MiSUMi

Standard Components for Plastic Mold

2015

MISUMI Corporation

MiSUMi

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Standard Components for Plastic Mold

Index

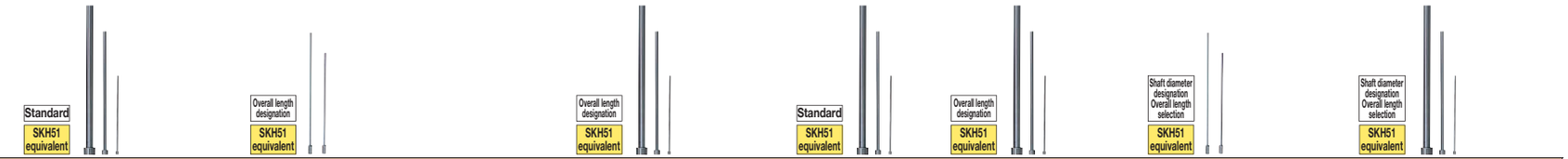
Contents 1～40
How to Use Catalog 41～50
Straight Ejector Pins 51～124
Stepped Ejector Pins 125～172
Free Flange-Position Ejector Pins 173～192
Rectangular Ejector Pins 193～272
Ejector Sleeves 273～336
Straight Center Pins 337～348
Stepped Center Pins 349～378
Taperless Center Pins 379～392
Straight Core Pins 393～438
Steps-Type Round Core Pins 439～492
Taperless Core Pins 493～518
Shaped Inlay Core Pins for Boss 519～540
Block Core Pins Cavity inserts 541～564
Steel Plates 565～566
Date Marked Pins Recycle Marked Pins pins with Gas Vent 567～600
Angular Pins Locking Blocks 601～630
Slide Cores Loose Cores 631～676
Guide Rails Center Rails 677～730
Sprue Bushings Locating Rings 731～794
Components of Runner Electrodes 795～824
Components of Gate 825～874
Leader Components 875～924
Components for Positioning 925～956
Components of Ejector Space 957～1008
Mold Opening Controllers 1009～1042
Cooling Components① Couplers Quick Fitting Joints 1043～1092
Cooling Components② Joints・Hoses Cooling Inside of Mold 1093～1138
Heating Items 1139～1164
Heat Insulation Sheets 1165～1182
Bolts Screws Washers 1183～1200
Mold Accessories 1201～1216
Chemical Products 1217～1218
Springs 1219～1268
Components of Large Mold 1269～1276
Die Cast Parts 1277～1296
Components for Injection Molding 1297～1298
Product Data/ Technical Data 1299～1352
Business Information 1353～1358
Index 1359

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

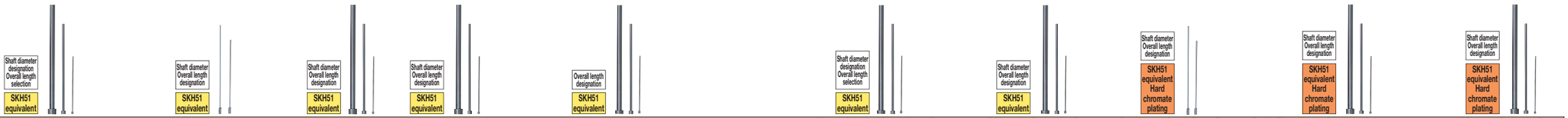
How to Use Catalog

- Guide to Marks (P.42)
- How to use Catalog (P.43)
- Stock and Delivery time (P.45)
- Express Service System (P.46)
- Alteration Service (P.45)
- Environmental activities and RoHS Directives (P.46)
- Guide for MISUMI EC service (P.47)

STRAIGHT EJECTOR PINS



Product Name / Part Number	Straight Ejector Pins—Standard— EPH	EPHE—B	Small Diameter Straight Ejector Pins EPY—L	Straight Ejector Pins—L Dimension Designation Type— EPH—L	EPHE—L	—Standard— EPHJ	EPHJE	—L Dimension Designation Type— EPHJ—L	EPHJE—L	Small Diameter Straight Ejector Pins EPY—G	Straight Ejector Pins—Shaft diameter designation · L dimension fixed type— EPH—G	EPHE—G
Page	55	55	57	57	57	59	59	59	59	61	61	61



—P Dimension Designation · L Dimension Selection Type—	EPHJ—G	EPHJE—G	Small Diameter Straight Ejector Pins EPYB	Straight Ejector Pins—L · P dimension designation type—	EPHB	EPHBE	EPHJB	EPHJBE	Extra Precision Straight Ejector Pins—L dimension designation type— EPV—L	—P Dimension Designation · L Dimension Selection Type—	EPV—G	—L · P Dimension Designation Type—	EPVB	Small Diameter Straight Ejector Pins	C—EPYB	Straight Ejector Pins—L · P dimension designation type—	C—EPHB	C—EPHBE	—L · P Dimension Designation Type—	C—EPHJB	C—EPHJBE
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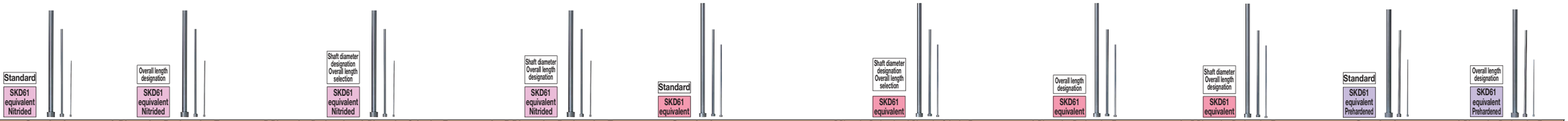

—Standard—	EPN	EPJ	—L Dimension Designation Type—	EPN—L	EPJ—L	—P Dimension Designation · L Dimension Selection Type—	EPNG	EPJG	—L · P Dimension Designation Type—	EPNB	EPJB	—Standard—	EPDS	EPD	—P Dimension Designation · L Dimension Selection Type—	EPDGS	EPDG	—L Dimension Designation Type—	EPDS—L	EPD—L	—L · P Dimension Designation Type—	EPDBS	EPDB	—Standard—	EPAJ	—L Dimension Designation Type—	EPAJ—L
	69	69		71	71		73	73		75	75		77	77		77	77		79	79		79	79		81		81

—P Dimension Designation · L Dimension Selection Type—	EPAJG	—L · P Dimension Designation Type—	EPAJB	—Standard type—	EPW	EPWJ	—P Dimension Designation · L Dimension Selection Type—	EPWG	EPWJG	—L Dimension Designation Type—	EPW—L	EPWJ—L	—L · P Dimension Designation Type—	EPWB	EPWJB	Straight Ejector Pins with Gas Vent—L · PC dimension designation type/L · P · PC dimension designation type—	GVB—EPH—L	GVB—EPHE—L	Straight Ejector Pins with Gas Vent—L · PC dimension designation type/L · P · PC dimension designation type—	GVB—EPHJ—L	GVB—EPHJE—L	—L · P · PC Dimension Designation Type—	GVB—EPHB	GVB—EPHBE
	81		81		83	83		83	83		83	83		83	83		85	85		85	85		85	85

—L · P · PC Dimension Designation Type—	GVB—EPHJB	GVB—EPHJBE	—L Dimension Designation Type—	GV—EPH—L	GV—EPHE—L	—L Dimension Designation Type—	GV—EPHJ—L	GV—EPHJE—L	—L · P Dimension Designation Type—	GV—EPHB	GV—EPHBE	—L · P Dimension Designation Type—	GV—EPHJB	GV—EPHJBE	Straight Ejector Pins with Gas Vent—Cutting facets／L dimension designation type—	GW□—EPH—L	GW□—EPHE—L	Straight Ejector Pins with Gas Vent—Cutting facets／L dimension designation type—	GW□—EPHJ—L	GW□—EPHJE—L	Straight Ejector Pins with Gas Vent—Cutting facets／L · P dimension designation type—	GW□—EPHB	GW□—EPHBE	GW□—EPHJB	GW□—EPH—JBE
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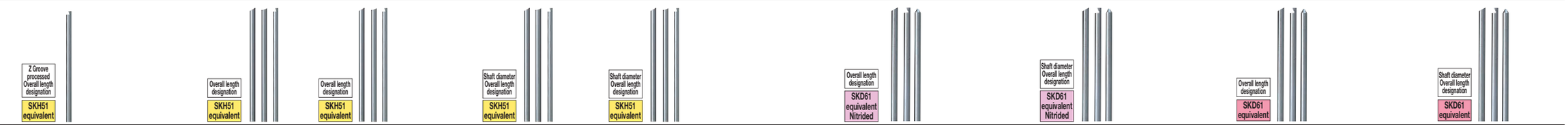


Ejector Pins with Z Groove Processed—L dimension designation type—	Z—EPH—L	Z—EPHE—L	Straight Ejector Pins with Tip Process—L dimension designation type—	EPH□A	EPHE□A	EPHJ□A	EPHJE□A	—L · P Dimension Designation Type—	EPHB□A	EPHBE□A	EPHJB□A	EPHJBE□A	—L Dimension Designation Type—	EPN□A	EPJ□A	—L · P Dimension Designation Type—	EPNB□A	EPJB□A	—L Dimension Designation Type—	EPDS□A	EPD□A	—L · P Dimension Designation Type—	EPDBS□A	EPDB□A
	91	91		97	97	97	97		99	99	99	99		101	101		103	103		105	105		107	107

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Straight Ejector Pins with Engraving—L Dimension Designation Type—
EPH□M EPH□MR EPHE□M EPHE□MR EPHJ□M EPHJ□MR EPHJE□M EPHJE□MR
109 109

—L・P Dimension Designation Type—
EPHB□M EPHB□MR EPHBE□M EPHBE□MR
111 111

—L・P Dimension Designation Type—
EPHJB□M EPHJB□MR EPHJBE□M EPHJBE□MR
111 111

Extra Precision Straight Ejector Pins with Engraving—L dimension designation type—
EPV□M EPV□MR
113 113

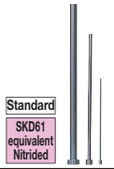
—L・P Dimension Designation Type—
EPVB□M EPVB□MR
113 113

Straight Ejector Pins with Engraving—L Dimension Designation Type—
EPN□M EPN□MR EPJ□M EPJ□MR
115 115

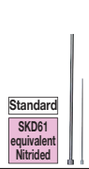
—L dimension designation・convex character type—
EPH□T EPHE□T
117 117

—L・P dimension designation・convex character type—
EPHB□T EPHBE□T
117 117

Straight Ejector Pins —Standard type—
48・100PACK—EPH 48・100PACK—EPHE
119 119



—Standard type—
48・100PACK—EPN
119 119



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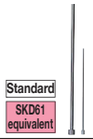


—Standard type—
48・100PACK—EPD
119 119

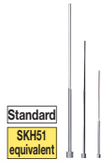
PINS FOR EJECTOR BLOCK
EBPJ
121 121

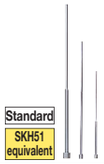
Air-Jet Valves
AJVE AJV
123 123

Spacers for Air-jet Valve
AJVS
124 124

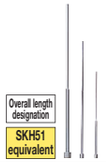
Spring Pins & Dowel Pins
WSP MS
124 124

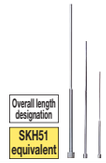
Stepped Ejector Pins



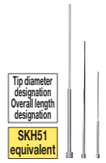


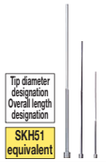
Product Name / Part Number: Stepped Ejector Pins—Standard—
EHS EHSE EHSJ EHSJE
Page: 129 129





—L Dimension Designation Type—
EHSL EHSEL EHSJL EHSJEL
131 131 131 131





—P・N dimension designation・L dimension selection type—
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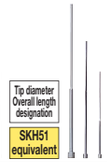

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EHYF EHSF EHSFE EHSJF EHSJFE
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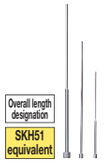
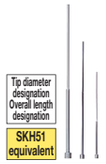
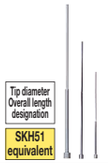


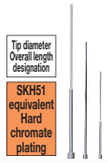
Extra Precision Stepped Ejector Pins—L dimension designation type—
EVSL
137

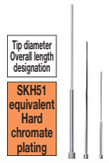


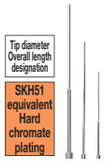
—P・N dimension designation・L dimension selection type—
EVSG
137



—L・P・N DIMENSION DESIGNATION TYPE—
EVSF
137







—L・P・N DIMENSION DESIGNATION TYPE—
C—EHYF C—EHSF C—EHSFE C—EHSJF C—EHSJFE
139 139 139 139 139

Stepped Ejector Pins with Gas Vent—L dimension designation type—
GVB—EHSL GVB—EHSJL GVB—EHSEL GVB—EHSJEL
141 141 141 141

—TIP DIAMETER・L・P・N DIMENSION DESIGNATION TYPE—
GVB—EHSF GVB—EHSJF GVB—EHSFE GVB—EHSJFE
143 143 143 143

—Cutting facets/L dimension designation type—
GW□—EHSL GW□—EHSJL GW□—EHSEL GW□—EHSJEL
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—Cutting facets/L・P N dimension designation type—
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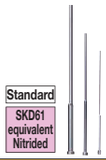

—Standard—
ENS EJS
149 149

—P・N dimension designation・L dimension selection type—
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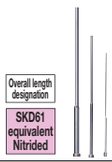

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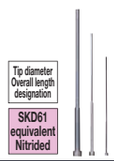

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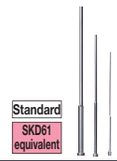
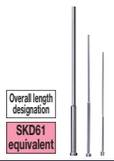


—Standard—
EDS EDSE
153 153

—P・N dimension designation・L dimension selection type—
EDSG EDSEG
153 153



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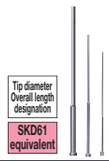
EDSL EDSEL
155 155



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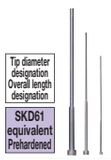
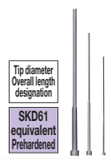


—P・N dimension designation・L dimension selection type—
EASG
157



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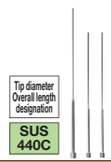
157 157



—L・P・N DIMENSION DESIGNATION TYPE—
EWSF EWSJF
159 159

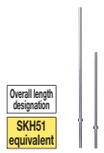
Two-Stepped Ejector Pins
EHWSB
161

Stepped Ejector Pins with Tip Process—L・P・N dimension designation type—
EHSF□A EHSFE□A EHSJF□A EHSJFE□A
167 167 167 167

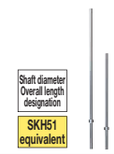
Stepped Ejector Pins with Engraving—L・P・N dimension designation type—
EHSF□M EHSF□MR EHSFE□M EHSFE□MR EHSJF□M EHSJF□MR EHSJFE□M EHSJFE□MR
169 169 169 169

Stepped Ejector Pins with Engraving—L・P・N dimension designation type—
EJSF□M EJSF□MR
171

FREE FLANGE POSITION EJECTOR PINS



Product Name / Part Number: Free Flange Position Straight Ejector Pins-L dimension designation type-
EPSH EPSHE
Page: 175 175



—L・P Dimension Designation Type—
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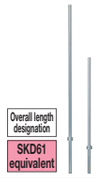
STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents



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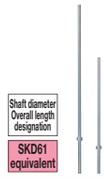
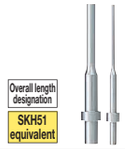


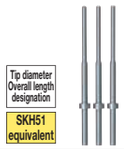
—L · P Dimension Designation Type—
EPSNB 177 177



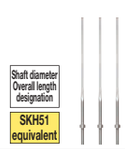
Stepped Ejector Pins with Free Flange Position
EPSHS 179 EPSHSE 179

Free Flange Position Straight Ejector Pins with Tip Process—L dimension designation type—
EPSH□A 185 EPSHE□A 185

—L · P Dimension Designation Type—
EPSHB□A 185 EPSHBE□A 185



Free Flange Position Stepped Ejector Pins with Tip Process—L · P · N Dimension Designation Type—
EPSHS□A 187 EPSHSE□A 187



Rectangular Ejector Pins with Free Flange Position
ERSH 189 ERSHE 189

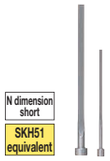
Pusher Pins with Spring Guide
EPCH 191 EPCHE 191

RECTANGULAR EJECTOR PINS

Product Name / Part Number: Rectangular Ejector Pins—Standard—
ERPH 197 ERJ 197

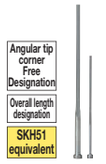
—L Dimension Designation Type—
ERL 199 ERJL 199

—Free designation type—
ERF 201 ERJF 201

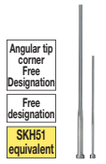


—N dimension short type—
ERSF 203 ERSJF 203

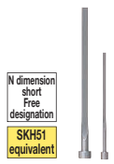
Precision Rectangular Ejector Pins—Standard—
ERVB 205 ERVJB 205



—L Dimension Designation Type—
ERVL 207 P—ERVL 207 ERVJL 207



—Free designation type—
ERVYF 209 P—ERVYF 209 ERVF 209 P—ERVF 209 ERVJ 209

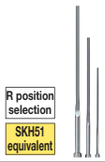


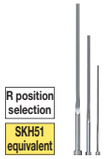
—N dimension short type—
ERVSF 211 ERVSJF 211

Extra Precision Rectangular Ejector Pins—Free designation type—
ERZF 213 P—ERZF 213

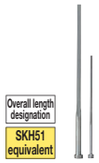
R-chamfered rectangular Ejector pins—L dimension designation type—
ERLWR 215 ERLFR 215

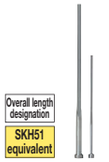
—Free designation type—
ERWR 217 ERFR 217 ERJWR 217 ERJFR 217





—Free designation · R position selection type—
ER□□R · ER□R 219 ERJ□□R · ERJ□R 219

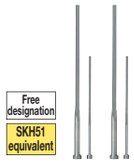




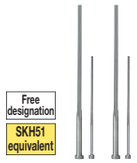
R-chamfered Precision Rectangular Ejector Pins—L dimension designation type—
ERVLWR 221 ERVLFR 221

—Free designation type—
ERVWR 223 ERVFR 223 ERVJWR 223 ERVJFR 223

—Free designation · R position selection type—
ERV□□R · ERV□R 225 ERVJ□□R · ERVJ□R 225



C-chamfered Rectangular Ejector Pins—Free designation type—
ERF□□C 227 ERJF□□C 227



C-chamfered Precision Rectangular Ejector Pins—Free designation type—
ERVF□□C 229

Gas Release Rectangular Ejector Pins
GV—ERF 231 GV—ERJF 231

Precision Gas Release Rectangular Ejector Pins
GV—ERVF 233 GV—ERVJ 233

Rectangular Ejector Pins with Tip Process
ER□□ 237 ERJ□□ 237

R-Chamfered Rectangular Ejector Pins with Tip Processed
ER□R□□ 239 ERJ□R□□ 239

Precision Rectangular Ejector Pins with Tip Process
ERV□□ 241 ERVJ□□ 241

Precision R-Chamfered Rectangular Ejector Pins with Tip Processed
ERV□R□□ 243 ERVJ□R□□ 243

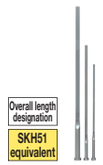
Stepped Ejector Pins with Engraving
ERF□M 245 ERF□MR 245

R-Chamfered Rectangular Ejector Pins with Engraving
ER□R□M 247 ER□R□MR 247

Precision Rectangular Ejector Pins with Engraving
ERVF□M 249 ERVF□MR 249

Precision R-Chamfered Rectangular Ejector Pins with Engraving
ERV□R□M 251 ERV□R□MR 251

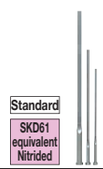
Rectangular Ejector Pins for Large Mold—Standard—
ERJXB 253



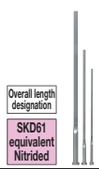
—L Dimension Designation Type—
ERJXL 253

—Free designation type—
ERJX 255

R-chamfered Rectangular Ejector Pins for Large Mold
ERJXWR 257 ERJXFR 257



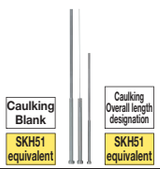
Rectangular Ejector Pins for Large Mold—Standard—
ERNXB 259



—L Dimension Designation Type—
ERNXL 259

—Free designation type—
ERNX 261

R-chamfered Rectangular Ejector Pins for Large Mold—Free designation type—
ERNXWR 263 ERNXFR 263



Rectangular Ejector Pins for Large Mold—Caulking · standard / Caulking · L dimension designation type—
ERHK—B 265 ERHK—L 265

—CAULKING · FREE DESIGNATION TYPE—
ERHK—F 267

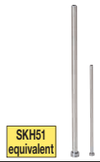
Rectangular Ejector Blanks for Large Mold
ERKB 268

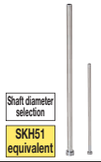
PRECISION RECTANGULAR EJECTOR PINS—RECTANGULAR SHANK TYPE—
ERSRP 269

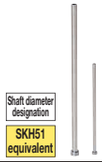
D-shaped Ejector Pins
ERDP 271 ERDF 271 ERDPJ 271 ERDFJ 271

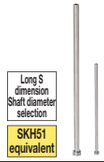
STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

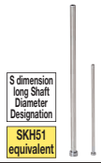
EJECTOR SLEEVES







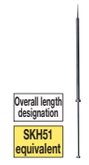




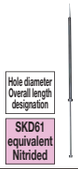
Product Name / Part Number	Straight Ejector Sleeves—Tapered Type—		Precision Straight Ejector Sleeves—Shaft diameter selection type—				—Shaft diameter designation type—				—Long S dimension · Shaft diameter selection type—			—Long S dimension · Shaft diameter designation type—			Short Ejector Sleeves—Relief tapered Type—			Precision Small Diameter · Thin-wall Stepped Ejector Sleeve—Tapered Type—
	ESVX	ESVXN	ESV	ESVJ	ESV—H	ESV—M	ESVB	ESVJB	ESVB—H	ESVB—M	ESVK—H	ESVKJ—H	ESVK—M	ESVKB—H	ESVKJB—H	ESVKB—M	EPBBH	EPBB—H	EPBB—M	ESVFX
Page	277	277	279	279	279	279	279	279	279	279	281	281	279	281	281	281	283	283	283	285

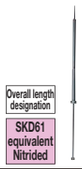
—D selection · D designation type—		Precision Stepped Ejector Sleeves—D selection · D designation type—				—Precision Small Diameter · Long S dimension / D selection · D designation type—		—Precision · Long S dimension / D selection · D designation type—			Straight Ejector Sleeve—Standard—	—L Dimension Designation Type—	—Shaft Diameter (D) Selection Type—	—Shaft diameter (P) designation (0.01mm increments) type—		—JIS head	Shaft diameter (D) selection type—
ESVF	ESVFB	ESV□□	ESVJ□□	ESV□□—H	ESV□□—M	ESVKF—H	ESVKFB—H	ESVK□□—H	ESVKJ□□—H	ESVK□□—M	ESNV	ESNV—LC	ESNV—L	ESNVB			ESNVJ
287	287	289	289	289	289	291	291	293	293	293	295	297	299	299			301

—JIS head	Shaft Diameter (P) designation(0.01mm increments) type—	—Standard—	—JIS head	Standard—	—L Dimension Designation Type—	—JIS head	L dimension designation type—	—Shaft diameter selection type—	—Shaft diameter designation type—	—JIS head	Shaft diameter selection type—	—JIS head	Shaft diameter designation type—	Short Ejector Sleeves	
	ESJVB	ESN		ESJ	ESN—LC		ESJL	ESN—L	ESNB		ESNJ		ESJB	ECB	ECBB
301		303	305		307	309		311	311		313		313	315	315



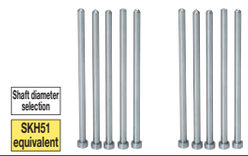
Stepped Ejector Sleeve	—JIS head—	—Standard—	—JIS head	Standard—	—L Dimension Designation Type—	—JIS head	L dimension designation type—	—L · V dimension designation type—	—JIS head	L · V dimension designation type—	Straight Ejector Sleeve & One-Step Center Pin Sets	—L Dimension Designation Type—	
ESNVF	ESJVF	ESNFT		ESJFT	ESNF—LC		ESJF—LC	ESNF		ESJF	ESV—S—□	ESNS—□	ESJS—□
317	317	319		319	321		321	323		325	327	329	329

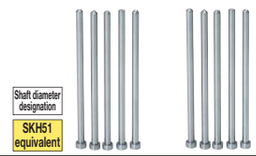




Straight Ejector Sleeve&One-Step Center Pin Sets—Hole (Shaft) diameter · L dimension designation type—		Stepped Ejector Sleeve&One-Step Center Pin Sets—L dimension designation type—		—L · V DIMENSION DESIGNATION TYPE—	
ESNP—□	ESJP—□	ESNM—□	ESJM—□	ESND—□	ESJD—□
331	331	333	333	335	335

STRAIGHT CENTER PINS

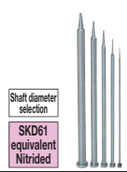




Product Name / Part Number	Straight Center Pins with Tip Process—Shaft diameter (D) selection type—				—Shaft diameter (P) designation (0.01mm increments) type—			
	CPH—5L□	CPHJ—5L□	CPHE—5L□	CPHJE—5L□	CPHG—5L□	CPHJG—5L□	CPHGE—5L□	CPHJGE—5L□
Page	339	339	339	339	341	341	341	341

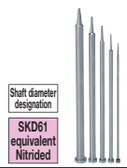
—Shaft Diameter (D) Selection Type—		Straight center pins with tip process—Shaft diameter (P) designation (0.1mm increments) type—		Straight Center Pins with Tip Process Cooling Hole—Shaft diameter (D) selection type—	
CPN—5L□	CPJ—5L□	CPNG—5L□	CPJG—5L□	RDCPN—5L□	RDCPJ—5L□
343	343	345	345	347	347

STEPPED CENTER PINS



Product Name / Part Number	One-step Center Pins		—Shaft diameter (D) selection type—		—Shaft diameter (P) designation (0.01mm increments) type—				—Shaft diameter (D) selection type—	
	CP□—5□	CP□J—5□	CP□E—5□	CP□JE—5□	CP□G—5□	CP□JG—5□	CP□GE—5□	CP□JGE—5□	CPN□—5□	CPJ□—5□
Page	353	353	355	355	357	357	359	359	361	361

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents



—Shaft diameter (P) designation (0.1mm increments) type—
CPN□G—5□ CPJ□G—5□
363 363

One-step Center Pins with Cooling Hole—Shaft diameter (D) selection type—
RDCPN—5□ RDCPJ—5□
365 365

One-step Center Pins —Shaft diameter (D) selection type—
CPP—5□ CPD—5□ CPDK—5□
367 367 367

—Shaft diameter (P) designation (0.01mm increments) type—
CPPG—5□ CPDG—5□ CPDKG—5□
369 369 369

Two-step Center Pins
C□H5□ C□HE5□
371 371

Precision Stepped One-step Center Pins
CP□B—5□ CP□BJ—5□
373 373

Stepped One-Step Center Pins
CPNB—5□ CPJB—5□
375 375

Stepped Two-step Center Pins
C□HB5□
377

TAPERLESS CENTER PINS

Product Name / Part Number: Taperless One-step Center Pins—Shaft diameter (D) fixed tip (A) type—
CP□S—5□ CP□SJ—5□
Page: 383 383

CP□SE—5□ CP□SJE—5□
383 383

—Shaft diameter (P) designation (0.01mm increments) type—
CP□SG—5□ CP□SJG—5□
385 385

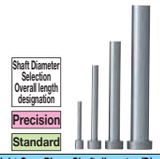
CP□SGE—5□ CP□SJGE—5□
385 385

—Shaft diameter (D) fixed tip (A) type—
CPNS—5□ CPJS—5□
387 387

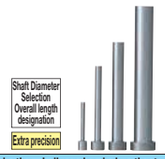
—Shaft diameter (P) designation (0.1mm increments) type—
CPNSG—5□ CPJSG—5□
389 389

Taperless One-step Center Pins with Cooling Hole
RDCPNS—5□ RDCPJS—5□
391

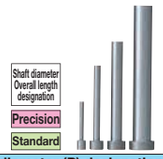
STRAIGHT CORE PINS



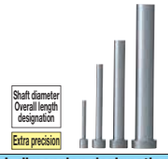
Product Name / Part Number: Straight Core Pins—Shaft diameter (D) selection · L dimension designation type—
CP□—L
Page: 397



CPM—L
397

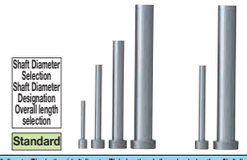


—Shaft diameter (P) designation · L dimension designation type—
CP□B—L
399



CPMB—L
399

—Shaft diameter (P) designation (0.01mm increments) · L dimension selection type—
CP□—G
401



—Shaft diameter (D) selection / shaft diameter (P) designation · L dimension designation · Shaft diameter tolerance / type—
CP□—L CP□B—L CP□—L CP□□B—L
403 403 405 405

Gas Release Straight Core Pins with Cutting facets
GW—CP□—L GWS—CP□—L
407 407

GW—CP□B—L GWS—CP□B—L
407 407

Gas Release Straight Core Pins
GV—CP□—L GV—CP□B—L
409 409

Precision Gas Release Straight Core Pins
GV—CP□—L GV—CP□B—L
411 411

Extra Precision Gas Release Straight Core Pins
GV—CPM—LGV—CPMB—L
413 413

Straight core pins with tip process Shaft diameter tolerance $^{-0.01}_{-0.02}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
415 417

Straight core pins with tip process Shaft diameter tolerance $^{-0}_{-0.005}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
415 417

Straight Core Pins with Tip Process
CPH□G CPH1Z CPH□R CPHB□G CPHB1Z CPHB□R
419

Precision straight core pins with tip process
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
421 421

Extra precision straight core pins with tip process
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
423 423

Straight core pins—JIS head—
CPDJ—L CPDJB—L
425

Straight core pins with tip process—JIS head—
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
427 427

Free designation straight core pins with tip process
F—CP□□ F—CP□E□
429 429

Straight Core Pins With Engraving —Concave Character Type—
CPH□M CPX□M CPHB□M CPXB□M
431

Straight Core Pins With Engraving —Concave character type—
CP□1MR CP□B1MR
433

Straight Core Pins With Engraving —Convex character type—
CPH□T CPX□T
435 435

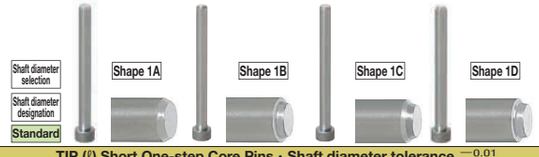
CPHB□T CPXB□T
435 435

Core Pin Blanks
CPD CPH
437 437

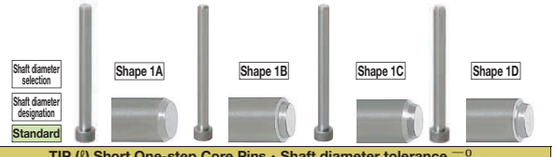
STEPS-TYPE · ROUND CORE PINS

Product Name / Part Number: One-step Core Pins · Shaft diameter tolerance $^{-0.01}_{-0.02}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
Page: 443 445

One-step Core Pins · Shaft diameter tolerance $^{-0}_{-0.005}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
443 445



TIP (ℓ) Short One-step Core Pins · Shaft diameter tolerance $^{-0.01}_{-0.02}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
447 447

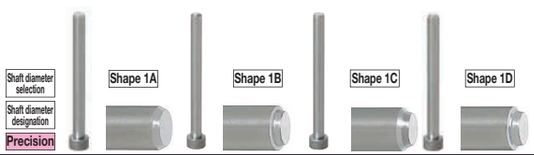


TIP (ℓ) Short One-step Core Pins · Shaft diameter tolerance $^{-0}_{-0.005}$
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
447 447

Contents

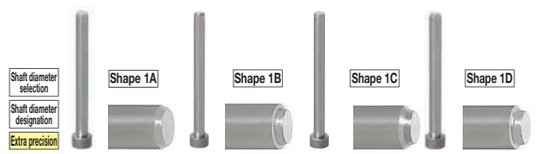
STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Precision One-Step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
449 451



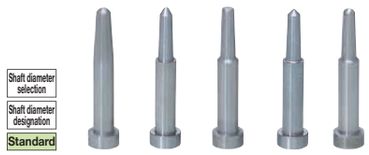
Precision Short Tip (ℓ) One-Step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
453 453

Extra Precision One-step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
455 457

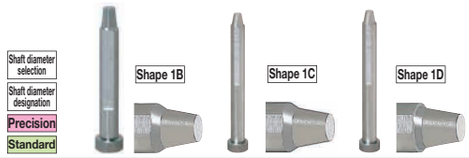


Extra Precision Short Tip (ℓ) One-step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
459 459

One-Step Core Pins—Tip lapped・Shaft diameter tolerance $^{-0.01}_{-0.02}$ —
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
461 463



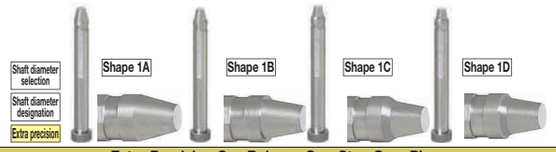
One-Step Core Pins—Tip lapped・Shaft diameter tolerance $^{0}_{-0.005}$ —
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
461 463



Gas Release One-Step Core Pins with Cutting Facets
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
465 465

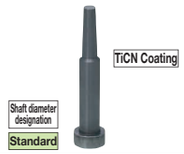
Gas Release One-step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
467 469

Precision Gas Release One-Step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation (0.005mm increments) type—
471 471

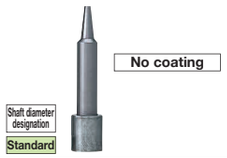


Extra Precision Gas Release One-Step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation (0.001mm increments) type—
473 473

One-step Core Pins—JIS head・Shaft diameter tolerance $^{-0.01}_{-0.02}$ —
—Shaft diameter (D) selection type— —Shaft diameter (P) designation (0.01mm increments) type—
475 475



Coated One-step Core Pins—TiCN coating—
H—CPDB1□□
477



Free Specified One-step Core Pins—No coating—
F—CP□B1□□
479

—TiCN coating—
HF—CPDB1□□
479

Two-step Core Pins—Shaft Diameter (D) Selection Type—
—Shaft diameter tolerance $^{-0.01}_{-0.02}$ — —Shaft diameter tolerance $^{0}_{-0.005}$ —
481 483

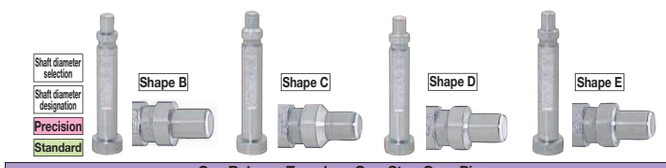
Two-step Core Pins—Shaft Diameter (D) Designation Type—
—Shaft diameter tolerance $^{-0.01}_{-0.02}$ — —Shaft diameter tolerance $^{0}_{-0.005}$ —
485 487

Precision Two-Step Core Pins
—Shaft diameter (D) selection type—
489

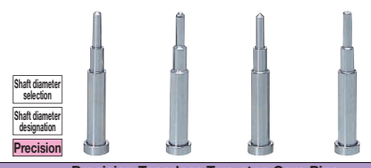
Precision Two-Step Core Pins
—Shaft diameter (P) designation type—
491

TAPERLESS CORE PINS

Product Name / Part Number	Taperless One-step Core Pins —Shaft diameter (D) selection type—	—Shaft diameter (P) designation type—	Precision Taperless One-step Core Pins —Shaft diameter (D) selection type—	—Shaft diameter (P) designation type—	Extra Precision Taperless One-Step Core Pins —Shaft diameter (D) selection type—	—Shaft diameter (P) designation type—	Taperless One-Step Core Pins—Lapped— —Shaft diameter (D) selection type—	—Shaft diameter (P) designation type—
Page	497	499	501	503	505	507	509	509



Gas Release Taperless One-Step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
511 513



Precision Taperless Two-step Core Pins
—Shaft diameter (D) selection type— —Shaft diameter (P) designation type—
515 517

Round Core Pins for Boss・Shaped Core Pins -Round Shank Type-・Round Core Pins -Inlay Type-

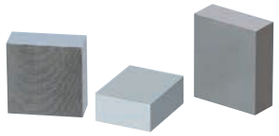
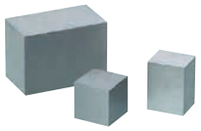
Product Name / Part Number	Large-diameter Straight Core Pins—Shaft diameter (D) selection・Shaft diameter (P) designation—						Round Shank Core Pins Shape B Shape C Shape D				Round Core Pins for Boss—Shaft diameter (D) selection・Shaft diameter (P) designation—	
	GCMN	GCMK	GCMX	GCMBN	GCMBK	GCMBX	CPD—□□	CPP—□□	CPH—□□	CPV—□□	BC□S—□□	BC□BS—□□
Page	521						523				525	

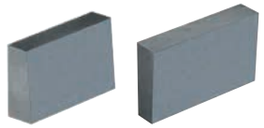
STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Round Core Pins for Boss—Gas release hole type— □GV—BC□S—□□ GV—BC□BS—□□	Straight Core Sleeves—S dimension Designation type— CS□K□4T CS□K□ CS□KB□4T CS□KB□	—S dimension Fixed type— CS□□4T CS□□ CS□B□4T CS□B□	Core Pins for Shaft Holes CPS□□ CPSB□□	CP□—2A CP□B—2A CP□—2B CP□B—2B Inlay Core Pins—Shaft diameter (D) selection type—	CP□—2C CP□B—2C CP□—2D CP□B—2D CP□—2E CP□B—2E Inlay Core Pins—Shaft diameter (P) designation type—				
527	529	531	533	535	537				

BLOCK CORE PINS CAVITY INSERTS

Inlay Bushings—Head type— IRHB	—Straight Type— IRB	Product Name Part Number	Block Core Pins—Straight type— SPHD	BCSS□	BCSSX	—Flange type— BCS□	BCSX	R-chamfered Block Core Pins—Straight type— SPHD—□□R	BCSSN—□□R	—Flange type— BCSH—□□R BCSN—□□R	Block Core Pins with Tip Process BCS□□A BCS□□B	Block Core Pins with Engraving BCSH□□ BCSN□□	Block Core Pins—Wide type— BCSW□	BCSWS	Hardened Plates for Core—Top & bottom 2-faces grinded type— HPSHW HPHEW HPSWW
539	540	Page	543	543	543	543	543	544		544	545	547	549	549	550

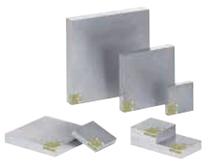
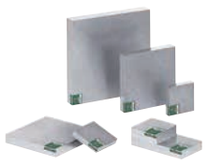
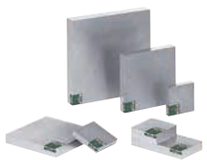
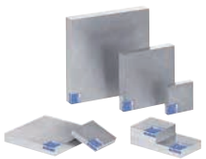


—6-faces grinded type— HPS□ HP□E	Cavity Insert Block Blanks No reference plane type／Reference plane type (4 faces grinded, 2 faces milled)			Cavity Insert Blocks (6 faces-grinded) Standard	Precision	Cavity Insert Wedges—Tapered type— ICS	ICH	—Bolt hole position free type— ICSM	ICHM	Cavity Insert Wedge Spacers ICSS	ICHS	IUSS	IUHS	Cavity Insert Wedges—Parallel type— IPS
551	553		553	555	555	557	557	559	559	561	561	561	561	563

STEEL PLATES

Product Name Part Number	Ground plates for wedm —Standard・Thickness (T) 0.01mm increments designation type— S50CWP・T—S50CWP	High-precision ground plates —Free size type— NAK55HP・NAK55MP	NAK80HP・NAK80MP	Ground plates for wedm —Standard・Thickness (T) 0.01mm increments designation type— STAVAXWP・T—STAVAXWP	PX5WP・T—PX5WP	DH2FWP・T—DH2FWP	SKD11WP・T—SKD11WP
Page	Internet			Internet			

S50CSP・F—S50CSP	Ground plates —Standard・Free size type— NAK55SP・F—NAK55SP	NAK80SP・F—NAK80SP	Ground plates —Standard・Free size type— STAVAXSP・F—STAVAXSP	PX5SP・F—PX5SP	Milled plates —Standard・Free size type— S50CFP・F—S50CFP	NAK55FP・F—NAK55FP	NAK80FP・F—NAK80FP
	Internet			Internet			

STAVAXFP・F—STAVAXFP	Milled plates —Standard・Free size type— PX5FP・F—PX5FP	DH2FFP・F—DH2FFP	SKD11FP・F—SKD11FP	Finished plates —Standard・Free size type— S50CRP・F—S50CRP	Finished plates —Standard・Free size type— NAK55RP・F—NAK55RP	NAK80RP・F—NAK80RP	SKD11RP・F—SKD11RP	Plates with water hole and・or heater hole—Free size type— M—S50CFP・M—S50CRP・M—S50CSP	
	Internet				Internet				

Internet catalog is not available in some subsidiaries.

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

DATE MARKED PINS RECYCLE MARKED PINS PINS WITH GAS VENT

Product Name / Part Number	Date Marked Pin Sets—PL exchange type— DTBX DTBXU DTX DTXU DTXS DTXSU DT□X DT□XU DTMBX DTX□M	Inside Arrows for PL Exchange Type DYYXDYYXUDNXDNXU DYMX	Outside Rings for PL Exchange Type DTX—RDT□X—RDTXS—RDTX—R□M	Date Marked Pin Sets—Plate-side exchange type— DTAA DTAAU DTBB DTBBU DT DTU DTS DTSU DT□ DT□U DTM□DT□M	Inside Arrows for Plate-side Exchange Type DYY DYYU DN DNU DYM	Outside Rings for Plate-side Exchange Type DT—R DTS—R DT□—R DT—R□M
Page	571	573	574	575	577	578

	Date Marked Pin Sets—PL Exchange・Outer Corner Tapered Type— DT□□□T DT□□—RT DTX—RT□M	Date Marked Pin Sets—Plate-side Exchange・Outer Corner Tapered Type— DT□□□T DT□—RT DT—RT□M	Date Marked Pin Sets—Convex Character Type— DT□□C DT□□—RC DYY□□ DN□□	Date Marked Pin Sets—Double Ring Type— DTBZ DTEZ	Screwdriver for Date Marked Pin Sets DTPPN	Date Marked Pin Sets—L adjustable type— DTBXL DT□XL CPWDT—L
Page	579 580	581 582	583・584	586	586	589

	—Inside Arrow・Character Designation Type— DTMBXL	—Outside Ring・Character Designation Type— DTXL□M	—Outside Rings for L Adjustable type— DT□XL—R DTXL—R□M	Recycle Marked Pins for Identification of Plastic Packaging RMP□M	Recycle Marked Pins RM□□	Gas Vents TSV□	Cavity Inserts for Gas Release—Round shape— BGVS	Vacuum Unit AVBN	Gas Vent Units MSTV	Spacer for Gas Vent Unit MSTVS MSTVM	Gas Release Assist Units (Vacuum Generator) M—VCL
Page	590	590	591	593	593	594	595	596	597	598 598	599

ANGULAR PINS LOCKING BLOCKS

Product Name / Part Number	Angular Pins AP	Angular Pins APS	—Economy type— APZ	—Economy type— APSZ	—Tapped type— APU APUS	—Tapped type— APHX APHXS	—Male screw type— APM	—Male screw type— APMS	Angular Pins —Cap bolt type— APX	Angular Pins —Cap bolt type— APXS	Angular Pin Retainers APRS□	Angular Pin Retainers APRW□	Screw Bolts for Angular Pin AI	Stopper Plates for Angular Pin APP	Angular Cams ANCE	Angular Cams ANC
Page	605	605	607	607	609	609	611	611	611	611	613	613	614	614	615	615

	Positioning Locking Blocks—Plain type— LBCSK	LBCMK	—Oil groove type— LBCSM	—Oil free type— LBCSZ	—Angle (G) designation・Inlay part 4mm type— LBCS	LBCM	—Angle (G) designation・Inlay part 8・10mm type— LBCSH	LBCMH	—Width (A)・Angle (G) designation・Inlay part 4mm type— LBCSF	LBCMF	Positioning Locking Blocks—Free designation type— LBC□I	—with Beveled Bottom— LBCST
Page	617	617	617	617	619	619	619	619	621	621	623	624

	Locking Blocks—Inlay type・Inlay part (E)・Angle (G) designation— LBMS	LBMM	LBMD	—Inlay・PL installation type— LBPS	LBPM	Locking Blocks with Angular Hole Process —For PL installation・Width space saving type— ABPXE	Locking Blocks with Angular Hole Process—For PL installation・Width space saving・High precision type— ABPX	Locking Blocks with Angular Holes ALBMS	—PL installation type— ALBPS
Page	625	625	625	627	627	628	628	629	630

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

SLIDE CORES LOOSE CORES

Product Name / Part Number	Mini Slide Core Units MSCN□	—Inlay part processed— MSCK□	—Tapped— MSCM□	—Slim type・Inlay part processed— MSCSG	—Slim type・Tapped— MSCSGM	—Slim type with slide core retracting mechanism／Inlay part・Tapped— MSCSB	MSCSBM	Slide core units for two-color injection mold SCTM	Slide Core Units For Two-color Injection Mold Slide Stroke Amount 6mm SCWM□	Slide Cores—Standard type— SLG□K	SLG□A
Page	634	634	634	637	637	638・639・640	638・639・640	642	643	645	645

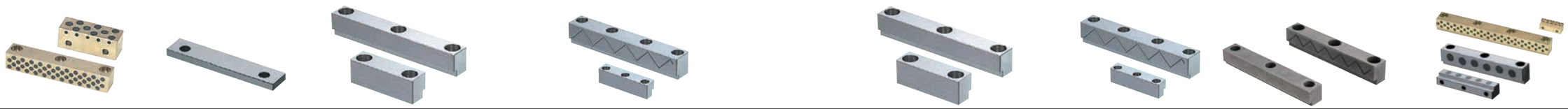
Slide Cores—Free designation type— SLF□K	SLF□A	Slide Cores with Angular Hole SLFK□A(X・Y・Z)	Ball Plungers BPJ BSJ BSZ BSX	Ball Buttons BBT	Ball Plunger Wrenches BPJG	Ball Plungers—Cap type— BPCT	Slide Locks SLLK	Ball Plungers—Plain type— BSZP	Ball Plungers—Head type— BSJT
645	645	647	651	651	651	652	653	654	654

Slide Stoppers SLSP	Slide Core Stop Blocks SLNB	Oil-free Slide Units for Loose Core—Standard・Fixing type— SCZN	—Standard・Adjusting type— SCZA	Oil-free Slide Inclined Pin Holders for Loose Core SCZNP	SCZAP	Oil-free Slide Units for Loose Core SCY	Oil-free Slide Inclined Pin Holders for Loose Core—selection type— KSCNP	Inclined pins・Direct push-up pins K—KSPSA KSPSA	K—KSPSB KSPSB	K—KSPSC KSPSC	K—KSPSD	—Male Thread type— K—KSPSE KSPSE	Inclined Pin Leader KPBZ	Oil-free Bushings MPBZ
655	656	659	661	663	663	665	667	669	669	671	671	673	675	675

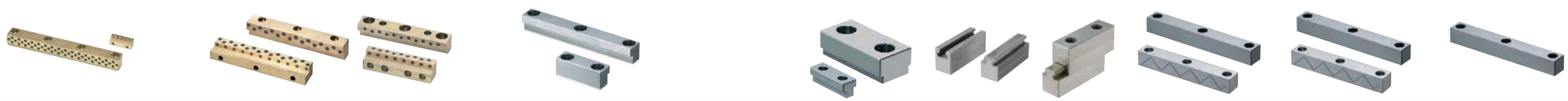
Oil-free Slide Blocks for Block Loose Core SCK
676

GUIDE RAILS CENTER RAILS

Product Name / Part Number	Plain Guide Rails—Non-oil groove type— GRS	GRM	—Oil groove type— GRSM	GRMM	—L dimension designation type— GRSF—□H GRMF—□H GRSFM—□H GRMFM—□H	—Free designation type— FGRS—□H FGRM—□H FGRSM—□H FGRMM—□H	—Nitriding type [Non-oil Groove]・[Oil Groove]— GRMT	GRMMT	Oil-free Plain Guide Rails—Standard (Copper Alloy・SKS3)— GRZ	GRSZ	—Bolt hole pitch designation type— GRZF—□H
Page	685	685	685	685	687	689	691		693		694



Oil-free Plain Guide Rails—Heat resistant 120° type— GRHZ	Plate Guide Rails GRPT	GRPTC	Single-heel Guide Rails—Standard (Groove 5・8・15mm)— GR5□C	GR5□	GR8□	GR15□	Single-heel Guide Rails—Standard [Oil Groove] (Groove 5・8・15mm)— GR5□CM	GR5□M	GR8□M	GR15□M	—L dimension designation [Non-oil Groove]・[Oil Groove] (Groove 5・8mm)— GR5SF□□—□H GR8SF□—□H GR5MF□□—□H GR8MF□—□H	—Free designation type [Non-oil Groove]・[Oil Groove]— FGR□—□H	FGR□M—□H	—Nitriding type [Non-oil Groove]・[Oil Groove]— GR□MT	GR□MMT	Oil-free Single Heel Guide Rails—Standard (Groove 5mm)— GR5Z	GR5SZ	—Standard (Groove 8mm)— GR8Z	GR8SZ
695	696		697				697				699	701		703		705		706	



Oil-free Single Heel Guide Rails—Bolt hole pitch designation (Groove 5・8mm)— GR5ZF—□H	GR8ZF—□H	—Standard (Groove 15mm)— GR15Z	—Dowel hole type— SRTL	Single-heel Guide Rails—V dimension standard (Groove 5・8mm)— GR5□V	GR8□V	Double Heel Guide Rails—Free designation type— FGTSF□M	FGTMF□M	Guide Rail—Ant heel type— GRAZF	GRAZM	Center Rails—Standard— CGS	CGSM	CGM	—L dimension designation— CGRS	CGRSM	CGRM	—Free designation type— FCGS□M	FCGM□M
707	708	709	710	711		712		713	713	715			716			717	

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

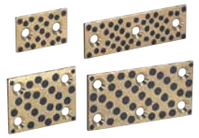
Oil-free Center Rails—Standard type— CGZ 719

—Bolt hole pitch designation type— CGZF—□H 720

Slide Adjustment Plates Non-oil Groove · Oil Groove SAS SAP SASM SAMM 721

Oil-free Slide Adjustment Plates SAPZ 721

Slide Adjustment Plates—Free designation type Non-oil Groove · Oil Groove— SAP□□H SAP□M□H 722



Oil-free Thin Slide Plates —Copper alloy 5mm type—UTW 723

—SKS3 (53~56HRC) 5mm type— UTWSZ 724

Oil-free Slide Plates —Copper alloy 10mm · 2-bolt type—STW · STWT 725

—Copper alloy 10mm · 4-bolt type— STW 725

Oil-free Slide Plate—SKS3 (53~56HRC) 10mm type— STWSZ 726

Compact Oil-free Slide Plates —Copper alloy 10mm type—STS 726

Oil-free Slide Plate Plates Thickness Plus Tolerance type —Copper alloy 10mm · Plate thickness plus tolerance type— PSLP 727

Oil-free Slide Plates —Copper alloy 10mm · Heat resistant 150° type—HPSLP 728

Oil-free Slide Plates —Copper alloy 20mm, 2-bolt type—SEW · SEWT 729

—Copper alloy 20mm, 4-bolt type— SEW 729

Shims for Oil-free Slide Plates SMP 730

SPRUE BUSHINGS LOCATING RINGS

Product Name / Part Number
Ecology Sprue Bushings Normal Bolt Type—Flange thickness 10mm · Straight— SBBPE SBBKE
—Flange thickness 10mm · Tapered— SBGPE SBGKE
Ecology Sprue Bushings Shoulder Type—Straight— SBSME SBSDE
—Tapered— SBTME SBTDE
Page 743 743 743 743 745 745 745 745

Sprue Bushings Normal Bolt Type—Bolt fixing type／flanged type— SBB□—B SBB□H—B 749 749

—Flange thickness 10mm · Straight— SBB□ SBB□H 751 751

—Flange thickness 10mm · Tapered— SBG□ SBG□H 751 751

String Eliminator Sprue Bushings—Board Thickness Selection Type— SBBJH SBBYH 753

Sprue Bushings Bolt Fixing Type—(Old) JIS A · straight— SJA□ SJA□E SJA□H 755 755 755

Sprue Bushings Bolt Fixing Type—(Old) JIS A · tapered— SJG□ SJG□E SJG□H 755 755 755

Sprue Bushings Proper Bolt Type—Flange thickness 10mm · Straight— SBB□ SBB□H 757 757

—Flange thickness 10mm · Tapered— SBG□ SBG□H 757 757

Cooling Sprue Bushings—Flange thickness 10mm— SBC□ SBC□H 759

Sprue Bushings Normal Bolt Type—Flange thickness 15mm · Straight— SBB□ SBB□H 761 761

—Flange thickness 15mm · Tapered— SBG□ SBG□H 761 761

—Flange thickness 20mm · Straight— SBB□ SBB□H 763 763

—Flange thickness 20mm · Tapered— SBG□ SBG□H 763 763

Sprue Bushings Normal Bolt Type—Flange thickness 8mm · Straight— SBB□S SBB□ 765 765

—Flange thickness 8mm · Tapered— SBB□TS SBB□T 765 765

Sprue Bushings Shoulder Type—Straight— SBS□ SBS□H 767 767

—Tapered— SBT□ SBT□H 767 767

Sprue Bushings Shoulder Type—(Old) JIS B · Straight— SJB□ SJB□H 769 769

—(Old) JIS B Type · Tapered— SJT□ SJT□H 769 769

Sprue Bushings Normal Bolt Type—Electroforming · Flange thickness 10mm— SBBN SBBNT 773 773

—Electroforming · Flange thickness 15mm— SBBE SBBET 775 775

Sprue Bushings—Electroforming/(Old) JIS A— SBJE SBJET 777 777

Sprue Bushings Shoulder Type—Electroforming— SBSN SBSNT 779 779

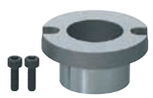
—Electroforming/(Old) JIS B— SBJN SBJNT 781 781

Thread Prevent Caps M—SK2 783

Sprue Bushings for Extension Nozzle—Locating presser type— SXHM SXHD 784

Sprue Bushings for Extension Nozzle—Straight— SX□ SXD□ SXC□ 785

—Tapered— SXT□ SXG□ SXS□ 785

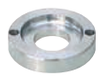


Sprue Bushing Guides SBGN 787

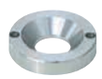
Sprue Lock Bushings —Head Type B dimension designation · B dimension selection/Straight type— SLBF SLBH SLBS 789 789 789

Locating Rings—Bolt type (2 holes)— LRBS 791

—Bolt type (4 holes)— LRBF 791



—Bolt type— LRBD 791

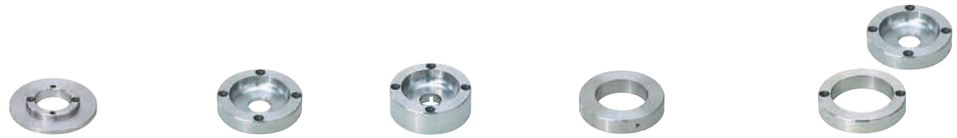


—JIStype— LRJS 791

—Runner lock pin pressing type— LRJST 791

Locating Rings —Large diameter type— LRK 791

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents



Locating Rings—Reversible type— LRBW	—Shoulder type— LRSS	—Shoulder type— LRSD	Locating Adapter Ring LAR	Locating Rings Packed 10・20PACK—LRBS	10・20PACK—LRSS
792	792	792	792	794	794

COMPONENTS OF RUNNER ELECTRODES

Product Name / Part Number	Runner Lock Pins—Straight・standard type— RLR	RLR□	RLR□F	—Straight・hard lock type— RLH	RLH□	RLH□F	—Tapered・standard type— RLT□	RLT□F	—Tapered・hard lock type— RHT□	RHT□F
Page	799			800			801		802	

Runner Lock Pins—Straight・with introduction type— RLRSB	RLRSBF	—Straight・tip edge type— RLREB	RLREBF	—Straight・cone-shaped tip type— RLK□	RLK□F	Runner Lock Pins—Straight・super hard lock type— RLEL	Runner Lock Pin Collars RLC	Runner Lock Pin Bushings RLBS	RLBT	RLBST	Runner Ejector Sets RES	RESA	RESB
803	803	804	804	805	805	806	806	807			808		

Runner Change Pins—L dimension selection/designation type(for Z pin combination)— RCPNZ	RCPLZ	—For ejector pins L dimension selection type・L dimension designation type— RCPN	RCPL	—For fixed side type— RCPK	Adjustable Pins For Runner Flow—L dimension selection・designation type— RFAN	RFAL	Adjustment Bolts for Runner Flow Rate RRCB	Electrodes for Pin-point Gate EMPG (For processing of SR part)	EMPGA (For processing of gate part)	Electrodes for Oblique Gate EMSG	Undersized Tapping Electrodes EMTA	EMTWA	EMTB	Electrodes for Round Engraving EMLM
809		811		813	817		819	821	821	822	823			824

COMPONENTS OF GATE

Pin-point Gate Bushing SKH51

Product Name / Part Number	Pin-point Gate Bushings—SKH51・B dimension selection・SR the inside diameter type— PGHB□A	—SKH51・B dimension selection・inner tapered type— PGHBV□A	—SKH51・B dimension selection・acute angle type— PGHBZ□A	PGHBVZ□A	Pin-point Gate Bushings—SKH51・B dimension designation・SR the inside diameter type— PGH□A	PGHZ□A	—SKH51・B dimension designation・inner tapered type— PGHV□A	PGHVZ□A	—SKH51・D dimension designation type— PGHD□A	PGHDZ□A	—SKH51・Large K° type— PGHF□A	PGHFZ□A
Page	829	831	833		835		837		839		841	

Pin-point Gate Bushing Material Electroforming

Pin-point Gate Bushings—SKH51・Inner diameter SR type with head— PGHT□A	—SKH51・inner tapered type with head— PGHVT□A	—SKH51・Prepared hole type— PGHTBL	—SKH51・Small diameter type/Small diameter head type— PGHS	PGXS	PGHST	PGXST	Pin-point Gate Bushings—Electroforming・B dimension selection・SR the inside diameter type— PGEB□A	PGKB□A	—Electroforming・B dimension selection・inner tapered type— PGEBV□A	—Electroforming・B dimension designation・SR the inside diameter type— PGE□A	PGK□A
843	845	847	849		850		851	851	853	855	855

Pin-point Gate Bushings—Electroforming・B dimension designation・inner tapered type— PGEV□A	—Electroforming・D dimension designation type— PGED□A	PGKD□A	—Electroforming・Head type— PGET□A	PGKT□A	Pin-point Gate Bushings—Electroforming・Small diameter type— PGES	PGKS	—Electroforming・Small diameter type with head— PGEST	PGKST	Pin-point Gate Bushings—Carbide・B dimension selection type— PGWB□A
857	859	859	861	861	863	863	864	864	865

Pin-point Gate Bushing Material Carbide

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Pin Gate Extension Bushing Tunnel Gate Blanks

—Carbide・B dimension designation type— PGW□A	Pin Gate Extension Bushings PGE□	PGE□R	—Headless type— PGEHS	PGENS	Rolling Gate Cut Units MRGC
867	869	869	869		872

LEADER COMPONENTS

Product Name / Part Number	Precision Leader Pins—Head・Plain Blank type— GPH	—Head・Plain Press-fit length designation type— GPHLO	GPH—XLO	—Head・Oil Groove L dimension selection type— GPJ
Page	881	883		886

—Head・Oil Groove Press-fit length designation type— GPJL	GPJ—XL	—Head・Oil Groove Press-fit length designation type— GPHLSP	Precision Leader Pins—Head type— GPHLO□	GPH—XLO□	Leader Pins with diameter of recess—Head・Plain Recess/Press-fit designation type— GPHOT	GPHOT—XL	Precision Leader Pins—Straight・Plain Recess/Press-fit designation type— GPSL	GPS—XL	—Straight・Oil Groove Press-fit length designation type— GPOL	Leader Pins with diameter of recess—Straight・Plain Recess/Press-fit designation type— GPSOT	Precision Leader Pins with Spiral Vent—Straight— GPSLO□	GPS—XLO□
887	888	889	891		893		895		897	899	901	

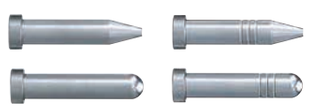
Leader Pins for Middle/Large Mold GPX	GPP	Assist Pins for Leader Pin GAP	Straight Leader Pins for Middle/Large Mold—Bolt type— GPPTA	—Joint type— GPPTB	Assist Pins for Leader Pin GAPT	Support Pins—Plain Press-fit length designation type— SPP	Support Pins—Oil Groove Press-fit length designation type— SPP—OC	Support Pin Collars SPS	SPD	Precision Leader Bushings —Head type with oil groove— GBH	—Straight type with oil groove— GBS
903		904	905	906	906	907	908	910		911	912

Leader Bushings —Head type with oil groove— GBHE	—Straight type with oil groove— GBSE	—Head type with no oil groove— GBAM	—Straight type with no oil groove— GBBM	Oil-free Leader Bushings—Special solid lubricant embedded type with head— GBHEZ	—Straight/Special solid lubricant embedded type— GBSEZ	—Copper alloy type with head— GBHDZ	—Straight/Copper Alloy Type— GBSDZ	Oil-Free Leader Bushings for High Temperature Use—Special copper alloy with head— GBHKZ	—Straight/Special Copper Alloy— GBSKZ
913	914	915	916	917	918	919	920	921	922

Leader Bushings for Middle/Large Mold—Straight type— GBST	Stopper Plates for Leader Bushings for Middle/Large Mold GPPH	Leader Pins for Rubber Mold GMT	GMR	Leader Bushings for Rubber Mold GMB
923	923	924		924

COMPONENTS FOR POSITIONING

Product Name / Part Number	Tapered Pin Set —Standard type— TPN	TPNV□	VTPN□	ZTPN□	—Bushing PL installation type— TPNC	TPV□	VTPV□	ZTPV□	—Pin・Bushing PL installation type— TPVX□	VTPVX□	Positioning Straight Pin Sets—Standard type— TPNF□
Page	927				929				931		932



Positioning Straight Pin Sets—Bushing PL installation type— TPNFC□	—Pin・Bushing PL installation type— TPNFCX□	Small Diameter Positioning Pins・Bushings with Head F—TPNF□	Spacers for Tapered Pin Set TPS	TPD	TPG	—Thickness designation type— FTPS	FTPD	FTPG	Positioning Pins—Shaft diameter (D) selection type／Shaft diameter (P) designation 0.01mm increments type— PPD□	PPH□	PPDF□	PPHF□	Tapered Leader Pin Sets TGPS	Positioning Pins for Insert Molding PPI	PPIR
933	934	935	937			938			939				941	942	

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

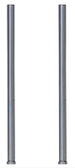
Tapered Block Sets —Precision type— TBS VTBS□	Positionig Straight Block Sets—PL installation type— TBSF	—Oil Groove PL installation type— TBSFM	Extra Precision Positionig Straight Block Sets—PL installation type— VTBSF	—TiN coating・Side installation type— TSSBN	Side Tapered Block Sets—Side installation type— TSST	—SIDE INSTALLATION TYPE— TSSB	—Oil Groove SIDE INSTALLATION TYPE— TSSBM
943	945	946	947	948	949	951	951

Extra Precision Side Straight Block Sets—Side installation type— VTSSB	Positioning Straight Block Sets—PL installation・L dimension short type— TTSB VTTSB	Positioning Block Sets LBJX□	Side Cotter Block LKWN
952	953	955	956

COMPONENTS FOR EJECTOR SPACE

Product Name / Part Number	Precision Ejector Leader Pins—Inlay type— EGH	—Striking type— EGHC	—Striking type— EGHN	—C ring type— EGHR	Ejector Leader Pins EGPD	EGPP
Page	961	962	962	963	964	964

Precision Ejector Leader Pins—Bolt fixing counterbore type— EGZA	—Bolt fixing through hole type— EGHA	Ejector Leader Pins for Middle/Large Mold—Stepped type— EGPDX	—Bolt hole type— EGPDHE	EGPDHF	Ejector Leader Bushings—Plain— EGBH	—S dimension long type— EGBN	—Oil-free type— EGBHZ	—Copper alloy・Oil-free type— EGBZS	—High temperature use・copper alloy・Oil-free type— EGBPK	—Long S dimension/Oil-free type— EGBNZ	—Long S dimension・Copper・Oil-free type— EGBZ	—Long S dimension・alloy・Oil-free type— EGBSK
965	966	967	967		968	968	969	969	969	970	970	970



— Linear guide type・Steel／Stainless— EGBL EGBLT EGBLS EGBS EGBW	Ejector Leader Bushings—Ball type— EGBB	Ball Retainers EMBS	Return Pins—Blank type— RP□TH RP□TJ	—L dimension designation type— RP□TL RP□TV RP□TZ	—L dimension designation with tap hole type— RP□TLM RP□TVM RP□TZM	Return Pins for Middle/Large Mold RP8TX□ RP8TSM	Early Return Units for Ejector Plate ERST	Bolts for Ejector Plate Set EPB	Support Pillars—Tapped type— SPL
971 972	973	974	977	979	981	983 984	987	990	991

Support Pillars—With dowell hole— SPLG	—Bolt hole type— DSPL DSF	—Fully quenched type— HSP HSPL	Stepped Support Pillars SPLF	Stroke Adjustment Collars SPLC	Covers for Ejector Space AEC	Spacer Rings SPW SPWG SPWD	Stopper Rings STR STPB	Stoper Pins STPH STPN	Ejector Rods ERDW CBW	—Free designation type— ERDFF ERDFX	Ejector Plate Return Detection Switches EGS EGS—V
993	995	997	998	999	999	1000	1000	1000	1001	1002	1003

Ejector Plate Return Detection Switches EPRSR—24V	Cables for Ejector Plate Return Detection Switch EPRS—24VT	EPRSC	Ejector Plate Return Detection Switches EGSM	EGSP
1005	1006	1006	1007	1007

MOLD OPENING CONTROLLERS

Product Name / Part Number	Stop Bolts STBG	Urethane Washers UW	Puller Bolts—Female screw type— PBTN	—Male screw type (Enhanced)— PBTK	—Male screw type— PBTX	Puller Bolt Collars PBC	Actuator Rods for Parting Lock PLRD
Page	1011	1012	1013	1014	1014	1014	1016

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Parting Locks PL PLB PLP 1017
Parting Locks—Heat-resistant 120° · Anti-Wear type— PLH PLHB PLPH 1018
Parting Lock Bushings PLBS 1019
—PL installation type— PLBSP 1020
Parting Lock Sets PL□ PL□—□□ PRS□ PRK□ PRL□ 1023
—Compact type— PLSW PLSW—□□ PR□W 1024

Parting Lock Sets—Mold opening · mold closing control type— PL□Z PR□Z PR□ZM 1025
Roller Lock Sets MPLK MPLKS MPLKB MPLKSB 1027
—Heat proof standard / Heat proof long type— MPLKH MPLKHS 1027
Magnet Lock Sets—Normal type— MLK 1029
—Compact type— MLKC 1029

Tension Links—Stepped type— TL TLH 1032
—Long stroke type— TLK TLKH 1033
—Adjustable stroke type— TLW TLWH 1034
—Stroke designation type— TLD TLDH 1035

Special Bolts for Tension Link LKB LKBH 1036 1036
Retainers for Tension Link LKR LKRB LKRH LKRBH LKT LKTB 1036
Tension Chain Holders TCHH 1037
Tension Chains TCHE JNTC 1038

Mold Opening Prevention Plates—Standard— OPP—C OPPH—C OPPS 1039
—L dimension designation type— OPPF OPPSF 1040
—Cut-out L dimension designation type— DPPFN 1041
Urethane Springs MAZ 1041
Pusher Pins PSP 1042

COOLING ITEMS ①
COUPLERS
QUICK FITTING JOINTS

Product Name / Part Number: Mold Couplers—Sockets · Heat resistant 80℃— KSH · KTSH KSM · KTSM KFF KTFF
—Sockets · Heat resistant 120℃ F120—KSH
· Hose Attachment Type · Ball Lock Type F120—KTSHBL
· L-shaped F120—KSHL
· Female screw joint F120—KSM
· Male screw joint— F120—KFF
Page 1049 1049 1049 1049 1049 1049 1049 1049

KPM 1050
Mold Couplers—Plugs— JPSH 1050
JPS 1050
KPP 1050
LJPSH 1051
Mold Couplers—Plugs— LJPS 1051
KPH 1051
LSPM 1052
LSP 1052

High Couplers for Cooling Pipe—Sockets · Heat resistant 80℃— KHSH 1053
KHSM 1053
KHSF 1053
—Sockets · Heat resistant 120℃— F120—KHSH 1053
F120—KHSM 1053
F120—KHSF 1053

KHPM 1055
JPLH 1055
JPL 1055
High Couplers for Cooling Pipe—Plugs— KHPH 1055
KHPF 1055
LJPLH 1056
LJPL 1056
JPHLM 1056
JPHL 1056

Joints for Cooling Water— Slim design Sockets— F120—MJTSH 1057
F120—MJTFF 1057
F120—MJTSL 1057
Joints for Cooling Water—Plugs— JPJ 1058
JPJH 1058
LJPJH 1059
LJPJ 1059
JPLJM 1059
JPLJ 1059

Valveless TSP Couplers for Cooling—Sockets— F120—TSH 1060
F120—TSF 1060
—Plugs— F120—TPM 1060
F120—TPF 1060
Large Flow Mold Couplers—Sockets · Plugs— K□—KSH 1061
K□—KPM 1061
K3—JPSH 1061
Double Valves SP Couplers for Cooling—Sockets— F120—SF 1062

—Plugs— F120—PM 1062
F120—PF 1062
Compact Double Valves Cooling High Flow Couplers—Sockets · Plugs— F120—HFLS 1063
F120—HFLM 1063
F120—HFLP 1063
Packing Products Mold Couplers—Plugs— 50 · 100PACK—JPS 1064
High Couplers for Cooling Pipe 50 · 100PACK—JPL 1064

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Couplers (Stainless Steel)—Sockets— SF120—MFTF	SF120—MJTFF	(Stainless Steel) —Plugs— SUS—JPSH	SUS—JPLH	SUS—JPJH	Double Valves SP Couplers for Cooling—Sockets— SF120—SF	—(Stainless) Plugs— SF120—PM	SF120—PF	Compact Double Valves Cooling High Flow Couplers—Sockets・Plugs— SF120—HFLS	SF120—HFLP	Valveless TSP Couplers for Cooling—Sockets— SF120—TSH	SF120—TSF	—(Stainless) Plugs— SF120—TPM	SF120—TPF
1065	1065	1066	1066	1066	1067	1067	1067	1068	1068	1068	1068	1068	1068

Hose Nipples NPWN□	NPWS	NPWL	NPW	NPL	L-Shaped Swivel Hose Nipples—Heat resistant 120℃type— LSNM	LSN	Quick-fitting Joints for Mold Cooling—Standard type (Heat resistant 60℃ series)— M—PC	M—PCX	M—POC	M—POCL	Quick-fitting Joints for Mold Cooling—Standard type (Heat resistant 60℃ series)— M—PL	M—POL	M—PLL
1069	1069	1069	1070	1070	1070	1070	1073	1073	1074	1074	1075	1075	1075

Quick-Fitting Joints for Mold Cooling M—80PC	—Standard (Heat resistant 80℃ series)— M—80POC	Quick-fitting Joints for Mold Cooling—For high temperature (Heat resistant 99℃ series)— M—KC	M—KOC	M—KL	M—KH	Quick-fitting Joints for Mold Cooling—For high temperature type (Heat resistant 120℃ series)— M—120KC	M—120KOC	M—120KL	M—120KH	Quick-fitting Joints for Mold Cooling—For high temperature type (Heat resistant 99℃ series)— M—AKC	M—AKL	M—AKCP	M—AKLP	M—AK
1076	1076	1077	1077	1078	1078	1079	1079	1080	1080	1081	1081	1082	1082	1082

Quick-fitting Joints for Mold Cooling—For high temperature type (Heat resistant 120℃ series)— —Components— M—120AKC	M—120AKL	M—120AKCP	M—120AKLP	M—AK	Bolting Joints for Mold Cooling—For high temperature type (Heat resistant 120℃ series)— M—NSC	M—NKC	M—NSL	M—NKL	Mold Coupling—Sockets— 10PACK—MKSH	10PACK—MKSM	10PACK—MKSF	—Plugs— 10・30PACK—MKPM	Mold High Coupling—Sockets 10PACK—HKSH	10PACK—HKSM	10PACK—HKSF	—Plugs— 10・30PACK—HKPM
1083	1083	1084	1084	1084	1086	1086	1086	1086	1087	1087	1087	1087	1088	1088	1088	1088

Both Valves SP coupling —Sockets— 10PACK—SPSF	—Plugs— 10PACK—SPPM	10PACK—SPPF	Both Valves SP coupling —Sockets— 10PACK—SPSFS	—(Stainless) Plugs— 10PACK—SPPMS	10PACK—SPPFS	Quick-fitting Joints for Mold Cooling—Standard type (Heat resistant 60℃ series)— 10・30PACK—ASC	10・30PACK—ASOC	10・30PACK—ASPL	Bolting Joints for Mold Cooling—For high temperature (Heat resistant 180℃ series)— 10・30PACK—NASC	10・30PACK—NASL
1089	1089	1089	1090	1090	1090	1091	1091	1091	1092	1092

COOLING ITEMS② JOINTS・HOSES COOLING INSIDE OF MOLD

Product Name / Part Number	Cooling Joint Plugs JTW	JTWS	HX—JTW	—Converting tapered screw type— JTWF	Cooling Adapter Joints JEMM JEMMR	JEMF JEMFR	Cooling Adapter Joints JEFS JEFSR	L-shaped Cooling Joints JEFL	JEFLR	JELF	L-shaped cooling Swivel Joints LSNF	SUS—LSNF	LSNFM
Page	1095	1095	1095	1096	1097	1097	1098	1099	1099	1099	1100	1100	1100

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Tubes for Hot Water M—NB	M—WE	M—SFT	Tube Cutters M—TCN	Insert Sleeves 10PACK—M—WR	Rubber Hoses for High Heat KGHA	WHSG
1101	1101	1101	1102	1102	1103	1103

Rubber Hoses for High-Temperature Water KGH	Hot-Water Hose MHW	Hose Band MHBT	TSP Couplers—Sockets・Plugs— MH—TSPN	MH—TSPS
1104	1104	1104	1106	1106

Mold-Cooling Flexible Hoses FSHP	FSHF	Plugs for High-Temperature Hose FSHG	FSHGR	L-Shaped Plugs for High-Temperature Hose FSHL	FSHLR	FSHLS
1107	1107	1108	1108	1108	1108	1108

Mold-Cooling Flexible Hoses (Stainless Steel) SUS—TKSP	SUS—TKSF	Flexible Hose Plugs (Stainless Steel) SUS—TKMM	SUS—TKMF	Mold-Cooling Flexible Hoses (Stainless Steel) —Flexible Type— SUS—TKHP	SUS—TKHF	Uni-joint Plugs JWRL	JWRF
1109	1109	1110	1110	1111	1111	1112	1112

Uni-joint Plugs—Heat proof type— JWRH	Hydro-circuit Blocks—Heat proof type— BRJH	Spot cooling pipes SWCP	SWCT	Cooling Pipes —Tapered screw type・Parallel Screw Type— WCPPT	WCPM	Cooling Pipes WCP	WCSP
1113	1113	1114		1115	1115	1115	1115

—Dowel pin type・Flange type— WCPN	WCPST	WCPNT	—Brazing joint・Tapered Brazing joint・screw type— WCPFT	—Parallel screw・Caulking type— WCPF	WCPK	Baffle Boards—Tapered screw plug type— BFPT	Stainless Steel Baffle Boards—Tapered screw plugs type— BFPTS
1116	1116		1117	1117	1117	1118	1119

—Partition function type— BFPTP—S・BFPTP—W	Baffle Boards BF□□R	BF□□	Spiral Baffle Boards—Separate type／Straight type— WRCAN	WRCTN	WRCBN	WRCCN
1120	1121	1122	1124	1124	1124	1124

Heat Transaction Pipes WHP	Mold Manifolds KMB	KMS	Cooling Circuit Plugs—Combined type— JWPZ	50PACK—JWPZ	100PACK—JWPZ	Tools for Cooling Circuit Plug JWPKS JWPKW JWPK3 JWPK4 JWPK6	Air Jet Coolers for Mold AJCMV	AJCMH
1126	1127		1129	1129	1129	1130	1131	

Cooling Circuit Plugs JWP	—Metal bar type— JWPMT	Screw Plugs with O-ring MSWM	Tapered Screw Plugs MSWT	MSWTS	Sealing Tape JST8—5	JST13—15	Flow Checkers for Cooling Water FLM—F	Marker Rings JMR	O-rings ORS	ORP	ORG
1133	1134	1135	1135	1135	1135	1135	1136	1136	1137	1137	1137

HEATING ITEMS

Product Name Part Number	Cartridge Heaters—Output selection type— MCH	—Output designation type— MCHV	Bolts for Cartridge Heater MCHB	Cartridge Heaters—With stopper flange— MFCH	—L dimension・Wattage・Flange selection— MSCHN・MSCHA・MSCHB	—With stopper frange/Lead protection cover— MCHJ	—Lead protection cover／L dimension／Wattage／Flange selection type— MJCHN・MJCHA・MJCHB
Page	1145	1146	1146	1147	1148 1148 1148	1149	1150 1150 1150

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Swivel Lifting Eye Bolts SLEB	Lifting Eye Bolts CHI	Lifting T-shaped Bolts TB	Lifting Bars for Mold KTA	KTB	Holding Plates for Pin CPHP	Holding Plates for Pin APP	Core Pin Hold Screw Plugs MSWPN	Positioning Screw Plugs MSWG	MSWGP	Slotted Keys KE□・KE□S	Shot Counters for Plastic Mold M—CVPL	M—CVEX	M—CVR
1210	1211	1211	1212	1212	1213	1213	1214	1214	1214	1215	1216	1216	1216

CHEMICAL PRODUCTS

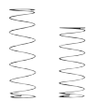
Product Name / Part Number	Rust Removers —For mold hydro-circuit— RTCC	Rust-Prevention Agents —For mold hydro-circuit— RST—CC	Lubricants —Grease for precision small diameter ejector pins— GSEPV	Lubricants —Long life grease for ejector pins— LGSEP	Lubricants —Antigall grease for slide cores— HGSSC	Lubricants —Antigall grease for slide cores (for high temperature)— HGSSC—H	Lubricants —Molybdenum disulfide grease for initial running-in grease— GSMOS
Page	Internet			Internet			

Lubricants —Spray type for hot spot— HSL—SP	Lubricants —Extra heat-resistant grease— GGPBC	Lubricants —Grease for O-ring— GSORG	Detergents—For grease for precision small diameter ejector pins— CLN—GSEPV	Detergent —For antigall grease for slide cores— CLN—HGSSC	Detergent —For long life grease for ejector pins— CLN—LGSEP	Detergent —For molybdenum disulfide grease for initial running-in grease— CLN—GSMOS	Detergents —Quick-drying spray type for mold— CAVCLN
Internet				Internet			

Detergents —Powerful liquid type for soaking— SGW	Detergents —Paste type for removing gas burn— GRVPST	Detergents —Gas spray type for removing gas and burned resin— GRVSP	Rust Removers —Spray type— RTSP	Rust Removers —Powerful liquid type for soaking— CPRSTR	Rust-prevention Agent —Standby (releasing possible) type— RST—DRY	Rust-prevention Agents —Gasification type— RST—VP	Rust-prevention Agents —Spray type for mold maintenance— MLDPRO	Rust-prevention Agents —Powerful liquid type for soaking— RUSTON	Maintenance Oil for Plastic Molds MLDOIL
Internet					Internet				

Burning Prevention Spray for Insulator Sheet COTHIP	Grease for Heat Transaction Pipe MTJ	Lubricant Burning-prevention Agents for Cartridge Heaters HTLB	Adhesives for Mold LOC638	LOC242	Normal Quick-drying Detergent 6PACK—METACL
Internet					

Spring



Product Name / Part Number	Wire Springs WY WR WF WL WT WM WH WB	—Internal diameter standard type— NWL NWM	—Long type— WP	Heat Proof Wire Springs WFH WLH WMH WHH
Page	1222～1229	1230	1230	1231～1234

Heat Proof Coil Springs SWY	SWU	SWR	SWS	Coil Springs SWN	SWC	SWF	SWL	SWM	SWH	Coil Springs SWB	SWG	Gate-cut Springs WSW	WSV	Coil Spring Washers SSWA SSWB SSWC	Spring Guide Pins SGAMK	SGA
1235	1236	1237	1239	1241	1243	1245	1247	1249	1251	1253	1255	1259		1259	1261	1262

Internet catalog is not available in some subsidiaries.

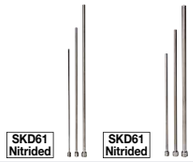
STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Gas Springs for Plastic Mold MBPGS—A MBPGS—B	Holder for Gas Spring MBPGS—H
1267	1268

COMPONENTS OF LARGE MOLD

Product Name Part Number	Stopper Plates STPX	Side Cotter Blocks LKWN	Riser pads RPS□	Cavity Inserts for Gas Release BGV
Page	1271	1272	1273	1275

COMPONENTS OF DIE CASTING



Product Name Part Number	Straight Ejector Pins for Die Cast DEP	DEPL	DEPB	Stepped Ejector Pins for Die Cast DESF	Ejector Sleeves for Die Cast DESL	Die Cast Core Pins —Shaft dia. (D) selection type—	—Shaft dia. (P) designation type—	Date Marked Pins for Die Cast DDMX	DDM□	CDMX	CDM□	Holder for Date Marked Pins—Small diameter type— CDH
Page	1279	1281	1281	1283	1285	1287	1289	1291	1291	1291	1291	1292

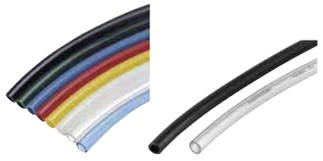
Cooling Units DCJK	Pipes for Cooling Unit DCJO	DCJI	Burr Cutting Pins DCP□
1293	1294	1294	1295

COMPONENTS FOR INJECTION MOLDING

Product Name Part Number	Adjustable chuck plates HCKM	HCKMT—S	Adjustable chuck plates—Thin Type— HCKMT—SH	HCKMT—W	HCKMT—WH
Page	Internet				

Mini Cylinder Pad—Square Shape— MBPS	—Round Shape— MBPR	Adjustable Mini Cylinder Brackets MCBF—B	—Shaft— MCBF—SP MCBF—SF	—Shaft Clamp— MCBF—HS MCBF—HSL	Adsorption Pads H—MPCGN H—MPCGS	Adsorption Metal Fittings H—NAMPC
Internet				Internet		

Set screws H—TNMPC	Adsorption Pads M—PJG□ M—PCG□	Adsorption Metal Fittings KTPCY	Set Screws TNP□	Adsorption Pads M—VPS M—VPBS	Adsorption Metal Fittings M—VPHC M—VPHE	Adjustable Vacuum Cup Brackets MABF—B
Internet				Internet		



—Shaft— MABF—S	—Shaft Clamp— MABF—H	Large—Diameter Adjustable MABFL—B	MABFL—S	Waterproof polyurethane tube/soft polyurethane tube PUT PUTL PUTY PUTYL	Barb Joint · Universality · Universal Elbow · Plug SRTG□N MUTEN MPLGN	Miniature quick-fitting joint MNCN MNCNP MNCNL MNCLYT	Insert for Soft Tube PUIT
Internet					Internet		

Internet catalog is not available in some subsidiaries.

STANDARD COMPONENTS FOR PLASTIC MOLD
2015 Contents

Product Data／Technical Data

＜Product Data＞

- Guaranteed Range of Shaft-Diameter Precision for Ejector Pins
- Step R and Concentricity of Stepped and Rectangular Ejector Pins
- Guaranteed Range of Hardness of the Ejector Pin Base Material, and Guaranteed Ranges of Nitriding and Surface Hardness
- Ejector Pin Hardness
- Guaranteed Range of Shaft-Diameter Precision for Ejector Sleeves and Center Pins
- Step R and Concentricity of Stepped Ejector Sleeves and Stepped Center Pins
- Guaranteed Range of Tip-Diameter Precision for Stepped Ejector Pins
- Guaranteed Range of Hardness of the Ejector Sleeve and Center Pin Base Material
- Guaranteed Range and Hardness of Nitriding and Surface Hardness
- Ejector Sleeve and Center Pin Combination
- Ejector Pin・Ejector Sleeves Strength Calculation
- Finishing of Ejector Pins and Core Pin Tips
- Finishing of Corners of Rectangular Ejector Pins
- Comparison of Guaranteed Range of Shaft-Diameter Precision between Ejector Pins and Core Pins
- Designation Method and Precision of Key Flat Cutting of Ejector Pins and Core Pins
- Methods for Computing One-step Core Pin Dimensions
- Strength of Inlay Section of Locking Blocks-Positioning Type-
- Relationship between Wedge Angle and Clearance
- Flow Rate when 98kPa for Mold Couplers
- ①Graph of Flow Rate and Pressure Loss Characteristics for Mold Couplers
- ②Graph of Flow Rate and Pressure Loss Characteristics for Mold Couplers
- Calculating Heater Capacity Requirements and JIS Type Tapered Screws
- Cooling-use Plug Attachment Threads
- Property Chart on Heat Insulation Sheets
- Standard Hole Processing Examples①
- Standard Hole Processing Examples②
- Standard Hole Processing Examples③
- Standard Hole Processing Examples④

Page 1299～1332

Product Data／Technical Data

＜Technical Data＞

- SI(Systeme International d' Unites)
- Calculation of Cubic Volume and Physical Characteristics of Metals
- General Dimensional Tolerance
- Conversion Table of Trigonometric Functions
- Fit Selection Basics
- Dimensional Tolerance and Fits
- Tolerance of Commonly Used Hole Fits
- Tolerance of Commonly Used Shaft Fits
- Conversion Table of Hardness
- Surface Roughness
- Technical Drawings-Method of Indicating Surface Texture on Drawing
- Socket Head Cap Screws
- Table of Diameter of Screw Low Hole (Low Anchor)
- Correct Tightening Axial Force and Correct Tightening Torque for Bolts
- Strength of Bolts, Screw Plugs, and Dowel Pins
- Comparison of Die Steel by Manufacturers・Hardness of Major Steel Products and Corresponding Tools
- Comparison of Materials between JIS and Foreign Standards (1)
- Comparison of Materials between JIS and Foreign Standards (2)

Page 1333～1352

Business Information

- General Ordering Information
- Contact for Orders

Page 1353～1358

Index

- Part Number Index
- Product Name Index (Alphabetically)

Page 1359～

HOW TO USE CATALOG

● Guide to Marks.....42
● How to use Catalog.....43
● MISUMI'S Environmental awareness and RoHS compliance.....46
● Guide for MISUMI EC service..... 47 ～ 50

HOW TO USE CATALOG

—GUIDE TO MARKS—

Mark	Meaning	Notes・Description examples
M	Material	M SKH51
H	Hardness	H 58～60HRC
S	Surface Treatment	S Black Oxide (Fe_3O_4)
A	Accessories	A MS6—25
T	Tolerance	T $^{+0.005}_{0}$
RoHS	RoHS Compliant	The product does not contain the six (6) Restricted Substances of RoHS Directive of EU more than the threshold value or the value of the applicable exemption.
!	Notes:	P/2≦KC＜H/2
⊗	Not Available	Indicates that specific sizes or items are not available for alteration. ⊗ D3 to 8 (D3 to 8: Not available) Also used to indicate specifications that cannot be ordered.
①②③	Unit No.	Number applied to each part of the product that includes two parts or more.
	Example of order code	Order Part Number — L MS 6 — 50

Mark	Meaning	Notes・Description examples
	Days To Ship	Days to Ship Quotation
P	Price	P Price
Quotation	Quotation	To be quoted at local MISUMI representative
ex	Example	ex Example
	Alteration	Alteration can be ordered without drawings.
	Refer To Catalog Page	P.232
•••▸	Conditions and their results. A···▸B means	$L^{+0.02}_{0}$ (L＞200 ···▸ $L^{+0.05}_{0}$) When L is larger than 200, L will be $^{+0.05}_{0}$

We employed marks for the universal use of the catalog.

HOW TO USE CATALOG

Product Name

Photograph

Drawing

Part Number

Materials and others

Dimension Table

●Select blue characters one by one from the left to find order symbols.

●Dimensions unnecessary to specify for order symbols are covered with blue mesh.

●Printed in red means added specifications, printed in purple means specifications were altered.

Page

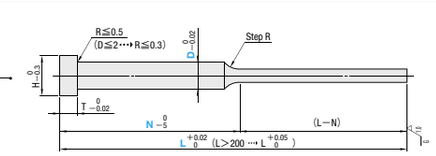
High Speed Steel SKH51 equivalent

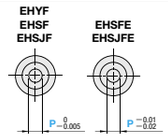
STEPPED EJECTOR PINS

—L・P・N DIMENSION DESIGNATION TYPE—

L・P・N dimension designation type

RoHS





Part Number	Head thickness	T P
EHYF(Small diameter)	4mm(T4)	0 −0.005
EHSF	6・8mm(JIS)	
EHSJF		
EHSFE	4mm(T4)	−0.01 −0.02
EHSJFE	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)
※EHYF is applied with overall quenching (its head without annealing).

H	T	Part Number Type	D	L 0.01mm increments	P 0.005mm increments	N 1mm increments	U/Price 1～4
2	4	EHYF (Small diameter)	0.5	30.00 ～ 60.00	0.300 ～ 0.400	N≧15 and (L−N)≧15	Quotation
			0.6		0.300 ～ 0.500		
			0.7		0.300 ～ 0.600		
			0.8		0.300 ～ 0.700		
			0.9		0.300 ～ 0.800		
			1		0.300 ～ 0.900		
			1.1		0.300 ～ 1.000		
			1.2		0.300 ～ 1.100		

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L 0.01mm increments	P 0.01mm increments	N 1mm increments
3	4	—	—	EHSF (P 0 −0.005)	—	1	40.00 ～ 100.00	0.30 ～ 0.90	N≧15 and 15≦(L−N)≦150 When L250.01～300.00 50≦(L−N)≦150
							100.01 ～ 150.00	0.60 ～ 0.90	
						1.1	40.00 ～ 200.00	0.60 ～ 1.00	
						1.2		0.60 ～ 1.10	
						1.3		0.60 ～ 1.20	
						1.4		0.60 ～ 1.30	
						1.5		0.60 ～ 1.40	
4						1.6	40.00 ～ 250.00	0.80 ～ 1.50	
						1.7		0.80 ～ 1.60	
						1.8		0.80 ～ 1.70	
						1.9		0.80 ～ 1.80	
						2	40.00 ～ 300.00	0.80 ～ 1.90	
5						2.5		0.80 ～ 2.40	
6				EHSFE (P −0.01 −0.02)		3	40.00 ～ 350.00 (50.00 ～ 350.00)	1.00 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 20≦(L−N)≦200 When L300.01～350.00 50≦(L−N)≦200
7		8	6			3.5		1.50 ～ 3.40	
8					EHSJF (P 0 −0.005)	4		1.50 ～ 3.90	
						4.5		2.50 ～ 4.40	
9		9				5	40.00 ～ 350.00 (50.00 ～ 350.00)	3.00 ～ 4.90	
						5.5		3.50 ～ 5.40	
		10				6		4.00 ～ 5.90	
10		11				6.5		4.50 ～ 6.40	
					EHSJFE (P −0.01 −0.02)	7		4.90 ～ 6.90	
11		13	8			8		5.90 ～ 7.90	
14		14				9		6.90 ～ 8.90	
15		15				10		7.90 ～ 9.90	
17		17				12		8.90 ～ 11.90	

The figures in parentheses ( ) for L dimensions are applicable for EHSJF and EHSJFE only.
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of EHSF (P 0 −0.005), EHSFE (P −0.01 −0.02).

How to order

●Order example

Days to Ship

Alteration

●Select alterations with code. P.45

Index

Price

●To know the latest product price, send us RFQ by FAX, E-mail or online Quotation request which is available on Misumi site.

Non JIS material definition is listed on P.1351 - 1352

Order: Part Number — L — P — N — Days to Ship: Quotation
EHSJF 5 — 300.00 — P3.00 — N150

Alterations: Part Number — L — P — N — (KC・WKC…etc.)
EHSJFE 7 — 180.00 — P6.60 — N50 — SKC4.0
Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Price Quotation

Alterations	Code	Spec.	1Code
HC −0.1	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
HCC −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC −0.02	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
+0.1 0	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T: 4, 6, 8; d: 2, 3, 5; E: 3, 5)	
	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T: 4, 6, 8; d: 2, 3; E1: 5)	
	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; E2: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L	TMC	Lapping on the tip face Not available for EHYF Available when P≧0.6	
S B	GVC	S, B=1mm increments 2≦S≦10, S+5≦B≦30 Available when P≧3	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with other than TMC/GVC not available (D: 8～9 M4; 10 M5; 12 M6)	

Stepped Ejector Pins
High Speed Steel SKH51 equivalent

How to find the product

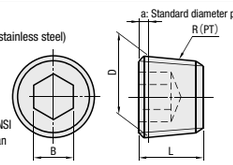
- Use the Contents page to find the products by the shape, Part Number, index, production time and page number. ……P.1～40
- Use the Part Number Index to find the products by the catalog number. ……P.1361
- Use the Product Name Index to find the products by the Product Name. ……P.1372

JIS notation

RoHS

MSWT (Tapered type)
MSWTS (Tapered type, stainless steel)

Thread JIS B 0203 tapered thread for tubing R(PT)
*The thread on MSWT No. S is ANSI B2.2 tapered thread for American tubing (NPT).



MSWT M S45C
H 32～42HRC
S Black Oxide(Fe304)
MSWTS M SUSXM7

● The indication of JIS standard on the page of each commodity is for reference only and does not signify onspec product.
● Non JIS material definition is listed on P.1351 - 1352

Alteration Service

■ Alterations can be ordered without drawings

- Our Alteration Service makes it possible for you to select some non-standard tolerance and/or dimensions, or non-standard processing. You can easily order alterations by specifying an appropriate code.

■ Alteration Order Example (in case of stepped ejector pins)

Order: Part Number — L — P — N
EHSJF 5 — 300.00 — P3.00 — N150

Alterations: Part Number — L — P — N — (KC・WKC…etc.)
EHSJFE 7 — 180.00 — P6.60 — N50 — SKC4.0

Alteration details P.127

Alterations	Code	Spec.		1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC＜H/2	About Designation Unit for Key Flat Cutting	
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC＜H/2		
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2		
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2		
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	Quotation
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2		
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC＜H/2		
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360		
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2		

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC＜H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC＜T, D≧1.5 (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T / d / ℓ: 4 / 2 / 3; 6, 8 / 3 / 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T / d / ℓ1: 4 / 2 / 5; 6, 8 / 3 / 5)	Quotation
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ2: 4 / 2 / 5; 6, 8 / 3 / 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L 0.2	TMC	Lapping on the tip face Not available for EHYF Available when P≧0.6	
t S B	GVC	S, B=1mm increments 2≦S≦10, S+5≦B≦30 Available when P≧3	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with other than TMC/GVC not available (D / M: 8～9 / M4; 10 / M5; 12 / M6)	

■ What is RoHS?

RoHS is the directive to speculate and restrict the use of certain hazardous substances in electrical and electronic equipments. It aims to minimize the hazards on environment and health through the life cycles of products from production to disposal.

■ Restricted Substances of RoHS (substances restricted by RoHS Directive of EU of 8 June, 2011)

No.	Substances		Subject Items and Application	Threshold value*1	
1	Cadmium and its compounds		Cadmium contained in alloys with zinc content (brass, zinc, die cast, lead-free solder, etc.), plating, plastic, rubber, coating, etc.	Less than 100 ppm	For packing materials, less than 100 ppm combined of cadmium, lead, mercury and hexavalent chromium
		Exemption	Cadmium and its compounds in electrical contacts	—	
2	Lead and its compounds		Lead contained in all types of alloys, solder, all items other than the following exemptions	Less than 1,000 ppm	
		Exemption	Lead which is alloyed with steel	0.35wt%(3,500ppm) or less	
			Lead which is alloyed with aluminum	0.4wt%(4,000ppm) or less	
			Lead which is alloyed with copper	4wt%(40,000ppm) or less	
			Lead used in solders which contains more than or equal to 85% of lead	—	
3	Mercury and its compounds		Mercury contained in all items aside from small fluorescent light bulbs and straight-tube fluorescent light bulbs	Less than 1,000 ppm	
4	Hexavalent chromium and its compounds		All Hexavalent chromium in chromate treatment, plating, coating, etc.. Chromium metal and chrome in metal alloys are exempted	Less than 1,000 ppm	
5	Polybrominated biphenyls (PBBs)		Flame retardant	Less than 1,000 ppm	
6	Polybrominated diphenylethers (PBDEs)		Flame retardant	Less than 1,000 ppm	

*Threshold value is, whether consciously or not, the maximum concentration value set for each homogeneous material which cannot be mechanically disjoined into different materials.

■ Green Procurement

MISUMI procures products, semi-finished products, parts, raw material, supplementary material, packing, packaging material, etc. from many suppliers.
In order to comply with environmental laws, regulations, and other requirements related to chemical substances and to achieve a sustainable society, MISUMI has prepared MISUMI Green Procurement Guidelines. Please refer to our website for details.

Web Order System is not available in some subsidiaries.

So easy to get quotes and place orders!!

What is Web Order System?

Misumi's Web Order System (WOS) enables you to get a quotation and/or place an order of items listed in our catalog through the internet. Please take advantage of this service available for you to enhance your business!

Product Information
Product information based on catalogues and technical data are here.

Register Now
In order to use this service, please go to register screen and fill out necessary information.

Log in ID, password?
Once you obtain log in ID and password, you can log in and request a quotation or place an order from here. Contact our Customer Service if you lost the log-in ID, please.

What's New?
Special promotions, Updates and news are listed here, and renewed time to time.

Easy steps to be register

How to register Web Order System?

STEP 1 Click on register now

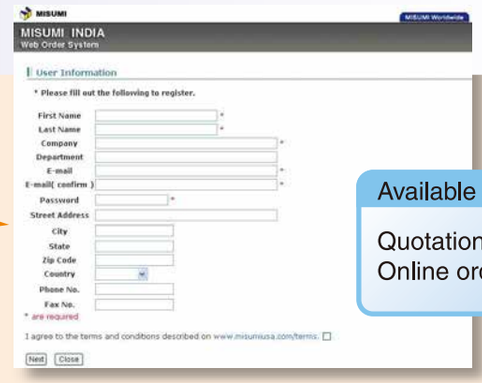
In order to register the log-in ID and password, please click on the box below.

WOS membership registration here

STEP 2 Fill out application form online

Please fill out application form with necessary information.

WOS service membership registration here



Available services

Quotation
Online ordering

STEP 3 WOS application is authorized

Received applications will be authorized after the confirmation.
You would be notified by e-mail after the authorization is processed.

Go to the next page for more details

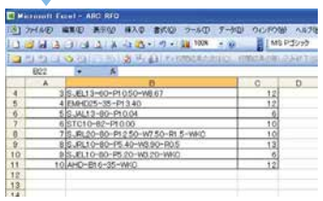
HOW TO USE WEB ORDER SYSTEM 2

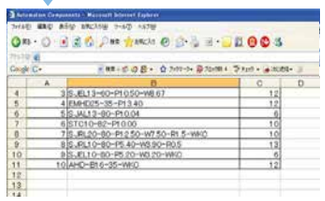
Web Order System is not available in some subsidiaries.

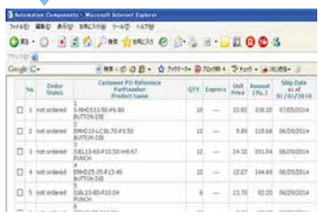
Features 1 Can I use my Excel spreadsheet?

Yes, it is so easy! You can just cut and paste the Excel spreadsheet.

Copy Excel spreadsheet → Paste the spreadsheet onto WOS screen → Order input is done instantly!





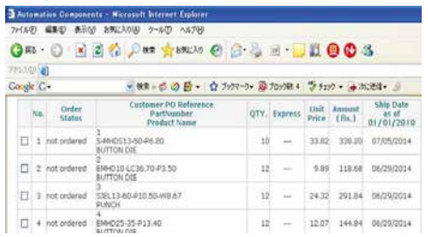


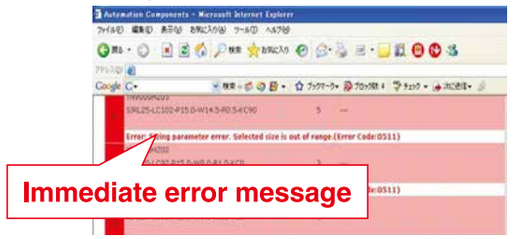
*Excel and other spreadsheet software can be utilized.
*CSV file and TXT files can be uploaded.

Features 2 Is it possible to verify a part number prior to ordering?

Yes, if incorrect, you are notified with an error message.

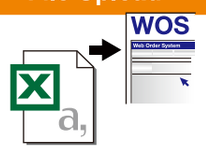
Input part number into WOS → You get an error message immediately if incorrect.





Other Convenient Functions!

File Upload

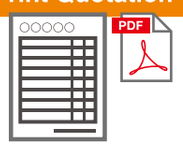


*CSV, TXT files can be uploaded.

Data Download

*Download quotation data or order history.

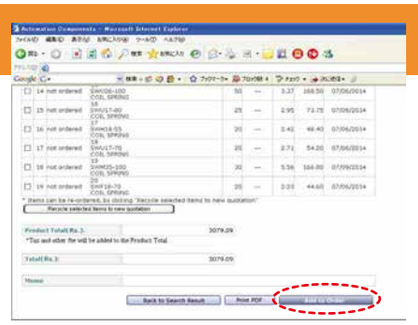
Print Quotation



*Print out quotation form on paper or download PDF form.

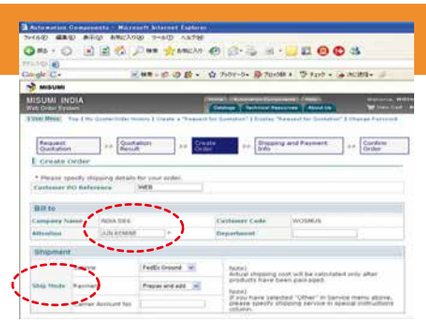
1.Create an Order

*Once quotation is made, click on My quote and choose the quotation you want to process for the order.
*Select items you want to place as an order.
*Then, click on “Add to order” for next step.



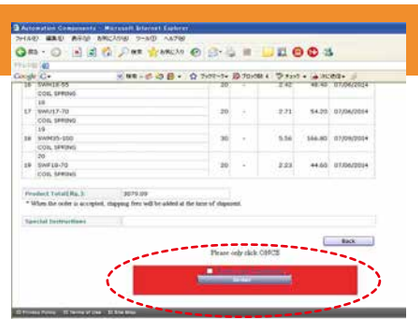
2.Shipping and Payment Information

*Select the shipping method and payment options from drop down box.
*Select shipping instruction “Ship Complete”, “Ship Partially”, or “Other” if there are special instructions.
*Click on “Next” for next step.



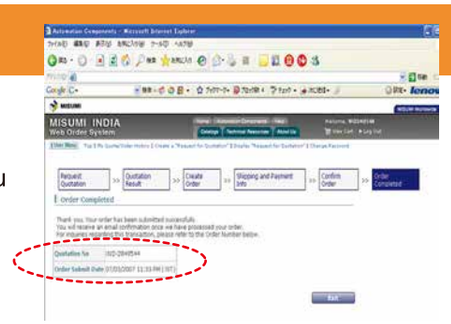
3.Confirm Order

*Confirm the contents of the order.
*Check terms and conditions, then click “Order”.



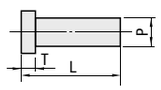
4.Order Verification

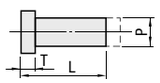
*Once your order is processed, you will be given a Quotation number.
*Also, you will receive an e-mail notifying you that the order was acknowledged.

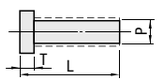


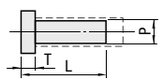
STRAIGHT EJECTOR PINS

Straight Ejector Pins









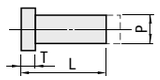
Material	Head Thickness (T)	Shaft diameter (P) Tolerance	Standard Part Number	Page	L Dimension Designation Type Part Number	Page	P dimension designation, L dimension selection type Part Number	Page	L/P Dimension Designation Type Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.002	—		EPV−L	P.65	EPV−G	P.65	EPVB	P.65
		0 −0.005	EPH	P.55	EPH−L	P.57	EPH−G	P.61	EPHB	P.63
		−0.01 −0.02	EPHE−B	P.55	EPHE−L	P.57	EPHE−G	P.61	EPHBE	P.63
	4mm (T4) Small diameter	0 −0.005	—		EPY−L	P.57	EPY−G	P.61	EPYB	P.63
	6・8mm (JIS)	0 −0.005	EPHJ	P.59	EPHJ−L	P.59	EPHJ−G	P.61	EPHJB	P.63
		−0.01 −0.02	EPHJE	P.59	EPHJE−L	P.59	EPHJE−G	P.61	EPHJBE	P.63
SKH51 equivalent + Hard chromate plating	4mm (T4)	0 −0.005	—		—		—		C−EPHB	P.67
		−0.01 −0.02	—		—		—		C−EPHBE	P.67
	4mm (T4) Small diameter	0 −0.005	—		—		—		C−EPYB	P.67
	6・8mm (JIS)	0 −0.005	—		—		—		C−EPHJB	P.67
		−0.01 −0.02	—		—		—		C−EPHJBE	P.67
SKD61 equivalent	4mm (T4)	0 −0.005	EPDS	P.77	EPDS−L	P.79	EPDGS	P.77	EPDBS	P.79
		−0.01 −0.02	EPD	P.77	EPD−L	P.79	EPDG	P.77	EPDB	P.79
SKD61 equivalent + Nitriding	4mm (T4)	*Reference tolerance −0.01 −0.02	EPN	P.69	EPN−L	P.71	EPNG	P.73	EPNB	P.75
	6・8mm (JIS)		EPJ	P.69	EPJ−L	P.71	EPJG	P.73	EPJB	P.75
SKD61 equivalent Prehardened	4・6・8mm (JIS)	*Reference tolerance −0.01 −0.02	EPAJ	P.81	EPAJ−L	P.81	EPAJG	P.81	EPAJB	P.81
SUS440C	4mm (T4)	0 −0.005	EPW	P.83	EPW−L	P.83	EPWG	P.83	EPWB	P.83
	6mm (JIS)	0 −0.005	EPWJ	P.83	EPWJ−L	P.83	EPWJG	P.83	EPWJB	P.83

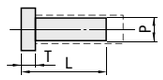
*The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.

Ejector pins with cutting facets・Taperless one-step core pins with gas vent

Ejector pins with cutting facets

Taperless one-step core pins with gas vent

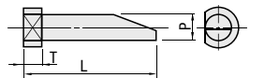




Type	Material	Head Thickness (T)	Shaft diameter (P) Tolerance	L Dimension Designation Type Part Number	Page	L/P Dimension Designation Type Part Number	Page
Cutting facets	SKH51 equivalent	4mm (T4)	0 −0.005	GW□−EPH−L	P.89	GW□−EPHB	P.89
			−0.01 −0.02	GW□−EPHE−L		GW□−EPHBE	
		6・8mm (JIS)	0 −0.005	GW□−EPHJ−L		GW□−EPHJB	
			−0.01 −0.02	GW□−EPHJE−L		GW□−EPHJBE	
Gas Release Groove (Tip Diameter designation)		4mm (T4)	0 −0.005	GVB−EPH−L	P.85	GVB−EPHB	P.85
			−0.01 −0.02	GVB−EPHE−L		GVB−EPHBE	
		6・8mm (JIS)	0 −0.005	GVB−EPHJ−L		GVB−EPHJB	
			−0.01 −0.02	GVB−EPHJE−L		GVB−EPHJBE	
Gas Release Groove		4mm (T4)	0 −0.005	GV−EPH−L	P.87	GV−EPHB−L	P.87
			−0.01 −0.02	GV−EPHE−L		GV−EPHBE−L	
		6・8mm (JIS)	0 −0.005	GV−EPHJ−L		GV−EPHJB−L	
			−0.01 −0.02	GV−EPHJE−L		GV−EPHJBE−L	

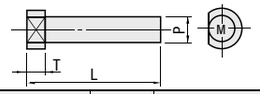
■Characteristics of materials for straight ejector pins: Refer to P.126.

Straight Ejector Pins with tip process



L Dimension Designation Type Part Number	Page	L/P Dimension Designation Type Part Number	Page
—		—	
EPH□A	P.97	EPHB□A	P.99
EPHE□A	P.97	EPHBE□A	P.99
—		—	
EPHJ□A	P.97	EPHJB□A	P.99
EPHJE□A	P.97	EPHJBE□A	P.99
—		—	
—		—	
—		—	
—		—	
—		—	
—		—	
—		—	
EPDS□A	P.105	EPDBS□A	P.107
EPD□A	P.105	EPDB□A	P.107
EPN□A	P.101	EPNB□A	P.103
EPJ□A	P.101	EPJB□A	P.103
—		—	
—		—	
—		—	

Straight Ejector Pins with engraving



L Dimension Designation Type Part Number	Page	L/P Dimension Designation Type Part Number	Page
EPV□M・EPV□MR (Sequential number)	P.113	EPVB□M・EPVB□MR (Sequential number)	P.113
EPH□M・EPH□MR (Sequential number)・EPH□T	P.109・117	EPHB□M・EPHB□MR (Sequential number)・EPHB□T	P.111・117
EPHE□M・EPHE□MR (Sequential number)・EPHE□T	P.109・117	EPHBE□M・EPHBE□MR (Sequential number)・EPHBE□T	P.111・117
—		—	
EPHJ□M	P.109	EPHJB□M	P.111
EPHJE□M	P.109	EPHJBE□M	P.111
—		—	
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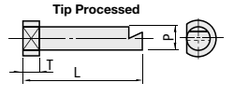
—		—	
—		—	
—		—	
—		—	
EPN□M・EPN□MR (Sequential number)	P.115	—	
EPJ□M・EPJ□MR (Sequential number)	P.115	—	
—		—	
—		—	
—		—	

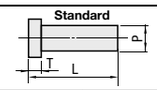
Z Groove Processed Straight Ejector Pins

Edge R



Type: Tip Processed			
Category: Material	Head Thickness (T)	Shaft Diameter (P) Tolerance	Part Number	Page
SKH51 equivalent	4mm (T4)	−0.005	Z−EPH−L	P.91
		−0.01 −0.02	Z−EPHE−L	

Straight Ejector Pins —Package Products—



Type: Standard						
Category: Material	Head Thickness (T)	Shaft Diameter (P) Tolerance	Part Number	Page	Part Number	Page
SKH51 equivalent	4mm (T4)	−0.005	50PACK−EPH	P.119	100PACK−EPH	P.119
		−0.01 −0.02	50PACK−EPHE		100PACK−EPHE	
SKD61 equivalent + Nitriding	4mm (T4)	−0.01 −0.02	50PACK−EPN		100PACK−EPN	
	6・8mm (JIS)		50PACK−EPJ		100PACK−EPJ	
SKD61	4mm (T4)	−0.01 −0.02	50PACK−EPD		100PACK−EPD	

Pins for ejector block P.121

Part Number EBPJ

Close-up of tip end

Air-Jet Valves P.123・124

Air-Jet Valves

Spacers

Part Number AJVE AJV AJVS

Spring Pins & Dowel Pins P.124

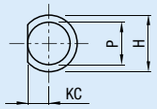
Part Number WSP MS

ALTERATION GUIDE FOR STRAIGHT EJECTOR PINS

■ Alteration Guide for STRAIGHT EJECTOR PINS

Items	Applicable Products	Alterations	Code	Specifications	1Code
Head alteration	Straight Ejector Pins (*Excluding products with head process and engraving)	**Precision key flat cutting** VKC -0.02^{0}	VKC	Precision single flat cutting Range of designation: P/2≦VKC<H/2 High speed steel SKH51 equivalent only	Quotation
		Precision key flat cutting VWC -0.02^{0}	VWC	Precision two parallel flats cutting Range of designation: P/2≦VWC<H/2 High speed steel SKH51 equivalent only	
		Key flat cutting KC -0.1^{0}	KC	Single flat cutting Range of designation: P/2≦KC<H/2	
		Key flat cutting WKC -0.1^{0}	WKC	Two flats cutting Range of designation: P/2≦WKC<H/2	
		Key flat cutting KAC KBC -0.1^{0}	KAC KBC	Varied width parallel flats cutting Range of designation: P/2≦KAC KAC<KBC<H/2	
		Key flat cutting RKC -0.1^{0}	RKC	Two flats (right angled) cutting Range of designation: P/2≦RKC<H/2	
		Key flat cutting DKC -0.1^{0}	DKC	Three flats cutting Range of designation: P/2≦DKC<H/2	
		Key flat cutting SKC -0.1^{0}	SKC	Four flats cutting Range of designation: P/2≦SKC<H/2	
		Key flat cutting (angled) AG° ±0.5, KGC -0.1^{0}	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation: P/2≦KGC<H/2 AG=1° increments, 0°<AG<360°	
		Key flat cutting (angled) 120°, KTC -0.1^{0}	KTC	Three flats cutting at 120° Range of designation: P/2≦KTC<H/2	
	Straight Ejector Pins with Tip Process & Straight Ejector Pins with Engraving	**Key flat cutting (angled)** P/2 -0.1^{0}	AKC	Changes the flat position (standard: 0°) clockwise in 1° increments. Range of designation: 0°<AKC<360° No need to designate AKC0 Unit of designation: 1° increments Designation method: θ=45° ⇒ AKC45	
		Key flat cutting (angled) P/2 -0.1^{0}	AWC	Adds two parallel flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Range of designation: 0°≦AWC<360° Unit of designation: 1° increments Designation method: θ=0° ⇒ AWC0, θ=45° ⇒ AWC45	
		Key flat cutting (angled) P/2 -0.1^{0}	ARC	Adds two right-angled flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Range of designation: 0°≦ARC<360° Unit of designation: 1° increments Designation method: θ=0° ⇒ ARC0, θ=45° ⇒ ARC45	
		Key flat cutting (angled) P/2 -0.1^{0}	ADC	Adds three flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Range of designation: 0°≦ADC<360° Unit of designation: 1° increments Designation method: θ=0° ⇒ ADC0, θ=45° ⇒ ADC45	
		Key flat cutting (angled) P/2 -0.1^{0}	KGA	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Range of designation: 0°<KGA<360° Unit of designation: 1° increments Designation method: θ=135° ⇒ KGA135	
		Key flat cutting (angled) P/2 -0.1^{0}	KGB	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Please note that standard position 0° is upper surface which is different from other alterations. Range of designation: 0°<KGB<360° Unit of designation: 1° increments Designation method: θ=135° ⇒ KGB135	
		Key flat cutting KAC KBC -0.1^{0}	KAC KBC	Varied width parallel flats cutting Combination with other key flat cutting not available Range of designation: P/2≦KAC KAC<KBC<H/2	

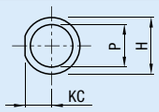
To make a flat at the shaft diameter position



Unit of designation
L dimension designation type (P/2)
·····0.05mm increments possible
L/P dimension 0.01mm designation type (P/2)
···0.005mm increments possible
L/P dimension 0.005mm designation type (P/2)
··· 0.0025mm increments possible
L/P dimension 0.001mm designation type (P/2)
··· 0.0005mm increments possible

Designation method
- VKC2.82 (When P5.64)
- VWC3.375 (When P6.75)
- KC2.61 (When P5.22)
- WKC3.085 (When P6.17)
- KAC3.25—KBC4 (When P6.5)
- RKC2.77 (When P5.54)
- DKC3 (When P6)
- SKC2.5 (When P5)
- KGC1.5—AG125 (When P3)
- KTC3.085 (When P6.17)

To designate an arbitrary flat size



Unit of designation: 0.1mm increments only
Designation method
- VKC1.4・VWC2.3・KC1.4・WKC2.3
- KAC1.4—KBC1.6・RKC1.4・DKC1.75
- SKC5.8・KGC1.4—AG135・KTC2.3

Note that designating (H/2—0.15) or more for Key flat cutting alteration will create hardly any flat on the head.

■ Alteration Guide for STRAIGHT EJECTOR PINS

Items	Applicable Products	Alterations	Code	Specifications	1Code
Head alteration	Straight Ejector Pins	**Head diameter change** H, HC -0.3^{0}, HCC -0.02^{0}	HC HCC (Precision)	Reduces head diameter. (HCC) Range of designation: P+1≦HC<H and P≧1.5 P+1≦HCC<H−0.3 and P≧1.5 Unit of designation: 0.1mm increments Designation method: HC6.5 HCC6.1	Quotation
		Head thickness change T, TC	TC	Reduces the head thickness. Dimension L remains unchanged (except for standard, P dimension designation/L dimension selection type). Range of designation: T/2≦TC<T P≧1.5 T−TC≦Lmax.−L	
		Dowel hole boring d $^{+0.1}_{0}$, H, ℓ, T	NC	Dowel hole boring Adds a dowel hole for use with WSP and MS. Designation method: NC Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	
		Dowel hole+Spring pin ℓ1, H, d, T	NCW	Dowel hole boring and spring pin driving. Designation method: NCW Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	
		Dowel hole+Dowel pin ℓ2, H, d, T	NCS	Dowel hole boring and dowel pin driving. Designation method: NCS Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	
		Numbering A13, 3	NHC	Combination with key flat cutting not available. Electrolytic marking of ID code on the head(in 5 point, Round Gothic type). Available characters: Numerals: 0~9; Alphabets: A~Z Range of designation: 1 character when 2≦H<4.9 1 or 2 characters when 5≦H<6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) Designation method: NHC—6, NHC—23, NHC—A90 Available when head diameter H≧2 Combination with SKC・MC not available. NHC is not available when numbering space in head exceeds the maximum of 1.8 long x 1.8 wide x characters.	
		Numbering 1, 2, 3, A1, A2, A3	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each ejector pin when two or more pieces of identical size are ordered. Available characters: Same as NHC (see above) Range of designation: Same as NHC (see above) Designation method: When 3 pieces are ordered with NHN-1, A sequential number starting from 1 to 3 is added on the head of each piece. When 10 pieces are ordered with NHN-A15: A sequential number starting from A15 (through A24) is added on the head of each piece. Only available when two or more pieces of identical size are ordered. Available when head diameter H≧2 Combination with SKC・MC not available.	
		Tapping MC, ℓ=M×1	MC	Creates a tap on the head. Available when P≧8, H≧13, T≧8. Designation method: MC When P 8.00~ 9.99 M4 When P10.00~11.99 M5 When P12.00~15.99 M6 When P16.00~25.00 M8 Combination with other than TMC・GVC not available.	
Tolerance alteration	Extra Precision Straight Ejector Pins	L T	LKC	Changes L dimension tolerance. Designation method: LKC $L^{+0.01}_{0}$ ⇒ $L^{+0.005}_{0}$ (L designation in 0.005mm increments possible) Available when 1.5≦P≦5	
		P	PKC	Shaft diameter tolerance alteration (range alteration) Designation method: PKC $P^{0}_{-0.002}$ ⇒ $P^{-0.001}_{-0.003}$	
Tip alteration	Straight Ejector Pins	**Lapping on the tip face** L, ℓ	TMC	Lapping on the tip face. Available for L dimension designation and L・P dimension designation types when the material is SKH51 equivalent or SUS440C. Available when P≧0.6 EPY-L, EPYB, C-EPYB not available.	
Shaft alteration	Straight Ejector Pins	**Gas vent machining** R1, R1, S, B	GVC	Gas vent machining Range of designation: 2≦S≦10, S+5≦B≦30 Unit of designation: S, B=1mm increments Designation method: GVC—S3—B20 Available when P≧3	
Engraving alteration	Straight Ejector Pins with engraving	GCB°, L $^{+0.05}_{0}$	GCB	Range of designation: 60°≦GCB<90° Unit of designation: 1° increments Designation method: GCB85 Available when L≦200 Combination with GCD not available.	
		L $^{+0.05}_{0}$, GCD°	GCD	Range of designation: 60°≦GCD<90° Unit of designation: 1° increments Designation method: GCD80 Available when L≦200 Combination with GCB not available.	
		EC $^{+0.02}_{0}$	EC	Engraving depth alteration 0.05 ⇒ 0.1 0.2 ⇒ 0.1 0.2 ⇒ 0.3 Designation method: EC Available when P≧1 Combination with GCB・GCD not available.	

T	d	ℓ
4	2	3
6	3	5
8		
10	4	

T	d	ℓ1	Spring pin
4	2	5	WSP2
6	3		WSP3
8			
10	4		WSP4

T	d	ℓ2
4	2	5
6	3	
8		

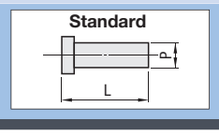
P	t
3.00~ 4.99	0.3
5.00~ 9.99	0.4
10.00~12.00	0.5

High Speed Steel
SKH51 equivalent
4mm head

STRAIGHT EJECTOR PINS

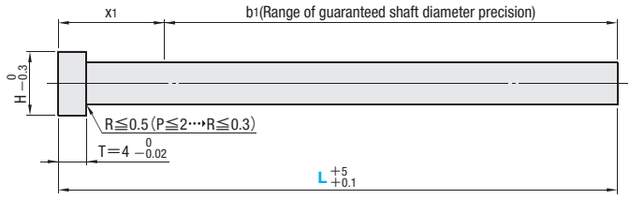
—STANDARD—

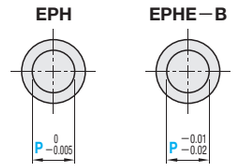
Standard



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
EPH	4mm(T4)	0 −0.005
EPHE−B		−0.01 −0.02

EPH・EPHE−B (when P=0.2) is applied with overall quenching. (Head without annealing)

Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	Part Number P	L Selection
2	4	EPH ($P^{0}_{-0.005}$) / EPHE−B ($P^{-0.01}_{-0.02}$)	0.2	60
3			0.3	60
			0.4 0.5	60 100
			0.6 0.7	100 150
			0.8 0.9	100 150
			1 1.1 1.2 1.3 1.4	100 150 200
			1.5	100 150 200 250
4			1.6	100 150 200 250
			1.7 1.8 1.9	100 150 200
			2	100 150 200 250 300
5			2.1	100 150 200 250
			2.2 2.3 2.4	100 150 200
			2.5	100 150 200 250 300
6			2.6	100 150 200 250
			2.7 2.8 2.9	100 150 200
			3	100 150 200 250 300 350
7			3.1	100 150 200 250
			3.2 3.3 3.4	100 150 200
			3.5	100 150 200 250 300 350
			3.6	100 150 200 250
			3.7 3.8 3.9	100 150 200
			4	100 150 200 250 300 350
			4.1	100 150 200 250
8			4.2 4.3 4.4	100 150 200
			4.5	100 150 200 250 300 350
			4.6	100 150 200 250
			4.7 4.8 4.9	100 150 200
			5	100 150 200 250 300 350
			5.1	100 150 200 250
9			5.5	100 150 200 250 300 350
			5.6	100 150 200 250
			6	100 150 200 250 300 350
			6.1	100 150 200 250
10			6.5	100 150 200 250 300 350
			6.6	100 150 200 250
			7	100 150 200 250 300 350
			7.1	100 150 200 250
11			7.5 7.6	100 150 200 250
			8	100 150 200 250 300 350
			8.1	100 150 200 250
14			8.5 8.6	100 150 200 250
			9	100 150 200 250 300 350
15			9.1 9.5 9.6	100 150 200 250
			10	100 150 200 250 300 350
			10.1	100 150 200 250
17			10.5 10.6 11 11.1	100 150 200 250
			11.5 11.6	100 150 200 250
			12	150 200 250 300 350

Please take the order for head JIS type EPHJ ($P^{0}_{-0.005}$), EPHJE ($P^{-0.01}_{-0.02}$). P.59

Order

Part Number	—	L
EPH 1.5	—	150

Days to Ship: Quotation

Alterations

Part Number	—	L	—	(KC・WKC···etc.)
EPH 2.5	—	150	—	TC3.0

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	Quotation
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4, P≧1.5 Dimension L becomes shorter by (4-TC)	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	Quotation
H 5 2 4	NCW	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
H 5 2 4	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	

Price: Quotation

Straight Ejector Pins

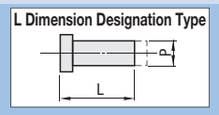
High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
4mm head

STRAIGHT EJECTOR PINS

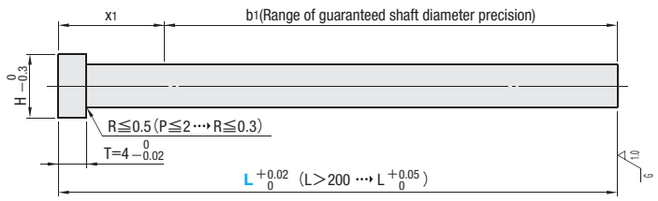
— L DIMENSION DESIGNATION TYPE —

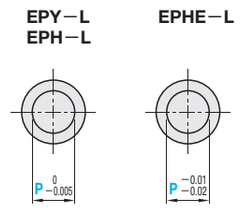
L Dimension Designation Type



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
EPY−L EPH−L	4mm(T4)	0 −0.005
EPHE−L		−0.01 −0.02

EPY−L is applied with overall quenching(Head without annealing)

Range of guaranteed shaft diameter precision (Details P.1301)
EPY−L ··· x_1 max.10
T4 ··· x_1 max.30

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Order Part Number − L
EPH−L5 − 210.00

Days to Ship Quotation

Alterations Part Number − L − (KC・WKC···etc.)
EPH−L5 − 210.00 − TC3 — Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	Quotation
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4, P≧1.5 (Dimension L remains unchanged.) 4−TC≦Lmax.−L	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	Quotation
H 5 2 4	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available.	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	
L 0.2	TMC	Lapping on the tip face Available when P≧0.6 EPY−L not available	
S B	GVC	S,B=1mm increments 2≦S≦10,S+5≦B≦30 Available when P≧3	

Price Quotation

H	T	Part Number Type	P	L 0.01mm increments	U/Price 1～4
2	4	EPY−L	0.3	20.00～60.00	Quotation
			0.4		
			0.5		
			0.6		
			0.7		
			0.8		
			0.9		
			1		

H	T	Part Number Type	P	L 0.01mm increments Lmin.	Lmax.	U/Price L40.00～100.00	L100.01～150.00	L150.01～200.00	L200.01～250.00	L250.01～300.00	L300.01～350.00
3	4	EPH−L (P 0 −0.005) EPHE−L (P −0.01 −0.02)	0.3	40.00	60.00						
			0.4		100.00						
			0.5								
			0.6 0.7		150.00						
			0.8 0.9								
			1 1.1		200.00						
			1.2 1.3 1.4								
			1.5		250.00						
			1.6								
4			1.7 1.8 1.9		200.00						
			2		300.00						
5			2.1		250.00						
			2.2 2.3 2.4		200.00						
			2.5		300.00						
6			2.6		250.00						
			2.7 2.8 2.9		200.00						
7			3		350.00						
			3.1		250.00						
			3.2 3.3 3.4		200.00						
			3.5		350.00						
			3.6		250.00						
			3.7 3.8 3.9		200.00						
8			4		350.00						
			4.1		250.00						
			4.2 4.3 4.4		200.00						
			4.5		350.00						
			4.6		250.00						
			4.7 4.8 4.9		200.00						
9			5		350.00						
			5.1		250.00						
			5.5		350.00						
			5.6		250.00						
10			6		350.00						
			6.1		250.00						
			6.5		350.00						
			6.6		250.00						
11			7		350.00						
			7.1		250.00						
			7.5								
			7.6								
14			8		350.00						
			8.1		250.00						
			8.5 8.6								
15			9		350.00						
			9.1		250.00						
			9.5 9.6								
17			10		350.00						
			10.1		250.00						
			10.5 10.6								
			11 11.1								
			11.5 11.6								
			12		350.00						

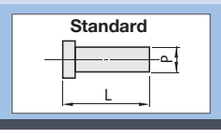
Quotation

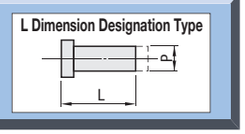
When the ejector pin's dimension L is less than 40mm, the length of b_1 (guaranteed shaft diameter precision range) may be too short for your particular application. For such application, use EPY−L or core pins instead.
Please take the order for JIS head type EPHJ−L (P 0 −0.005) / EPHJE−L (P −0.01 −0.02) . P.59

High Speed Steel
SKH51
equivalent
JIS head

STRAIGHT EJECTOR PINS

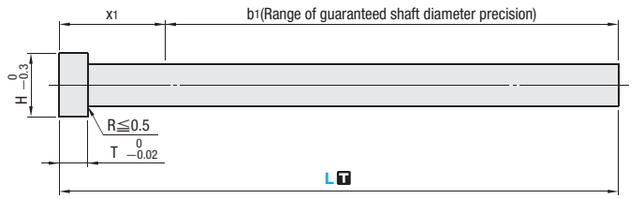
—STANDARD／L DIMENSION DESIGNATION TYPE—

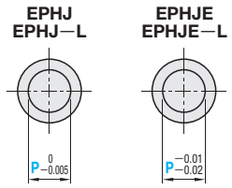




Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Shapes	Head thickness	T L	T P	Tip Face Roughness
EPHJ	Standard	6・8mm (JIS)	+5 +0.1	0 −0.005	—
EPHJE				−0.01 −0.02	
EPHJ—L	L Dimension Designation Type		+0.02 0 L>200 ··· +0.05 0	0 −0.005	
EPHJE—L				−0.01 −0.02	

Range of guaranteed shaft diameter precision (Details P.1301)
JIS ··· x1 max.35

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

■Standard

H	T	Part Number Type	Part Number P	L Selection					
8	6	EPHJ ($P^{0}_{-0.005}$) EPHJE ($P^{-0.01}_{-0.02}$)	4	100	150	200	250	300	
			4.5	100	150	200	250	300	
9			5	100	150	200	250	300	350
			5.5	100	150	200	250	300	350
10			6	100	150	200	250	300	350
11			6.5	100	150	200	250	300	350
			7	100	150	200	250	300	350
13	8		8	100	150	200	250	300	350
14			9	100	150	200	250	300	350
15			10	100	150	200	250	300	350
17			12		150	200	250	300	350

For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPH ($P^{0}_{-0.005}$) / EPHE—B ($P^{-0.01}_{-0.02}$) P.55

■L Dimension Designation Type

H	T	Part Number Type	Part Number P	L 0.01mm increments
8	6	EPHJ—L ($P^{0}_{-0.005}$) EPHJE—L ($P^{-0.01}_{-0.02}$)	4	40.00～300.00
			4.5	
9			5	40.00～350.00
			5.5	
10			6	
11			6.5	
			7	
13	8		8	
14			9	
15			10	
17			12	

For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPH—L ($P^{0}_{-0.005}$) / EPHE—L ($P^{-0.01}_{-0.02}$) P.57

Order

Part Number	—	L
EPHJ4	—	200
EPHJ—L5	—	210.00

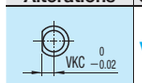
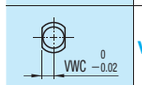
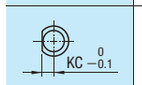
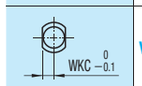
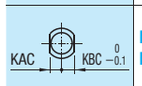
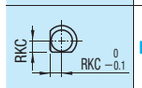
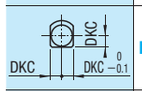
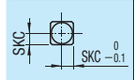
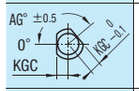
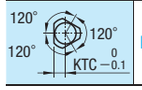
Days to Ship **Quotation**

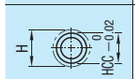
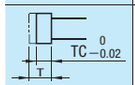
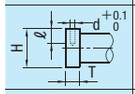
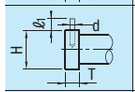
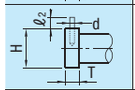
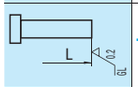
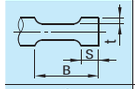
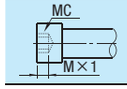
Alterations

Part Number	—	L	—	(KC・WKC···etc.)
EPHJ4	—	200	—	TC3.0
EPHJ—L5	—	210.00	—	TC5

Quotation

Alteration details P.53

Alterations	Code	Spec.		1Code
	VKC	Precision single flat cutting P/2≦VKC<H/2	About Designation Unit for Key Flat Cutting	
	VWC	Precision two flats cutting P/2≦VWC<H/2		
	KC	Single flat cutting P/2≦KC<H/2		
	WKC	Two flats cutting P/2≦WKC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		Quotation
	RKC	Two flats (right angled) cutting P/2≦RKC<H/2		
	DKC	Three flats cutting P/2≦DKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
	SKC	Four flats cutting P/2≦SKC<H/2		
	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360		
	KTC	Three flats cutting at 120° P/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments P+1≦HC<H	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T EPHJ,EPHJE ··· Dimension L becomes shorter by (T-TC). EPHJ-L,EPHJE-L ··· T−TC≦Lmax.−L (Dimension L remains unchanged.)	
	NC	Dowel hole boring ⊗ Combination with other than NHC・NHN・TMC・GVC not available. (T: 6, 8 / d: 3 / ℓ: 5)	
	NCW	Dowel hole boring+ Spring pin driving ⊗ Combination with other than NHC・NHN・TMC・GVC not available. (T: 6, 8 / d: 3 / ℓ1: 5)	Quotation
	NCS	Dowel hole boring+ Dowel pin driving ⊗ Combination with other than NHC・NHN・TMC・GVC not available. (T: 6, 8 / d: 3 / ℓ2: 5)	
	NHC	Numbering on the head How to order P.54 ⊗ Combination with SKC・MC not available	
	NHN	Automatic sequential numbering on the head How to order P.54 ⊗ Combination with SKC・MC not available	
	TMC	Lapping on the tip face Available for L dimension designation type only	
	GVC	S,B=1mm increments 2≦S≦10,S+5≦B≦30 Available for L dimension designation type only	
	MC	Head tapping Available when P≧8 ⊗ Combination with other than TMC・GVC not available. (P: 8・9 / M: M4; P: 10 / M: M5; P: 12 / M: M6)	

Straight Ejector Pins

High Speed Steel SKH51 equivalent

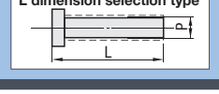
Price **Quotation**

High Speed Steel SKH51 equivalent

STRAIGHT EJECTOR PINS

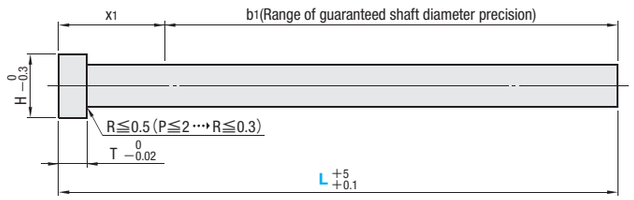
—P DIMENSION DESIGNATION • L DIMENSION SELECTION TYPE—

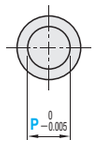
P dimension designation • L dimension selection type

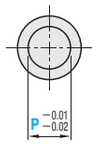


Non JIS material definition is listed on P.1351 - 1352

RoHS







Part Number	Head thickness	T P
EPY—G	4mm(T4)	0 −0.005
EPH—G		
EPHJ—G	6・8mm(JIS)	
EPHE—G	4mm(T4)	−0.01 −0.02
EPHJE—G	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (Details P.1301)

Head thickness	L	x1 max.
T4 (Small diameter)	60	10
T4	100～200	30
JIS	100～200	35
T4 ・ JIS	250	110
	300	160
	350	210

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)
EPY—G is applied with overall quenching
(Head without annealing)

H	T	Part Number Type	No.	L	P 0.005mm increments
2	4	EPY—G	0.4	60	0.300～0.395
			0.5		0.400～0.495
			0.6		0.500～0.595
			0.7		0.600～0.695
			0.8		0.700～0.795
			0.9		0.800～0.895
			1		0.900～0.995

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	No.	L Selection	P 0.01mm increments
3	4	—	—	EPH—G (P 0 −0.005)	—	0.5	100	0.40～ 0.49
						0.6		0.50～ 0.59
						0.7		0.60～ 0.69
						0.8	100 150	0.70～ 0.79
						0.9		0.80～ 0.89
						1	100 150 200	0.90～ 0.99
						1.5		1.00～ 1.49
4						2	100 150 200 250	1.50～ 1.99
5						2.5	100 150 200 250 300	2.00～ 2.49
6						3		2.50～ 2.99
7						3.5		3.00～ 3.49
		8	6	EPHE—G (P −0.01 −0.02)	EPHJ—G (P 0 −0.005)	4		3.50～ 3.99
8						4.5	100 150 200 250 300 (350)	4.00～ 4.49
		9				5	100 150 200 250 300 350	4.50～ 4.99
9						5.5		5.00～ 5.49
		10				6		5.50～ 5.99
10		11				6.5		6.00～ 6.49
						7		6.50～ 6.99
11		13	8		EPHJE—G (P −0.01 −0.02)	8		7.00～ 7.99
15		15				10		8.00～ 9.99
17		17				12		10.00～11.99

The L dimension enclosed in brackets ( ) is applicable only for EPH-G and EPHE-G.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPH—G (P 0 −0.005) / EPHE—G (P −0.01 −0.02)
When L dimension is 250 or more, make sure to check the range of guaranteed shaft diameter precision. (Details P.1301)

Order

Part Number — L — P
EPH—G 5 — 350 — P4.72

Days to Ship Quotation

Alterations

Part Number — L — P — (KC・WKC···etc.)
EPH—G 5 — 350 — P4.72 — KC2.5

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
0.005mm increments possible
EPY—G only 0.0025mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 Dimension L becomes shorter by (T−TC)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T 4 6 8, d 2 3 3, ℓ 3 5 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T 4 6 8, d 2 3 3, ℓ1 5)	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T 4 6 8, d 2 3 3, ℓ2 5)	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available for EPHJ—G・EPHJE—G when P≧8.00 Combination with any other alteration not available. (P 8.00～9.99 M4, P10.00～11.99 M5)	

Price Quotation

Straight Ejector Pins

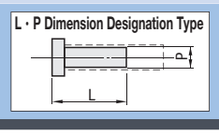
High Speed Steel SKH51 equivalent

High Speed Steel SKH51 equivalent

STRAIGHT EJECTOR PINS

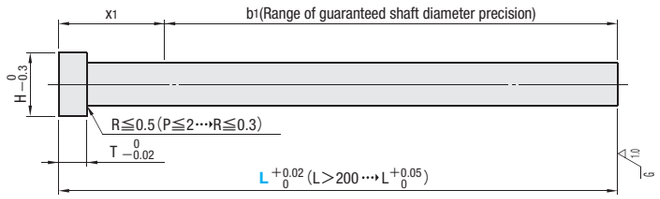
—L・P DIMENSION DESIGNATION TYPE—

L・P Dimension Designation Type

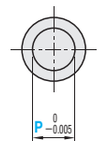


Non JIS material definition is listed on P.1351 - 1352

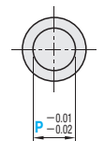
RoHS



EPYB
EPHB
EPHJB



EPHBE
EPHJBE



Part Number	Head thickness	T P
EPYB	4mm(T4)	0 −0.005
EPHB		
EPHJB	6・8mm(JIS)	
EPHBE	4mm(T4)	−0.01 −0.02
EPHJBE	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (Details P.1301)

Head thickness	L	x1 max.
T4 (Small diameter)	20.00～ 60.00	10
T4	40.00～200.00	30
JIS	40.00～200.00	35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)
EPYB is applied with overall quenching (Head without annealing)

H	T	Part Number Type	Part Number No.	L 0.01mm increments	P 0.005mm increments
2	4	EPYB	0.4	20.00～60.00	0.300 ～ 0.395
			0.5		0.400 ～ 0.495
			0.6		0.500 ～ 0.595
			0.7		0.600 ～ 0.695
			0.8		0.700 ～ 0.795
			0.9		0.800 ～ 0.895
			1		0.900 ～ 0.995

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	L 0.01mm increments	P 0.01mm increments
3	4	—	—	EPHB (P 0 −0.005) EPHBE (P −0.01 −0.02)	—	0.5	40.00～100.00	0.40～ 0.49
						0.6		0.50～ 0.59
						0.7		0.60～ 0.69
						0.8	40.00～150.00	0.70～ 0.79
						0.9		0.80～ 0.89
						1	40.00～200.00	0.90～ 0.99
						1.5		1.00～ 1.49
4						2	40.00～250.00	1.50～ 1.99
5						2.5	40.00～300.00	2.00～ 2.49
6						3		2.50～ 2.99
7						3.5		3.00～ 3.49
		8	6		EPHJB (P 0 −0.005) EPHJBE (P −0.01 −0.02)	4		3.50～ 3.99
8						4.5	40.00～300.00(350.00)	4.00～ 4.49
		9				5	40.00～350.00	4.50～ 4.99
9						5.5		5.00～ 5.49
		10				6		5.50～ 5.99
10		11				6.5		6.00～ 6.49
						7		6.50～ 6.99
11		13	8			8		7.00～ 7.99
15		15				10		8.00～ 9.99
17		17				12		10.00～11.99

The L dimension enclosed in brackets ( ) is applicable only for EPHB and EPHBE.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPHB (P 0 −0.005) / EPHBE (P −0.01 −0.02)
When L dimension is 200.01 or more, make sure to check the range of guaranteed shaft diameter precision. (Details P.1301)
When the ejector pin's dimension L is less than 40, the guaranteed shaft diameter precision range may be too short for your particular application. For such application, use EPYB or core pins instead.

Order

Part Number — L — P
EPHJB 5 — 350.00 — P4.72

Days to Ship: Quotation

Alterations

Part Number — L — P — (KC・WKC…etc.)
EPHJB 5 — 350.00 — P4.72 — KC2.5

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible
EPYB only 0.0025mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4 6 8, d 2 2 3, ℓ 3 3 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4 6 8, d 2 3, ℓ1 5)	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
L 0.2 70	TMC	Lapping on the tip face Available when P≧0.6 Not availabe for EPYB.	
S B	GVC	S,B=1mm increments 2≦S≦10,S+5≦B≦30 Available when P≧3	
MC M×1	MC	Head tapping Available for EPHJB・EPHJBE when P≧8.00 Combination with other than TMC・GVC not available. (P 8.00～ 9.99 M4; P10.00～11.99 M5)	

Price: Quotation

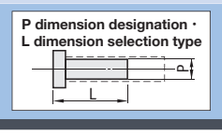
Straight Ejector Pins

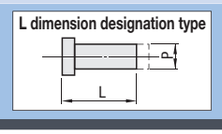
High Speed Steel SKH51 equivalent

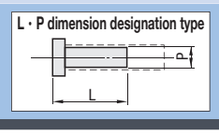
High Speed Steel
SKH51 equivalent
4mm head

EXTRA PRECISION STRAIGHT EJECTOR PINS

—P DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE／L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION TYPE—

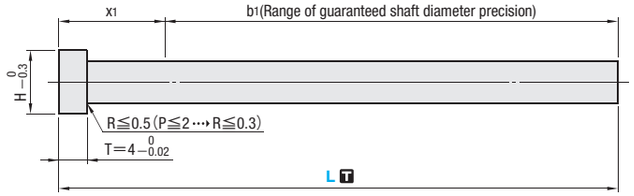


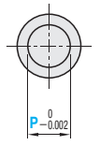




Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number		Head thickness	T L	T P	Tip Face Roughness
EPV—G	(P dimension designation・L dimension selection type)	4mm(T4)	+5 +0.1	0 −0.002	—
EPV—L	(L dimension designation type)		+0.01 0		
EPVB	(L・P dimension designation type)				

The heads of extra precision straight ejector pins are not annealed in order to guarantee precision. Use a construction that supports sliding and does not readily apply a load to the flange of the ejector pin, such as by using a precision ejector guide pin&bushing.

Range of guaranteed shaft diameter precision (Details P.1301)

P	x1 max.
0.3～0.799	10
0.8～5	30

M SKH51 equivalent
H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)
Applied with overall quenching
(Head without annealing)

■P Dimension Designation・L Dimension Selection Type

H	T	Part Number Type	Part Number No.	L	P 0.001mm increments
2	4	EPV—G	0.4	60	0.300～0.399
3			0.5	60 100	0.400～0.499
			0.6		0.500～0.599
			0.7		0.600～0.699
			0.8		0.700～0.799
			0.9	60 100 150	0.800～0.899
			1		0.900～0.999
			1.5		1.000～1.499
4			2	100 150	1.500～1.999
5			2.5		2.000～2.499
6			3		2.500～2.999
7			3.5		3.000～3.499
			4		3.500～3.999
8			4.5		4.000～4.499
			5		4.500～4.999

The figure for H dimension is 2 when P＜0.4.

■L Dimension Designation Type

H	T	Part Number Type	Part Number P	L 0.01mm increments
2	4	EPV—L	*0.3	20.00～ 60.00
			*0.4	
3			0.5	30.00～100.00
			0.6	
			0.7	
			0.8	50.00～150.00
			0.9	
			1	
			1.5	
4			2	
5			2.5	
6			3	
7			3.5	
			4	
8			4.5	
			5	

*The figure for H dimension is 2 for P dimensions 0.3 or 0.4.

■L・P Dimension Designation Type

H	T	Part Number Type	Part Number No.	L 0.01mm increments	P 0.001mm increments
2	4	EPVB	0.4	20.00～ 60.00	0.300～0.399
3			0.5	30.00～100.00	0.400～0.499
			0.6		0.500～0.599
			0.7		0.600～0.699
			0.8		0.700～0.799
			0.9	50.00～150.00	0.800～0.899
			1		0.900～0.999
			1.5		1.000～1.499
4			2		1.500～1.999
5			2.5		2.000～2.499
6			3		2.500～2.999
7			3.5		3.000～3.499
			4		3.500～3.999
8			4.5		4.000～4.499
			5		4.500～4.999

The figure for H dimension is 2 when P＜0.4.

Order

Part Number	—	L	—	P
EPV—G 2	—	150	—	P1.725
EPV—L 2	—	150.00		

Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	(KC・WKC···etc.)
EPV—L 2	—	150.00			—	KC1.5

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC＜H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC＜H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC＜H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC＜H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC＜H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC＜H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
EPV—G・EPVB 0.0005mm increments possible
EPV—L 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC＜H, P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC＜H−0.3, P≧1.5	
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC＜4,P≧1.5 4−TC≦Lmax.−L EPV—G ··· Dimension L becomes shorter by (4−TC). EPV—L, EPVB ··· (Dimension L remains unchanged.)	
	TRN	Relief under the head Available when P≧0.6	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC not available.	
L	TMC	Lapping on the tip face Available when P≧0.6 Available when EPV—L・EPVB	
L T	LKC	Changes L dimension tolerance. L +0.01 0 ···, +0.005 0 (L designation in 0.005mm increments possible) Available when 1.5≦P≦5 Available when EPV—L・EPVB	
P	PKC	Shaft diameter tolerance alteration (range alteration) P 0 −0.002 ··· −0.001 −0.003	

Price: Quotation

Straight Ejector Pins

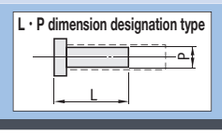
High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
+
Hard chromate plating

STRAIGHT EJECTOR PINS

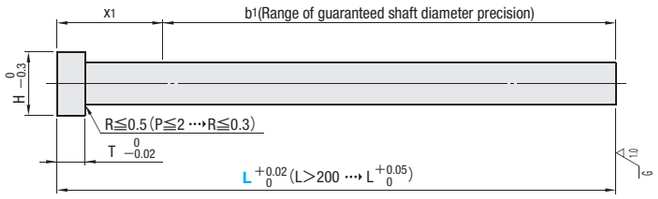
—L・P DIMENSION DESIGNATION TYPE—

L・P dimension designation type

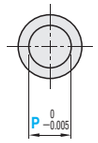


Non JIS material definition is listed on P.1351 - 1352

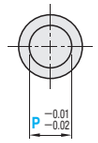
RoHS



C−EPYB
C−EPHB
C−EPHJB



C−EPHBE
C−EPHJBE



Part Number	Head thickness	T P
C−EPYB (Small diameter)	4mm(T4)	0 −0.005
C−EPHB		
C−EPHJB	6・8mm(JIS)	
C−EPHBE	4mm(T4)	−0.01 −0.02
C−EPHJBE	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (Details P.1301)

Head thickness	L	x1 max.
T4(Small diameter)	20.00～ 60.00	10
T4	40.00～200.00	30
JIS	40.00～200.00	35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

Tolerances of shaft diameter/lenth are values after plating.
Plating may extend to the head.

M SKH51 equivalent+Hard chromate plating
H Surface:900HV～(Referance value)
Base materials:58～60HRC
Range of guaranteed base material hardness (Details P.1303)
C-EPYB is applied with overall quenching
(Head without annealing)

H	T	Part Number Type	No.	L 0.01mm increments	P 0.005mm increments	U/Price 1～4 pcs.
2	4	C−EPYB	0.4	20.00～60.00	0.300～0.395	Quotation
			0.5		0.400～0.495	
			0.6		0.500～0.595	
			0.7		0.600～0.695	
			0.8		0.700～0.795	
			0.9		0.800～0.895	
			1		0.900～0.995	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	No.	L 0.01mm increments	P 0.01mm increments
3	4	—	—	C−EPHB (P 0 −0.005)	—	0.5	40.00～100.00	0.40～ 0.49
						0.6		0.50～ 0.59
						0.7		0.60～ 0.69
						0.8	40.00～150.00	0.70～ 0.79
						0.9		0.80～ 0.89
						1	40.00～200.00	0.90～ 0.99
						1.5		1.00～ 1.49
4						2	40.00～250.00	1.50～ 1.99
5						2.5	40.00～300.00	2.00～ 2.49
6						3		2.50～ 2.99
7						3.5		3.00～ 3.49
		8	6	C−EPHBE (P −0.01 −0.02)	C−EPHJB (P 0 −0.005)	4		3.50～ 3.99
8						4.5	40.00～300.00(350.00)	4.00～ 4.49
		9				5	40.00～350.00	4.50～ 4.99
9						5.5		5.00～ 5.49
		10				6		5.50～ 5.99
10		11			C−EPHJBE (P −0.01 −0.02)	6.5		6.00～ 6.49
						7		6.50～ 6.99
11		13	8			8		7.00～ 7.99
15		15				10		8.00～ 9.99
17		17				12		10.00～11.99

The L dimension enclosed in brackets ( ) is applicable only for C-EPHB and C-EPHBE.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of C−EPHB (P 0 −0.005) / C−EPHBE (P −0.01 −0.02)
When L dimension is 200.01 or more, make sure to check the range of guaranteed shaft diameter precision. (Details P.1301)
When the ejector pin's dimension L is less than 40, the guaranteed shaft diameter precision range may be too short for your particular application. For such application, use C−EPYB or core pins instead.

Order

Part Number	—	L	—	P
C−EPHJB 5	—	350.00	—	P4.72

Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	(KC・WKC⋯etc.)
C−EPHJB 5	—	350.00	—	P4.72	—	KC2.5

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC° 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

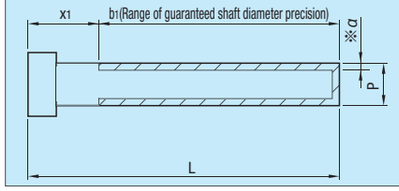
(1)To align the key flat with the shaft diameter
Unit of designation
0.005mm increments possible
C-EPYB only 0.0025mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

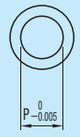
Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T/d/ℓ: 4/2/3, 6/8/3/5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T/d/ℓ1: 4/2/5, 6/8/3/5)	
217	NHC	Numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Available when H≧2 Combination with SKC・MC not available.	
L	TMC	Lapping on the tip face Not available for C−EPYB Available when P≧0.6 Hard chromate plating is applied after alternations.	
S B	GVC	S,B=1mm increments 2≦S≦10,S+5≦B≦30 Available when P≧3 Hard chromate plating is applied after alternations.	
MC M×1	MC	Head tapping Available for C−EPHJB・C−EPHJBE when P≧8.00 Combination with other than TMC・GVC not available. (P/M: P 8.00～ 9.99 / M4, P10.00～11.99 / M5)	

Price: Quotation

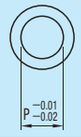
■Hard chromate plating on ejector pins



C−EPYB
C−EPHB
C−EPHJB



C−EPHBE
C−EPHJBE



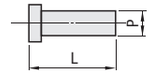
Hard chromate plating for hardness 900 HV or higher is applied to base materials of SKH51 equivalent for improvement of wear resistance.
The thickness of a plating layer of one side (α) is between 0.001 and 0.002mm (reference value). By processing a shaft diameter of a base material to be thin in consideration of such thickness, shaft diameter precision is guaranteed after plating.
The range of guaranteed plating layer covers the b1 dimension section; however plating may extend to the head as it is applied after machining dimension L/P.
The tip surface is plated.
Since the plating layer is too thin for surface hardness testing after plating, the data shown in this catalog are "reference values."

Dies Steel
SKD61 equivalent
+
Nitriding

STRAIGHT EJECTOR PINS

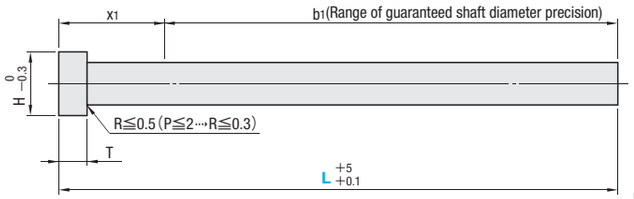
—STANDARD—

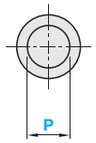
Standard



Non JIS material definition is listed on P.1351 - 1352

RoHS





Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30
JIS ··· x1 max.35

Part Number	Head thickness	T T
EPN	4mm(T4)	0 −0.02
EPJ	6・8mm (JIS)	0 −0.05

T P

L \ P	1 ~ 13	15 ~ 20	25
L≦500	−0.01 −0.02	−0.01 −0.03	−0.01 −0.04
L≧600	−0.01 −0.03	−0.01 −0.03	−0.01 −0.05

M SKD61 equivalent+Nitrided
H Surface base:900HV~
Base material:40~45HRC
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Type 4mm head	Type JIS head	P	L Selection
3	4	—	—	EPN	—	1 1.1 1.2 1.3 1.4	100 150
						1.5	100 150 200
						1.6 1.7 1.8 1.9	100 150 200
4						2	100 150 200 250 300 350 400
5						2.1 2.2 2.3 2.4	100 150 200 250 300
						2.5	100 150 200 250 300 350 400
6						2.6 2.7 2.8 2.9	100 150 200 250 300
						3	100 150 200 250 300 350 400 450 500
7						3.1 3.2 3.3 3.4	100 150 200 250 300 350 400
						3.5	100 150 200 250 300 350 400 450 500
						3.6 3.7 3.8 3.9	100 150 200 250 300 350 400
		8	6		EPJ	4	100 150 200 250 300 350 400 (500)
8						(4.1) (4.2) (4.3) (4.4)	200 300 400
						4.5	100 150 200 250 300 350 400 (500)
		9				(4.6) (4.7) (4.8) (4.9)	200 300 400
						5	100 150 200 250 300 350 400 500 (600)
9						(5.1) (5.2) (5.3) (5.4)	200 300 400
						5.5	100 150 200 250 300 350 400 500
		10				(5.6) (5.7) (5.8) (5.9)	200 300 400
						6	100 150 200 250 300 350 400 500 (600) (700)
10		11				(6.1) (6.2) (6.3) (6.4)	200 300 400
						6.5	100 150 200 250 300 350 400 500 (600) (700)
						7	100 150 200 250 300 350 400 500 (600) (700) (800) (900) (1000)
11		13	8			8	100 150 200 250 300 350 400 (450) 500 (600) (700) (800) (900) (1000)
15		15				10	100 150 200 250 300 350 400 (450) 500 (600) (700) (800) (900) (1000)
17		17				12	100 150 200 250 300 350 400 (450) 500 (600) (700) (800) (900) (1000)
18		18				(13)	100 150 200 250 300 350 400 500
20		20				15	100 150 200 250 300 350 400 (450) 500 (600) (700) (800) (900) (1000)
21		21				16	100 150 200 250 300 350 400 500 (600) (700) (800) (900) (1000)
—	—	25		—		20	150 200 250 300 400 500 600 700 800 900 1000
		30				25	200 300 400 500 600 700 800 900 1000

The P dimension enclosed in brackets ( ) is applicable only for EPN.
The L dimension enclosed in brackets ( ) is applicable only for EPJ.

Order

Part Number	—	L
EPN 3	—	100

Days to Ship: Quotation

Alterations

Part Number	—	L	—	(KC・WKC…etc.)
EPN 16	—	500	—	NC

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
KC −0.1	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC AG −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	Quotation
TC T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 Dimension L becomes shorter by (T−TC)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. T d ℓ: 4 2 3; 6 8 3 5	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. T d ℓ1: 4 2; 6 8 3 5	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. T d ℓ2: 4 2; 6 8 3 5	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available for EPJ when P≧8 Combination with any other alteration not available. P M: 8 M4; 10 M5; 12・15 M6; 16~25 M8	

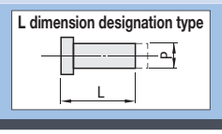
Price: Quotation

Dies Steel
SKD61 equivalent
+
Nitriding

STRAIGHT EJECTOR PINS

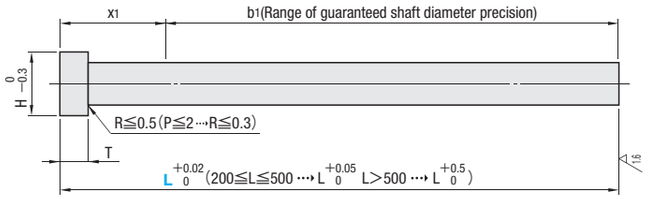
—L DIMENSION DESIGNATION TYPE—

L dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS



Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30
JIS ··· x1 max.35

Part Number	Head thickness	T T
EPN—L	4mm(T4)	0 −0.02
EPJ—L	6・8mm(JIS)	0 −0.05

T P

L \ P	1~13	15~20	25
L≦500	−0.01 −0.02	−0.01 −0.03	−0.01 −0.04
L>500	−0.01 −0.03	−0.01 −0.03	−0.01 −0.05

M SKD61 equivalent+Nitrided
H Surface base:900HV~
Base material:40~45HRC
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	L 0.01mm increments (When L>500, then 0.1mm increments)
3	4	—	—	EPN—L	—	1 1.1 1.2 1.3 1.4	40.00~150.00
						1.5	40.00~200.00
4						1.6 1.7 1.8 1.9	
						2	40.00~400.00
5						2.1 2.2 2.3 2.4	40.00~300.00
						2.5	40.00~400.00
6						2.6 2.7 2.8 2.9	40.00~300.00
						3	40.00~500.00
7						3.1 3.2 3.3 3.4	40.00~400.00
						3.5	40.00~500.00
						3.6 3.7 3.8 3.9	40.00~400.00
8		8	6		EPJ—L	4	40.00~400.00 (500.0)
						(4.1) (4.2) (4.3) (4.4)	
						4.5	
		9				(4.6) (4.7) (4.8) (4.9)	
						5	40.00~500.00 (600.0)
9						(5.1) (5.2) (5.3) (5.4)	40.00~400.00
						5.5	40.00~500.00
		10				(5.6) (5.7) (5.8) (5.9)	40.00~400.00
						6	40.00~500.00 (700.0)
10		11				(6.1) (6.2) (6.3) (6.4)	40.00~400.00
						6.5	40.00~500.00 (700.0)
						7	40.00~500.00 (1000.0)
11		13	8			8	
15		15				10	
17		17				12	40.00~500.00 (1000.0)
18		18				(13)	
20		20				15	
21		21				16	
—	—	25		—		20	40.00~1000.00
		30				25	

The P dimension enclosed in brackets ( ) is applicable only for EPN—L.
The L dimension enclosed in brackets ( ) is applicable only for EPJ—L.

Order Part Number — L
EPN—L 3 — 125.55

Days to Ship Quotation

Alterations Part Number — L — (KC・WKC···etc.)
EPN—L 4.5 — 225.55 — WKC2.25

Quotation

Alteration details P.53

Alterations	Code	Spec.		1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2		
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2		
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2		

Alterations	Code	Spec.		1Code
H HC 0 +0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5		Quotation
TC T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged) T−TC≦Lmax.−L		
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	T d ℓ: 4 2 3; 6 8 3 5	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available.	T d ℓ1: 4 2; 6 8 3 5	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available.	T d ℓ2: 4 2; 6 8 3 5	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.		
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.		
MC M×1	MC	Head tapping Available for EPJ—L when P≧8 Combination with any other alteration not available.	P M: 8 M4; 10 M5; 12・15 M6; 16~25 M8	

Price Quotation

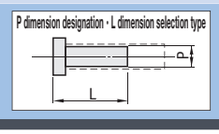
Straight Ejector Pins

Dies Steel SKD61 equivalent + Nitriding

Dies Steel
SKD61 equivalent
+
Nitriding

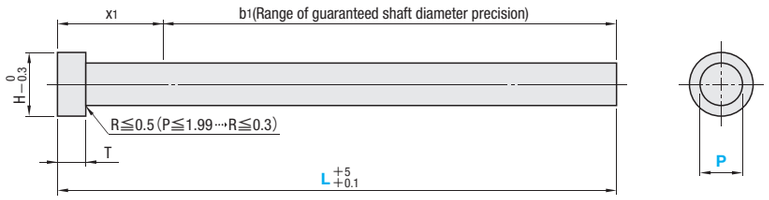
STRAIGHT EJECTOR PINS

—P DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



Range of guaranteed shaft diameter precision (Details P.1301)

Head thickness	L	x1 max.
T4	100～300	30
JIS	100～300	35
T4・JIS	350	210

Part Number	Head thickness	T T
EPNG	4mm(T4)	0 −0.02
EPJG	6・8mm(JIS)	0 −0.05

T P	
P≦12.00	P>12.00
−0.01 −0.02	−0.01 −0.03

M SKD61 equivalent+Nitrided
H Surface base:900HV～
Base materials:40～45HRC
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

4mm head		JIS head		Part Number			L	P
				Type			Selection	0.01mm increments
H	T	H	T	4mm head	JIS head	No.		
3	4	—	—	EPNG	—	1.5	100 150 200	1.00～ 1.49
4						2	100 150 200 250 300 350	1.50～ 1.99
5						2.5		2.00～ 2.49
6						3	100 150 200 250 300 350	2.50～ 2.99
7						3.5		3.00～ 3.49
		8	6		EPJG	4	100 150 200 250 300 350	3.50～ 3.99
8						4.5		4.00～ 4.49
		9				5	100 150 200 250 300 350	4.50～ 4.99
9						5.5	100 150 200 250 300 350	5.00～ 5.49
		10				6	100 150 200 250 300 350	5.50～ 5.99
10		11				6.5		6.00～ 6.49
						7	100 150 200 250 300 350	6.50～ 6.99
11		13	8			8	100 150 200 250 300 350	7.00～ 7.99
15		15				10		8.00～ 9.99
17		17				12	100 150 200 250 300 350	10.00～11.99
20		20				15		12.00～14.99
21		21				16	100 150 200 250 300 350	15.00～15.99
—	—	25		—		20	150 200 250 300	16.00～19.99
		30				25	200 300	20.00～24.99

Since nitriding is performed after P dimension machining, the head may also be nitrided.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPNG.

Order — Part Number — L — P
EPJG 6 — 200 — P5.61

Days to Ship — Quotation

Alterations — Part Number — L — P — (KC・WKC···etc.)
EPJG 4.5 — 200 — P4.23 — WKC2.115

Alteration details P.53

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 +0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
TC T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 Dimension L becomes shorter by (T−TC) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. T: 4, 6, 8 / d: 2, 3 / ℓ: 3, 5	
H ℓ1 d T	NCW	Dowel hole boring+ Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. T: 4, 6, 8 / d: 2, 3 / ℓ1: 5	Quotation
H ℓ2 d T	NCS	Dowel hole boring+ Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. T: 4, 6, 8 / d: 2, 3 / ℓ2: 5	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available when P≧8.00 for EPJG Combination with any other alteration not available. P 8.00～9.99: M4 P10.00～11.99: M5 P12.00～15.99: M6 P16.00～24.99: M8	

Price — Quotation

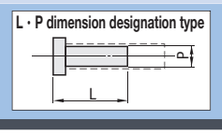
Straight Ejector Pins
Dies Steel SKD61 equivalent + Nitriding

Dies Steel
SKD61 equivalent
+
Nitriding

STRAIGHT EJECTOR PINS

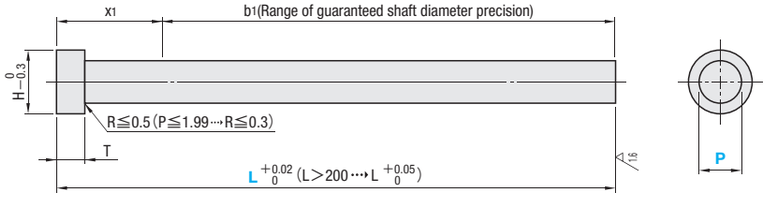
—L・P DIMENSION DESIGNATION TYPE—

L・P dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS



Range of guaranteed shaft diameter precision (Details P.1301)

Head thickness	L	x1 max.
T4	40.00～300.00	30
JIS	40.00～300.00	35
T4・JIS	300.01～350.00	210

M SKD61 equivalent+Nitrided
H Surface base:900HV～
Base materials:40～45HRC

Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

Part Number	Head thickness	T T
EPNB	4mm(T4)	0 −0.02
EPJB	6・8mm(JIS)	0 −0.05

T P

P≦12.00	P>12.00
−0.01 −0.02	−0.01 −0.03

4mm head		JIS head		Part Number			0.01mm increments	
				Type		No.		
H	T	H	T	4mm head	JIS head		L	P
3	4	—	—	EPNB	—	1.5	40.00～200.00	1.00～ 1.49
4						2	40.00～250.00	1.50～ 1.99
5						2.5	40.00～400.00	2.00～ 2.49
6						3		2.50～ 2.99
7						3.5		3.00～ 3.49
		8	6		EPJB	4		3.50～ 3.99
8						4.5		4.00～ 4.49
		9				5	40.00～500.00	4.50～ 4.99
9						5.5		5.00～ 5.49
		10				6		5.50～ 5.99
10		11				6.5		6.00～ 6.49
						7		6.50～ 6.99
11		13	8			8		7.00～ 7.99
15		15				10		8.00～ 9.99
17		17				12		10.00～11.99
20		20				15		12.00～14.99
21		21				16		15.00～15.99
—	—	25		—		20		16.00～19.99
		30				25		20.00～24.99

Since nitriding is performed after P dimension machining, the head may also be nitrided.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPNB.

Order — Part Number — L — P
EPJB 6 — 175.31 — P5.61

Days to Ship — Quotation

Alterations — Part Number — L — P — (KC・WKC…etc.)
EPJB 4.5 — 248.35 — P4.23 — WKC2.115

Alteration details P.53

Alterations	Code	Spec.		1Code
KC −0.1 0	KC	Single flat cutting P/2≦KC<H/2	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation 0.005mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	Quotation
WKC −0.1 0	WKC	Two flats cutting P/2≦WKC<H/2		
KAC KBC −0.1 0	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		
RKC −0.1 0	RKC	Two flats (right angled) cutting P/2≦RKC<H/2		
DKC −0.1 0	DKC	Three flats cutting P/2≦DKC<H/2		
SKC −0.1 0	SKC	Four flats cutting P/2≦SKC<H/2		
AG° ±0.5 0° KGC −0.1 0	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° KTC −0.1 0	KTC	Three flats cutting at 120° P/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
H HC −0.3 0	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
TC T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ: 4 / 2 / 3; 6, 8 / 3 / 5)	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ1: 4 / 2; 6, 8 / 3 / 5)	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ2: 4 / 2; 6, 8 / 3 / 5)	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available when P≧8.00 for EPJB Combination with any other alteration not available. (P / M: P 8.00～9.99 M4; P10.00～11.99 M5; P12.00～15.99 M6; P16.00～24.99 M8)	

Price — Quotation

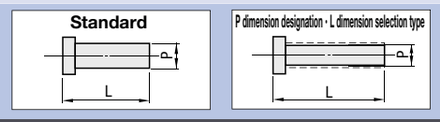
Straight Ejector Pins

Dies Steel
SKD61 equivalent
+
Nitriding

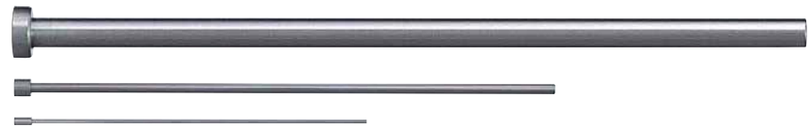
Dies Steel
SKD61 equivalent
4mm Head

STRAIGHT EJECTOR PINS

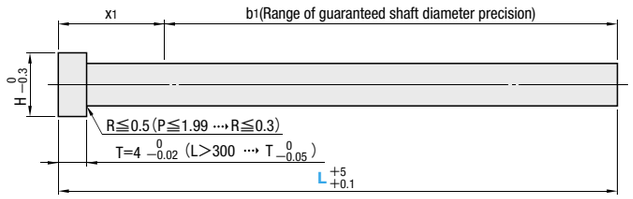
—STANDARD／P DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE—

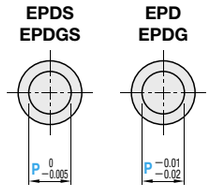


Non JIS material definition is listed on P.1351 - 1352



RoHS





Part Number		Head thickness	T P
EPDS	(Standard)	4mm(T4)	0 −0.005
EPDGS	(P dimension designation・L dimension selection type)		
EPD	(Standard)		−0.01 −0.02
EPDG	(P dimension designation・L dimension selection type)		

・Standard
x1 max.=30

・P Dimension Designation・L Dimension Selection Type

L	x1 max.
100・150	30
200	60
250	110
300	160
400	260
500	360

Range of guaranteed shaft diameter precision (Details P.1301)

M SKD61 equivalent
H 50～55HRC

Range of guaranteed base material hardness (Details P.1303)

■Standard

H	T	Part Number Type	P	L Selection						
3	4	EPDS (P 0 −0.005) / EPD (P −0.01 −0.02)	1.5	100	150	200				
4			2	100	150	200	250			
5			2.5	100	150	200	250			
6			3	100	150	200		300		
7			3.5	100	150	200		300		
			4	100	150	200		300		
8			4.5	100		200		300		
			5	100	150	200		300	400	500
9			5.5	100		200		300	400	500
			6	100	150	200		300	400	500
10			6.5	100		200		300	400	500
			7	100	150	200		300	400	500
11			8	100	150	200		300	400	500
14			9	100		200		300	400	500
15			10	100	150	200		300	400	500
17			12	100		200		300	400	500
18			13			200		300	400	500

■P Dimension Designation・L Dimension Selection Type

H	T	Part Number Type	No.	L Selection							P 0.01mm increments
3	4	EPDGS (P 0 −0.005) / EPDG (P −0.01 −0.02)	1.5	100	150	200					1.00～ 1.49
4			2	100	150	200	250				1.50～ 1.99
5			2.5								2.00～ 2.49
6			3	100	150	200		300			2.50～ 2.99
7			3.5								3.00～ 3.49
			4								3.50～ 3.99
8			4.5	100		200		300			4.00～ 4.49
			5	100	150	200		300			4.50～ 4.99
9			5.5	100		200		300			5.00～ 5.49
			6	100	150	200		300	400	500	5.50～ 5.99
10			6.5	100		200		300	400	500	6.00～ 6.49
			7	100	150	200		300	400	500	6.50～ 6.99
11			8	100	150	200		300	400	500	7.00～ 7.99
15			10								8.00～ 9.99
17			12	100		200		300	400	500	10.00～11.99
18			13			200		300	400	500	12.00～12.99

When L≧200, Please place your order after confirmation of the range of guaranteed shaft diameter precision. (Details P.1301)

Part Number — L — P
EPDG 12 — 300 — P11.00

Quotation

Alterations

Part Number — L — P — (KC・WKC···etc.)
EPDG 12 — 300 — P11.00 — HC15

Alteration details P.53

Alterations	Code	Spec.		1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2		
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	(1)To align the key flat with the shaft diameter Unit of designation EPDS・EPD 0.05mm increments possible EPDGS・EPDG 0.005mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2		
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2		
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2		
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2		

Price Quotation

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H EPDGS・EPDG···›P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3 EPDGS・EPDG···›P≧1.5	
TC 4	TC	TC=0.1mm increments 2.0≦TC<4 Dimension L becomes shorter by (4−TC) EPDGS,EPDG···›P≧1.5,4—TC≦Lmax.—L	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.54 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC not available.	

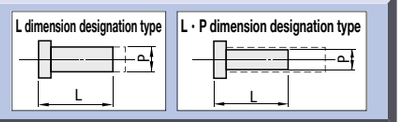
Straight Ejector Pins

Dies Steel SKD61 equivalent

Dies Steel
SKD61 equivalent
4mm Head

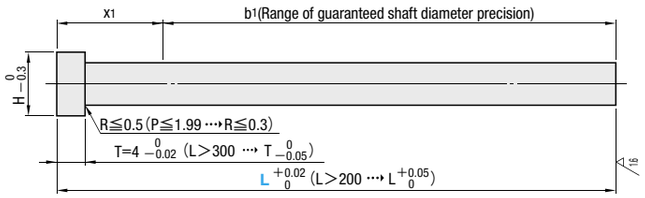
STRAIGHT EJECTOR PINS

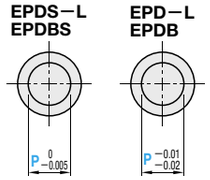
—L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS





・L Dimension Designation Type
T4 ⋯ x1 max.30

・L・P Dimension Designation Type

L	x1 max.
40.00 ～ 150.00	30
150.01 ～ 200.00	60
200.01 ～ 250.00	110
250.01 ～ 300.00	160
300.01 ～ 350.00	210
350.01 ～ 400.00	260
400.01 ～ 450.00	310
450.01 ～ 500.00	360

Range of guaranteed shaft diameter precision (Details P.1301)

M SKD61 equivalent
H 50～55HRC

Range of guaranteed base material hardness (Details P.1303)

Part Number		Head thickness	T P
EPDS—L	(L dimension designation type)	4mm(T4)	0 −0.005
EPDBS	(L・P dimension designation type)		
EPD—L	(L dimension designation type)		−0.01 −0.02
EPDB	(L・P dimension designation type)		

■L Dimension Designation Type

H	T	Part Number Type	P	L 0.01mm increments
3	4	EPDS—L (P 0 −0.005) / EPD—L (P −0.01 −0.02)	1.5	40.00～200.00
4			2	40.00～250.00
5			2.5	
6			3	40.00～300.00
7			3.5	
			4	
8			4.5	
			5	40.00～500.00
9			5.5	
			6	
10			6.5	
			7	
11			8	
14			9	
15			10	
17			12	
18			13	

■L・P Dimension Designation Type

H	T	Part Number Type	No.	0.01mm increments L	P
3	4	EPDBS (P 0 −0.005) / EPDB (P −0.01 −0.02)	1.5	40.00～200.00	1.00～ 1.49
4			2	40.00～250.00	1.50～ 1.99
5			2.5		2.00～ 2.49
6			3	40.00～300.00	2.50～ 2.99
7			3.5		3.00～ 3.49
			4		3.50～ 3.99
8			4.5		4.00～ 4.49
			5		4.50～ 4.99
9			5.5		5.00～ 5.49
			6	40.00～500.00	5.50～ 5.99
10			6.5		6.00～ 6.49
			7		6.50～ 6.99
11			8		7.00～ 7.99
15			10		8.00～ 9.99
17			12		10.00～11.99
18			13		12.00～12.99

When L≧150.01, Please place your order after confirmation of the range of guaranteed shaft diameter precision. (Details P.1301)

Part Number — L — P
EPDS—L2.5 — 80.00
EPDB 12 — 350.00 — P11.00

Quotation

Alterations

Part Number — L — P — (KC・WKC⋯etc.)
EPDB 12 — 350.00 — P11.00 — HC15

Alteration details P.53

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation
EPDS—L・EPD—L 0.05mm increments possible
EPDBS・EPDB 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H EPDBS・EPDB ⋯ P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3 EPDBS・EPDB ⋯ P≧1.5	
TC 4	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L remains unchanged.) EPDBS・EPDB ⋯ P≧1.5 4−TC≦Lmax.−L	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.54 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC not available.	

Price Quotation

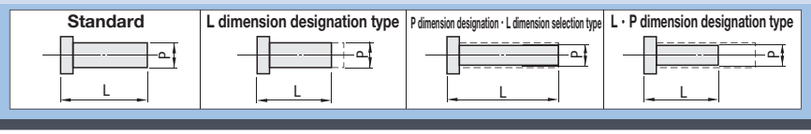
Straight Ejector Pins

Dies Steel SKD61 equivalent

Prehardened Dies Steel SKD61 equivalent JIS head

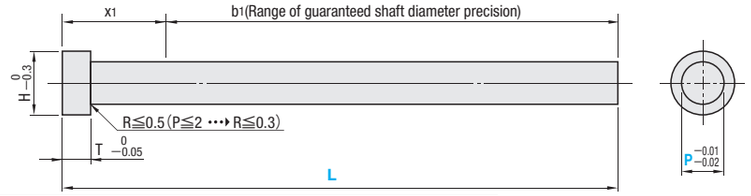
STRAIGHT EJECTOR PINS

—STANDARD／L DIMENSION DESIGNATION TYPE／P DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE／L・P DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number		Head thickness	T	L	Tip Face Roughness
EPAJ	(Standard)	4・6・8mm (JIS)	+5 +0.1		—
EPAJG	(P dimension designation・L dimension selection type)				
EPAJ—L	(L dimension designation type)		+0.05 0		▽1.6
EPAJB	(L・P dimension designation type)				

*EPAJ-L L>500 ⋯→ $L^{+0.5}_{0}$

Range of guaranteed shaft diameter precision (Details P.1301)
x_1 max.=35

M SKD61 equivalent (Prehardened)
H 40～45HRC

Range of guaranteed base material hardness (Details P.1303)

■ Standard

H	T	Part Number Type	Part Number P	L Selection
4	4	EPAJ	2	100 200
5			2.5	
6			3	100 200 300
7			3.5	
8			4	
			4.5	
9	6		5	
10			6	100 200 300 500 800 1000
11			7	
13	8		8	
15			10	
17			12	200 300 500 800 1000

■ P Dimension Designation・L Dimension Selection Type

H	T	Part Number Type	Part Number No.	L Selection	P 0.01mm increments
4	4	EPAJG	2	100 200	1.50～ 1.99
5			2.5		2.00～ 2.49
6			3	100 200 300	2.50～ 2.99
7			3.5		3.00～ 3.49
8			4		3.50～ 3.99
			4.5		4.00～ 4.49
9	6		5		4.50～ 4.99
10			6	100 200 300	5.00～ 5.99
11			7		6.00～ 6.99
13	8		8		7.00～ 7.99
15			10		8.00～ 9.99
17			12	200 300	10.00～11.99

■ L Dimension Designation Type

H	T	Part Number Type	Part Number P	L 0.01mm increments
4	4	EPAJ—L	2	40.00～ 200.00
5			2.5	
6			3	40.00～ 300.00
7			3.5	
8	6		4	
			4.5	
9			5	
10			6	40.00～1000.00
11			7	
13	8		8	
15			10	
17			12	

■ L・P Dimension Designation Type

H	T	Part Number Type	Part Number No.	0.01mm increments L	0.01mm increments P
4	4	EPAJB	2	40.00～200.00	1.50～ 1.99
5			2.5		2.00～ 2.49
6			3	40.00～300.00	2.50～ 2.99
7			3.5		3.00～ 3.49
8	6		4		3.50～ 3.99
			4.5		4.00～ 4.49
9			5		4.50～ 4.99
10			6		5.00～ 5.99
11			7		6.00～ 6.99
13	8		8		7.00～ 7.99
15			10		8.00～ 9.99
17			12		10.00～11.99

Order

Part Number		L	P
(Standard)	EPAJ 3	100	
(L dimension designation type)	EPAJ—L 3	150.35	
(P dimension designation・L dimension selection type)	EPAJG 4	100	P3.99
(L・P dimension designation type)	EPAJB 4	180.05	P3.99

Days to Ship **Quotation**

Alterations

Part Number	L	P	(KC・WKC⋯etc.)
EPAJB 5	125.61	P4.97	RKC2.485

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
EPAJ・EPAJ-L 0.05mm increments possible
EPAJG・EPAJB 0.005mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H	Quotation
TC T	TC	TC=0.1mm increments T/2≦TC<T EPAJ,EPAJG ⋯→ Dimension L becomes shorter by (T—TC) EPAJ—L,EPAJB ⋯→ T—TC≦Lmax.—L (Dimension L remains unchanged.)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ: 4 / 2 / 3; 6 / 3 / 5; 8 / 3 / 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ1: 4 / 2 / 5; 6 / 3 / 5; 8 / 3 / 5)	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available when P≧8.00 Combination with any other alteration not available. (P / M: P 8.00～ 9.99 / M4; P10.00～11.99 / M5; P12 / M6)	

Price **Quotation**

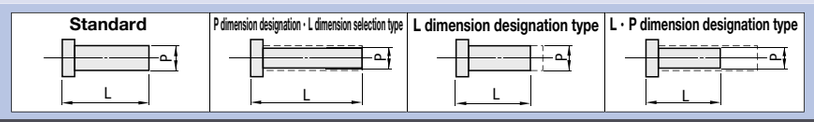
Straight Ejector Pins

Prehardened Dies Steel SKD61 equivalent

Stainless
SUS440C

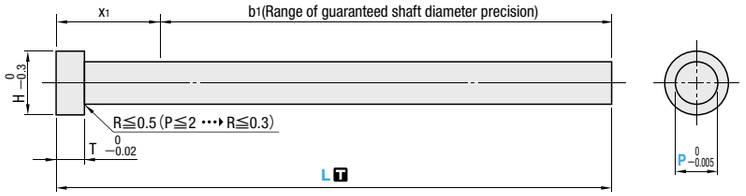
STRAIGHT EJECTOR PINS

—STANDARD／P DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE／L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30
JIS ··· x1 max.35

M SUS440C
H 56～60HRC
Range of guaranteed base material hardness
(Details P.1303)

Part Number	Type	T L	Head thickness
EPW	Standard	+5 +0.1	4mm(T4)
EPWJ			6mm(JIS)
EPWG	P dimension designation・L dimension selection type		4mm(T4)
EPWJG			6mm(JIS)

Part Number	Type	T L	Head thickness	Tip Face Roughness
EPW—L	L dimension designation type	+0.02 0	4mm(T4)	
EPWJ—L			6mm(JIS)	
EPWB	L・P dimension designation type		4mm(T4)	
EPWJB			6mm(JIS)	

■Standard

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	L Selection
3	4	—	—	EPW	—	1	100 150
						1.5	100 150 200
4						2	
5						2.5	
6						3	
7					EPWJ	3.5	
		8	6			4	
8						4.5	
		9				5	
9						5.5	
		10				6	

For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPW

■P Dimension Designation・L Dimension Selection Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	L Selection	P 0.01mm increments
3	4	—	—	EPWG	—	1.5	100 150 200	1.00～1.49
4						2		1.50～1.99
5						2.5		2.00～2.49
6						3		2.50～2.99
7						3.5		3.00～3.49
		8	6		EPWJG	4		3.50～3.99
8						4.5		4.00～4.49
		9				5		4.50～4.99
9						5.5		5.00～5.49
		10				6		5.50～5.99

For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPWG

■L Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	L 0.01mm increments
3	4	—	—	EPW—L	—	1	40.00～150.00
						1.5	40.00～200.00
4						2	
5						2.5	
6						3	
7						3.5	
		8	6		EPWJ—L	4	
8						4.5	
		9				5	
9						5.5	
		10				6	

For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPW—L

■L・P Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	0.01mm increments L	0.01mm increments P
3	4	—	—	EPWB	—	1.5	40.00～200.00	1.00～1.49
4						2		1.50～1.99
5						2.5		2.00～2.49
6						3		2.50～2.99
7						3.5		3.00～3.49
		8	6		EPWJB	4		3.50～3.99
8						4.5		4.00～4.49
		9				5		4.50～4.99
9						5.5		5.00～5.49
		10				6		5.50～5.99

For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPWB

Order

	Part Number	—	L	—	P
(Standard)	EPW 6	—	100		
(L・P dimension designation type)	EPWG 5	—	100	—	P4.95
(L dimension designation type)	EPWJ—L4	—	99.65		
(L・P dimension designation type)	EPWJB 5	—	95.05	—	P4.95

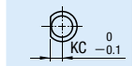
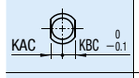
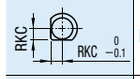
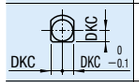
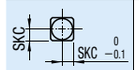
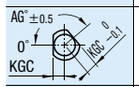
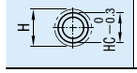
Days to Ship Quotation

Alterations

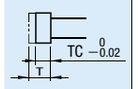
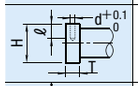
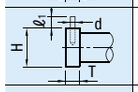
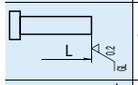
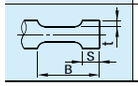
Part Number — L — P — (KC・WKC···etc.)
EPWJB 6 — 135.51 — P5.59 — WKC2.795

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
	KC	Single flat cutting P/2≦KC<H/2	Quotation
	WKC	Two flats cutting P/2≦WKC<H/2	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
	DKC	Three flats cutting P/2≦DKC<H/2	
	SKC	Four flats cutting P/2≦SKC<H/2	
	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
	KTC	Three flats cutting at 120° P/2≦KTC<H/2	
	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation
EPW・EPWJ
EPW-L・EPWJ-L
0.05mm increments possible
EPWG・EPWJG
EPWB・EPWJB
0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	Quotation
	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 T−TC≦Lmax.−L EPW,EPWJ,EPWG,EPWJG ··· Dimension L becomes shorter by (T−TC) EPW-L,EPWJ-L,EPWB,EPWJB ··· Dimension L remains unchanged.	
	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T 4 6 / d 2 3 / ℓ 3 5	
	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T 4 6 / d 2 3 / ℓ1 5	
217	NHC	Numbering on the head How to order P.54 Combination with SKC not available.	
	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC not available.	
	TMC	Lapping on the tip face Available for EPW-L,EPWJ-L・EPWB,EPWJB	
	GVC	S,B=1mm increments 2≦S≦10,S+5≦B≦30 Available when P≧3 Available for EPW-L,EPWJ-L・EPWB,EPWJB	

Price Quotation

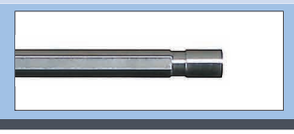
Straight Ejector Pins

Stainless SUS440C

High Speed Steel
SKH51 equivalent

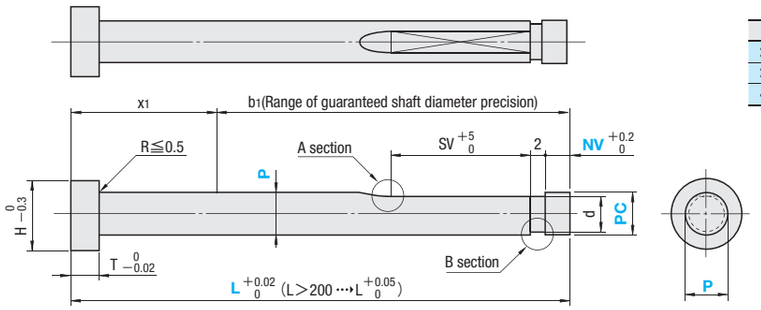
STRAIGHT EJECTOR PINS WITH GAS VENT

—L・PC DIMENSION DESIGNATION TYPE／L・P・PC DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



P	d
2 ～ 2.49	P−0.2
2.50～ 3.99	P−0.4
4.00～12	P−0.6

L	SV
40.00～ 60.00	15
60.01～200.00	30
200.01～350.00	50

Part Number	Head thickness	T P	T PC
GVB−EPH−L GVB−EPHB	4mm(T4)	0 −0.005	0 −0.005
GVB−EPHE−L GVB−EPHBE		−0.01 −0.02	
GVB−EPHJ−L GVB−EPHJB	6・8mm(JIS)	0 −0.005	
GVB−EPHJE−L GVB−EPHJBE		−0.01 −0.02	

Close-up
A section

Close-up
B section

Range of guaranteed shaft diameter precision
(Details P.1301)

- L・PC Dimension Designation Type
  T4 ··· x1 max.30
  JIS ··· x1 max.35
- L・P・PC Dimension Designation Type

Head thickness	L	x1 max.
T4	40.00 ～ 200.00	30
JIS	40.00 ～ 200.00	35
T4・JIS	200.01 ～ 250.00	110
	250.01 ～ 300.00	160
	300.01 ～ 350.00	210

(The guarantee range of shaft diameter precision is the value of shaft diameter except gas vent.)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness
(Details P.1303)

■ L・PC Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	0.01mm increments L	0.01mm increments PC	0.5mm increments NV
4	4	—	—	GVB−EPH−L GVB−EPHE−L	—	2	40.00～300.00	(GVB − EPH − L GVB − EPHJ − L) P−0.08≦85<P	0.5～8.0
5						2.5			
6						3			
7						3.5			
8		8	6		GVB−EPHJ−L GVB−EPHJE−L	4			2.0～10.0
						4.5	40.00～300.00(350.00)		
9		9				5	40.00～350.00	(GVB − EPHE − L GVB − EPHJE − L) P−0.08≦85<P−0.02	
		10				5.5			
10		11				6			
						6.5			
11		13	8			7			
15		15				8			
17		17				10			
						12			

When P=PC; refer to P.87 L in ( ) is applicable only for head thickness 4mm type.

■ L・P・PC Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	0.01mm increments L	0.01mm increments P	0.01mm increments PC	0.5mm increments NV
5	4	—	—	GVB−EPHB GVB−EPHBE	—	2.5	40.00～300.00	2.00～ 2.49	(GVB − EPHB GVB − EPHJB) P−0.08≦85<P	0.5～ 8.0
6						3		2.50～ 2.99		
7						3.5		3.00～ 3.49		2.0～10.0
8		8	6		GVB−EPHJB GVB−EPHJBE	4		3.50～ 3.99		
						4.5	40.00～300.00(350.00)	4.00～ 4.49		
9		9				5	40.00～350.00	4.50～ 4.99		
		10				5.5		5.00～ 5.49		
10		11				6		5.50～ 5.99	(GVB − EPHBE GVB − EPHJBE) P−0.08≦85<P−0.02	
						6.5		6.00～ 6.49		
11		13	8			7		6.50～ 6.99		
15		15				8		7.00～ 7.99		
17		17				10		8.00～ 9.99		
						12		10.00～11.99		

When P=PC; refer to P.87 L in ( ) is applicable only for head thickness 4mm type.

Order

Part Number	L	P	PC	NV
GVB−EPH−L5	210.00		PC4.96	NV2.0
GVB−EPHB3	148.36	P2.96	PC2.94	NV2.0

Days to Ship — Quotation

Alterations

Part Number	L	P	PC	NV	(VKC・VWC···etc.)
GVB−EPHB3	148.36	P2.96	PC2.94	NV2.0	KC1.48

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
GVB−EPH−L・GVB−EPHE−L
GVB−EPHJ−L・GVB−EPHJE−L
0.05mm increments possible
GVB−EPHB・GVB−EPHBE
GVB−EPHJB・GVB−EPHJBE
0.005mm increments possible

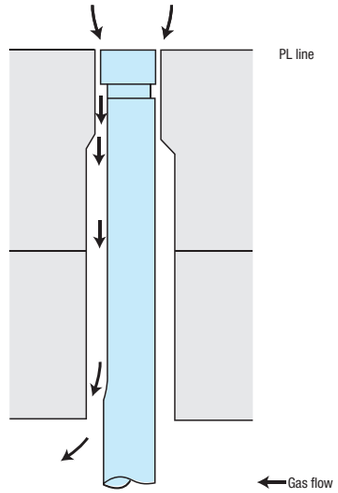
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Flat cutting position is set at 90° of SV dimension in counter clockwise direction.

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T (Dimension L remains unchanged.) T−TC≦Lmax.−L	
217	NHC	Numbering on the head How to order P.54 ⊗ Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 ⊗ Combination with SKC not available.	

Example

■ Characteristics
Let gas out from the inside of the cavity via the clearance around the ejector pin.



Price — Quotation

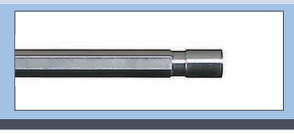
Straight Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent

STRAIGHT EJECTOR PINS WITH GAS VENT

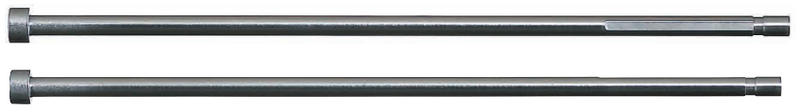
—L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION TYPE—

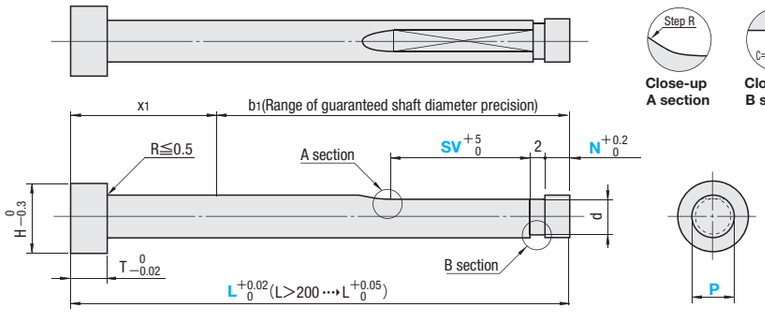


Refer to P.85 when tip diameter dimension designated.

Non JIS material definition is listed on P.1351 - 1352

RoHS





Close-up A section

Close-up B section

P	d
2 ～ 2.49	P−0.2
2.50～ 3.99	P−0.4
4.00～12	P−0.6

Range of guaranteed shaft diameter precision (Details P.1301)

- L Dimension Designation Type
  T4 ··· x1 max.30
  JIS ··· x1 max.35
- L・P Dimension Designation Type

Head thickness	L	x1 max.
T4	40.00～200.00	30
JIS	40.00～200.00	35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

(The guarantee range of shaft diameter precision is the value of shaft diameter except gas vent.)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Part Number	Head thickness	Part Number	Head thickness	Type	T P	Tip Face Roughness
GV−EPH−L	4mm (T4)	GV−EPHJ−L	6・8mm (JIS)	L dimension designation type	0 −0.005	—
GV−EPHE−L		GV−EPHJE−L			0 −0.01 −0.02	
GV−EPHB		GV−EPHJB		L・P dimension designation type	0 −0.005	
GV−EPHBE		GV−EPHJBE			0 −0.01 −0.02	

■L Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	0.01mm increments L	0.5mm increments N	0.5mm increments SV
4	4	—	—	GV−EPH−L GV−EPHE−L	—	2	40.00～300.00	0.5～8.0 L−(2+SV+N)≧10	2.0～30.0 L−(2+SV+N)≧10
5						2.5			
6						3			
7						3.5			
		8	6		GV−EPHJ−L GV−EPHJE−L	4		2.0～10.0 L−(2+SV+N)≧10	2.0～50.0 L−(2+SV+N)≧10
8						4.5	40.00～300.00(350.00)		
		9				5	40.00～350.00		
9						5.5			
		10				6			
10		11				6.5			
						7			
11		13	8			8			
15		15				10			
17		17				12			

L in ( ) is applicable only for head thickness 4mm type.

■L・P Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	0.01mm increments L	0.01mm increments P	0.5mm increments N	0.5mm increments SV
5	4	—	—	GV−EPHB GV−EPHBE	—	2.5	40.00～300.00	2.00～ 2.49	0.5～8.0 L−(2+SV+N)≧10	2.0～30.0 L−(2+SV+N)≧10
6						3		2.50～ 2.99		
7						3.5		3.00～ 3.49	2.0～10.0 L−(2+SV+N)≧10	2.0～50.0 L−(2+SV+N)≧10
		8	6		GV−EPHJB GV−EPHJBE	4		3.50～ 3.99		
8						4.5	40.00～300.00(350.00)	4.00～ 4.49		
		9				5	40.00～350.00	4.50～ 4.99		
9						5.5		5.00～ 5.49		
		10				6		5.50～ 5.99		
10		11				6.5		6.00～ 6.49		
						7		6.50～ 6.99		
11		13	8			8		7.00～ 7.99		
15		15				10		8.00～ 9.99		
17		17				12		10.00～11.99		

L in ( ) is applicable only for head thickness 4mm type.

Order

Part Number	L	P	N	SV
GV−EPH−L5	210.00		N2.0	SV4.0
GV−EPHB3	148.36	P2.96	N2.0	SV4.0

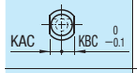
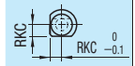
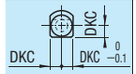
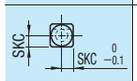
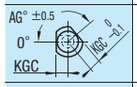
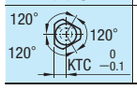
Days to Ship: Quotation

Alterations

Part Number	L	P	N	SV	(KC・WKC···etc.)
GV−EPHB3	148.36	P2.96	N2.0	SV4.0	KC1.48

Quotation

Alteration details P.53

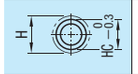
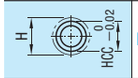
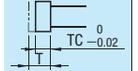
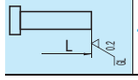
Alterations	Code	Spec.	1Code
	VKC	Precision single flat cutting P/2≦VKC< H/2	
	VWC	Precision two flats cutting P/2≦VWC<H/2	
	KC	Single flat cutting P/2≦KC<H/2	
	WKC	Two flats cutting P/2≦WKC<H/2	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	Quotation
	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
	DKC	Three flats cutting P/2≦DKC<H/2	
	SKC	Four flats cutting P/2≦SKC<H/2	
	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
GV−EPH−L・GV−EPHE−L
GV−EPHJ−L・GV−EPHJE−L
0.05mm increments possible

GV−EPHB・GV−EPHBE
GV−EPHJB・GV−EPHJBE
0.005mm increments possible

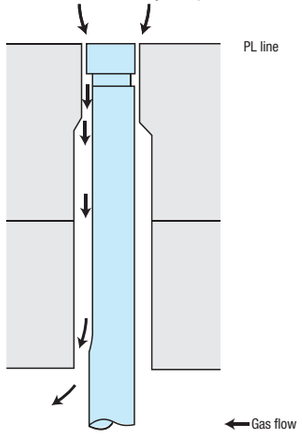
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments P+1≦HC<H	Quotation
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T (Dimension L remains unchanged.) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.54 ⊗ Combination with SKC not available.	
	NHN	Automatic sequential numbering on the head How to order P.54 ⊗ Combination with SKC not available.	
	TMC	Lapping on the tip face. Details P.54	

Example

■Characteristics

Let gas out from the inside of the cavity via the clearance around the ejector pin.



Price: Quotation

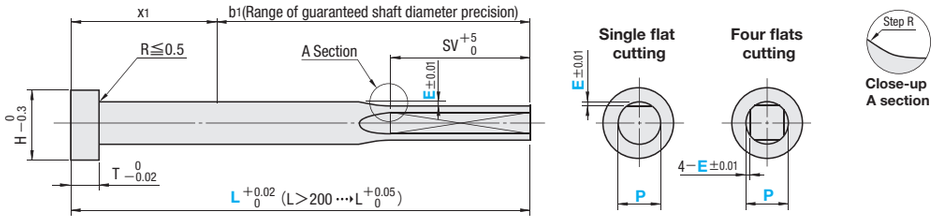
High Speed Steel
SKH51 equivalent

STRAIGHT EJECTOR PINS WITH GAS VENT

—L DIMENSION DESIGNATION／L・P DIMENSION DESIGNATION WITH CUTTING FACETS TYPE—

Non JIS material definition is listed on P.1351 - 1352

RoHS



Limit of E±0.01 is within 10mm from the tip.

Part Number		Head thickness	T	P
Single flat cutting	Four flats cutting			
GW—EPH—L GW—EPHB	GWS—EPH—L GWS—EPHB	4mm(T4)	0 −0.005	
GW—EPHE—L GW—EPHBE	GWS—EPHE—L GWS—EPHBE		−0.01 −0.02	
GW—EPHJ—L GW—EPHJB	GWS—EPHJ—L GWS—EPHJB	6・8mm(JIS)	0 −0.005	
GW—EPHJE—L GW—EPHJBE	GWS—EPHJE—L GWS—EPHJBE		−0.01 −0.02	

Range of guaranteed shaft diameter precision (Details P.1301)
- L Dimension Designation Type T4 ··· x1 max.30
- L・P Dimension Designation Type JIS ··· x1 max.35

Head thickness	L	x1 max.
T4	40.00～200.00	30
JIS	40.00～200.00	35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness
(Details P.1303)
(The guarantee range of shaft diameter precision is the value of shaft diameter except gas vent.)

■L Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	P	0.01mm increments L	0.01mm increments E	SV
3	4	—	—	Single flat cutting GW—EPH—L GW—EPHE—L	—	0.6 0.7 0.8 0.9	40.00～150.00	Single flat cutting 0.02～0.05 Four flats cutting 0.03～0.05	L / SV 40.00～ 60.00 / 15 60.01～200.00 / 30 200.01～350.00 / 50
						1 1.2	40.00～200.00		
						1.5	(40.00)60.00～250.00		
4				Single flat cutting GW—EPH—L GW—EPHE—L Four flats cutting GWS—EPH—L GWS—EPHE—L	Single flat cutting GW—EPHJ—L GW—EPHJE—L Four flats cutting GWS—EPHJ—L GWS—EPHJE—L	2	(40.00)60.00～300.00		
5						2.5			
6						3	(40.00)60.00～350.00		
7						3.5			
		8	6			4			
8						4.5			
		9				5			
9						5.5			
		10				6			
10		11				6.5			
						7			
11		13	8			8			
15		15				10			
17		17				12			

Dimension L figures in parenthesis represents for single flat cutting. L dimension is up to 300 for head thickness JIS of P4.5.

■L・P Dimension Designation Type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	0.01mm increments L	0.01mm increments P	0.01mm increments E	SV
3	4	—	—	Single flat cutting GW—EPHB GW—EPHBE	—	0.7	40.00～100.00	0.60～ 0.69	Single flat cutting 0.02～0.05 Four flats cutting 0.03～0.05	L / SV 40.00～ 60.00 / 15 60.01～200.00 / 30 200.01～350.00 / 50
						0.8	40.00～150.00	0.70～ 0.79		
						0.9		0.80～ 0.89		
						1	40.00～200.00	0.90～ 0.99		
						1.5	(40.00)60.00～250.00	1.20～ 1.49		
4				Single flat cutting GW—EPHB GW—EPHBE Four flats cutting GWS—EPHB GWS—EPHBE	Single flat cutting GW—EPHJB GW—EPHJBE Four flats cutting GWS—EPHJB GWS—EPHJBE	2	(40.00)60.00～300.00	1.50～ 1.99		
5						2.5		2.00～ 2.49		
6						3		2.50～ 2.99		
7						3.5		3.00～ 3.49		
		8	6			4		3.50～ 3.99		
8						4.5	(40.00)60.00～350.00	4.00～ 4.49		
		9				5		4.50～ 4.99		
9						5.5		5.00～ 5.49		
		10				6		5.50～ 5.99		
10		11				6.5		6.00～ 6.49		
						7		6.50～ 6.99		
11		13	8			8		7.00～ 7.99		
15		15				10		8.00～ 9.99		
17		17				12		10.00～11.99		

Dimension L figures in parenthesis represents for single flat cutting. L dimension is up to 300 for head thickness JIS of No.4.5.

Order

Part Number	L	P	E
GW—EPH—L5	210.00		E0.03
GWS—EPHB6	230.00	P5.50	E0.03

Days to Ship: Quotation

Alterations

Part Number	L	P	E	(KC・WKC···etc.)
GW—EPHB3	148.36	P2.96	E0.03	KC1.48

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation
L Dimension Designation Type 0.05mm increments possible
L・P Dimension Designation Type 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm
Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

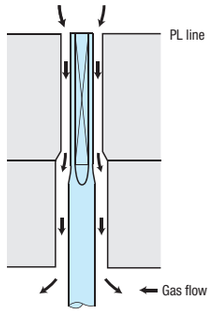
Price: Quotation

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
T TC 0 −0.02	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged) T−TC≦Lmax.−L	
217	NHC	Numbering on the head How to order P.54 ⊗ Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 ⊗ Combination with SKC not available.	

Example

■Characteristics

Let gas out from the inside of the cavity via the clearance around the ejector pin.



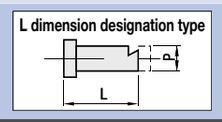
Straight Ejector Pins
High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
4mm head

EJECTOR PINS WITH Z GROOVE PROCESSED

—L DIMENSION DESIGNATION TYPE—

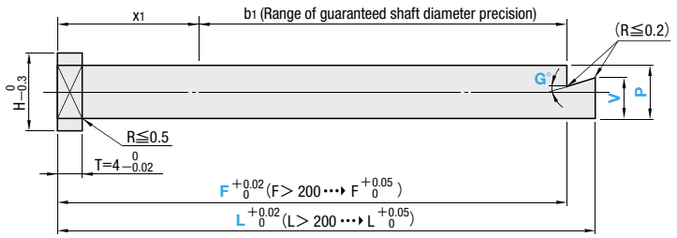
L dimension designation type



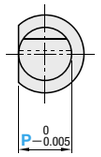
Non JIS material definition is listed on P.1351 - 1352

RoHS

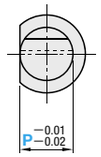
Select a tip shape



Z—EPH—L



Z—EPHE—L



V—(L—F)tanG≧1

Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness
(Details P.1303)

To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T P	T G	T V
Z—EPH—L	4mm(T4)	0 −0.005	±30'	±0.05
Z—EPHE—L		−0.01 −0.02		

H	T	Part Number Type	P	0.01mm increments L	0.5mm increments V	1° increments G°	0.01mm increments F
4	4	Z—EPH—L Z—EPHE—L	2	50.00～300.00	1.5≦V<P	0～45	L—F≦10
5			2.5				
6			3				
7			4	50.00～350.00			
8			5				
9			6				
10			7				
11			8				

V—(L—F)tanG≧1

Order

Part Number								
Type	P	—	L	—	V	—	G	—	F
Z—EPH—L	5	—	150.00	—	V2.0	—	G5	—	F145.00

Days to Ship: Quotation

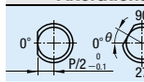
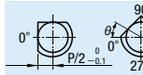
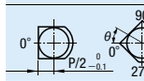
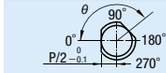
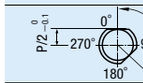
Price: Quotation

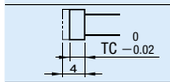
Alterations

Part Number	—	L	—	V	—	G	—	F	—	(AKC・AWC···etc.)
Z—EPH—L5	—	150.00	—	V2.0	—	G5	—	F145.00	—	TC2

Quotation

Alteration details P.53

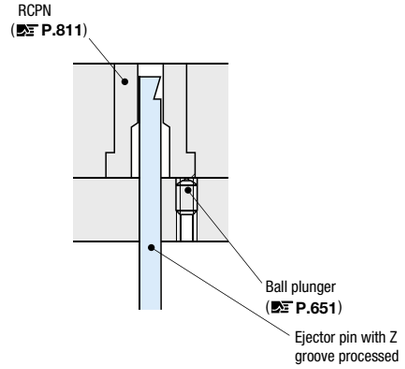
Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

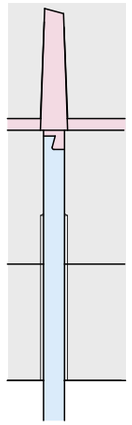
Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	HC	HC=0.1mm increments P+1≦HC<H	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	Quotation
	TC	TC=0.1mm increments 2≦TC<4 (Dimensions L and F remain unchanged) 4−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	

Example

■Characteristics

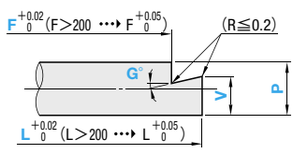
Z groove ejector pins have the function of sprue lock by undercutting of the tip groove.





■Ejector Pins with Tip Processed

5A (Z groove)



- 0° ≦G≦45°
- 1.5≦V<P
- L—F≦10
- V—(L—F)tanG≧1

⊗ R designation not available

SKH51 equivalent L dimension designation type P.97

SKH51 equivalent L・P dimension designation type P.99

Straight Ejector Pins

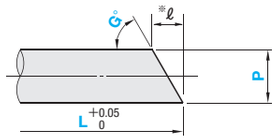
High Speed Steel SKH51 equivalent

SHAPE VARIATIONS OF STRAIGHT EJECTOR PINS WITH TIP PROCESS①

—SHAPES 1A～20A—

Shapes 21A ～ 32A
P.95・96

1A (Bezel・angle designation)

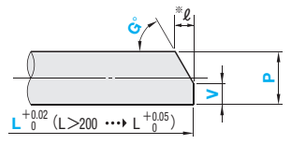


※ℓ calculation

$\ell = \frac{P}{\tan G}$

- 45°≦G＜90°

2A (Partial bezel・angle designation)

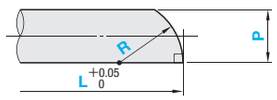


※ℓ calculation

$\ell = \frac{P-V}{\tan G}$

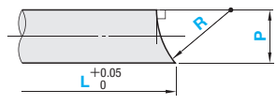
- 45°≦G＜90°
- 1.5≦V＜P

3A (Outward R)



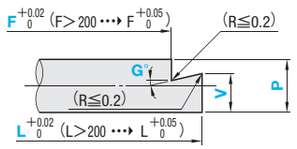
- P≦R≦15

4A (Inward R)



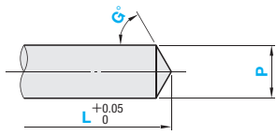
- P≦R≦15

5A (Z groove)



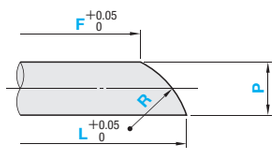
- 0°≦G≦45°
- 1.5≦V＜P
- L−F≦10
- V−(L−F)tanG≧1
- ⊗ R designation not available

6A (Cone)



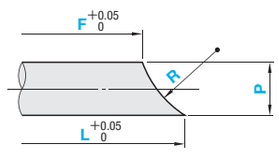
- 45°≦G＜90°

7A (Outward R with F designation)



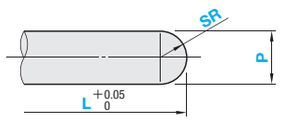
- L−F≦P＜R≦15
- L−F＞R−$\sqrt{R^2-P^2}$

8A (Inward R with F designation)



- L−F≦P＜R≦15
- L−F＞R−$\sqrt{R^2-P^2}$

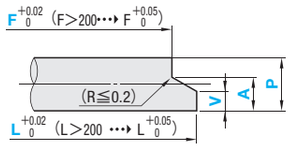
9A (Spherical surface)



- Default:SR=$\frac{P}{2}$

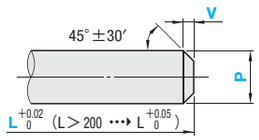
SR may be designated within
- $\frac{P}{2}$＜SR≦2P range.

10A (Trapezoid)



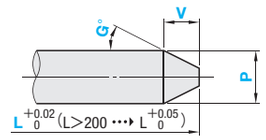
- 1.5≦V＜P
- V≦A＜P
- L−F≦5
- ⊗ R designation not available

11A (C chamfered)



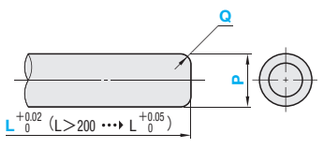
- 0.1≦V≦$\left(\frac{P}{2}-0.1\right)$

12A (Tapered)



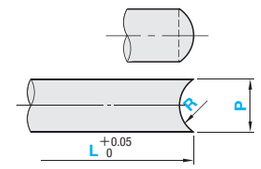
- 0.1≦V≦(P×2), $\frac{P}{2}$−VtanG≧0.1
- 0°＜G≦45°

13A (R chamfered)



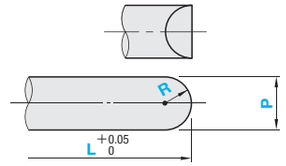
- 0.2≦Q≦$\left(\frac{P}{2}-0.1\right)$

14A (R groove)



- (P×1.2)≦R≦(P×2)

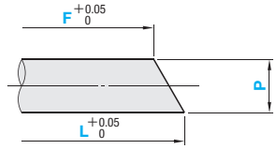
15A (R surface)



- Default:R=$\frac{P}{2}$

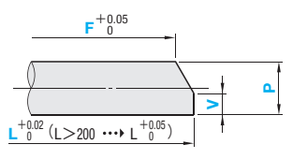
R may be designated within
- $\frac{P}{2}$＜R≦2P range.

16A (Bezel/F specification)



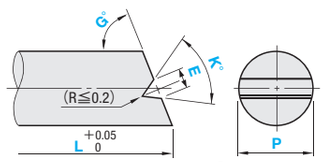
- 0.05≦(L−F)≦P

17A (Partial bezel/F specification)



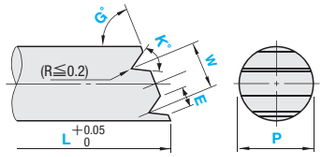
- 0.05≦(L−F)≦(P−V)
- 1.5≦V＜P

18A (Bezel+1 groove)



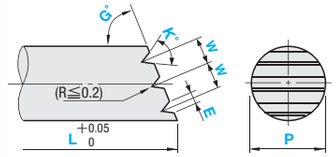
- 45°≦G＜90°
- 0.3≦E≦3.0
- E≦$\frac{P}{2}$
- K Selection 60°or 90°
- ⊗ R designation not available

19A (Bezel+2 groove)



- 45°≦G＜90°
- 0.3≦E≦3.0
- E≦$\frac{P}{3}$
- (E+0.2)≦W≦(P−E−0.4)
- K Selection 60°or 90°
- ⊗ R designation not available

20A (Bezel+3 groove)



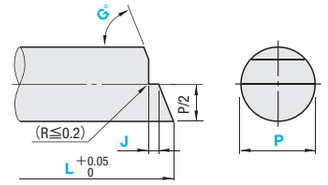
- 45°≦G＜90°
- 0.3≦E≦3.0
- E≦$\frac{P}{4}$
- (E+0.2)≦W≦(P−$\frac{E}{2}$−0.2)
- K Selection 60°or 90°
- ⊗ R designation not available

SHAPE VARIATIONS OF STRAIGHT EJECTOR PINS WITH TIP PROCESS②

—SHAPES 21A～32A—

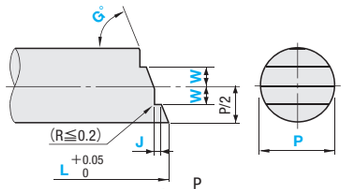
Shapes 1A ～ 20A
P.93・94

21A (Bezel＋1 vertical groove)



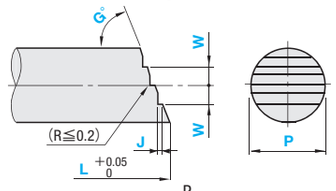
- 45°≦G＜90°
- 0.3≦J≦3.0
- ⊗ R designation not available
- J≦ P / 3 tanG

22A (Bezel＋2 vertical groove)



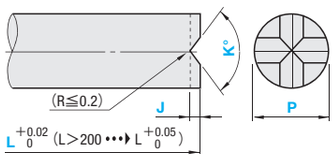
- 45°≦G＜90°
- J≦ P / 4 tanG
- 0.3≦J≦3.0
- 0.1＋JtanG≦W≦(P/2 −0.2)

23A (Bezel＋3 vertical groove)



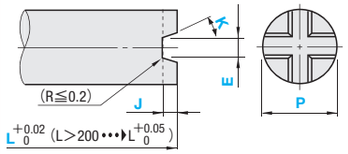
- 45°≦G＜90°
- J≦ P / 5 tanG
- 0.3≦J≦3.0
- 0.1＋JtanG≦W≦(P/2 −0.2)

24A (Cross groove/Triangle shaped)



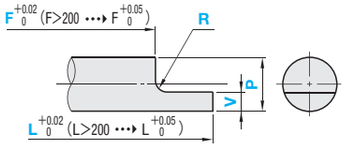
- 0.3≦J≦3.0
- J≦ P / 3
- 30°≦K°≦90°(5° increments)

25A (Cross groove/Trapezoid-shaped)



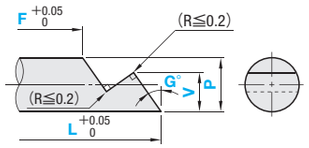
- 0.3≦J≦3.0
- 0.3≦E≦3.0
- J≦ P / 3
- E≦ P / 3
- 0°≦K°≦45°(5° increments)

26A (L-shaped・R designation)



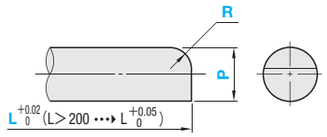
- 0.3≦R≦(P−V) and R≦(L−F)
- 0.2≦(L−F)≦(V×5)
- 1≦V＜P

27A (Bezel・Z groove)



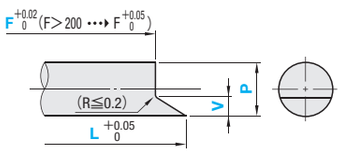
- 1≦(L−F)≦(V×5)
  1.5≦V＜P
- 0°＜G≦45°
- ⊗ R designation not available

28A (Half R)



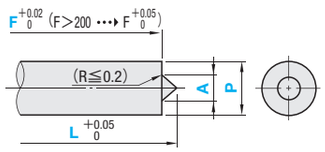
- (P×0.1)≦R＜(P×0.8)

29A (L-shaped・Tapered)



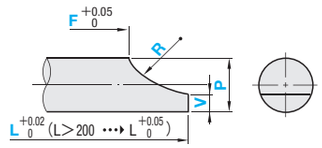
- 0.2≦(L−F)≦V×5
- 0.3≦V＜P
- ⊗ R designation not available

30A (Umbo)



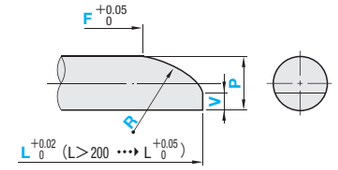
- 1≦A≦(P−1) and P/3 ≦A
- 1≦(L−F)≦(A×3)
- ⊗ R designation not available

31A (Inward R with F/V designation)



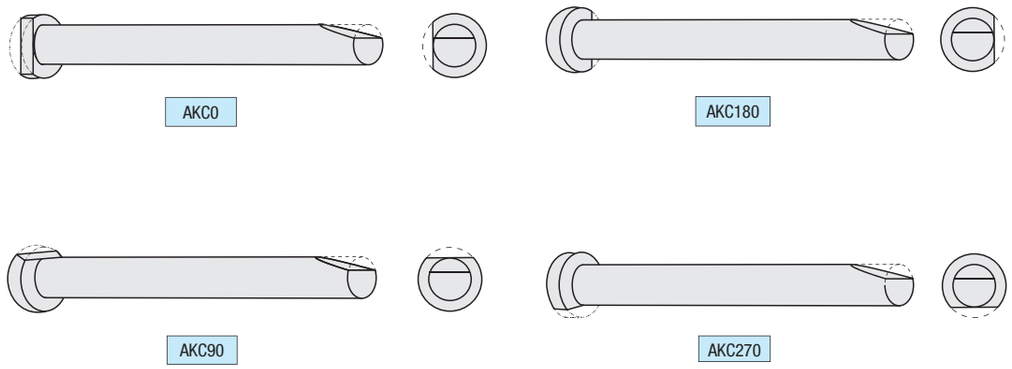
- P＜R≦15
- 1.5≦V＜P
- L−F＞R−√(R²−(P−V)²)

32A (Outward R with F/V designation)



- P＜R≦15
- 1.5≦V＜P
- L−F＞R−√(R²−(P−V)²)

■Flats cutting position for 2A shape



■Products list

Material	Head Thickness (T)	Shaft Diameter (P) Tolerance	Tip Processed: L dimension designation type — Part Number	Page	Tip Processed: L/P dimension designation type — Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	EPH□A	P.97	EPHB□A	P.99
		−0.01 / −0.02	EPHE□A		EPHBE□A	
	6・8mm (JIS)	0 / −0.005	EPHJ□A		EPHJB□A	
		−0.01 / −0.02	EPHJE□A		EPHJBE□A	
SKD61 equivalent ＋ Nitrided	4mm (T4)	−0.01 / −0.02	EPN□A	P.101	EPNB□A	P.103
	6・8mm (JIS)		EPJ□A		EPJB□A	
SKD61 equivalent	4mm (T4)	0 / −0.005	EPDS□A	P.105	EPDBS□A	P.107
		−0.01 / −0.02	EPD□A		EPDB□A	

■Unit of designation

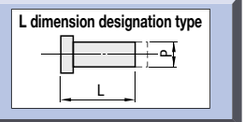
T	Unit of designation
G±30'	1° increments
K±30'	18A・19A・20A 60° or 90° Selection
	24A・25A 5° increments
SKH51 equivalent R±0.02 (15A・26A ••• R±0.1) SKD61 equivalent R±0.1 SKD61 equivalent＋Nitrided R±0.1	0.1mm increments
SR±0.1	0.1mm increments
A±0.05	0.1mm increments
V±0.05	0.1mm increments
E±0.02	0.1mm increments
J±0.02	0.1mm increments
W±0.02	0.1mm increments
Q±0.1	0.1mm increments
F (For tolerance, refer to the drawing)	0.01mm increments

High Speed Steel
SKH51 equivalent

STRAIGHT EJECTOR PINS WITH TIP PROCESS

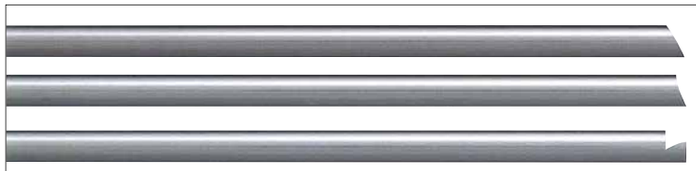
—L DIMENSION DESIGNATION TYPE—

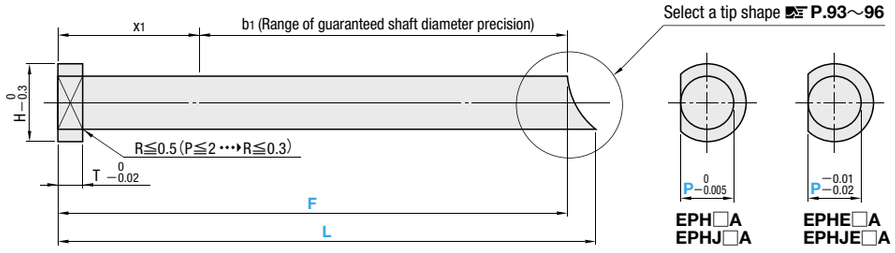
L dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T P
EPH□A	4mm(T4)	0 −0.005
EPHJ□A	6・8mm(JIS)	
EPHE□A	4mm(T4)	−0.01 −0.02
EPHJE□A	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (Details P.1301)

Head Thickness (T)	L	x1 max.
T4	50.00～200.00	30
JIS		35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head		JIS head		Part Number				0.01mm increments
H	T	H	T	Type: 4mm head	Type: JIS Head	Tip shapes	P	L
3	4	—	—	EPH (P 0 −0.005)	—	1A 11A 21A 31A	1.5	50.00～250.00
4						2A 12A 22A 32A	2	50.00～300.00
5							2.5	
6							3	
7						3A 13A 23A	3.5	
		8	6		EPHJ (P 0 −0.005)	4A 14A 24A	4	50.00～350.00(50.00～300.00)
8				EPHE (P −0.01 −0.02)			4.5	50.00～350.00
		9				5A 15A 25A	5	
9						6A 16A 26A	5.5	
		10					6	
10		11				7A 17A 27A	6.5	
					EPHJE (P −0.01 −0.02)	8A 18A 28A	7	
11		13	8			9A 19A 29A	8	
14		14				10A 20A 30A	9	
15		15					10	
17		17					12	

Select the tip shape 1A～32A P.93～96. L ( ) will be available for JIS head only.
For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPH□A (0 −0.005), EPHE□A (−0.01 −0.02).

Order

Part Number					
Type	Tip shapes	P	—	L	— Sequence of A/V/E/J/W/R/SR/F/G/K/Q
EPHJ	2A	10	—	200.00	— V5.0 —G70

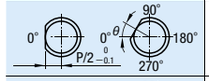
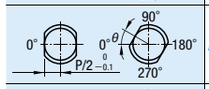
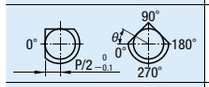
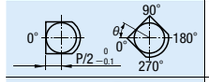
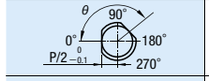
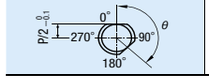
Days to Ship **Quotation**

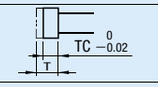
Alterations

Part Number	—	L	—	A・V・E・J・W・R・SR・F・G・K・Q	— (AKC・AWC…etc.)
EPHJ2A 10	—	200.00	—	V5.0 —G70	— TC6

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	Quotation
	HC	HC=0.1mm increments P+1≦HC<H	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and F remain unchanged) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・HCC・TC・NHC・NHN available.	

Price **Quotation**

Straight Ejector Pins

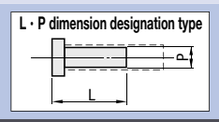
High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent

STRAIGHT EJECTOR PINS WITH TIP PROCESS

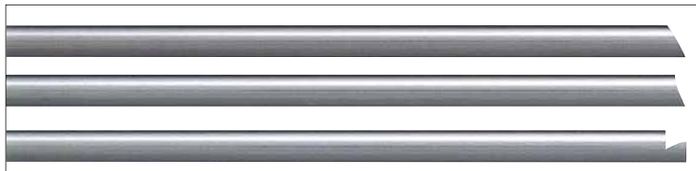
—L・P DIMENSION DESIGNATION TYPE—

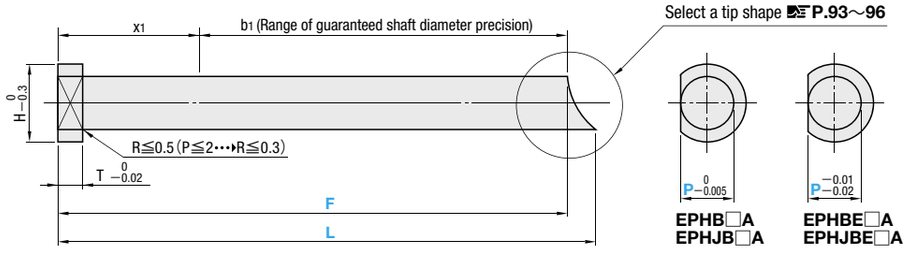
L・P dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T P
EPHB□A	4mm(T4)	0 −0.005
EPHJB□A	6・8mm(JIS)	
EPHBE□A	4mm(T4)	−0.01 −0.02
EPHJBE□A	6・8mm(JIS)	

Range of guaranteed shaft diameter precision
(Details P.1301)

Head Thickness (T)	L	x1 max.
T4	50.00～200.00	30
JIS		35
T4・JIS	200.01～250.00	110
	250.01～300.00	160
	300.01～350.00	210

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness
(Details P.1303)

4mm head		JIS head		Part Number								0.01mm increments	
H	T	H	T	Type 4mm head	Type JIS Head	Tip shapes				No.		L	P
4	4	—	—	EPHB (P 0 −0.005) EPHBE (P −0.01 −0.02)	—	1A	11A	21A	31A	2		50.00～250.00	1.50～ 1.99
5						2A	12A	22A	32A	2.5		50.00～300.00	2.00～ 2.49
6										3			2.50～ 2.99
7						3A	13A	23A		3.5			3.00～ 3.49
		8	6		EPHJB (P 0 −0.005) EPHJBE (P −0.01 −0.02)	4A	14A	24A		4			3.50～ 3.99
8						5A	15A	25A		4.5		50.00～350.00	4.00～ 4.49
		9				6A	16A	26A		5			4.50～ 4.99
9						7A	17A	27A		5.5			5.00～ 5.49
		10				8A	18A	28A		6			5.50～ 5.99
10		11				9A	19A	29A		6.5			6.00～ 6.49
						10A	20A	30A		7			6.50～ 6.99
11		13	8							8			7.00～ 7.99
15		15								10			8.00～ 9.99
17		17								12			10.00～11.99

Select the tip shape 1A～32A P.93～96.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPHB□A (0 −0.005), EPHBE□A (−0.01 −0.02).

Order

Part Number			—	L	—	P	—	Sequence of A/V/E/J/W/R/SR/F/G/K/Q
Type	Tip shapes	No.						
EPHJB	2A	10	—	200.00	—	P9.80	—	V5.0 —G70

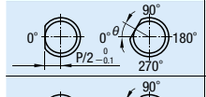
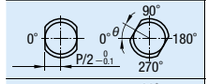
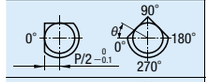
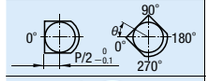
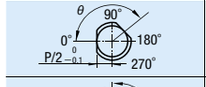
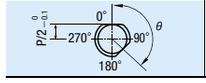
Days to Ship: Quotation

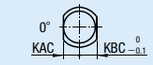
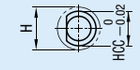
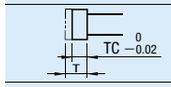
Alterations

Part Number	—	L	—	P	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC･･･etc.)
EPHJB3A 6	—	100.00	—	P5.70	—	R10	—	TC5

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	Quotation
	HC	HC=0.1mm increments P+1≦HC<H	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and F remain unchanged) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・HCC・TC・NHC・NHN available.	

Price: Quotation

Straight Ejector Pins

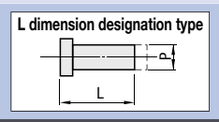
High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent
+
Nitriding

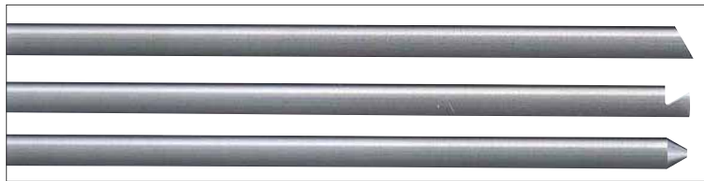
STRAIGHT EJECTOR PINS WITH TIP PROCESS

—L DIMENSION DESIGNATION TYPE—

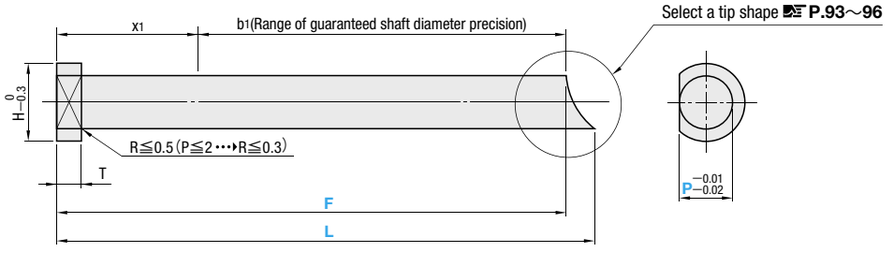
L dimension designation type



Non JIS material definition is listed on P.1351 - 1352



RoHS



To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T T	T P
EPN□A	4mm(T4)	0 −0.02	−0.01 −0.02
EPJ□A	6・8mm(JIS)	0 −0.05	

Range of guaranteed shaft diameter precision (Details P.1301)

Head Thickness (T)	L	X1 max.
T4	50.00～300.00	30
JIS		35
T4・JIS	300.01～350.00	210

M SKD61 equivalent+Nitrided
H Surface base:900HV～
Base material:40～45HRC

Range of guaranteed base material hardness (Details P.1303)

Range of guaranteed surface hardness for nitriding (Details P.1303)

4mm head		JIS head		Part Number				0.01mm increments
				Type				
H	T	H	T	4mm head	JIS Head	Tip shapes	P	L
3	4	—	—	EPN	—	1A 11A 21A 31A	1.5	50.00～200.00
4							2	50.00～250.00
5						2A 12A 22A 32A	2.5	
6							3	50.00～300.00
7						3A 13A 23A	3.5	
		8	6		EPJ	4A 14A 24A	4	
8							4.5	
		9				5A 15A 25A	5	50.00～350.00
9						6A 16A 26A	5.5	
		10				7A 17A 27A	6	
10		11				8A 18A 28A	6.5	
							7	
11		13	8			9A 19A 29A	8	
15		15				10A 20A 30A	10	
17		17					12	

The shaped tip has the same hardness as its base material.
Select the tip shape 1A～32A P.93～96.
For JIS head type less than P4 is T=4, please place the order for 4mm head type of EPN□A

Order

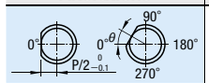
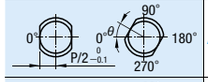
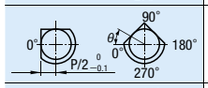
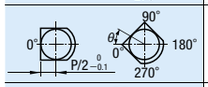
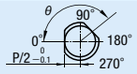
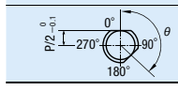
Part Number					
Type	Tip shapes	P	—	L	— Sequence of A/V/E/J/W/R/SR/F/G/K/Q
EPJ	2A	10	—	200.00	— V5.0 — G70

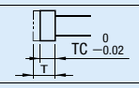
Days to Ship: Quotation

Alterations

Part Number	—	L	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC…etc.)
EPJ2A 10	—	200.00	—	V5.0 —G70	—	TC6

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	Quotation
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	HC	HC=0.1mm increments P+1≦HC<H	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and F remain unchanged) T−TC≦Lmax.−L	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・TC・NHC・NHN available.	

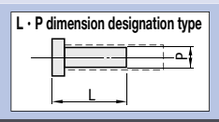
Price: Quotation

Dies Steel
SKD61 equivalent
+
Nitriding

STRAIGHT EJECTOR PINS WITH TIP PROCESS

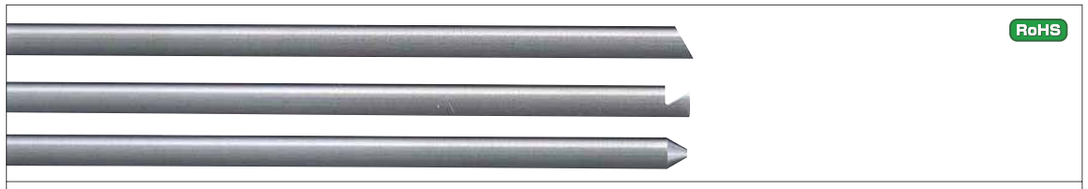
—L・P DIMENSION DESIGNATION TYPE—

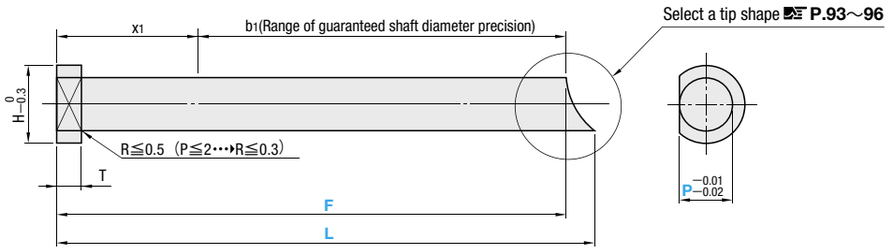
L・P dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T T	T P
EPNB□A	4mm(T4)	0 −0.02	−0.01 −0.02
EPJB□A	6・8mm(JIS)	0 −0.05	

Range of guaranteed shaft diameter precision (Details P.1301)

Head Thickness (T)	L	x1 max.
T4	50.00～300.00	30
JIS		35
T4・JIS	300.01～350.00	210

M SKD61 equivalent+Nitrided
H Surface base:900HV～
Base material:40～45HRC

Range of guaranteed base material hardness (Details P.1303)

Range of guaranteed surface hardness for nitriding (Details P.1303)

4mm head		JIS head		Part Number								0.01mm increments	
H	T	H	T	Type 4mm head	Type JIS head	Tip shapes					No.	L	P
4	4	—	—	EPNB	—	1A	11A	21A	31A		2	50.00 ～ 250.00	1.50～ 1.99
5											2.5		2.00～ 2.49
6						2A	12A	22A	32A		3	50.00 ～ 300.00	2.50～ 2.99
7						3A	13A	23A			3.5		3.00～ 3.49
		8	6		EPJB	4A	14A	24A			4		3.50～ 3.99
8											4.5		4.00～ 4.49
		9				5A	15A	25A			5	50.00 ～ 350.00	4.50～ 4.99
9						6A	16A	26A			5.5		5.00～ 5.49
		10				7A	17A	27A			6		5.50～ 5.99
10		11				8A	18A	28A			6.5		6.00～ 6.49
											7		6.50～ 6.99
11		13	8			9A	19A	29A			8		7.00～ 7.99
15		15				10A	20A	30A			10		8.00～ 9.99
17		17									12		10.00～11.99

The shaped tip has the same hardness as its base material. Since nitriding is performed after P dimension machining, the head may also be nitrided.
Select the tip shape 1A～32A P.93～96.
For JIS head type less than No.4 is T=4, please place the order for 4mm head type of EPNB□A

Order

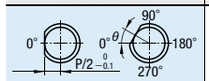
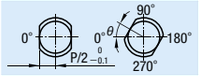
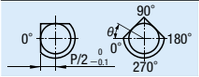
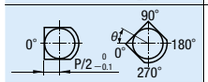
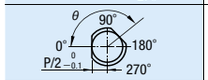
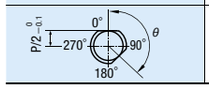
Part Number			—	L	—	P	—	Sequence of A/V/E/J/W/R/SR/F/G/K/Q
Type	Tip shapes	No.						
EPJB	2A	10	—	200.00	—	P8.50	—	V5.0 — G70

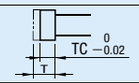
Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC･･･etc.)
EPJB2A 10	—	200.00	—	P8.50	—	V5.0 — G70	—	TC6

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	HC	HC=0.1mm increments P+1≦HC<H	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and F remain unchanged) T−TC≦Lmax.−L	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・TC・NHC・NHN available.	

Price: Quotation

Straight Ejector Pins

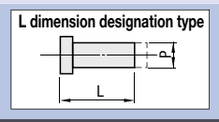
Dies Steel
SKD61 equivalent
+
Nitriding

Dies Steel
SKD61 equivalent
4mm head

STRAIGHT EJECTOR PINS WITH TIP PROCESS

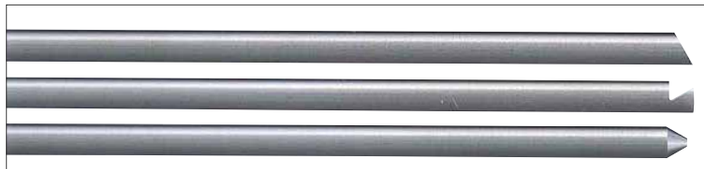
— L DIMENSION DESIGNATION TYPE —

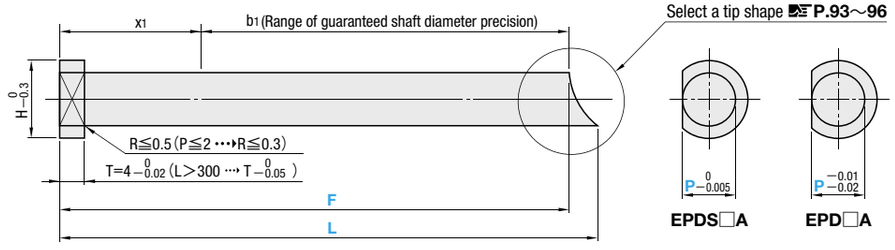
L dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T P
EPDS□A	4mm(T4)	0 −0.005
EPD□A		−0.01 −0.02

Range of guaranteed shaft diameter precision (Details P.1301)

L	x1 max.
50.00～150.00	30
150.01～200.00	60
200.01～250.00	110
250.01～300.00	160
300.01～350.00	210

M SKD61 equivalent
H 50 ～ 55HRC

Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	Tip shapes	P	0.01mm increments L
3	4	EPDS (P 0 −0.005) / EPD (P −0.01 −0.02)	1A 11A 21A 31A / 2A 12A 22A 32A / 3A 13A 23A / 4A 14A 24A / 5A 15A 25A / 6A 16A 26A / 7A 17A 27A / 8A 18A 28A / 9A 19A 29A / 10A 20A 30A	1.5	50.00～250.00
4				2	
5				2.5	
6				3	50.00～300.00
7				3.5	
				4	
8				4.5	
				5	50.00～350.00
9				5.5	
				6	
10				6.5	
				7	
11				8	
15				10	
17				12	

Select the tip shape 1A～32A P.93～96.

Order

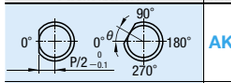
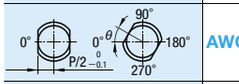
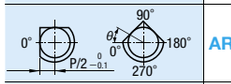
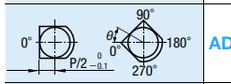
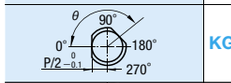
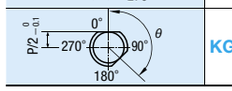
Part Number			—	L	—	Sequence of A/V/E/J/W/R/SR/F/G/K/Q
Type	Tip shapes	P				
EPD	2A	10	—	200.00	—	V5.0 —G70

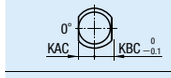
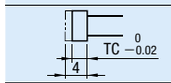
Days to Ship: Quotation

Alterations

Part Number	—	L	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC…etc.)
EPD2A 10	—	200.00	—	V5.0 —G70	—	TC2

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	HC	HC=0.1mm increments P+1≦HC<H	
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and F remain unchanged) 4−TC≦Lmax.−L	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・TC・NHC・NHN available.	

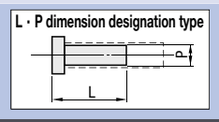
Price: Quotation

Dies Steel
SKD61 equivalent
4mm head

STRAIGHT EJECTOR PINS WITH TIP PROCESS

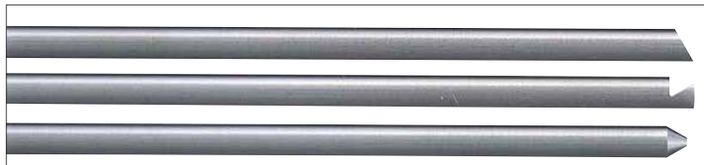
—L・P DIMENSION DESIGNATION TYPE—

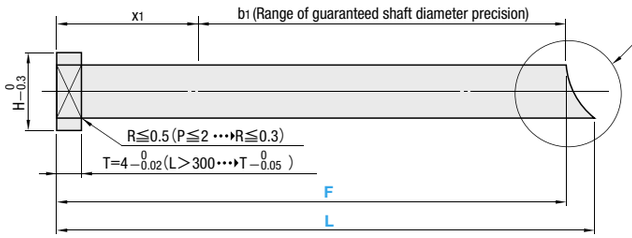
L・P dimension designation type



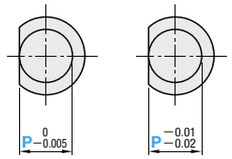
Non JIS material definition is listed on P.1351 - 1352

RoHS





Select a tip shape P.93～96



EPDBS□A EPDB□A

To determine the shape position, key flat cutting is made at the standard 0°

Part Number	Head thickness	T P
EPDBS□A	4mm(T4)	0 −0.005
EPDB□A		−0.01 −0.02

Range of guaranteed shaft diameter precision
(Details P.1301)

L	x1 max.
50.00～150.00	30
150.01～200.00	60
200.01～250.00	110
250.01～300.00	160
300.01～350.00	210

M SKD61 equivalent
H 50～55HRC

Range of guaranteed base material hardness
(Details P.1303)

H	T	Part Number Type	Tip shapes	No.	0.01mm increments L	P
4	4	EPDBS (P 0 −0.005) / EPDB (P −0.01 −0.02)	1A 11A 21A 31A	2	50.00～250.00	1.50～ 1.99
5				2.5		2.00～ 2.49
6			2A 12A 22A 32A	3	50.00～300.00	2.50～ 2.99
7			3A 13A 23A	3.5		3.00～ 3.49
				4		3.50～ 3.99
8			4A 14A 24A	4.5		4.00～ 4.49
			5A 15A 25A	5	50.00～350.00	4.50～ 4.99
9			6A 16A 26A	5.5		5.00～ 5.49
			7A 17A 27A	6		5.50～ 5.99
10			8A 18A 28A	6.5		6.00～ 6.49
				7		6.50～ 6.99
11			9A 19A 29A	8		7.00～ 7.99
15			10A 20A 30A	10		8.00～ 9.99
17				12		10.00～11.99

Select the tip shape 1A～32A P.93～96.

Order

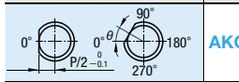
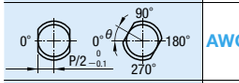
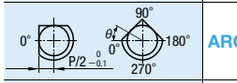
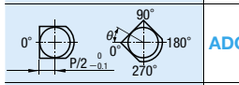
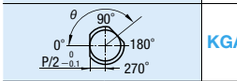
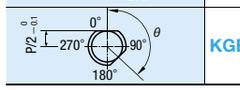
Part Number			—	L	—	P	—	Sequence of A/V/E/J/W/R/SR/F/G/K/Q
Type	Tip shapes	No.						
EPDB	2A	10	—	200.00	—	P9.80	—	V5.0 —G70

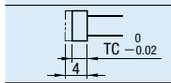
Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC···etc.)
EPDB2A 10	—	200.00	—	P9.80	—	V5.0 —G70	—	TC2

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	HC	HC=0.1mm increments P+1≦HC<H	
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and F remain unchanged) 4−TC≦Lmax.−L	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・24A・25A・30A Combination only with HC・TC・NHC・NHN available.	

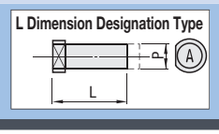
Price: Quotation

High Speed Steel
SKH51 equivalent

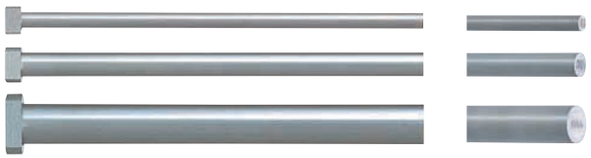
STRAIGHT EJECTOR PINS WITH ENGRAVING

—L DIMENSION DESIGNATION TYPE—

L Dimension Designation Type

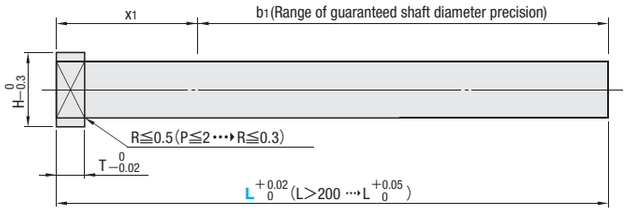


Non JIS material definition is listed on P.1351 - 1352

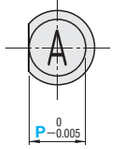


RoHS

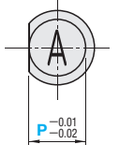
Part Number		Head thickness	T P
Type	Character		
EPH	□M	4mm(T4)	0 −0.005
EPHJ	□MR	6・8mm(JIS)	
EPHE	(Sequential numbering designation)	4mm(T4)	−0.01 −0.02
EPHJE		6・8mm(JIS)	



EPH□M・EPH□MR
EPHJ□M・EPHJ□MR



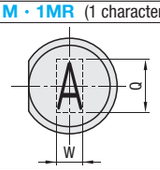
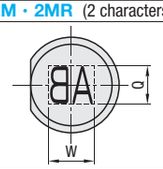
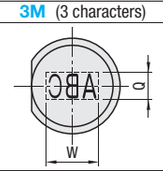
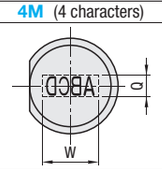
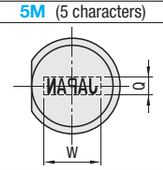
EPHE□M・EPHE□MR
EPHJE□M・EPHJE□MR



To determine the engraving position, key flat cutting is made at the standard 0°

Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30
JIS ··· x1 max.35

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.3≦P≦12	1.5≦P≦12	2.8≦P≦12	3.6≦P≦12	4.5≦P≦12

Designate characters in the right reading order to appear on the finished products. Refer to P.118 for character font.

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Character	P	0.01mm increments L
3	4	—	—	EPH (P 0 −0.005)	—	1M	0.3	40.00～ 60.00
							0.4 0.5	40.00～100.00
							0.6 0.7 0.8 0.9	40.00～150.00
							1 1.1 1.2 1.3 1.4	40.00～200.00
							1.5	40.00～250.00
4							1.6	40.00～250.00
							1.7 1.8 1.9	40.00～200.00
						2M	2	40.00～250.00
5							2.1	40.00～250.00
							2.2 2.3 2.4	40.00～200.00
						3M	2.5	40.00～250.00
6							2.6	40.00～250.00
						4M	2.7 2.8 2.9	40.00～200.00
							3	40.00～250.00
7						5M	3.1	40.00～250.00
							3.2 3.3 3.4	40.00～200.00
							3.5 3.6	40.00～250.00
				EPHE (P −0.01 −0.02)			3.7 3.8 3.9	40.00～200.00
		8	6		EPHJ (P 0 −0.005) EPHJE (P −0.01 −0.02)	Sequential numbering designation	4	40.00～250.00
8							4.5	
		9				1MR	5	
9							5.5	
		10				2MR	6	
10		11					6.5	
							7	
11		13	8				8	
14		14					9	
15		15					10	
17		17					12	

Characters for engraving (Round Gothic type)

0 1 2 3 4
5 6 7 8 9

A B C D E
F G H I J
K L M N O
P Q R W S T
U V X Y
Z

Name	Characters for engraving	Order code
Slash	／	¥
Greater	＞	＞
Less	＜	＜
Plus	＋	＋
Minus	—	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating ／(slash), # for —(minus), % for ⬚(space), @ for ・(centered dot), and & for . (period).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the 1st digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the 2nd digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

1MR (Example)
- When placing the order for 5 pieces of EPH1MR2—150—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of EPH1MR3—150—Z, characters for engraving "Z A B"

2MR (Example)
- When placing the order for 4 pieces of EPH2MR4—100—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of EPH2MR4—100—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of EPH2MR6—150—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

■No. of characters and shaft diameter (P)

No. of characters	P
1M・1MR (1 character)	0.3～12
2M・2MR (2 characters)	1.5～12
3M (3 characters)	2.8～12
4M (4 characters)	3.6～12
5M (5 characters)	4.5～12

Order

Part Number				Characters for engraving (0～9, A～Z ／ > < + − ⬚ ・)
Type	Character	P	L	
EPH	5M	6	200.00	ABC20
EPH	3M	5	184.25	@ ¥ +

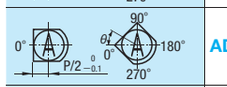
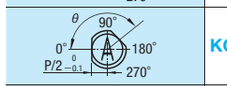
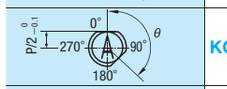
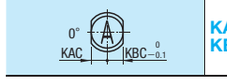
Days to Ship: Quotation

Alterations

Part Number	L	Characters for engraving	(AKC・AWC···etc.)
EPH5M 6	200.00	ABC20	AKC120

Quotation

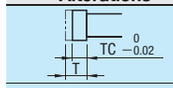
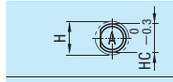
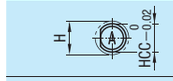
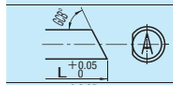
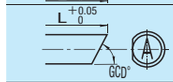
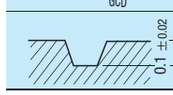
Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 When combined with GCB/GCD, 90° increments only No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with GCB/GCD, 90° increments only	
	ARC	ARC=1° increments 0≦ARC<360 When combined with GCB/GCD, 90° increments only	
	ADC	ADC=1° increments 0≦ADC<360 When combined with GCB/GCD, 90° increments only	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	

■Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1M 1MR (1 character)	0.3	0.2	0.1
	0.4	0.25	0.13
	0.5	0.35	0.18
	0.6～ 0.7	0.4	0.2
	0.8～ 0.9	0.6	0.3
	1 ～ 1.2	0.8	0.4
	1.3～ 1.4	1.0	0.5
	1.5～ 1.9	1.2	0.6
	2 ～ 2.4	1.5	0.8
	2.5～ 3.4	2.0	1.0
	3.5～ 4	3.0	1.5
	4.5～ 5	4.0	2.0
	5.5～12	5.0	2.5

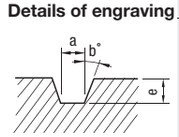
No. of characters	P	Q	W
2M 2MR (2 characters)	1.5～ 1.9	0.7	1.1
	2 ～ 2.2	0.8	1.2
	2.3～ 2.9	1.0	1.3
	3 ～ 3.9	1.5	2.0
	4 ～ 4.5	2.0	2.6
	5 ～ 5.5	2.5	3.3
	6 ～ 7	3.0	3.9
	8 ～12	4.0	5.2
3M (3 characters)	2.8～ 3	0.8	1.8
	3.1～ 4	1.0	2.1
	4.5～ 5	1.5	3.2
	5.5～ 6.5	2.0	4.2
	7 ～12	2.5	5.3
4M (4 characters)	3.6～ 3.8	0.8	2.4
	3.9～ 5	1.0	2.9
	5.5～ 6.5	1.5	4.4
	7 ～12	2.0	5.8
5M (5 characters)	4.5～ 4.9	0.8	3.0
	5 ～ 6.5	1.0	3.7
	7 ～12	1.5	5.6

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	
	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
	NHC	Numbering on the head How to order P.54	Quotation
	NHN	Automatic sequential numbering on the head How to order P.54	
	GCB	GCB=1° increments 60≦GCB<90 L≦200, Available when P≧2 Combination with GCD not available.	
	GCD	GCD=1° increments 60≦GCD<90 L≦200, Available when P≧2 Combination with GCB not available.	
	EC	Engraving depth alteration 0.05 ··· 0.1 Available when P≧1 Combination with GCB, GCD not available.	

Price: Quotation

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Convex character)

Details of engraving



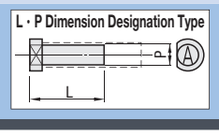
Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	When P≦0.9 0.03±0.01 When P≧1 0.05±0.02 When EC code is used 0.1±0.02

High Speed Steel
SKH51 equivalent

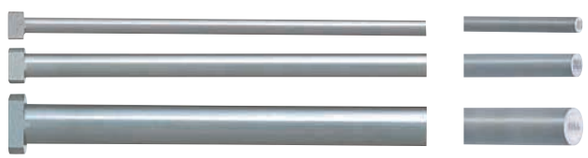
STRAIGHT EJECTOR PINS WITH ENGRAVING

—L・P DIMENSION DESIGNATION TYPE—

L・P Dimension Designation Type

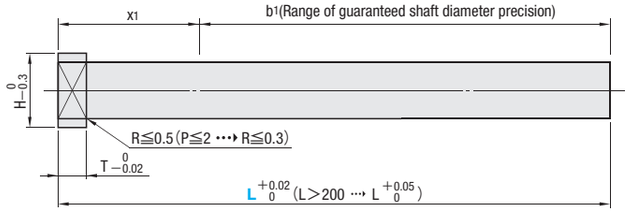


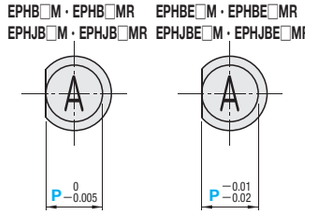
Non JIS material definition is listed on P.1351 - 1352



RoHS

Part Number		Head thickness	T P
Type	Character		
EPHB	□M	4mm(T4)	0 −0.005
EPHJB	□MR	6・8mm(JIS)	
EPHBE	(Sequential numbering designation)	4mm(T4)	−0.01 −0.02
EPHJBE		6・8mm(JIS)	

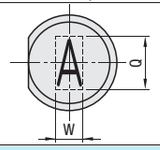
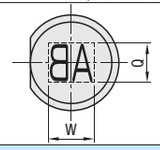
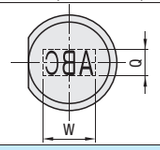
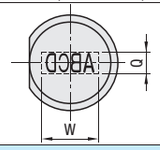
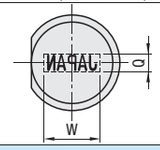




To determine the engraving position, key flat cutting is made at the standard 0°

Range of guaranteed shaft diameter precision (Details P.1301)
T4 ⋯ x1 max.30 (L>200 ⋯ x1 max.=110)
JIS ⋯ x1 max.35 (L>200 ⋯ x1 max.=110)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.40≦P≦11.99	1.50≦P≦11.99	2.80≦P≦11.99	3.60≦P≦11.99	4.50≦P≦11.99

Designate characters in the right reading order to appear on the finished products. Refer to P.118 for character font.

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Character	No.	0.01mm increments L	0.01mm increments P
3	4	—	—	EPHB (P 0 −0.005)	—	1M 2M 3M 4M 5M	0.6	40.00～100.00	0.40～ 0.59
							1	40.00～150.00	0.60～ 0.99
							1.5	40.00～200.00	1.00～ 1.49
4							2	40.00～250.00	1.50～ 1.99
5							2.5		2.00～ 2.49
6							3		2.50～ 2.99
7							3.5		3.00～ 3.49
		8	6		EPHJB (P 0 −0.005)		4		3.50～ 3.99
8							4.5		4.00～ 4.49
		9		EPHBE (P −0.01 −0.02)		Sequential numbering designation	5		4.50～ 4.99
9							5.5		5.00～ 5.49
		10					6		5.50～ 5.99
10		11			EPHJBE (P −0.01 −0.02)	1MR 2MR	6.5		6.00～ 6.49
							7		6.50～ 6.99
11		13	8				8		7.00～ 7.99
15		15					10		8.00～ 9.99
17		17					12		10.00～11.99

Characters for engraving (Round Gothic type)

0 1 2 3 4
5 6 7 8 9
A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z

Name	Characters for engraving	Order code
Slash	／	¥
Greater	＞	＞
Less	＜	＜
Plus	＋	＋
Minus	－	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating ／(slash), # for －(minus), % for ⬚(space), @ for ・(centered dot), and & for . (period).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the 1st digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the 2nd digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

1MR (Example)
- When placing the order for 5 pieces of EPHB1MR2—150—P1.8—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of EPHB1MR3—150—P2.8—Z, characters for engraving "Z A B"

2MR (Example)
- When placing the order for 4 pieces of EPHB2MR4—100—P3.8—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of EPHB2MR4—100—P3.8—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of EPHB2MR6—150—P5.8—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

■No. of characters and shaft diameter (P)

No. of characters	P
1M・1MR (1 character)	0.40～11.99
2M・2MR (2 characters)	1.50～11.99
3M (3 characters)	2.80～11.99
4M (4 characters)	3.60～11.99
5M (5 characters)	4.50～11.99

Order

Part Number			—	L	—	P	—	Characters for engraving
Type	Character	No.						0~9, A~Z (／><＋－⬚・.)
EPHB	3M	7	—	65.00	—	P6.80	—	923
EPHB	5M	8	—	125.00	—	P7.58	—	＞#&%＜

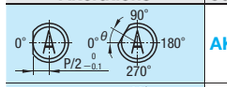
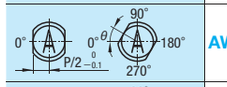
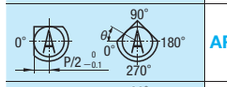
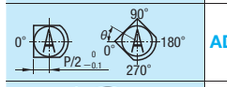
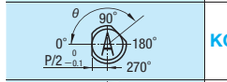
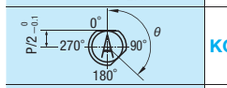
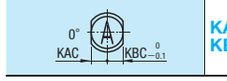
Days to Ship Quotation

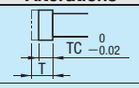
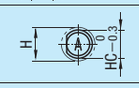
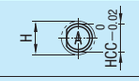
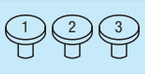
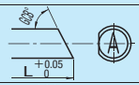
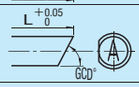
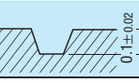
Alterations

Part Number	—	L	—	P	—	Characters for engraving	—	(AKC・AWC⋯etc.)
EPHB3M 7	—	65.00	—	P6.80	—	923	—	TC2

Quotation

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 When combined with GCB/GCD, 90° increments only No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with GCB/GCD, 90° increments only	
	ARC	ARC=1° increments 0≦ARC<360 When combined with GCB/GCD, 90° increments only	
	ADC	ADC=1° increments 0≦ADC<360 When combined with GCB/GCD, 90° increments only	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	Quotation
	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	GCB	GCB=1° increments 60≦GCB<90 L≦200, Available when P≧2 Combination with GCD not available.	
	GCD	GCD=1° increments 60≦GCD<90 L≦200, Available when P≧2 Combination with GCB not available.	
	EC	Engraving depth alteration 0.05⋯0.1 Available when P≧1 Combination with GCB, GCD not available.	

■Relationship between Shaft Diameter (P) and Character Size (Q, W)

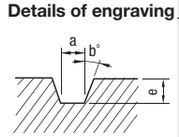
No. of characters	P	Q	W
1M 1MR (1 character)	0.40～ 0.49	0.25	0.13
	0.50～ 0.59	0.35	0.18
	0.60～ 0.79	0.4	0.2
	0.80～ 0.99	0.6	0.3
	1.00～ 1.29	0.8	0.4
	1.30～ 1.49	1.0	0.5
	1.50～ 1.99	1.2	0.6
	2.00～ 2.49	1.5	0.8
	2.50～ 3.49	2.0	1.0
	3.50～ 4.49	3.0	1.5
	4.50～ 5.49	4.0	2.0
	5.50～11.99	5.0	2.5

No. of characters	P	Q	W
2M 2MR (2 characters)	1.50～ 1.99	0.7	1.1
	2.00～ 2.29	0.8	1.2
	2.30～ 2.99	1.0	1.3
	3.00～ 3.99	1.5	2.0
	4.00～ 4.99	2.0	2.6
	5.00～ 5.99	2.5	3.3
	6.00～ 7.99	3.0	3.9
	8.00～11.99	4.0	5.2
3M (3 characters)	2.80～ 3.09	0.8	1.8
	3.10～ 4.49	1.0	2.1
	4.50～ 5.49	1.5	3.2
	5.50～ 6.99	2.0	4.2
	7.00～11.99	2.5	5.3
4M (4 characters)	3.60～ 3.89	0.8	2.4
	3.90～ 5.49	1.0	2.9
	5.50～ 6.99	1.5	4.4
	7.00～11.99	2.0	5.8
5M (5 characters)	4.50～ 4.99	0.8	3.0
	5.00～ 6.99	1.0	3.7
	7.00～11.99	1.5	5.6

P Price Quotation

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Convex character)

Details of engraving

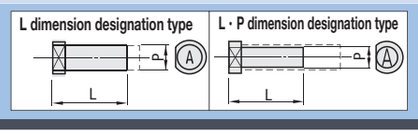


Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	When P≦0.99 0.03±0.01 When P≧1.00 0.05±0.02 When EC code is used 0.1±0.02

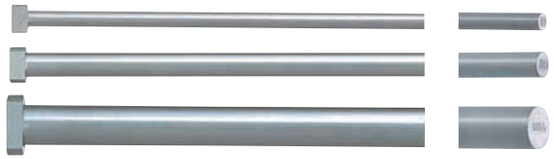
High Speed Steel
SKH51 equivalent

EXTRA PRECISION STRAIGHT EJECTOR PINS WITH ENGRAVING

—L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION TYPE—

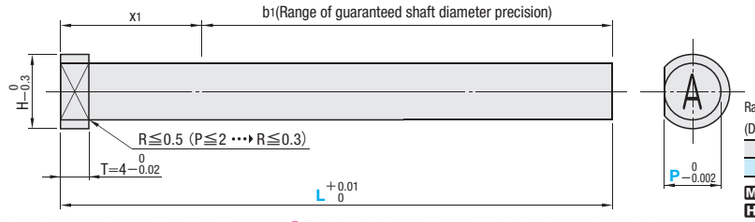


Non JIS material definition is listed on P.1351 - 1352



RoHS

Part Number		Head thickness	T P
Type	Character		
EPV EPVB	□M □MR (Sequential numbering designation)	4mm(T4)	0 −0.002



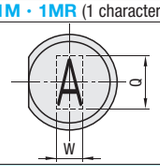
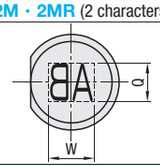
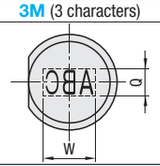
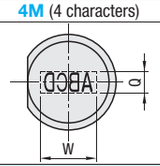
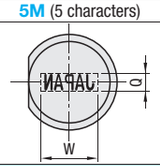
Range of guaranteed shaft diameter precision
(Details P.1301)

P	X1 max.
1.000～5.000	30

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)
Applied with overall quenching (its head without annealing).

To determine the engraving position, key flat cutting is made at the standard 0°

The heads of extra precision straight ejector pins are not annealed in order to guarantee precision. Use a construction that supports sliding and does not readily apply a load to the flange of the ejector pin, such as by using a precision ejector guide pin & bushing.

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
1.000≦P≦5.000	2.000≦P≦5.000	2.800≦P≦5.000	3.600≦P≦5.000	4.500≦P≦5.000

Designate characters in the right reading order to appear on the finished products. Refer to P.118 for character font.

■ L dimension designation type

4mm head		Part Number			L	Characters for engraving (Round Gothic type)
H	T	Type	Character	P	0.01mm increments	
3	4	EPV	1M	1	50.00～100.00	0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
			2M	1.5		
4			3M	2		
5				2.5		
6			4M	3		
7			5M	3.5	50.00～120.00	
			Sequential numbering designation	4		
8				4.5		
			※1MR	5		
			※2MR			

Name	Characters for engraving	Order code
Slash	／	¥
Greater	＞	＞
Less	＜	＜
Plus	＋	＋
Minus	−	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating (slash), # for −(minus), % for ⬚(space), @ for ・(centered dot), and & for . (period).

■ L・P dimension designation type

4mm head		Part Number			L	P	Characters for engraving (Round Gothic type)
H	T	Type	Character	No.	0.01mm increments	0.001mm increments	
3	4	EPVB	1M	1.5	50.00～100.00	1.000～1.499	0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
4			2M	2		1.500～1.999	
5			3M	2.5		2.000～2.499	
6			4M	3		2.500～2.999	
7			5M	3.5	50.00～120.00	3.000～3.499	
			Sequential numbering designation	4		3.500～3.999	
8				4.5		4.000～4.499	
			※1MR	5		4.500～4.999	
			※2MR				

Name	Characters for engraving	Order code
Slash	／	¥
Greater	＞	＞
Less	＜	＜
Plus	＋	＋
Minus	−	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating (slash), # for −(minus), % for ⬚(space), @ for ・(centered dot), and & for . (period).
※ 1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
※ In case of 1MR,"0" is next to "9" while "A" is next to "Z". ⊗ In case of 1MR and 2MR, other engraving characters cannot be used for designation.
※ In case of 2MR, the ones digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the tens digit is increased by one.
・When placing the order for 5 pieces of EPV1MR2—150—1, characters for engraving "1 2 3 4 5" ・When placing the order for 3 pieces of EPVB1MR3—150—P2.8—Z, characters for engraving "Z A B"

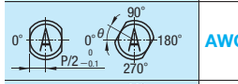
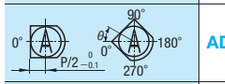
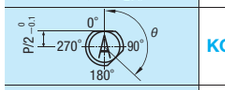
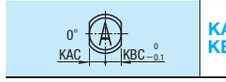
Order (L dimension designation type) (L・P dimension designation type)

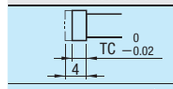
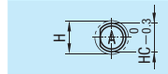
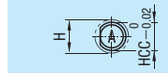
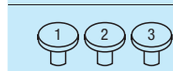
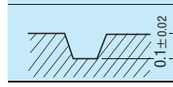
Part Number			—	L	—	P	—	Characters for engraving (0～9, A～Z ／><+−⬚・.)
Type	Character	No.						
EPV	1M	1.5	—	75.00			—	A
EPVB	3M	5	—	100.00	—	P4.700	—	BCD

Days to Ship: Quotation

Alterations: Part Number — L — P — Characters for engraving — (AKC・AWC…etc.)
EPVB3M5 — 100 — P4.700 — BCD — TC3.0

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 When combined with GCB/GCD, 90° increments only No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with GCB/GCD, 90° increments only	
	ARC	ARC=1° increments 0≦ARC<360 When combined with GCB/GCD, 90° increments only	
	ADC	ADC=1° increments 0≦ADC<360 When combined with GCB/GCD, 90° increments only	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 ⊗ Combination with other key flat cutting not available	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0≦TC<4, P≧1.5 (Dimension L remains unchanged.) 4−TC≦Lmax.−L	
	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	EC	Engraving depth alteration 0.05 ··· 0.1 Available when P≧1 ⊗ Combination with GCB, GCD not available.	

Straight Ejector Pins
High Speed Steel SKH51 equivalent

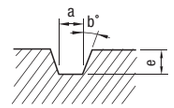
■ Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1M 1MR (1 character)	1.000～1.299	0.8	0.4
	1.300～1.499	1.0	0.5
	1.500～1.999	1.2	0.6
	2.000～2.499	1.5	0.8
	2.500～3.499	2.0	1.0
	3.500～4.499	3.0	1.5
	4.500～5.000	4.0	2.0
2M 2MR (2 characters)	2.000～2.299	0.8	1.2
	2.300～2.999	1.0	1.3
	3.000～3.999	1.5	2.0
	4.000～4.999	2.0	2.6
	5.000	2.5	3.3

No. of characters	P	Q	W
3M (3 characters)	2.800～3.099	0.8	1.8
	3.100～4.499	1.0	2.1
	4.500～5.000	1.5	3.2
4M (4 characters)	3.600～3.899	0.8	2.4
	3.900～5.000	1.0	2.9
5M (5 characters)	4.500～4.999	0.8	3.0
	5.000	1.0	3.7

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Convex character)

Details of engraving



Width of engraving (a)	(0.1×Q)±0.05
Angle of engraving (b°)	30° ± 2°
Depth of engraving (e)	0.05±0.02 When EC code is used 0.1±0.02

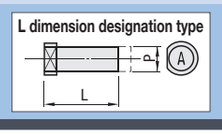
Price: Quotation

Dies Steel
SKD61 equivalent
+
Nitriding

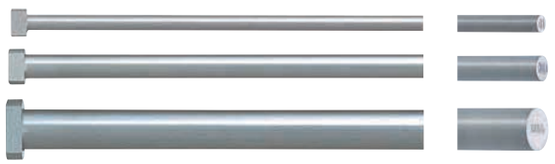
STRAIGHT EJECTOR PINS WITH ENGRAVING

—L DIMENSION DESIGNATION TYPE—

L dimension designation type

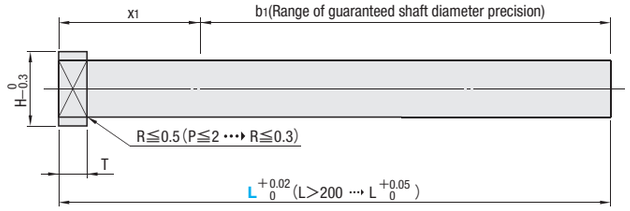


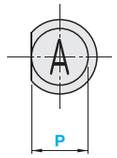
Non JIS material definition is listed on P.1351 - 1352



RoHS

Part Number	Head thickness	T	P 1～13	P 15～20	P 25
EPN□M EPN□MR	4mm(T4)	0 −0.02	−0.01 −0.02	−0.01 −0.03	−0.01 −0.04
EPJ□M EPJ□MR	6・8mm(JIS)	0 −0.05			

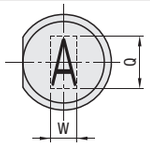
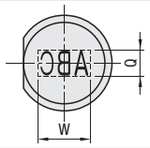
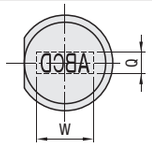
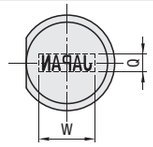




To determine the engraving position, key flat cutting is made at the standard 0°

Range of guaranteed shaft diameter precision (Details P.1301)
T4 ⋯ x1 max.30
JIS ⋯ x1 max.35

M SKD61 equivalent+Nitrided
H Surface:900HV～ Base material:40～45HRC
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
1≦P≦25	1.5≦P≦25	2.8≦P≦25	3.6≦P≦25	4.5≦P≦25

Designate characters in the right reading order to appear on the finished products. Refer to P.118 for character font.

4mm head H	4mm head T	JIS head H	JIS head T	Type: 4mm head	Type: JIS head	Character	P	0.01mm increments L
3	4	—	—	EPN	—	1M	1 1.1 1.2 1.3 1.4	40.00～150.00
							1.5	40.00～200.00
4							1.6 1.7 1.8 1.9	
							2	40.00～300.00
5							2.1 2.2 2.3 2.4	
							2.5	
6							2.6 2.7 2.8 2.9	
						2M	3	
7							3.1 3.2 3.3 3.4	
							3.5	
							3.6 3.7 3.8 3.9	
		8	6		EPJ	3M	4	
8							(4.1) (4.2) (4.3) (4.4)	
						4M	4.5	
		9					(4.6) (4.7) (4.8) (4.9)	
							5	
9						5M	(5.1) (5.2) (5.3) (5.4)	
							5.5	
		10					(5.6) (5.7) (5.8) (5.9)	
							6	
10		11				Sequential numbering designation	(6.1) (6.2) (6.3) (6.4)	
							6.5	
						1MR	7	
11		13	8				8	
15		15					10	
17		17				2MR	12	
18		18					(13)	
20		20					15	
21		21					16	
—	—	25		—			20	
		30					25	

Characters for engraving (Round Gothic type)

0 1 2 3 4
5 6 7 8 9

A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z

Name	Characters for engraving	Order code
Slash	／	¥
Greater	＞	＞
Less	＜	＜
Plus	＋	＋
Minus	－	#
Space	⬚	%
Centered dot	・	@
Period	.	&

The P dimension enclosed in brackets ( ) is applicable only for EPN.
Use ¥ for indicating (slash), # for —(minus), % for ⬚(space), @ for ・(centered dot), and & for . (period).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the 1st digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the 2nd digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

1MR (Example)
- When placing the order for 5 pieces of EPN1MR2—150—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of EPN1MR3—150—Z, characters for engraving "Z A B"

2MR(Example)
- When placing the order for 4 pieces of EPJ2MR4—100—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of EPJ2MR4—100—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of EPJ2MR6—150—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Order

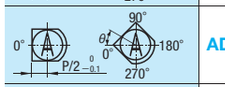
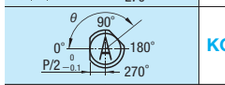
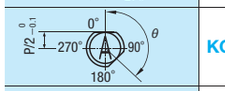
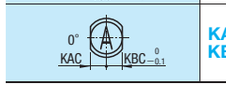
Part Number: Type	Character	P	L	Characters for engraving (0～9, A～Z / ＞＜＋－⬚・.)
EPN	2M	6	250.00	A1
EPJ	1MR	5	280.00	T

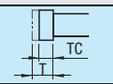
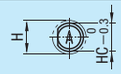
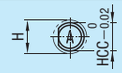
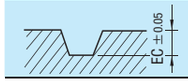
Days to Ship: Quotation

Alterations

Part Number	L	Characters for engraving	(AKC・AWC⋯etc.)
EPJ1M 4	270.00	A	AKC90

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0＜AKC＜360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC＜360	
	ARC	ARC=1° increments 0≦ARC＜360	
	ADC	ADC=1° increments 0≦ADC＜360	
	KGA	KGA=1° increments 0＜KGA＜360	
	KGB	KGB=1° increments 0＜KGB＜360	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2 Combination with other key flat cutting not available	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC＜T, P≧1.5 (Dimension L remains unchanged.) T−TC≦Lmax.−L	
	HC	HC=0.1mm increments P+1≦HC＜H, P≧1.5	
	HCC	HCC=0.1mm increments P+1≦HCC＜H−0.3, P≧1.5	Quotation
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	
	EC	Engraving depth alteration 0.2 ⋯→ 0.1 Designation method EC0.1 0.2 ⋯→ 0.3 Designation method EC0.3	

Price: Quotation

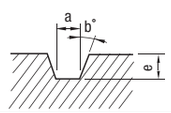
■Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1M 1MR (1 character)	1～1.2	0.8	0.4
	1.3～1.4	1.0	0.5
	1.5～1.9	1.2	0.6
	2～2.4	1.5	0.8
	2.5～3.4	2.0	1.0
	3.5～4.4	3.0	1.5
	4.5～5.4	4.0	2.0
	5.5～12	5.0	2.5
	13～20	9.0	4.5
	25	14.0	7.0
2M 2MR (2 characters)	1.5～1.9	0.7	1.1
	2～2.2	0.8	1.2
	2.3～2.9	1.0	1.3
	3～3.9	1.5	2.0
	4～4.9	2.0	2.6
	5～5.9	2.5	3.3
	6～7	3.0	3.9
	8～12	4.0	5.2
	13～20	6.5	8.0
	25	10.0	12.5

No. of characters	P	Q	W
3M (3 characters)	2.8～3	0.8	1.8
	3.1～4.4	1.0	2.1
	4.5～5.4	1.5	3.2
	5.5～6.5	2.0	4.2
	7～12	2.5	5.3
	13～20	4.5	8.5
	25	7.0	13.5
4M (4 characters)	3.6～3.8	0.8	2.4
	3.9～5.4	1.0	2.9
	5.5～6.5	1.5	4.4
	7～12	2.0	5.8
	13～20	3.5	8.8
	25	5.5	14.0
5M (5 characters)	4.5～4.9	0.8	3.0
	5～6.5	1.0	3.7
	7～12	1.5	5.6
	13～20	3.0	9.0
	25	4.8	14.2

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Concave character)

Details of engraving

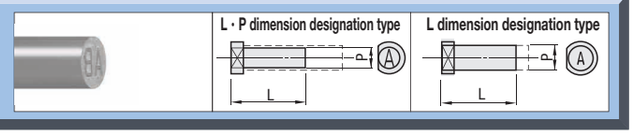


Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	20° ±2°
Depth of engraving (e)	0.2±0.05

High Speed Steel
SKH51 equivalent
4mm head

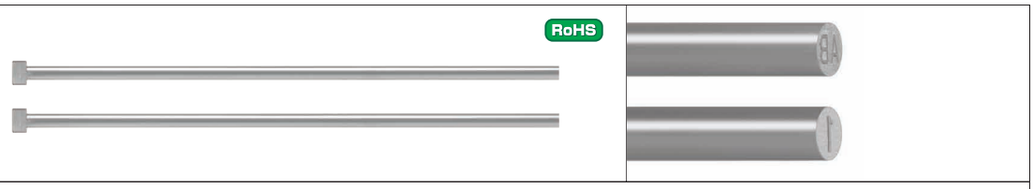
STRAIGHT EJECTOR PINS WITH ENGRAVING

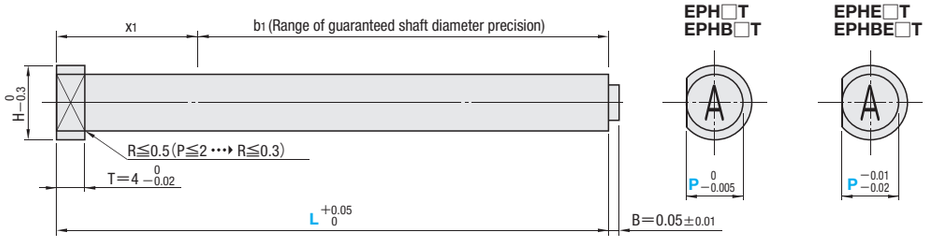
—L DIMENSION DESIGNATION TYPE／L・P DIMENSION DESIGNATION・CONVEX CHARACTER TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



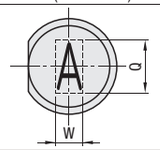
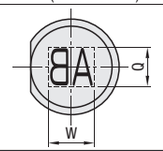


Part Number	Head thickness	T P
EPH□T EPHB□T	4mm(T4)	0 −0.005
EPHE□T EPHBE□T		−0.01 −0.02

To determine the engraving position, key flat cutting is made at the standard 0°

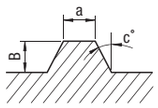
Range of guaranteed shaft diameter precision (Details P.1301)
T4 ··· x1 max.30

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

1T (1character)	2T (2 characters)
	
1≦P≦4	2≦P≦4

Designate characters in the right reading order to appear on the finished products.

Details of engraving



Ejector pins	Finished products
Reversed reading (Convex character)	Normal reading (Concave character)

Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (c°)	25°±2°
Depth of engraving (B)	0.05±0.01

■L dimension designation type

H	T	Part Number Type	Character	P	L 0.01mm increments	Characters for engraving (Round Gothic type)
3	4	EPH (P 0 −0.005) EPHE (P −0.01 −0.02)	1T 2T (P≧2)	1 1.1 1.2 1.3 1.4	40.00～200.00	0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
				1.5	40.00～250.00	
4				1.6	40.00～250.00	
				1.7 1.8 1.9	40.00～200.00	
				2	40.00～250.00	
5				2.1	40.00～250.00	
				2.2 2.3 2.4	40.00～200.00	
				2.5	40.00～250.00	
6				2.6	40.00～250.00	
				2.7 2.8 2.9	40.00～200.00	
				3	40.00～250.00	
7				3.1	40.00～250.00	
				3.2 3.3 3.4	40.00～200.00	
				3.5 3.6	40.00～250.00	
				3.7 3.8 3.9	40.00～200.00	
				4	40.00～250.00	

■L・P dimension designation type

H	T	Part Number Type	Character	No.	0.01mm increments L	P	Characters for engraving (Round Gothic type)
3	4	EPHB (P 0 −0.005) EPHBE (P −0.01 −0.02)	1T 2T (P≧2)	1.5	40.00～200.00	1.00～1.49	0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
4				2	40.00～250.00	1.50～1.99	
5				2.5		2.00～2.49	
6				3		2.50～2.99	
7				3.5		3.00～3.49	
				4		3.50～3.99	

Order

Part Number				L		Characters for engraving (0～9 A～Z)
Type	Character	P	—		—	
EPH	1T	4	—	200.00	—	A

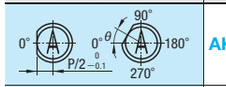
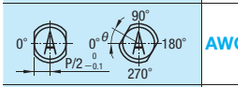
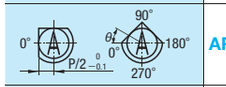
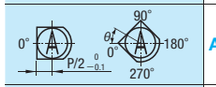
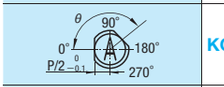
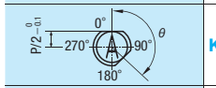
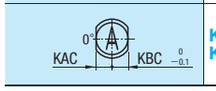
Days to Ship

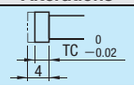
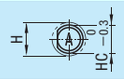
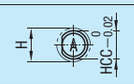
Quotation

Alterations

Part Number		L		Characters for engraving (0～9, A～Z)		(AKC・AWC···etc.)
EPH1T 4	—	200.00	—	A	—	AKC120

Alteration details P.53

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	
	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0≦TC<4, P≧1.5 (Dimension L remains unchanged) 4−TC≦Lmax.−L	Quotation
	HC	HC=0.1mm increments P+1≦HC<H, P≧1.5	
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
	NHC	Numbering on the head How to order P.54	
	NHN	Automatic sequential numbering on the head How to order P.54	

■Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1T (1 character)	1.0～1.29	0.6	0.5
	1.3～1.49	0.6	0.5
	1.5～1.99	0.9	0.7
	2.0～2.49	1.3	0.8
	2.5～2.99	1.6	1.0
	3.0～3.49	1.9	1.2
	3.5～4	2.3	1.4
2T (2 characters)	2.0～2.49	1.0	1.4
	2.5～2.99	1.2	1.7
	3.0～3.49	1.5	2.1
	3.5～3.99	1.7	2.4
	4	2	2.8

■Character font (Round Gothic type)

0 1 2 3 4 5 6 7 8 9
A B C D E F G H I J
K L M N O P Q R S T
U V W X Y Z

Price

Quotation

Straight Ejector Pins

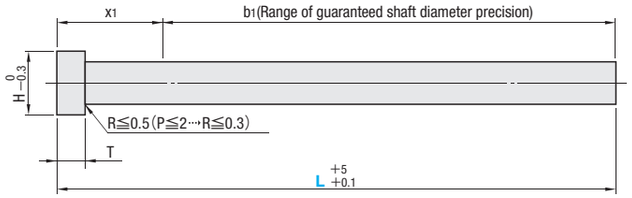
High Speed Steel SKH51 equivalent

STRAIGHT EJECTOR PINS

—PACKAGE PRODUCTS—

RoHS

PACK	Type	M	H	Head thickness	T T	T P
50PACK (50) 100PACK (100)	EPH	SKH51 equivalent	58～60HRC	4mm(T4)	0 −0.02	0 −0.005
	EPHE					−0.01 −0.02
	EPN	SKD61 equivalent + Nitriding	Surface 900HV～ Base material 40～45HRC			
	EPJ			6・8mm(JIS)	0 −0.05	
	EPD	SKD61 equivalent	50～55HRC	4mm(T4)	0 −0.02	



Range of guaranteed shaft diameter precision (Details P.1301)
x1 max.35 for EPJ and max.30 for other than EPJ
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

■SKH51 equivalent(58～60HRC)

H	T	Part Number PACK	Type	P	L Selection			50 PACK PRICE L100	L150	L200	100 PACK PRICE L100	L150	L200
3	4	50 PACK 100 PACK	EPH EPHE	1	100	150	200						
				1.5	100	150	200						
4				2	100	150	200			Quotation			
5				2.5	100	150	200						
6				3	100	150	200						
7				4	100	150	200						

■SKD61 equivalent+Nitriding (Base material 40～45HRC, Surface 900HV～) 4mm head

H	T	Part Number PACK	Type	P	L Selection				50 PACK PRICE L100	L150	L200	L300	100 PACK PRICE L100	L150	L200	L300
3	4	50 PACK 100 PACK	EPN	1.5	100	150	200									
4				2	100	150	200									
6				3	100	150	200				Quotation					
7				4	100	150	200									
8				5	100	150	200									
9				6		150	200	300								

■SKD61 equivalent+Nitriding (Base material 40～45HRC, Surface 900HV～) JIS head

H	T	Part Number PACK	Type	P	L Selection				50 PACK PRICE L150	L200	L250	L300	100 PACK PRICE L150	L200	L250	L300
8	6	50 PACK 100 PACK	EPJ	4	150	200	250	300								
9				5	150	200	250	300								
10				6	150	200	250	300			Quotation					
13	8			8	150	200	250	300								

■SKD61 equivalent(50～55HRC)

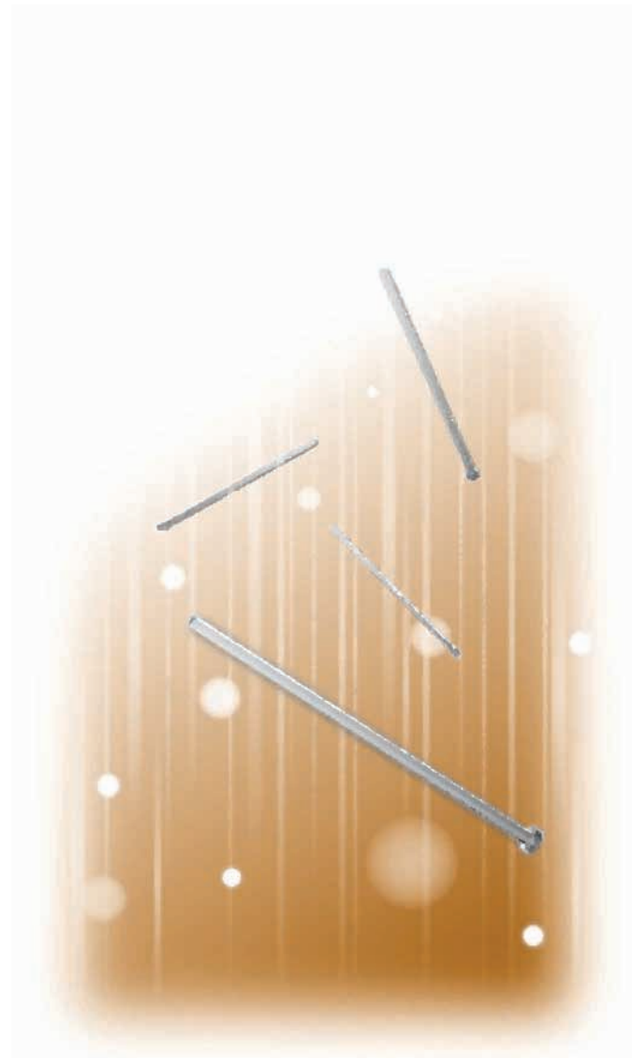
H	T	Part Number PACK	Type	P	L Selection			50 PACK PRICE L100	L150	L200	100 PACK PRICE L100	L150	L200
4	4	50 PACK 100 PACK	EPD	2	100	150	200						
6				3	100	150	200			Quotation			
7				4	100	150	200						

Order

Part Number			—	L
PACK	Type	P		
(50) 50 PACK	EPH	3	—	100
(100) 100 PACK	EPHE	3	—	100

Days to Ship

Quotation



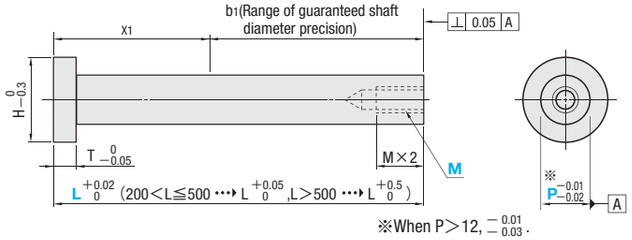
PINS FOR EJECTOR BLOCK

Non JIS material definition is listed on P.1351 - 1352

RoHS

Close-up of tip end

EBPJ



Range of guaranteed shaft diameter precision (Details P.1301)
x_1 max.35

M SKD61 equivalent+Nitrided
H Surface base:900HV~
Base material:40±3HRC

Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

H	T	Part Number Type	Part Number P	L 0.01mm increments (L>500 → 0.1mm increments)	M
10	6	EBPJ	6	40.00~450.00	3 4 5 6 / 8 10 12 16 / M≦P−3
11			7		
13	8		8	40.00~500.00	
15			10		
17			12	40.00~800.00	
21			16		
25			20		

Order

Part Number	L	M
EBPJ8	220.00	M4

Days to Ship: Quotation

Alterations

Part Number	L	M	
EBPJ8	225.55	M4	WKC4

(KC・WKC···etc.)

Alteration details P.53

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKCa<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting P/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
Unit of designation
0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H	
TC T	TC	TC=0.1mm increments T/2≦TC<T (Dimension L remains unchanged) T−TC≦Lmax.−L	
d +0.1 0 H ℓ T	NC	Dowel hole boring Combination with other than NHC・NHN not available. T: 6, 8 / d: 3 / ℓ: 5	
d H ℓ1 T	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN not available. T: 6, 8 / d: 3 / ℓ1: 5	Quotation
d H ℓ2 T	NCS	Dowel hole boring+Dowel pin driving Combination with other than NHC・NHN not available. T: 6, 8 / d: 3 / ℓ2: 5	
217	NHC	Numbering on the head How to order P.54 Combination with SKC・MC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.54 Combination with SKC・MC not available.	
MC M×1	MC	Head tapping Available when P≧8 Combination with any other alteration not available. P: 8, 10, 12, 16・20 / M: M4, M5, M6, M8	

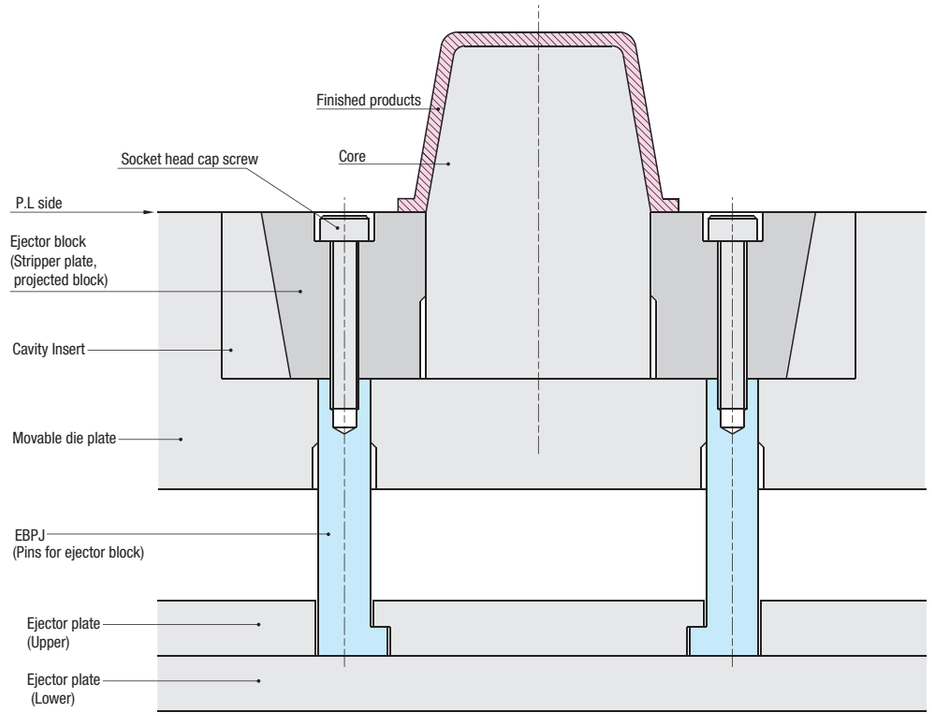
Price: Quotation

Example

■Characteristics

- The assembly and adjustment of ejector block (stripper plate) ejected mold is easy.
- The ejector blocks can be installed from the parting line by using socket head cap screws.
- The rotation during bolt tightening can be prevented by combination with key flat cutting alteration (KC, etc.).
- They are used by customers of food containers, medical apparatuses, cylindrical molded products, automotive interior decoration products and home appliances, etc.

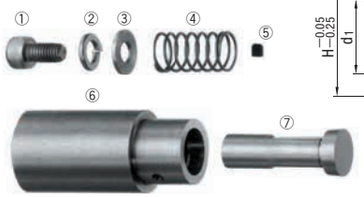
●Example of use on cylindrical containers

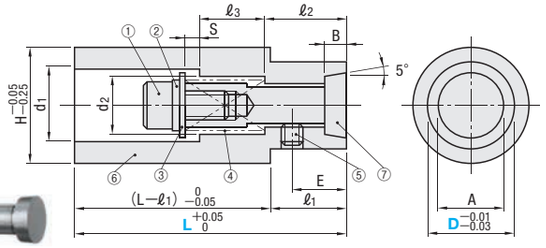


Non JIS material definition is listed on P.1351 - 1352

RoHS

AJVE (Steel type)
AJV (Stainless Steel type)





No.	Item	AJVE M	AJVE H	AJV M	AJV H
①	Socket head cap screw	SCM435	38～43HRC	SUS304	—
②	Spring Washers	SWRH62	42～50HRC	SUS304	—
③	Plain washer	SK5	—	SUS304	—
④	SPRINGS	SUS304	—	SUS304	—
⑤	Screw plug	SCM435	34～43HRC	SCM435	34～43HRC
⑥	Cylinder tube	S45C	33～38HRC	NAK101	35HRC
⑦	Piston rod	S45C	33～38HRC	NAK101	35HRC

D	Ejection force N{kgf}	Spring pressure N{kgf}	Components ①	Components ⑤
10	9.61{ 0.98}	4.81{0.49}	M 3—L 6	MSW3
13	16.67{ 1.70}	8.34{0.85}	M 4—L 8	MSW3
16	24.51{ 2.50}	12.26{1.25}	M 5—L10	MSW4
20	38.25{ 3.90}	19.61{2.00}	M 6—L12	MSW4
25	64.72{ 6.60}	32.36{3.30}	M 8—L15	MSW5
32	124.54{12.70}	63.74{6.50}	M10—L20	MSW6

{kgf}=N×0.101972

- The screw plug ⑤ is used to fix the piston rod ⑦ when assembling/disassembling the air-jet valve. Before mounting the air-jet valve on a mold, make sure to loosen the screw plug and check the piston rod movement.
- Periodically tighten the bolt ① in order to prevent the piston rod ⑦ from coming loose.
- Shown here are reference values of ejection force when the air pressure is 49N/cm²{500kPa}.
- When using the air-jet value, set the air pressure at 49N/cm²{500kPa} or higher.

S	E	ℓ_1	ℓ_2	ℓ_3	d_1	d_2	H	B	A	Part Number Type	D	L AJVE (Selection)	L AJV 1mm increments
1.5	7	12	10.5	8.5	8.5	6.5	15	3	7.5	AJVE (Steel type) AJV (Stainless type)	10	20 25 30 35	19～35
1.5	8	15	14	11	10.5	8.5	18	4	9		13	25 30 35 40	25～40
2.5	10	15	16	12	12.5	10.5	21	4	11		16	30 40 50	28～50
3.0	12	20	21	15	16	13	25	6	14		20	40 50 60	36～60
3.0	12	20	26	18	19	16	32	6	18		25	50 60 70	44～70
5.0	15	25	35	20	25	22	40	8	25		32	70 80	55～80

Please select AJV (stainless type) for resin with high liquidity when you select the material, and select AJVE (steel type) for resin with low liquidity.

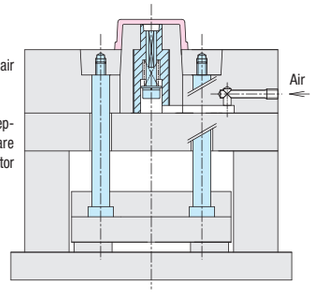
Order

Part Number	—	L
AJVE 20	—	60
AJV 20	—	38

Price Quotation

Example

- Thrust out the molded product using air pressure.
- Use these valves for thrusting out deep-molded products, when problems are likely to occur if the marks of the ejector pin remain on the product, and so on.



Days to Ship Quotation

Alterations

Part Number	—	L(LC)	—	(KC・JC・AC)
AJVE 20	—	LC58	—	KC

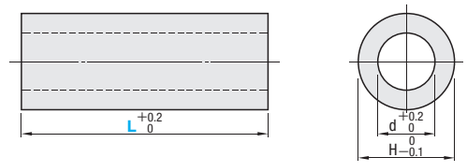
Quotation

Alterations	Code	Spec.	1Code
	KC	⑥Adds a key flat on the cylinder tube.	Quotation
	JC	⑥Adds a spacer connecting slot onto the cylinder tube.	
	AC	Enables the user to keep air blowing all the time. ③Adds a hole on the plain washer.	
	LC	⑥Total length alteration 1mm increments Lmin.≦LC＜L ※Available for AJVE only.	

D	Lmin.
10	19
13	25
16	28
20	36
25	44
32	55

RoHS

AJVS (Spacers for Air-jet Valve)



M S45C

d	H	Part Number Type	Part Number No.	L 1mm increments	U/Price 1～9 L10～50	U/Price 1～9 L51～100
8.5	15	AJVS	10	10～100	Quotation	
10.5	18		13			
10.5	21		16			
13	25		20			
16	32		25			
25	40		32			

Order

Part Number	—	L
AJVS 10	—	53

Days to Ship Quotation

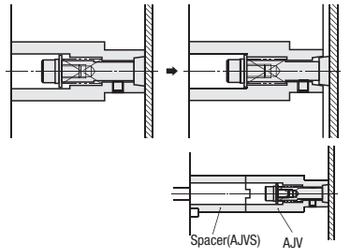
Price Quotation

Alterations

Part Number	—	L	—	(KC・JC)
AJVS 16	—	85	—	KC

Example

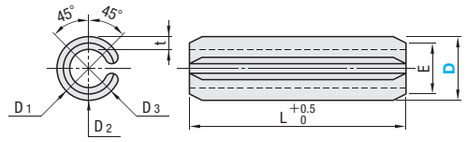
- By making a unit with the air-jet valve, you can avoid major machining work; no more than a simple boring process on the mold plane will be required.



Opening the valve with air allows:
1. Vacuum breaking
2. Air blowing
3. Preliminary ejection

Alterations	Code	Spec.	1Code
	KC	Adds a key flat on the spacer.	Quotation
	JC	Adds a cylinder tube on the spacer connecting slot.	

WSP (Spring Pins chamfered both ends (W type))



M SUS 402 J2

Emax.	*kN{kgf}	t (Reference)	L	D min.	D max.	Part Number Type	Part Number D	U/Price 1～299	Slide unit price 300～499	500～1999	2000～4000
1.9	2.76{ 281}	0.4	8	2.15	2.25	WSP	2	Quotation			
2.9	6.20{ 633}	0.6	10	3.15	3.25		3				
3.9	10.80{1130}	0.8	10	4.2	4.4		4				

The maximum value of D is the maximum value on the pin's circumference; its minimum value is the average of D_1, D_2 and D_3. Reference Value t is in accordance with JSMA No.6 (Standards of Japan Spring Manufacturers Association)
*The minimum load of double shearing (JIS B2808)

Order

Part Number	—	L
WSP 2		
MS 3	—	15

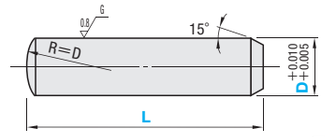
Days to Ship Quotation

・Recommended spring pins & dowel pins

Head thickness of ejector pins in NC alteration	4mm	6・8mm	10mm
Spring pin (WSP)	WSP2	WSP3	WSP4
Dowel pin (MS)	MS2	MS3	MS4

RoHS

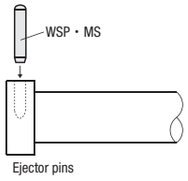
MS (Dowel pin)



M SUJ2
H 58HRC～

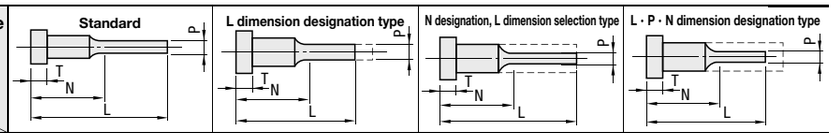
The detailed specifications of dowel pins P.1203

Example



STEPPED EJECTOR PINS

STEPPED EJECTOR PINS



Material	Head Thickness (T)	Tip diameter (P) tolerance	Standard Part Number	Page	L dimension designation type Part Number	Page	N designation, L dimension selection type Part Number	Page	L・P・N dimension designation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.002	—		EVSL	P.137	EVSG	P.137	EVSF	P.137
		0 −0.005	EHS	P.129	EHSL	P.131	EHSG	P.133	EHSF	P.135
		−0.01 −0.02	EHSE	P.129	EHSEL	P.131	EHSEG	P.133	EHSFE	P.135
	4mm (T4) Small diameter	0 −0.005	—		—		—		EHYF	P.135
	6・8mm (JIS)	0 −0.005	EHSJ	P.129	EHSJL	P.131	EHSJG	P.133	EHSJF	P.135
		−0.01 −0.02	EHSJE	P.129	EHSJEL	P.131	EHSJEG	P.133	EHSJFE	P.135
SKH51 equivalent + Hard chromate plating	4mm (T4)	0 −0.005	—		—		—		C−EHSF	P.139
		−0.01 −0.02	—		—		—		C−EHSFE	P.139
	4mm (T4) Small diameter	0 −0.005	—		—		—		C−EHYF	P.139
	6・8mm (JIS)	0 −0.005	—		—		—		C−EHSJF	P.139
		−0.01 −0.02	—		—		—		C−EHSJFE	P.139
SKD61 equivalent	4mm (T4)	0 −0.005	EDS	P.153	EDSL	P.155	EDSG	P.153	EDSFS	P.155
		−0.01 −0.02	EDSE	P.153	EDSEL	P.155	EDSEG	P.153	EDSF	P.155
SKD61 equivalent + Nitriding	4mm (T4) 6・8mm (JIS)	* Reference tolerance −0.01 −0.02	ENS	P.149	ENSL	P.151	ENSG	P.149	ENSF	P.151
			EJS	P.149	EJSL	P.151	EJSG	P.149	EJSF	P.151
SKD61 equivalent Prehardened	4mm (T4) 6・8mm (JIS)	* Reference tolerance −0.01 −0.02	—		—		EASG	P.157	EASF	P.157
			—		—		—		EAJSF	P.157
SUS440C	4mm (T4)	0 −0.005	—		—		—		EWSF	P.159
	6mm (JIS)	0 −0.005	—		—		—		EWSJF	P.159

*The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the tip diameter. For details, refer to the catalog page of each product.

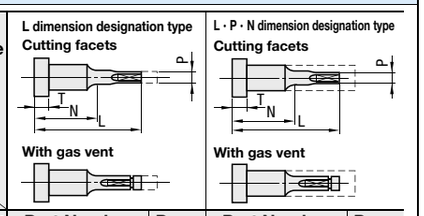
STEPPED EJECTOR PINS WITH GAS VENT

・Cutting facets

Close-up of tip end

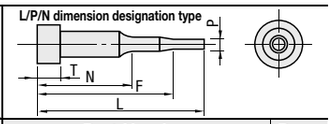
・With gas vent

Close-up of tip end



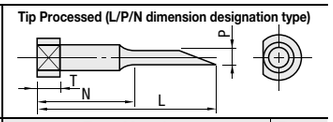
Tip	Material	Head Thickness (T)	Shaft diameter (P) Tolerance	L dimension designation type Part Number	Page	L・P・N dimension designation type Part Number	Page
Single flat cutting	SKH51 equivalent	4mm (T4)	0 −0.005	GW−EHSL	P.145	GW−EHSF	P.147
			−0.01 −0.02	GW−EHSEL	P.145	GW−EHSFE	P.147
		6・8mm (JIS)	0 −0.005	GW−EHSJL	P.145	GW−EHSJF	P.147
			−0.01 −0.02	GW−EHSJEL	P.145	GW−EHSJFE	P.147
Four flats cutting	SKH51 equivalent	4mm (T4)	0 −0.005	GWS−EHSL	P.145	GWS−EHSF	P.147
			−0.01 −0.02	GWS−EHSEL	P.145	GWS−EHSFE	P.147
		6・8mm (JIS)	0 −0.005	GWS−EHSJL	P.145	GWS−EHSJF	P.147
			−0.01 −0.02	GWS−EHSJEL	P.145	GWS−EHSJFE	P.147
With gas vent	SKH51 equivalent	4mm (T4)	0 −0.005	GVB−EHSL	P.141	GVB−EHSF	P.143
			−0.01 −0.02	GVB−EHSEL	P.141	GVB−EHSFE	P.143
		6・8mm (JIS)	0 −0.005	GVB−EHSJL	P.141	GVB−EHSJF	P.143
			−0.01 −0.02	GVB−EHSJEL	P.141	GVB−EHSJFE	P.143

TWO-STEPPED EJECTOR PINS



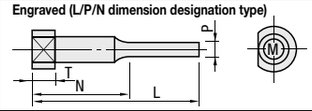
Material	Head Thickness (T)	Tip diameter (P) tolerance	Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	EHWSB	P.161

STEPPED EJECTOR PINS WITH TIP PROCESS



Material	Head Thickness (T)	Tip diameter (P) tolerance	Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	EHSF□A	P.167
		−0.01 −0.02	EHSFE□A	P.167
	6・8mm (JIS)	0 −0.005	EHSJF□A	P.167
		−0.01 −0.02	EHSJFE□A	P.167

STEPPED EJECTOR PINS WITH ENGRAVING



Material	Head Thickness (T)	Tip diameter (P) tolerance	Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	EHSF□M・EHSF□MR(Sequential No.)	P.169
		−0.01 −0.02	EHSFE□M・EHSFE□MR(Sequential No.)	P.169
	6・8mm (JIS)	0 −0.005	EHSJF□M・EHSJF□MR(Sequential No.)	P.169
		−0.01 −0.02	EHSJFE□M・EHSJFE□MR(Sequential No.)	P.169
SKD61 equivalent + Nitriding	6・8mm (JIS)	−0.01 −0.02	EJSF□M・EJSF□MR(Sequential No.)	P.171

■Material characteristics of ejector pins

		High Speed Steel SKH51 (M2) (1.3343)	Dies Steel SKD61 (H13) (1.2344)	Dies Steel SKD61 (H13)(1.2344) + Nitriding	Prehardened Dies Steel SKD61 (H13)(1.2344)	Stainless steel SUS440C (S44004)(1.4125)
M						
H	HRC	58～60	50～55	Surface base:900HV～ Material:40～45	40～45	56～60
Machining characteristics	Wear resistance	5	4	4	3	4
	Ability to be mirror-finished	4	4	3	3	4
	Toughness	3	5	4	4	3
	Corrosion resistance	3	3	3	3	5
Physical characteristics	Density [g/cm³]	8.2	7.75	7.75	7.75	7.78
	Modulus of longitudinal elasticity [kgf/mm²]	22300	21000	21000	21000	20400
	Coefficient of thermal expansion [×10⁻⁶/℃]	10.1	10.8	10.8	10.8	10.2
	Thermal conductivity [cal/cm・sec・℃]	0.051	0.061	0.061	0.061	0.058
Mechanical characteristics	Tensile strength [kgf/mm²]	235	135	135	135	200
	Charpy impact values [kgf・m/cm²]	2	6	4	4	1.5

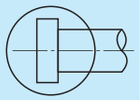
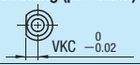
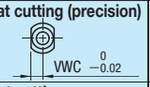
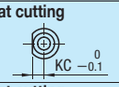
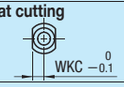
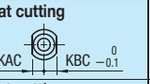
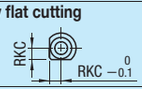
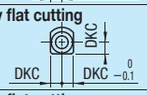
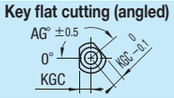
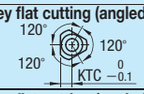
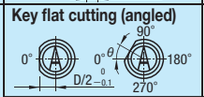
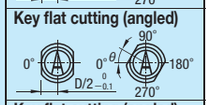
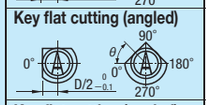
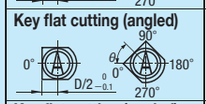
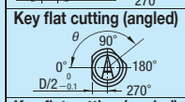
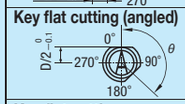
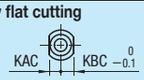
Machining characteristics: 1 (Inferior) — 3 (Good) — 5 (Excellent)

Conversion expression
1kgf/mm²=9.81N/mm²
1cal/cm・sec・℃=418.6W/M.K
1kgf・m/cm²=9.81J/cm²

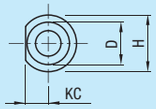
Data (figures shown) may vary depending on heat treatment and/or working conditions: Use these data as reference.

ALTERATION GUIDE FOR STEPPED EJECTOR PINS

■Alteration Guide for Stepped Ejector Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
 Head alteration	Stepped Ejector Pins (* Excluding products with head process and engraving.)	Key flat cutting (precision) 	VKC	Single flat cutting (precision) High speed steel SKH51 equivalent only Range of designation D/2≦VKC<H/2	Quotation
		Key flat cutting (precision) 	VWC	Two parallel flats cutting (precision) High speed steel SKH51 equivalent only Range of designation D/2≦VWC<H/2	
		Key flat cutting 	KC	Single flat cutting Range of designation D/2≦KC<H/2	
		Key flat cutting 	WKC	Two parallel flat cutting Range of designation D/2≦WKC<H/2	
		Key flat cutting 	KAC KBC	Varied width parallel flats cutting Range of designation D/2≦KAC KAC<KBC<H/2	
		Key flat cutting 	RKC	Right angled two flats cutting Range of designation D/2≦RKC<H/2	
		Key flat cutting 	DKC	Three flats cutting Range of designation D/2≦DKC<H/2	
		Key flat cutting	SKC	Four flats cutting Range of designation D/2≦SKC<H/2	
		Key flat cutting (angled) 	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation 0°<AG<360° D/2≦KGC<H/2 AG=1° increments	
		Key flat cutting (angled) 	KTC	Three flats cutting at 120° Range of designation D/2≦KTC<H/2	
	Stepped Ejector Pins with Tip Process & Stepped Ejector Pins with Engraving	Key flat cutting (angled) 	AKC	Changes the flat position (standard: 0°) clockwise in 1° increments. Range of designation 0°≦AKC<360° No need to designate AKC0 Unit of designation 1° increments Designation method θ=45° ··· AKC45	
		Key flat cutting (angled) 	AWC	Adds two parallel flats at the standard (0°) position, moreover at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0°≦AWC<360° Unit of designation 1° increments Designation method θ=0° ··· AWC0, θ=45° ··· AWC45	
		Key flat cutting (angled) 	ARC	Adds two right-angled flats at the standard (0°)position, moreover at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0°≦ARC<360° Unit of designation 1° increments Designation method θ=0° ··· ARC0, θ=45° ··· ARC45	
		Key flat cutting (angled) 	ADC	Adds three flats at the standard (0°) position, moreover at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0°≦ADC<360° Unit of designation 1° increments Designation method θ=0° ··· ADC0, θ=45° ··· ADC45	
		Key flat cutting (angled) 	KGA	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0°<KGA°<360° Unit of designation 1° increments Designation method θ=135° ··· KGA135	
		Key flat cutting (angled) 	KGB	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Please note that standard position 0° is upper surface which is different from other alterations. Range of designation 0°<KG°<360° Unit of designation 1° increments Designation method θ=135° ··· KGB135	
		Key flat cutting 	KAC KBC	Varied width parallel flats cutting Combination with other key flat cutting not available Range of designation D/2≦KAC KAC<KBC<H/2	

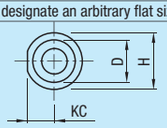
To make a flat at the shaft diameter position



Unit of designation / Designation method: 0.05mm increments possible
- VKC3 (When D6)
- VWC3.5 (When D7)
- KC0.75 (When D1.5)
- WKC3.5 (When D7)
- KAC1.25—KBC2.0 (When D2.5)
- RKC2.25 (When D4.5)
- DKC3 (When D6)
- SKC2.5 (When D5)
- KGC1.5—AG125 (When D3)
- KTC3.25 (When D6.5)

It remains at D tolerance even when D/2 is designated to fit shaft diameter.

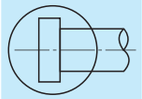
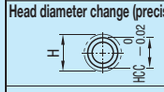
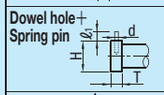
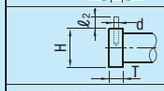
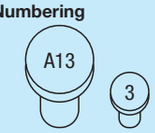
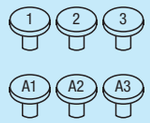
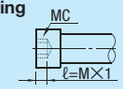
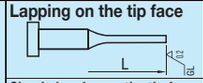
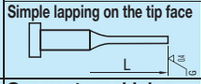
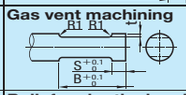
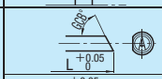
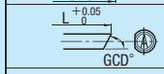
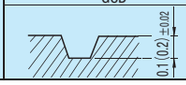
To designate an arbitrary flat size



Unit of designation / Designation method: 0.1mm increments only
- VKC1.4・VWC2.3・KC1.4・WKC2.3
- KAC1.4—KBC1.6・RKC1.4・DKC1.75
- SKC5.8・KGC1.4—AG135・KTC2.3

Note that designating H/2—0.15 or more for Key flat cutting alteration will create hardly any flat on the head.

■Alteration Guide for Stepped Ejector Pins

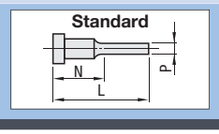
Items	Applicable Products	Alterations	Codes	Specifications	1Code
 Head alteration	Stepped Ejector Pins	Head diameter change	HC	Reduces head diameter. Range of designation D+1≦HC<H and D≧1.5 Unit of designation 0.1mm increments Designation method HC6.5	
		Head diameter change (precision) 	HCC	Reduces head diameter. (Precision) Range of designation D+1≦HCC<H—0.3 and D≧1.5 Unit of designation 0.1mm increments Designation method HCC6.1	
		Head thickness change	TC	Reduces the head thickness from the standard. Dimension L remains unchanged (except blank type). Range of designation T/2≦TC<T D≧1.5 T—TC≦Lmax.—L	
		Dowel hole boring	NC	Dowel hole boring Adds a dowel hole for use with WSP and MS. Designation method NC Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T / d / ℓ: 4 / 2 / 3; 6 / 3 / 5; 8 / 3; 10 / 4	
		Dowel hole+ Spring pin 	NCW	Adds a dowel hole and drives a spring pin. Designation method NCW Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T / d / ℓ1 / Spring pin: 4 / 2 / 5 / WSP2; 6 / 3 / 5 / WSP3; 8 / 3 / 5 / WSP3; 10 / 4 / 5 / WSP4	
			NCS	Adds a dowel hole and drives a dowel pin. Available when head diameter H≧4 Combination with other than NHC・NHN not available. T / d / ℓ2: 4 / 2 / 5; 6 / 3 / 5; 8 / 3 / 5	
		Numbering 	NHC	Numbering on the head. Electrolytic marking of ID code on the head (in 5 point, Round Gothic type). Available characters Numerals: 0~9; Alphabets: A~Z Range of designation 1 character when 2≦H<4.9 1 or 2 characters when 5≦H<6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) Designation method NHC—6, NHC—23, NHC—A90 Available when head diameter H≧2 Combination with SKC・MC not available. NHC is not available when numbering space in head exceeds the maximum of 1.8 long x 1.8 wide x characters.	
		Numbering 	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each ejector pin when two or more pieces of identical size are ordered. Available characters Same as NHC (see above) Range of designation Same as NHC (see above) Designation method When 3 pieces are ordered with NHN—1, a sequential number starting from 1 is added on the head of each piece. When 10 pieces are ordered with NHN-A15, a sequential number starting from A15 (through A24) is added on the head of each piece. Available when head diameter H≧2 Combination with SKC・MC not available. Only available when two or more pieces of identical size are ordered. NHN is not available when numbering space in head exceeds the maximum of 1.8 long x 1.8 wide x characters.	Quotation
		Tapping 	MC	Creates a tap on the head. Available when D≧8, H≧13, T≧8 Designation method MC When D 8.00~ 9.99 M4 When D10.00~11.99 M5 When D12.00~15.99 M6 When D16.00~20.00 M8 Combination with key flat cutting (NC, NCW, NCS, HC, HCC, NHC, NHN) not available.	
Tolerance alteration	Extra Precision Stepped Ejector Pins	Tolerance of tip change	PKC	Tolerance of tip can be changed. 0 / −0.002 ··· −0.001 / −0.003 Designation method PKC	
Tip alteration	Stepped Ejector Pins	Lapping on the tip face 	TMC	Performs lapping on the tip face. Available for L dimension designation and L・P dimension designation types when the material is SKH51 equivalent or SUS440C. Available when P≧0.6	
		Simple lapping on the tip face 	PFC	Performs simple lapping on the tip face. Applicable for the Tip R processed/P・L dimension designation type pins.	
Shaft alteration	Stepped Ejector Pins	Gas vent machining 	GVC	Gas vent machining Range of designation 2≦S≦10, S+5≦B≦30 Unit of designation S, B=1mm increments Designation method GVC—S3—B20 Available when P≧3 P / t: 3.00 ~ 4.99 / 0.3; 5.00 ~ 9.99 / 0.4; 10.00 ~ 12.00 / 0.5	
	Extra Precision Stepped Ejector Pins	Relief under the head	TRN	Relief under the head Designation method TRN	
Engraving alteration	Stepped Ejector Pins with Engraving		GCB	Range of designation 60°≦GCB<90° Unit of designation 1° increments Designation method GCB85 Available when L≦200 Combination with GCD not available.	
			GCD	Range of designation 60°≦GCD°<90° Unit of designation 1° increments Designation method GCD80 Available when L≦200 Combination with GCB not available.	
			EC	Changes the depth of engraving 0.05 ··· 0.1 (0.1 ··· 0.2) Designation method EC Available when P≧1 Combination with GCB/GCD not available.	

Stepped Ejector Pins

High Speed Steel
SKH51
equivalent

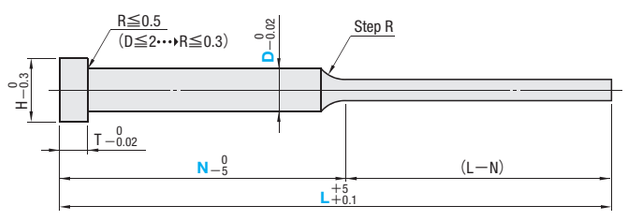
STEPPED EJECTOR PINS

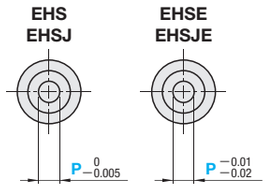
—STANDARD—



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
EHS	4mm(T4)	0 −0.005
EHSJ	6mm(JIS)	
EHSE	4mm(T4)	−0.01 −0.02
EHSJE	6mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	D	L	P	N
3	4	EHS (P 0 −0.005)	1	60	(0.3) (0.4) (0.5) 0.6 0.7 0.8	20 35
				100	(0.3) (0.4) (0.5) 0.6 0.7 0.8	40 50 60
			1.5	60	(0.3) (0.4) (0.5)	20 35
				100	(0.3) (0.4) (0.5) 0.6 0.7 0.8 0.9 1.0 1.2	40 50 60
				150	(0.5) 0.6 0.7 0.8 0.9 1.0 1.2	50 70 90
4		EHSE (P −0.01 −0.02)	2	100	0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.8	40 50 60
				150	0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.8	40 50 70 90
				200	0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.8	70 80 100
5			2.5	150	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1	50 70 90
				200	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1	70 80 100
6			3	150	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6	50 70 90
				200	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6	70 80 100
8	6	EHSJ (P 0 −0.005)	4	150	2.0 2.5 3.0	50 70
				200	2.0 2.5 3.0	70 100
				250	2.0 2.5 3.0	100 125
		EHSJE (P −0.01 −0.02)	4.5	150	2.0 2.5	50 70
				200	2.0 2.5	70 100
				250	2.0 2.5	100 125
9			5	150	3.0	50 70
				200	3.0	70 100
				250	3.0	100 125

The figures in ( ) for P dimensions are applicable for EHS only.

Order

Part Number	L	P	N
EHS 2	150	1.0	70
EHSE 2.5	200	P1.5	N70

Note that alphabetical characters (P, N) are not necessary in ordering EHS

Days to Ship: Quotation

Alterations

Part Number	L	P	N	(KC・WKC…etc.)
EHS 2	150	1.0	70	RKC1

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC＜H/2	
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC＜H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	Quotation
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC＜H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Price: Quotation

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC＜H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC＜T, D≧1.5 Dimensions L and N become shorter by (T−TC).	
d +0.1 0 H ℓ T	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T 4 / d 2 / ℓ 3; T 6 / d 3 / ℓ 5)	Quotation
d H ℓ₁ T	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T 4 / d 2 / ℓ₁ 5; T 6 / d 3 / ℓ₁ 5)	
d H ℓ₂ T	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T 4 / d 2 / ℓ₂ 5; T 6 / d 3 / ℓ₂ 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

Stepped Ejector Pins

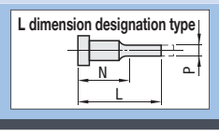
High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

STEPPED EJECTOR PINS

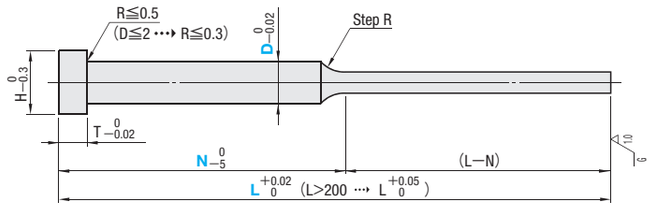
—L DIMENSION DESIGNATION TYPE—

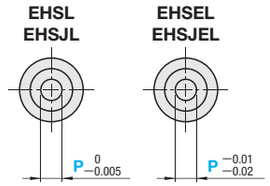
L dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
EHSL	4mm(T4)	0 −0.005
EHSJL	6mm(JIS)	
EHSEL	4mm(T4)	−0.01 −0.02
EHSJEL	6mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	D	L 0.01mm increments	P	N
3	4	EHSL (P 0 −0.005)	1	50.00～ 60.00	(0.3) (0.4) (0.5) 0.6 0.7 0.8	20 35
				60.01～100.00		40 50 60
			1.5	50.00～ 60.00	(0.3) (0.4) (0.5)	20 35
				60.01～100.00	(0.3) (0.4) (0.5) 0.6 0.7 0.8 0.9 1.0 1.2	40 50 60
				100.01～150.00	(0.5) 0.6 0.7 0.8 0.9 1.0 1.2	50 70 90
				150.01～200.00	0.6 0.7 0.8 0.9 1.0 1.2	70 80 100
4		EHSEL (P −0.01 −0.02)	2	50.00～100.00	0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.8	40 50 60
				100.01～150.00		40 50 70 90
				150.01～200.00		70 80 100
5			2.5	50.00～100.00	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1	40 50 60
				100.01～150.00		50 70 90
				150.01～200.00		70 80 100
6			3	100.00～150.00	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6	50 70 90
				150.01～200.00		70 80 100
8	6	EHSJL (P 0 −0.005)	4	100.00～150.00	2.0 2.5 3.0	50 70
				150.01～200.00		70 100
				200.01～250.00		100 125
			4.5	100.00～150.00	2.0 2.5	50 70
		EHSJEL (P −0.01 −0.02)		150.01～200.00		70 100
				200.01～250.00		100 125
9			5	100.00～150.00	3.0	50 70
				150.01～200.00		70 100
				200.01～250.00		100 125

The figures in ( ) for P dimensions are applicable for EHSL only. L—N≧10

Order

Part Number	L	P	N
EHSJL 4	240.30	P2.5	N100

Days to Ship **Quotation**

Alterations

Part Number	L	P	N	(KC・WKC···etc.)
EHSL 2	150.00	P1.5	N70	KTC1.5

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	Quotation
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L Dimension L remains unchanged. Dimensions N becomes shorter by (T−TC).	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4 6 / d 2 3 / ℓ 3 5)	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4 6 / d 2 3 / ℓ1 5)	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T 4 6 / d 2 3 / ℓ2 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L 0.2 0	TMC	Lapping on the tip face Available when P≧0.6	
S B	GVC	S, B=1mm increments Available for P=3.0 only 2≦S≦10, S+5≦B≦30	

Price **Quotation**

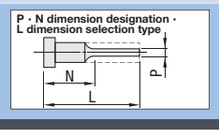
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

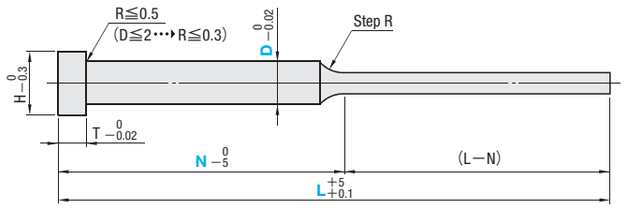
STEPPED EJECTOR PINS

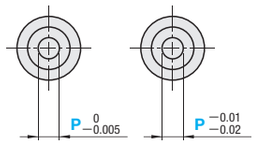
—P・N DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
EHSG	4mm(T4)	0 −0.005
EHSJG	6mm(JIS)	
EHSEG	4mm(T4)	−0.01 −0.02
EHSJEG	6mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L Selection	P 0.01mm increments	N 1mm increments
3	4	—	—	EHSG (P 0 −0.005) EHSEG (P −0.01 −0.02)	—	1	60 100	0.60 ～ 0.90	N≧15 and 15≦(L−N)≦150
						1.5	60 100 150 200	0.60 ～ 1.40	
4						2	100 150 200	0.80 ～ 1.90	
5						2.5	150 200	0.80 ～ 2.40	
6						3	150 200 250	1.00 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 20≦(L−N)≦200
7		8	6		EHSJG (P 0 −0.005) EHSJEG (P −0.01 −0.02)	4	150 200 250	1.50 ～ 3.90	
8						4.5	150 200 250	2.50 ～ 4.40	
		9				5	150 200 250	3.00 ～ 4.90	

For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of EHSG (P 0 −0.005), EHSEG (P −0.01 −0.02).

Order

Part Number	L	P	N
EHSJG 5	200	P3.00	N50

Days to Ship **Quotation**

Alterations

Part Number	L	P	N	(KC・WKC…etc.)
EHSJEG 5	200	P3.00	N50	SKC2.5

Quotation

Alteration details P.127

Alterations	Code	Spec.		1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	About Designation Unit for Key Flat Cutting	
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2		
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2		
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		Quotation
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2		
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 Dimension L becomes shorter by (T−TC). Dimensions N remain unchanged.	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when head diameter H≧4 — T d ℓ: 4 2 3; 6 3 5 Combination with other than NHC・NHN not available.	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 — T d ℓ1: 4 2 5; 6 3 5 Combination with other than NHC・NHN not available.	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 — T d ℓ2: 4 2 5; 6 3 5 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

Price **Quotation**

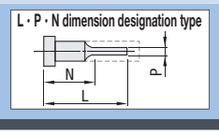
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

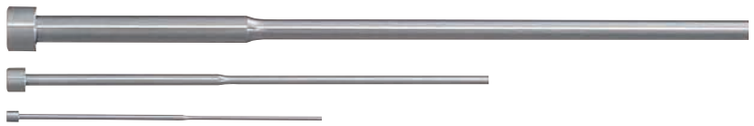
STEPPED EJECTOR PINS

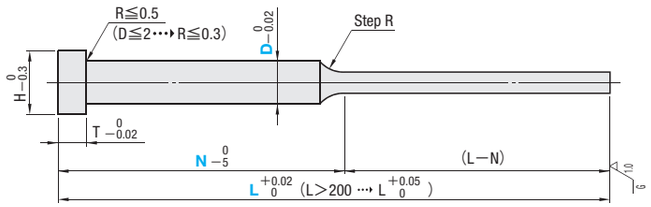
—L・P・N DIMENSION DESIGNATION TYPE—

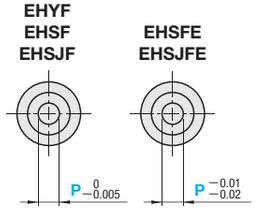


Non JIS material definition is listed on P.1351 - 1352

RoHS







Part Number	Head thickness	T P
EHYF (Small diameter)	4mm(T4)	0 −0.005
EHSF		
EHSJF	6・8mm(JIS)	
EHSFE	4mm(T4)	−0.01 −0.02
EHSJFE	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)
※EHYF is applied with overall quenching (its head without annealing).

H	T	Part Number Type	D	L 0.01mm increments	P 0.005mm increments	N 1mm increments	U/Price 1～4
2	4	EHYF (Small diameter)	0.5	30.00 ～ 60.00	0.300 ～ 0.400	N≧15 and (L−N)≧15	Quotation
			0.6		0.300 ～ 0.500		
			0.7		0.300 ～ 0.600		
			0.8		0.300 ～ 0.700		
			0.9		0.300 ～ 0.800		
			1		0.300 ～ 0.900		
			1.1		0.300 ～ 1.000		
			1.2		0.300 ～ 1.100		

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	0.01mm increments L	0.01mm increments P	1mm increments N
3	4	—	—	EHSF (P 0 −0.005) EHSFE (P −0.01 −0.02)	—	1	40.00 ～ 100.00	0.30 ～ 0.90	N≧15 and 15≦(L−N)≦150 When L250.01～300.00 50≦(L−N)≦150
							100.01 ～ 150.00	0.60 ～ 0.90	
						1.1	40.00 ～ 200.00	0.60 ～ 1.00	
						1.2		0.60 ～ 1.10	
						1.3		0.60 ～ 1.20	
						1.4		0.60 ～ 1.30	
						1.5		0.60 ～ 1.40	
4						1.6	40.00 ～ 250.00	0.80 ～ 1.50	
						1.7		0.80 ～ 1.60	
						1.8		0.80 ～ 1.70	
						1.9		0.80 ～ 1.80	
						2	40.00 ～ 300.00	0.80 ～ 1.90	
5						2.5		0.80 ～ 2.40	
6						3	40.00 ～ 350.00 (50.00 ～ 350.00)	1.00 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 20≦(L−N)≦200 When L300.01～350.00 50≦(L−N)≦200
7						3.5		1.50 ～ 3.40	
		8	6		EHSJF (P 0 −0.005) EHSJFE (P −0.01 −0.02)	4		1.50 ～ 3.90	
8						4.5		2.50 ～ 4.40	
		9				5	40.00 ～ 350.00 (50.00 ～ 350.00)	3.00 ～ 4.90	
9						5.5		3.50 ～ 5.40	
		10				6		4.00 ～ 5.90	
10		11				6.5		4.50 ～ 6.40	
						7		4.90 ～ 6.90	
11		13	8			8		5.90 ～ 7.90	
14		14				9		6.90 ～ 8.90	
15		15				10		7.90 ～ 9.90	
17		17				12		8.90 ～ 11.90	

The figures in parentheses ( ) for L dimensions are applicable for EHSJF and EHSJFE only.
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of EHSF (P 0 −0.005), EHSFE (P −0.01 −0.02).

Order: Part Number — L — P — N
EHSJF 5 — 300.00 — P3.00 — N150

Days to Ship: Quotation

Alterations: Part Number — L — P — N — (KC・WKC⋯etc.)
EHSJFE 7 — 180.00 — P6.60 — N50 — SKC4.0
Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 KGC −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° KTC −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
HC −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
HCC −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC −0.02	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4/6/8, d 2/2/3, ℓ 3/3/5)	
	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T 4/6/8, d 2/3/3, ℓ1 5/5/5)	
	NCS	Dowel hole boring+Dowel pin driving Available when head diameter H≧4 Combination with other than NHC・NHN not available. (T 4/6/8, d 2/3/3, ℓ2 5/5/5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L 0.2	TMC	Lapping on the tip face Not available for EHYF Available when P≧0.6	
S B	GVC	S, B=1mm increments 2≦S≦10, S+5≦B≦30 Available when P≧3	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with other than TMC/GVC not available (D 8～9/10/12, M M4/M5/M6)	

Price: Quotation

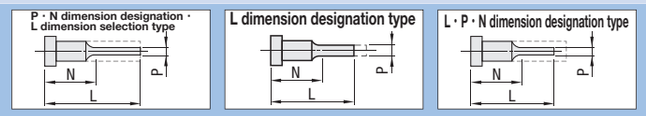
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
4mm head

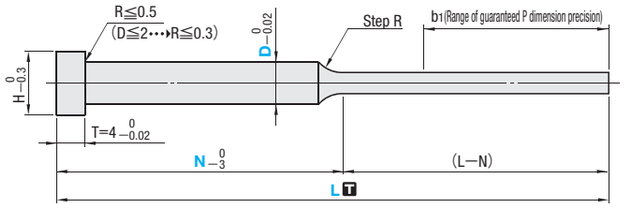
EXTRA PRECISION STEPPED EJECTOR PINS

—P・N DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE／L DIMENSION DESIGNATION TYPE／L・P・N DIMENSION DESIGNATION TYPE—

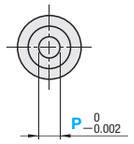


Non JIS material definition is listed on P.1351 - 1352

RoHS



L	b1min.
L≦100.00	L−N− 5
L>100.00	L−N−10



Part Number	Type	Head thickness	T L	T P	Tip Face Roughness
EVSG	P・N DESIGNATION DESIGNATION・L DIMENSION SELECTION TYPE	4mm (T4)	+5 +0.1	0 −0.002	—
EVSL	L DIMENSION DESIGNATION TYPE		+0.01 0		
EVSF	L・P・N DIMENSION DESIGNATION TYPE				

The heads of extra precision ejector pins are not annealed in order to guarantee precision. Use a construction that supports sliding and does not readily apply a load to the flange of the ejector pin, such as by using a precision ejector guide pin&bushing.

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)
※Overall quenching
(No annealing on head)

■P・N dimension designation・L dimension selection type

H	T	Part Number Type	D	L Selection	P 0.001mm increments	N 1mm increments
3	4	EVSG	1	60	0.300～0.900	When L60・100 N≧15 and (L−N)≧15
				100	0.500～0.900	
				150	0.600～0.900	
			1.5	60	0.300～1.400	
				100	0.500～1.400	
				150	0.600～1.400	
4			2	100 150	0.800～1.900	When L150 N≧15 and (L−N)≧50
5			2.5	100 150	0.800～2.400	
6			3	100 150	1.000～2.900	

■L DIMENSION DESIGNATION TYPE

H	T	Part Number Type	D	L 0.01mm increments	P	N
3	4	EVSL	1	50.00 ～ 60.00	0.3 0.4 0.5 0.6	30
				60.01 ～ 100.00	0.5 0.6	40
				100.01 ～ 150.00	0.6 0.8	50 60 70
			1.5	50.00 ～ 60.00	0.3 0.4 0.5 0.6	30
				60.01 ～ 100.00	0.5 0.6 0.8	40
				100.01 ～ 150.00	0.6 0.8 1.0	50 60 70
4			2	60.00 ～ 100.00	0.8 1.0 1.2 1.5	40
				100.01 ～ 150.00		50 60 70
5			2.5	60.00 ～ 100.00	1.0 1.5 2.0	40
				100.01 ～ 150.00		50 60 70
6			3	60.00 ～ 100.00	1.2 1.5 2.0	40
				100.01 ～ 150.00		50 60 70

■L・P・N DIMENSION DESIGNATION TYPE

H	T	Part Number Type	D	L 0.01mm increments	P 0.001mm increments	N 1mm increments
3	4	EVSF	1	50.00 ～ 100.00	0.300 ～ 0.900	When L≦100.00 N≧15 and (L−N)≧15
				100.01 ～ 150.00	0.600 ～ 0.900	
			1.5	60.00 ～ 100.00	0.300 ～ 1.400	
				100.01 ～ 150.00	0.600 ～ 1.400	
4			2	60.00 ～ 150.00	0.800 ～ 1.900	
5			2.5	60.00 ～ 150.00	0.800 ～ 2.400	When L>100.00 N≧15 and (L−N)≧50
6			3	60.00 ～ 150.00	1.000 ～ 2.900	

Order

Part Number	L	P	N
EVSG 3	100	P2.900	N50
EVSL 3	150.00	P2.0	N70

Days to Ship: Quotation

Alterations

Part Number	L	P	N	(KC・WKC…etc.)
EVSL 2	150.00	P1.5	N70	KTC1.5

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4, D≧1.5 EVSL, EVSF ･･･ 4−TC≦Lmax.−L EVSL Dimension L remains unchanged Dimension N becomes shorter by (4−TC). EVSF Dimension L・N remains unchanged EVSG ･･･ Dimension L becomes shorter by (4−TC).	
	TRN	Relief under the head	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L 0.2	TMC	Lapping on the tip face Available when P≧0.6 Applicable to EVSL, EVSF only	
P	PKC	Tolerance of tip change P 0 −0.002 ･･･ −0.001 −0.003	

Price: Quotation

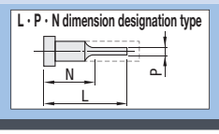
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
+
Hard chromate plating

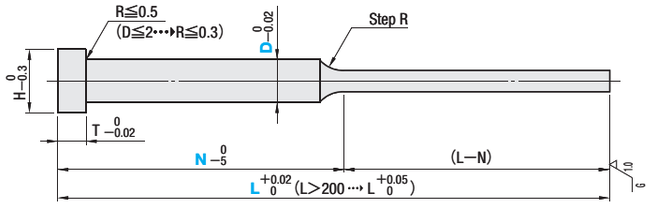
STEPPED EJECTOR PINS

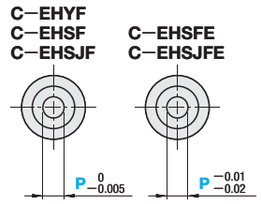
—L・P・N DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head thickness	T P
C−EHYF (Small diameter)	4mm(T4)	0 −0.005
C−EHSF		
C−EHSJF	6・8mm(JIS)	
C−EHSFE	4mm(T4)	−0.01 −0.02
C−EHSJFE	6・8mm(JIS)	

Tolerances of tip diameter/length are figures after plating.
Plating may extend to the head.

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent+Hard chromate plating
H Surface:900HV～(Reference value)
Base material:58～60HRC

Range of guaranteed base material hardness (Details P.1303)
※C−EHYF is applied with overall quenching. (its head without annealing).

H	T	Part Number Type	D	L 0.01mm increments	P 0.005mm increments	N 1mm increments	U/Price 1～4
2	4	C−EHYF (Small diameter)	0.5	30.00 ～ 60.00	0.300～0.400	N≧15 and (L−N)≧15	Quotation
			0.6		0.300～0.500		
			0.7		0.300～0.600		
			0.8		0.300～0.700		
			0.9		0.300～0.800		
			1		0.300～0.900		
			1.1		0.300～1.000		
			1.2		0.300～1.100		

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	0.01mm increments L	0.01mm increments P	1mm increments N
3	4	—	—	C−EHSF (P 0 −0.005)	—	1	40.00 ～ 100.00	0.30～ 0.90	N≧15 and 15≦(L−N)≦150
							100.01 ～ 150.00	0.60～ 0.90	
						1.1	40.00 ～ 200.00	0.60～ 1.00	
						1.2		0.60～ 1.10	
						1.3		0.60～ 1.20	
						1.4		0.60～ 1.30	
						1.5		0.60～ 1.40	
4						1.6	40.00 ～ 250.00	0.80～ 1.50	
						1.7		0.80～ 1.60	
						1.8		0.80～ 1.70	
						1.9		0.80～ 1.80	
						2		0.80～ 1.90	
5						2.5		0.80～ 2.40	
6				C−EHSFE (P −0.01 −0.02)		3	40.00 ～ 300.00 (50.00 ～ 300.00)	1.00～ 2.90	N≧15 (T4) N≧30 (JIS) and 20≦(L−N)≦200
7						3.5		1.50～ 3.40	
8		8	6		C−EHSJF (P 0 −0.005)	4		1.50～ 3.90	
						4.5		2.50～ 4.40	
9		9				5	40.00 ～ 350.00 (50.00 ～ 350.00)	3.00～ 4.90	
		10				5.5		3.50～ 5.40	
10		11				6		4.00～ 5.90	
						6.5		4.50～ 6.40	
					C−EHSJFE (P −0.01 −0.02)	7		4.90～ 6.90	
11		13	8			8		5.90～ 7.90	
14		14				9		6.90～ 8.90	
15		15				10		7.90～ 9.90	
17		17				12		8.90～11.90	

The figures in parentheses ( ) for L dimensions are applicable for C−EHSJF and C−EHSJFE only.
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of C−EHSF (P 0 −0.005), C−EHSFE (P −0.01 −0.02).

Order: Part Number — L — P — N
C−EHSJF 5 — 300.00 — P3.00 — N150

Days to Ship: Quotation

Alterations: Part Number — L — P — N — (KC・WKC…etc.)
C−EHSJFE 7 — 180.00 — P6.60 — N50 — SKC4.0

Alteration details P.127

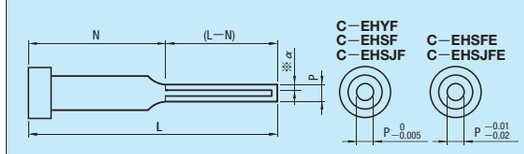
Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
d +0.1 0 H T	NC	Dowel hole boring Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T: 4, 6, 8; d: 2, 3; ℓ: 3, 5)	
d H T	NCW	Dowel hole boring+Spring pin driving Available when head diameter H≧4 Combination with other than NHC・NHN・TMC・GVC not available. (T: 4, 6, 8; d: 2, 3; ℓ1: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L	TMC	Lapping on the tip face Not available for C−EHYF Available when P≧0.6 Hard chromate plating is applied after alternations.	
S B	GVC	S, B=1mm increments 2≦S≦10, S+5≦B≦30 Available when P≧3 Hard chromate plating is applied after alternations.	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with other than TMC/GVC not available (D: 8～9, 10, 12; M: M4, M5, M6)	

Price: Quotation

Hard chromate plating on stepped ejector pins

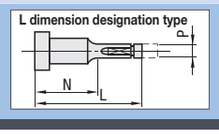


Hard chromate plating for hardness 900 HV or higher is applied to base materials of SKH51 equivalent for improvement of wear resistance.
The thickness of a plating layer of one side (α) is between 0.001 and 0.002 mm (reference value).
By processing a tip diameter (P) of a base material to be thin in consideration of such thickness, the tip diameter (P) precision is guaranteed after plating.
The range of guaranteed plating layer covers the (L-N) dimension section; however, plating may extend to the head as it is applied after dimension L/P/N machining.
The tip surface is plated.
Since the plating layer is too thin for surface hardness testing after plating, the data shown in this catalog are "reference values."

High Speed Steel
SKH51
equivalent

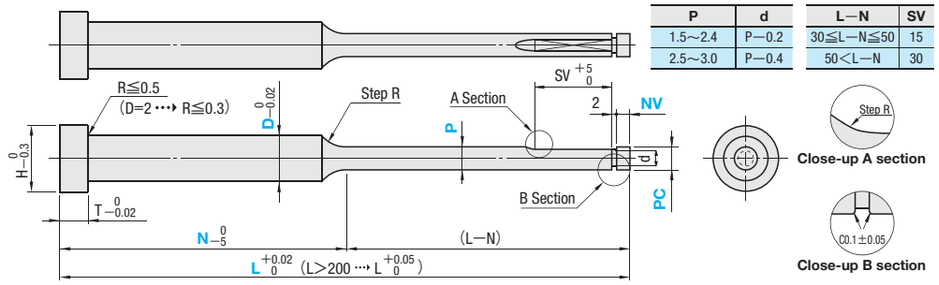
STEPPED EJECTOR PINS WITH GAS VENT

—L DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



P	d
1.5～2.4	P−0.2
2.5～3.0	P−0.4

L−N	SV
30≦L−N≦50	15
50<L−N	30

Part Number	Head thickness	T P (PCX)	T 141
GVB−EHSL	4mm (T4)	0 −0.005	0 −0.005
GVB−EHSJL	6mm (JIS)		
GVB−EHSEL	4mm (T4)	−0.01 −0.02	
GVB−EHSJEL	6mm (JIS)		

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L 0.01mm increments	P	N	NV 0.1mm increments	141 0.01mm increments
4	4	—	—	GVB−EHSL (P 0 −0.005)	—	2	70.00～100.00	1.5 1.6 1.8	40 50 60	0.5～8.0	(GVB−EHSL GVB−EHSJL) P−0.08≦141<P
							100.01～150.00		40 50 70 90		
							150.01～200.00		70 80 100		
5						2.5	100.00～150.00	1.5 1.6 1.7 1.8 1.9 2.0 2.1	50 70 90		
							150.01～200.00		70 80 100		
							200.01～250.00		80 100 125		
6						3	100.00～150.00	1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6	50 70 90		
							150.01～200.00		70 80 100		
							200.01～250.00		80 100 125		
7		8	6	GVB−EHSEL (P −0.01 −0.02)	GVB−EHSJL (P 0 −0.005)	4	100.00～150.00	2.0 2.5 3.0	50 70		(GVB−EHSEL GVB−EHSJEL) P−0.08≦141<P−0.02
							150.01～200.00		70 100		
							200.01～250.00		100 125		
8						4.5	100.00～150.00	2.0 2.5	50 70		
							150.01～200.00		70 100		
							200.01～250.00		100 125		
		9			GVB−EHSJEL (P −0.01 −0.02)	5	100.00～150.00	3.0	50 70		
							150.01～200.00		70 100		
							200.01～250.00		100 125		

When PC=P, PCX is applied.

L−N≧30 For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of GVB−EHSL (P 0 −0.005), GVB−EHSEL (P −0.01 −0.02).

Order

Part Number	L	P	N	NV	PC(PCX)
GVB−EHSJL 4	240.30	P2.5	N100	NV3.0	PC2.49
GVB−EHSL 3	120.23	P2.1	N70	NV4.1	PCX

Days to Ship Quotation

Alterations

Part Number	L	P	N	NV	PC(PCX)	(KC・WKC···etc.)
GVB−EHSL 2	150.00	P1.5	N70	NV2.0	PC1.46	KTC1.5

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
WKC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

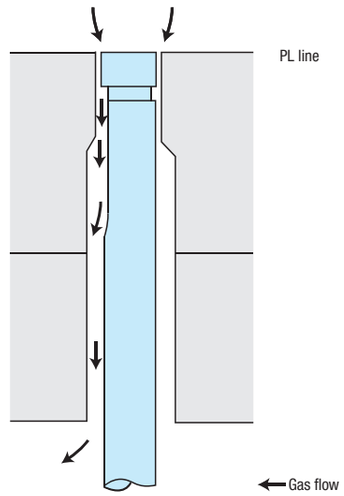
About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm
Flat cutting position is set at 90° of SV dimension in counterclockwise direction.

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L Dimension L remains unchanged. Dimensions N becomes shorter by (T−TC).	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T 4 6, d 2 3, ℓ 3 5)	
H ℓ d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T 4 6, d 2 3, ℓ1 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

Price Quotation

Example

■Characteristics
Let gas out from the inside of the cavity via the clearance around the ejector pin.



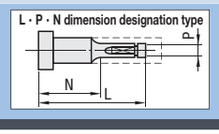
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

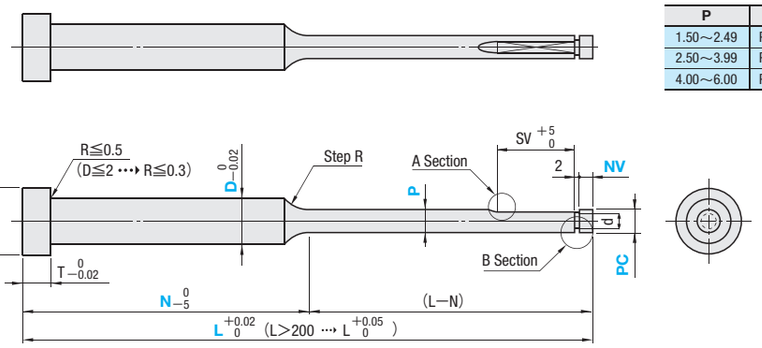
STEPPED EJECTOR PINS WITH GAS VENT

—TIP DIAMETER • L • P • N DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS



P	d
1.50～2.49	P−0.2
2.50～3.99	P−0.4
4.00～6.00	P−0.6

L−N	SV
30≦L−N≦50	15
50<L−N	30

Part Number	Head Thickness	T P (PCX)	T 143
GVB−EHSF	4mm(T4)	0 −0.005	0 −0.005
GVB−EHSJF	6・8mm(JIS)		
GVB−EHSFE	4mm(T4)	−0.01 −0.02	
GVB−EHSJFE	6・8mm(JIS)		

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	0.01mm increments L	0.01mm increments P	1mm increments N	0.1mm increments NV	0.01mm increments PC
4	4	—	—	GVB−EHSF (P 0 −0.005)	—	1.6	70.00 ～ 250.00	1.50	N≧15 and 30≦(L−N)≦150	0.5～8.0	(GVB−EHSF GVB−EHSJF) P−0.08≦143<P
						1.7		1.50 ～ 1.60			
						1.8		1.50 ～ 1.70			
						1.9		1.50 ～ 1.80			
						2		1.50 ～ 1.90			
5						2.5		1.50 ～ 2.40			
6						3	70.00 ～ 300.00	1.50 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 30≦(L−N)≦200		
7						3.5		1.50 ～ 3.40			
		8	6		GVB−EHSJF (P 0 −0.005)	4		1.50 ～ 3.90			
8						4.5		2.50 ～ 4.40			
		9		GVB−EHSFE (P −0.01 −0.02)		5	70.00 ～ 350.00	3.00 ～ 4.90			(GVB−EHSFE GVB−EHSJFE) P−0.08≦143<P−0.02 When PC=P, PCX is applied.
9						5.5		3.50 ～ 5.40			
		10				6		4.00 ～ 5.90			
10		11				6.5		4.50 ～ 6.40			
					GVB−EHSJFE (P −0.01 −0.02)	7		4.90 ～ 6.90			
11		13	8			8		5.90 ～ 7.90			
14		14				9		6.90 ～ 8.90			
15		15				10		7.90 ～ 9.90			
17		17				12		8.90 ～ 11.90			

For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of GVB−EHSF (P 0 −0.005), GVB−EHSFE (P −0.01 −0.02).

Order

Part Number	L	P	N	NV	PC(PCX)
GVB−EHSJF 5	300.00	P3.00	N150	NV2.0	PC2.96

Days to Ship: Quotation

Alterations

Part Number	L	P	N	NV	PC(PCX)	(KC・WKC···etc.)
GVB−EHSJFE 7	180.00	P6.60	N50	NV2.0	PC6.56	SKC4.0

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Flat cutting position is set at 90° of SV dimension in counterclockwise direction.

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ: 3, 5)	Quotation
H ℓ d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ1: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with any other alteration not available. (D: 8～9, 10, 12; M: M4, M5, M6)	

Price: Quotation

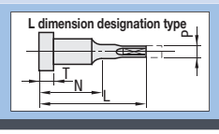
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

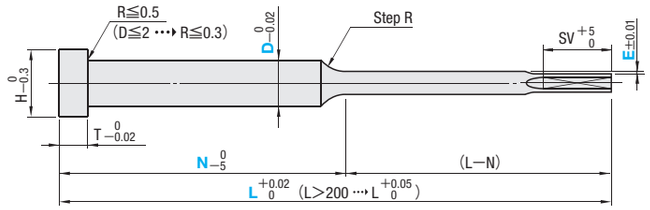
STEPPED EJECTOR PINS WITH GAS VENT

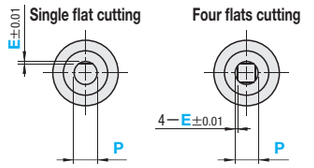
— CUTTING FACETS/L DIMENSION DESIGNATION TYPE —



Non JIS material definition is listed on P.1351 - 1352

RoHS





GW−EHSL
GW−EHSJL
GW−EHSEL
GW−EHSJEL

GWS−EHSL
GWS−EHSJL
GWS−EHSEL
GWS−EHSJEL

Part Number		Head Thickness	T P
Single flat cutting	Four flats cutting		
GW−EHSL	GWS−EHSL	4mm (T4)	0 −0.005
GW−EHSJL	GWS−EHSJL	6mm (JIS)	
GW−EHSEL	GWS−EHSEL	4mm (T4)	−0.01 −0.02
GW−EHSJEL	GWS−EHSJEL	6mm (JIS)	

Limit of E±0.01 is within 10mm from the tip.

L−N	SV
30≦L−N≦50	15
50<L−N	30

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L 0.01mm increments	P	N	E 0.01mm increments
3	4	—	—	Single flat cutting GW−EHSL (P 0 −0.005) GW−EHSEL (P −0.01 −0.02)	—	1	50.00～ 70.00	0.6 0.7 0.8	20 35	Single flat cutting 0.02～0.05
							70.01～100.00		40 50 60	
						1.5	70.00～100.00	0.6 0.7 0.8 0.9 1.0 1.2	40 50 60	
							100.01～150.00	0.6 0.7 0.8 0.9 1.0 1.2	50 70 90	
							150.01～200.00	0.6 0.7 0.8 0.9 1.0 1.2	70 80 100	
4						2	70.00～100.00	0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.8	40 50 60	
							100.01～150.00		40 50 70 90	
							150.01～200.00		70 80 100	
5						2.5	100.00～150.00	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1	50 70 90	
							150.01～200.00		70 80 100	
6						3	100.00～150.00	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6	50 70 90	
				Four flats cutting (P≧2) GWS−EHSL (P 0 −0.005) GWS−EHSEL (P −0.01 −0.02)			150.01～200.00		70 80 100	Four flats cutting 0.03～0.05
7		8	6		Single flat cutting GW−EHSJL (P 0 −0.005) GW−EHSJEL (P −0.01 −0.02) Four flats cutting GWS−EHSJL (P 0 −0.005) GWS−EHSJEL (P −0.01 −0.02)	4	100.00～150.00	2.0 2.5 3.0	50 70	
							150.01～200.00		70 100	
							200.01～250.00		100 125	
8						4.5	100.00～150.00	2.0 2.5	50 70	
							150.01～200.00		70 100	
							200.01～250.00		100 125	
		9				5	100.00～150.00	3.0	50 70	
							150.01～200.00		70 100	
							200.01～250.00		100 125	

L−N≧30 For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type.

Order

Part Number	L	P	N	E
GW−EHSJL 4	240.30	P2.5	N100	E0.03

Days to Ship: Quotation

Alterations

Part Number	L	P	N	E	(KC・WKC···etc.)
GW−EHSL 2	150.00	P1.5	N70	E0.03	KTC1.5

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

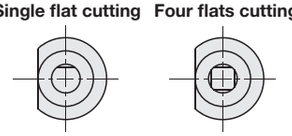
About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm
Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L Dimension L remains unchanged. Dimensions N becomes shorter by (T−TC).	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, d: 2, ℓ: 3; T: 6, d: 3, ℓ: 5)	
H ℓ d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, d: 2, ℓ1: 5; T: 6, d: 3, ℓ1: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

About flat cutting position
Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

Ex.: KC

Single flat cutting Four flats cutting



Price: Quotation

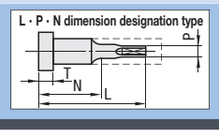
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51
equivalent

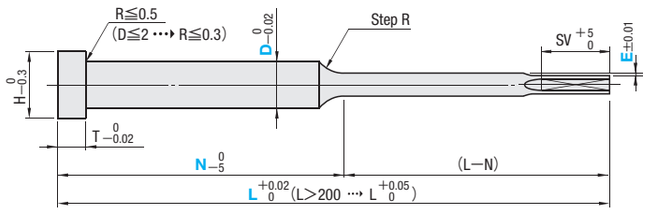
STEPPED EJECTOR PINS WITH GAS VENT

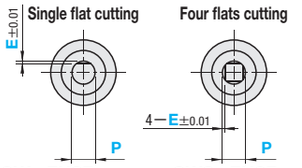
—CUTTING FACETS/L・P・N DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS





GW−EHSF
GW−EHSJF
GW−EHSFE
GW−EHSJFE

GWS−EHSF
GWS−EHSJF
GWS−EHSFE
GWS−EHSJFE

Part Number		Head Thickness	T P
Single flat cutting	Four flats cutting		
GW−EHSF	GWS−EHSF	4mm(T4)	0 −0.005
GW−EHSJF	GWS−EHSJF	6・8mm(JIS)	
GW−EHSFE	GWS−EHSFE	4mm(T4)	−0.01 −0.02
GW−EHSJFE	GWS−EHSJFE	6・8mm(JIS)	

Limit of E ± 0.01 is within 10mm from the tip.

L−N	SV
30≦L−N≦50	15
50<L−N	30

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head		JIS head		Part Number			0.01mm increments		1mm increments	0.01mm increments
				Type						
H	T	H	T	4mm head	JIS head	D	L	P	N	E
3	4	—	—	Single flat cutting GW−EHSF (P 0 −0.005) GW−EHSFE (P −0.01 −0.02)	—	1	50.00 ～ 150.00	0.60 ～ 0.90	N≧15 and 30≦(L−N)≦150	Single flat cutting 0.02～0.05
						1.1	50.00 ～ 200.00	0.60 ～ 1.00		
						1.2		0.60 ～ 1.10		
						1.3		0.60 ～ 1.20		
						1.4		0.60 ～ 1.30		
						1.5		0.60 ～ 1.40		
4						1.6	50.00 ～ 250.00	0.80 ～ 1.50		
						1.7		0.80 ～ 1.60		
						1.8		0.80 ～ 1.70		
						1.9		0.80 ～ 1.80		
						2		0.80 ～ 1.90		
5						2.5		0.80 ～ 2.40		
6				Four flats cutting (D≧2 and P≧1.50) GWS−EHSF (P 0 −0.005) GWS−EHSFE (P −0.01 −0.02)		3		1.00 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 30≦(L−N)≦200	Four flats cutting 0.03～0.05
7						3.5	50.00 ～ 300.00 (60.00 ～ 300.00)	1.50 ～ 3.40		
		8	6		Single flat cutting GW−EHSJF (P 0 −0.005) GW−EHSJFE (P −0.01 −0.02)	4		1.50 ～ 3.90		
8						4.5		2.50 ～ 4.40		
		9				5	50.00 ～ 350.00 (60.00 ～ 300.00)	3.00 ～ 4.90		
9						5.5		3.50 ～ 5.40		
		10				6		4.00 ～ 5.90		
10		11				6.5		4.50 ～ 6.40		
					Four flats cutting GWS−EHSJF (P 0 −0.005) GWS−EHSJFE (P −0.01 −0.02)	7		4.90 ～ 6.90		
11		13	8			8		5.90 ～ 7.90		
14		14				9		6.90 ～ 8.90		
15		15				10		7.90 ～ 9.90		
17		17				12		8.90 ～ 11.90		

The figures in parentheses ( ) for L dimensions are applicable for JIS head only.
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type.

Order

Part Number	L	P	N	E
GW−EHSJF 5	300.00	P3.00	N150	E0.02

Days to Ship: Quotation

Alterations

Part Number	L	P	N	E	(KC・WKC···etc.)
GW−EHSJFE 7	180.00	P6.60	N50	E0.02	SKC4.0

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

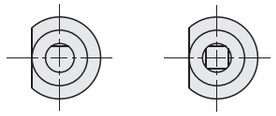
About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm
Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ: 3, 5)	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ1: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
MC M×1	MC	Head tapping Available when D≧8, H≧13, T=8 Combination with any other alteration not available. (D: 8～9, 10, 12; M: M4, M5, M6)	

About flat cutting position
Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

Ex.: KC

Single flat cutting Four flats cutting



Price: Quotation

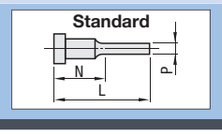
Stepped Ejector Pins

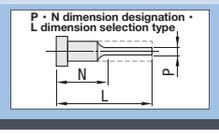
High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent
+
Nitrided

STEPPED EJECTOR PINS

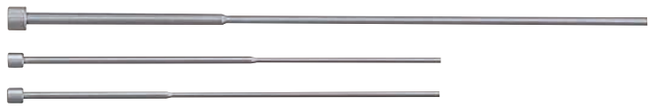
— STANDARD ／ P・N DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE —

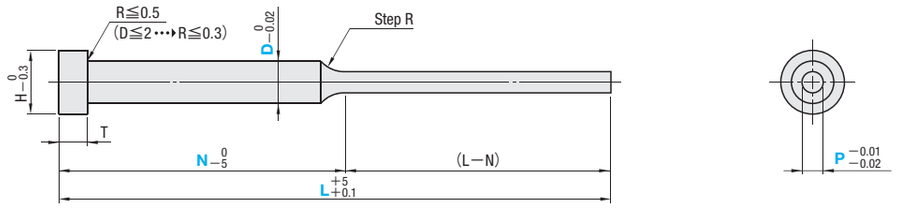




Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Type	Head Thickness	T
ENS	Standard	4mm(T4)	0 −0.02
ENSG	P・N dimension designation・L dimension selection type		
EJS	Blank type	6mm(JIS)	0 −0.05
EJSG	P・N dimension designation・L dimension selection type		

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKD61 equivalent+Nitrided
H Surface 900HV～
Base material 40～45HRC

Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

■Blank type

H	T	Part Number Type	D	L	P	N
3	4	ENS	1.5	100	0.8 1.0	40 50
				150	0.8 1.0	40 50 70
4			2	100	0.8 1.0 1.2 1.5	40 60
				150	0.8 1.0 1.2 1.5	40 50 70 90
				200	0.8 1.0 1.2 1.5	80 100
5			2.5	100	1.0 1.2 1.5 1.8 2.0	50 60
				150	1.0 1.2 1.5 1.8 2.0	50 60 70 90
				200	1.0 1.2 1.5 1.8 2.0	70 80 100
6			3	100	1.5 1.8 2.0 2.5	50 60
				150	1.5 1.8 2.0 2.5	50 60 70
				200	1.5 1.8 2.0 2.5	70 80 100
8	6	EJS	4	150	1.5 2.0 2.5 3.0	50
				200		70 100
				250		100 125
9			5	150	3.0 3.5 4.0	50
				200		70 100
				250		100 125
10			6	150	4.0	50
				200		70 100
				250		100 125

For less D4 head thickness JIS type is T=4, please place the order for head 4mm type ENS.

■P・N dimension designation・L dimension selection type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L Selection	P 0.01mm increments	N 1mm increments
3	4	—	—	ENSG	—	1.5	100 150 200	0.80 ～ 1.40	N≧15 and 15≦(L−N)≦150
4						2		0.80 ～ 1.90	
5						2.5	100 150 200 250 300	0.80 ～ 2.40	
6						3	100 150 200 250 300	1.00 ～ 2.90	・N≧15 (T4) and 20≦(L−N)≦200 ・N≧ L/3 (JIS) and (L−N)≧10
7						3.5		1.50 ～ 3.40	
		8	6		EJSG	4		1.50 ～ 3.90	
8						4.5		2.50 ～ 4.40	
		9				5		3.00 ～ 4.90	
9						5.5		3.50 ～ 5.40	
		10				6		4.00 ～ 5.90	

Nitriding may extend to the head as it is applied after dimension P machining. For less D4 head thickness JIS type is T=4, please place the order for head 4mm type ENSG.

Order

Part Number	L	P	N
ENS 2	150	1.0	70
EJS 4	150	P2.0	N50
EJSG4	200	P3.00	N100

Note that alphabetical characters (P, N) are not necessary in ordering **ENS**.

Days to Ship **Quotation**

Alterations

Part Number	L	P	N	(KC・WKC…etc.)
EJS 4	150	P1.5	N50	NC
EJSG 4	200	P3.00	N100	SKC2.0

Quotation

Alterations	Code	Spec.		1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2		
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2		
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2		
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC＜H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360		
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2		

Price **Quotation**

Alteration details P.127

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC＜H	Quotation
TC 0 −0.05 T	TC	TC=0.1mm increments T/2≦TC＜T ENS・EJS••• Dimensions L and N become shorter by (T−TC). ENSG・EJSG••• Dimension L becomes shorter by (T−TC). Dimensions N remains unchanged.	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ: 4 / 2 / 3; 6 / 3 / 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ1: 4 / 2 / 5; 6 / 3 / 5)	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T / d / ℓ2: 4 / 2 / 5; 6 / 3 / 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

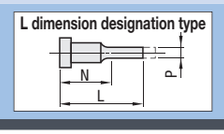
Stepped Ejector Pins

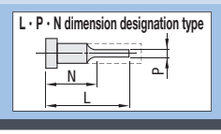
Dies Steel
SKD61 equivalent
+
Nitrided

Dies Steel
SKD61 equivalent
+
Nitrided

STEPPED EJECTOR PINS

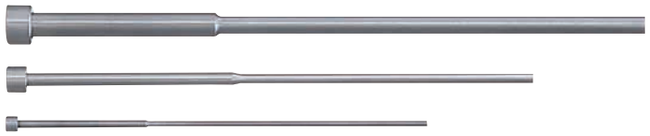
— L DIMENSION DESIGNATION TYPE ／ L・P・N DIMENSION DESIGNATION TYPE —

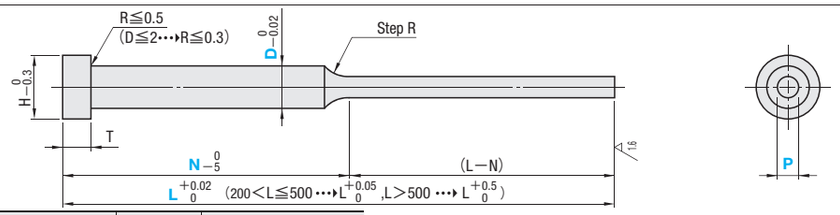




Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Type	Head Thickness	T
ENSL	L dimension designation type	4mm(T4)	0 −0.02 (L>300 ··· T 0 −0.05)
ENSF	L・P・N dimension designation type		
EJSL	L dimension designation type	6・8mm(JIS)	0 −0.05
EJSF	L・P・N dimension designation type		

L \ D	1.5～8	10～20
L≦500	−0.01 −0.02	−0.01 −0.03
L>500	−0.01 −0.03	−0.01 −0.04

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKD61 equivalent+Nitrided
H Surface 900HV～Base material 40～45HRC
Range of guaranteed base material hardness (Details P.1303)
Range of guaranteed surface hardness for nitriding (Details P.1303)

■L dimension designation type

H	T	Part Number Type	D	L 0.01mm increments	P	N
3	4	ENSL	1.5	50.00～100.00	0.8 1.0	40 50
				100.01～150.00		40 50 70
4			2	50.00～100.00	0.8 1.0 1.2 1.5	40 60
				100.01～150.00		40 50 70 90
				150.01～200.00		80 100
5			2.5	60.00～100.00	1.0 1.2 1.5 1.8 2.0	50 60
				100.01～150.00		50 60 70 90
				150.01～200.00		70 80 100
6			3	60.00～100.00	1.5 1.8 2.0 2.5	50 60
				100.01～150.00		50 60 70
				150.01～200.00		70 80 100
8	6	EJSL	4	100.00～150.00	1.5 2.0 2.5 3.0	50
				150.01～200.00		70 100
				200.01～250.00		100 125
9			5	100.00～150.00	3.0 3.5 4.0	50
				150.01～200.00		70 100
				200.01～250.00		100 125
10			6	100.00～150.00	4.0	50
				150.01～200.00		70 100
				200.01～250.00		100 125

L−N≧10

■L・P・N dimension designation type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L 0.01mm increments (L>500 ··· 0.1mm increments)	P 0.01mm increments	N 1mm increments
3	4	—	—	ENSF	—	1.5	40.00～200.00	0.80 ～ 1.40	N≧15 and 15≦(L−N)≦150
4						2	40.00～300.00	0.80 ～ 1.90	
5						2.5		0.80 ～ 2.40	
6						3	40.00～400.00	1.00 ～ 2.90	N≧15 (T4) and 20≦(L−N)≦200
7					EJSF	3.5		1.50 ～ 3.40	
		8	6			4	40.00～400.00 (50.00～600.00)	1.50 ～ 3.90	
8						4.5		2.50 ～ 4.40	
		9				5	40.00～500.00(50.00～600.0)	3.00 ～ 4.90	
9						5.5	40.00～500.00(50.00～500.00)	3.50 ～ 5.40	
		10				6	40.00～500.00 (50.00～700.0)	4.00 ～ 5.90	
10		11				6.5		4.50 ～ 6.40	
						7	40.00～500.00(50.00～800.0)	4.90 ～ 6.90	
11		13	8			8	40.00～500.00 (50.00～900.0)	5.90 ～ 7.90	N≧ L/3 (JIS) and (L−N)≧10
15		15				10		7.90 ～ 9.90	
17		17				12		8.90 ～ 11.90	
—	—	20		—		15	50.00～900.0	10.90 ～ 14.90	
		21				16		11.90 ～ 15.90	
		25				20		15.90 ～ 19.90	

The figures in ( ) for L dimension is for EJSF only.
Nitriding may extend to the head as it is applied after dimension P machining.
For less D4 head thickness JIS type is T=4, please place the order for head 4mm type ENSF.

Order

Part Number	L	P	N
ENSL 2.5	149.78	P1.5	N70
EJSL 5	223.70	P3.5	N100
EJSF 10	720.5	P9.00	N300

Days to Ship: Quotation

Alterations

Part Number	L	P	N	(KC・WKC···etc.)
ENSL 2.5	149.78	P1.5	N70	NCW
EJSF 10	720.5	P9.00	N300	SKC7.0

Quotation

Alteration details P.127

Alterations	Code	Spec.		1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2		
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2		
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

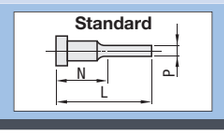
Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H	Quotation
TC 0 −0.05 T	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L ENSL, EJSL ··· Dimension L remains unchanged Dimensions N becomes shorter by (T−TC). ENSF, EJSF ··· Dimensions L and N remain unchanged.	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ: 3, 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ1: 5)	
H ℓ2 d T	NCS	Dowel hole boring+Dowel pin driving Available when H≧4 Combination with other than NHC・NHN not available. (T: 4, 6, 8; d: 2, 3; ℓ2: 5)	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
MC M×1	MC	Head tapping Available for EJSF when D≧8, H≧13, T=8 Combination with any other alteration not available. (D: 8, 10, 12・15, 16・20; M: M4, M5, M6, M8)	

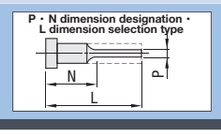
P Price: Quotation

Dies Steel
SKD61 equivalent
4mm head

STEPPED EJECTOR PINS

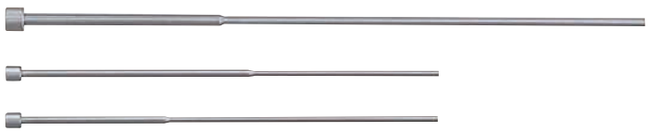
— STANDARD ／ P・N DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE —

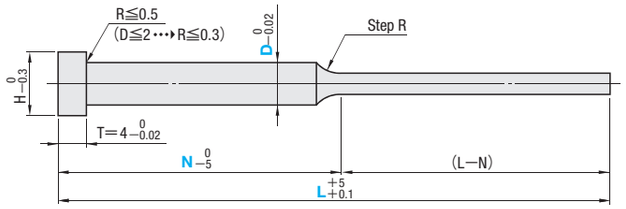


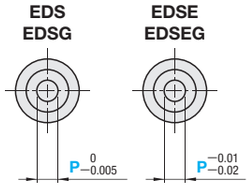


Non JIS material definition is listed on P.1351 - 1352

RoHS







Part Number	Head Thickness	T P
EDS EDSG	4mm(T4)	0 −0.005
EDSE EDSEG		−0.01 −0.02

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKD61 equivalent
H 50～55HRC
Range of guaranteed base material hardness (Details P.1303)

■ Standard

H	T	Part Number Type	D	L	P	N
3	4	EDS (P 0 −0.005) EDSE (P −0.01 −0.02)	1.5	100	0.6 0.8 1.0 1.2	40 50
				150		60 70
4			2	100	0.8 1.0 1.2 1.5	40 50
				150		60 70
				200		70 100
5			2.5	100	1.0 1.2 1.5 2.0	50
				150		60 70
				200		100
6			3	100	1.5 2.0	40 50
				150		60 70
				200		70 100
7			4	150	2.0 2.5	50
				200		100
				250		160

■ P・N dimension designation・L dimension selection type

H	T	Part Number Type	D	L Selection	P 0.01mm increments	N 1mm increments
3	4	EDSG (P 0 −0.005) EDSEG (P −0.01 −0.02)	1.5	100 150 200	0.60 ～ 1.40	N≧15 and 15≦(L−N)≦150
4			2		0.80 ～ 1.90	
5			2.5		0.80 ～ 2.40	
6			3	100 150 200 250 300	1.00 ～ 2.90	N≧15 and 20≦(L−N)≦200
7			3.5		1.50 ～ 3.40	
			4		1.50 ～ 3.90	

Order

Part Number	L	P	N
EDS 2	150	P1.0	N70
EDSE 4	150	P2.0	N50
EDSEG 4	250	P2.80	N60

Days to Ship **Quotation**

Alterations

Part Number	L	P	N	(KC・WKC･･･etc.)
EDS 3	150	P1.5	N60	NC
EDSEG 4	250	P2.80	N60	NC

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC＜H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC＜H	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3 Available only for EDSG, EDSEG	
TC 4	TC	TC=0.1mm increments 2.0≦TC＜4 EDS, EDSE ･･･ Dimensions L and N become shorter by (4−TC). EDSG, EDSEG ･･･ Dimension L becomes shorter by (4−TC) Dimensions N remains unchanged.	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

Price **Quotation**

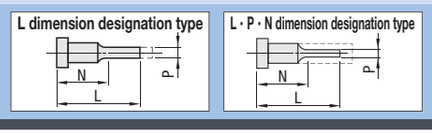
Stepped Ejector Pins

Dies Steel SKD61 equivalent

Dies Steel
SKD61 equivalent
4mm head

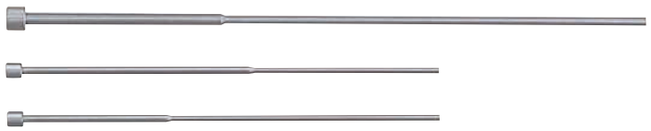
STEPPED EJECTOR PINS

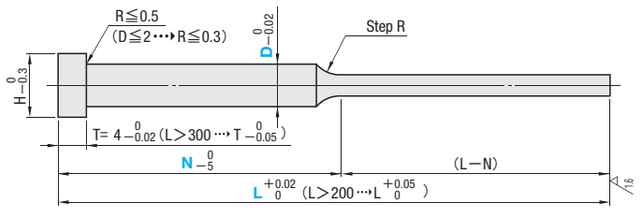
— L DIMENSION DESIGNATION TYPE ／ L・P・N DIMENSION DESIGNATION TYPE —

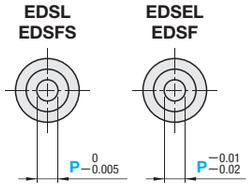


Non JIS material definition is listed on P.1351 - 1352

RoHS







Part Number	Type	Head Thickness	T	P
EDSL	L dimension designation type	4mm(T4)	4	0 −0.005
EDSFS	L・P・N dimension designation type			
EDSEL	L dimension designation type			−0.01 −0.02
EDSF	L・P・N dimension designation type			

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKD61 equivalent
H 50～55HRC
Range of guaranteed base material hardness (Details P.1303)

■L dimension designation type

H	T	Part Number Type	D	L 0.01mm increments	P	N
3	4	EDSL (P 0 −0.005) EDSEL (P −0.01 −0.02)	1.5	50.00 ～ 100.00	0.6 0.8 1.0 1.2	40 50
				100.01 ～ 150.00		60 70
4			2	50.00 ～ 100.00		40 50
				100.01 ～ 150.00	0.8 1.0 1.2 1.5	60 70
				150.01 ～ 200.00		70 100
5			2.5	60.00 ～ 100.00		50
				100.01 ～ 150.00	1.0 1.2 1.5 2.0	60 70
				150.01 ～ 200.00		100
6			3	60.00 ～ 100.00		40 50
				100.01 ～ 150.00	1.5 2.0	60 70
				150.01 ～ 200.00		70 100
7			4	100.00 ～ 150.00		50
				150.01 ～ 200.00	2.0 2.5	100
				200.01 ～ 250.00		160

L−N≧10

■L・P・N dimension designation type

H	T	Part Number Type	D	0.01mm increments L	0.01mm increments P	1mm increments N
3	4	EDSFS (P 0 −0.005) EDSF (P −0.01 −0.02)	1.5	40.00～200.00	0.60 ～ 1.40	N≧15 and 15≦(L−N)≦150
4			2		0.80 ～ 1.90	
5			2.5		0.80 ～ 2.40	
6			3	40.00～300.00	1.00 ～ 2.90	N≧15 and 20≦(L−N)≦200
7			3.5		1.50 ～ 3.40	
			4		1.50 ～ 3.90	
8			4.5		2.50 ～ 4.40	
			5	40.00～500.00	3.00 ～ 4.90	
9			5.5		3.50 ～ 5.40	
			6		4.00 ～ 5.90	
10			6.5		4.50 ～ 6.40	
			7		4.90 ～ 6.90	
11			8		5.90 ～ 7.90	
14			9		6.90 ～ 8.90	
15			10		7.90 ～ 9.90	
17			12		8.90 ～ 11.90	
18			13		9.90 ～ 12.90	

Order

Part Number	L	P	N
EDSL 2.5	149.78	P1.5	N70
EDSEL 4	223.70	P2.0	N160
EDSF 4	240.30	P2.80	N60

Days to Ship: Quotation

Alterations

Part Number	L	P	N	(KC・WKC･･･etc.)
EDSL 2	149.78	P1.5	N70	NCW
EDSF 4	240.30	P2.80	N60	NC

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H− Available only for EDSFS,EDSF	
TC 4	TC	TC=0.1mm increments 2.0≦TC<4 4−TC≦Lmax.−L EDSL,EDSEL ･･･ Dimension L remains unchanged Dimensions N becomes shorter by (4−TC). EDSFS,EDSF ･･･ Dimensions L and N remain unchanged.	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available.	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	

Price: Quotation

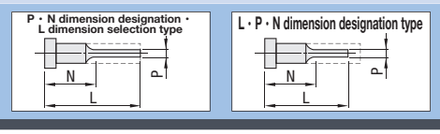
Stepped Ejector Pins

Dies Steel SKD61 equivalent

Prehardened Dies Steel SKD61 equivalent

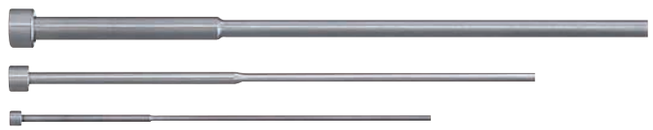
STEPPED EJECTOR PINS

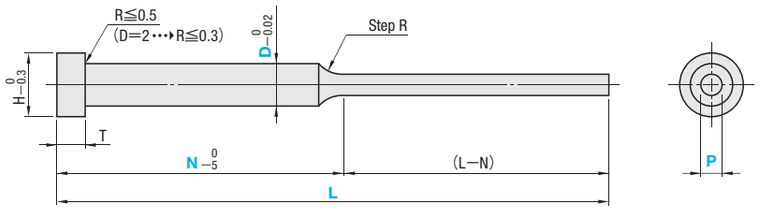
— P・N DIMENSION DESIGNATION・L DIMENSION SELECTION TYPE ／ L・P・N DIMENSION DESIGNATION TYPE —



Non JIS material definition is listed on P.1351 - 1352

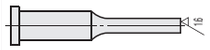
RoHS





Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKD61 equivalent (Prehardened)
H 40～45HRC
Range of guaranteed base material hardness (Details P.1303)

Part Number	Type	Head Thickness	T T	L L	P P	Tip Face Roughness
EASG	P・N dimension designation・L dimension selection type	4mm (T4)	0 −0.02 (L＞300 ･･･ T 0 −0.05)	+5 +0.1	−0.01 −0.02	—
EASF	L・P・N dimension designation type			+0.02 0 (200＜L≦500 ･･･ L +0.05 0, L＞500 ･･･ L +0.5 0)	L＼D 2～8: L≦500 −0.01 −0.02; L＞500 −0.01 −0.03; 10～20: L≦500 −0.01 −0.03; L＞500 −0.01 −0.04	
EAJSF		6・8mm (JIS)	0 −0.05			

■P・N dimension designation・L dimension selection type

4mm head H	4mm head T	Part Number Type	D	L Selection	P 0.01mm increments	N 1mm increments
4	4	EASG	2	100 150 200 250 300	0.80 ～ 1.90	N≧15 and 15≦(L−N)≦150
5			2.5		0.80 ～ 2.40	
6			3	100 150 200 250 300 400	1.00 ～ 2.90	N≧15 and 20≦(L−N)≦200
7			3.5		1.50 ～ 3.40	
			4		1.50 ～ 3.90	

■L・P・N dimension designation type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L 0.01mm increments (L＞500 ･･･ 0.1mm increments)	P 0.01mm increments	N 1mm increments
4	4	—	—	EASF	—	2	40.00 ～ 300.00	0.80 ～ 1.90	N≧15 and 15≦(L−N)≦150
5						2.5		0.80 ～ 2.40	
6						3	40.00 ～ 400.00	1.00 ～ 2.90	・N≧15 (T4) and 20≦(L−N)≦200
7						3.5		1.50 ～ 3.40	
		8	6		EAJSF	4	40.00 ～ 400.00 (50.00 ～ 500.00)	1.50 ～ 3.90	
8						4.5		2.50 ～ 4.40	
		9				5	40.00～ 500.00(50.00～600.0)	3.00 ～ 4.90	
9						5.5	40.00～ 500.00(50.00～500.00)	3.50 ～ 5.40	
		10				6	40.00 ～ 500.00 (50.00 ～ 700.0)	4.00 ～ 5.90	
10		11				6.5		4.50 ～ 6.40	
						7	40.00 ～ 500.00 (50.00 ～ 800.0)	4.90 ～ 6.90	
11		13	8			8		5.90 ～ 7.90	・N≧ L/3 (JIS) and (L−N)≧10
15		15				10		7.90 ～ 9.90	
17		17				12		8.90 ～ 11.90	
—	—	20		—		15	50.00 ～ 800.0	10.90 ～ 14.90	
		21				16		11.90 ～ 15.90	
		25				20		15.90 ～ 19.90	

The figure in ( ) for L dimension is for EAJSF only.
For less D4 head thickness JIS type is T=4, please place the order for head 4mm type EASF.

Order

Part Number	L	P	N
EASG2	150	P1.90	N50
EAJSF10	720.5	P9.00	N300

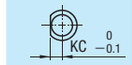
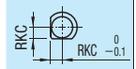
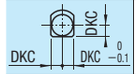
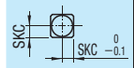
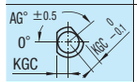
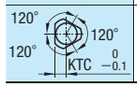
Days to Ship: Quotation

Alterations

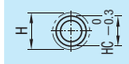
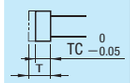
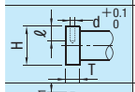
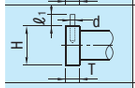
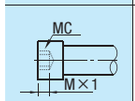
Part Number	L	P	N	(KC・WKC･･･etc.)
EASG 2	150	P1.90	N50	SKC1.0
EAJSF 10	720.5	P9.00	N300	SKC7.0

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
	KC	Single flat cutting D/2≦KC＜H/2	Quotation
	WKC	Two flats cutting D/2≦WKC＜H/2	
	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2	
	DKC	Three flats cutting D/2≦DKC＜H/2	
	SKC	Four flats cutting D/2≦SKC＜H/2	
	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
	KTC	Three flats cutting at 120° D/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

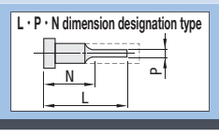
Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments D+1≦HC＜H	Quotation
	TC	TC=0.1mm increments T/2≦TC＜T EASG ･･･ Dimension L becomes shorter by (T−TC). Dimensions N remains unchanged. EASF, EAJSF ･･･ T−TC≦Lmax.−L (Lmax. remains unchanged.)	
	NC	Dowel hole boring ⊗ Combination with other than NHC・NHN not available. (T 4, 6, 8: d 2, 3, 3; ℓ 3, 5, 5)	
	NCW	Dowel hole boring+Spring pin driving ⊗ Combination with other than NHC・NHN not available. (T 4, 6, 8: d 2, 3, 3; ℓ1 5)	
	NHC	Numbering on the head How to order P.128 ⊗ Combination with SKC not available.	
	NHN	Automatic sequential numbering on the head How to order P.128 ⊗ Combination with SKC not available.	
	MC	Head tapping Available for EAJSF when D≧8, H≧13, T=8 ⊗ Combination with any other alteration not available. (D 8, 10, 12・15, 16・20: M M4, M5, M6, M8)	

Price: Quotation

Stainless Steel
SUS440C

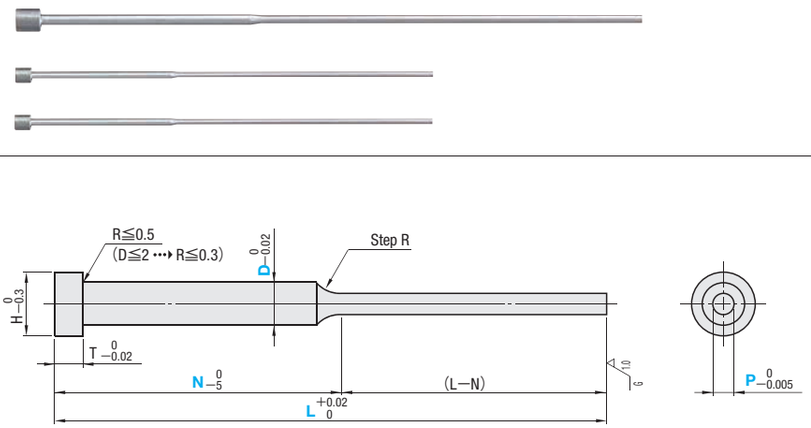
STEPPED EJECTOR PINS

— L・P・N DIMENSION DESIGNATION TYPE —



Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number	Head Thickness	T P
EWSF	4mm(T4)	0 −0.005
EWSJF	6mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SUS 440C
H 56～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head		JIS head		Part Number			0.01mm increments		1mm increments
				Type					
H	T	H	T	4mm head	JIS head	D	L	P	N
3	4	—	—	EWSF	—	1.5	40.00～200.00 (50.00)	0.60 ～ 1.40	N≧15 and 15 ≦(L−N)≦150
4						2		0.80 ～ 1.90	
5						2.5		0.80 ～ 2.40	
6						3		1.00 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 20≦(L−N)≦150
7		8	6		EWSJF	3.5		1.50 ～ 3.40	
						4		1.50 ～ 3.90	
8						4.5		2.50 ～ 4.40	
		9				5		3.00 ～ 4.90	
9						5.5		3.50 ～ 5.40	
		10				6		4.00 ～ 5.90	

The figures in ( ) for L dimension is for EWSF only.
For less D4 head thickness JIS type is T=4, please place the order for head 4mm type EWSF.

Order

Part Number	L	P	N
EWSJF 5	185.00	P3.00	N130

Days to Ship: Quotation

Alterations

Part Number	L	P	N	(KC・WKC…etc.)
EWSJF 4	180.00	P3.85	N50	SKC2.0

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC＜H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2	
H D±0.3 HC 0 −1	HC	HC=0.1mm increments D+1≦HC＜H	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3	Quotation
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC＜T (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T: 4, 6 / d: 2, 3 / ℓ: 3, 5	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・TMC・GVC not available. T: 4, 6 / d: 2, 3 / ℓ1: 5	
217	NHC	Numbering on the head How to order P.128 Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 Combination with SKC not available.	
L GL	TMC	Lapping on the tip face	
S B	GVC	S, B=1mm increments 2≦S≦10, S+5≦B≦30 Available when P≧3	

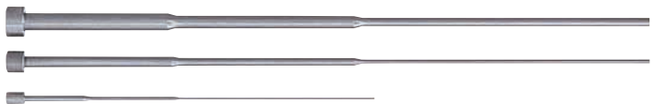
Price: Quotation

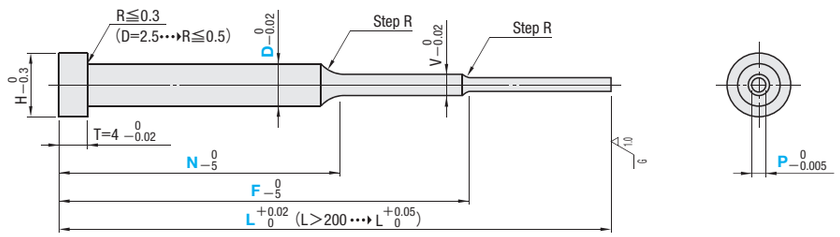
High Speed Steel
SKH51 equivalent
4mm head

TWO-STEPPED EJECTOR PINS

Non JIS material definition is listed on P.1351 - 1352

RoHS





Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Part Number	Head Thickness
EHWSB	4mm(T4)

H	T	V	Part Number Type	D	0.01mm increments L	P	1mm increments N	F
3	4	0.6	EHWSB	1	50.00 ～ 100.00	0.30 ～ 0.50	15 ～ 50	15≦(F−N)≦50
3		1		1.5	50.00 ～ 100.00	0.30 ～ 0.59		
					50.00 ～ 150.00	0.60 ～ 0.90	15 ～ 100	15≦(F−N)≦100
4		1.5		2	50.00 ～ 200.00	0.60 ～ 1.40	15 ～ 150	15≦(F−N)≦125
5		2		2.5	50.00 ～ 250.00	0.60 ～ 1.90	15 ～ 200	15≦(F−N)≦125

L−N≦140 15≦(L−F)≦100×P

Order

Part Number	L	P	N	F
EHWSB 2	120.40	P0.86	N40	F80

Days to Ship **Quotation**

■Characteristics

- Two-stepping enables production of lengthy pins with small tip diameter.

(Example :Maximum full length 100mm for tip diameter : 0.3mm
Maximum full length 250mm for tip diameter : 0.6mm)

Alterations

Part Number	L	P	N	F	(KC・WKC···etc.)
EHWSB 2	120.40	P0.86	N40	F80	TMC

Alteration details P.127

Alterations	Code	Spec.		1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	About Designation Unit for Key Flat Cutting	
VWC 0 −0.02	VWC	Two parallel flats cutting (precision) D/2≦VWC<H/2		
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2		
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		Quotation
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2		
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4, D≧1.5 (Dimensions L, F and N remain unchanged.) 4−TC≦Lmax.−L	Quotation
217	NHC	Numbering on the head How to order P.128 ⊗ Combination with SKC not available.	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.128 ⊗ Combination with SKC not available.	
L 1/2 GL	TMC	Lapping on the tip face Available when P≧0.6	

Price **Quotation**

Stepped Ejector Pins

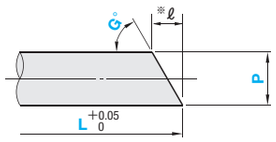
High Speed Steel SKH51 equivalent

SHAPE VARIATIONS OF STEPPED EJECTOR PINS WITH TIP PROCESS ①

—SHAPES 1A～20A—

Shapes 21A～32A
P.165・166

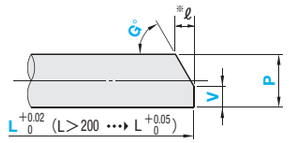
1A (Bezel・Angle designation)



※ℓ calculation $\ell=\frac{P}{\tan G}$

・45°≦G＜90°

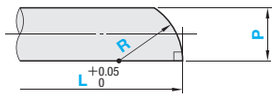
2A (Partial bezel・Angle designation)



※ℓ calculation $\ell=\frac{P-V}{\tan G}$

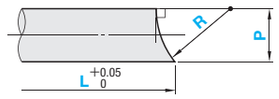
・45°≦G＜90°
・1.5≦V＜P

3A (Outward R)



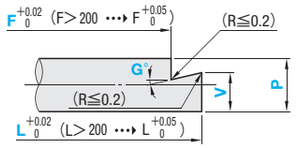
・P≦R≦15

4A (Inward R)



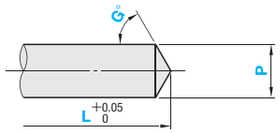
・P≦R≦15

5A (Z groove)



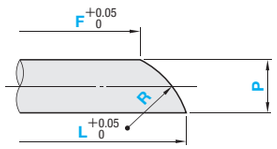
・0°≦G≦45°
・1.5≦V＜P
・L−F≦10
・V−(L−F)tanG≧1
⊗ R designation not available.

6A (Cone)

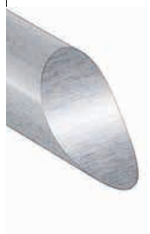


・45°≦G＜90°

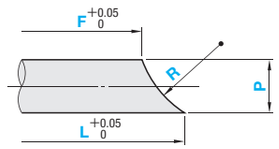
7A (Outward R with F designation)



・L−F≦P≦15

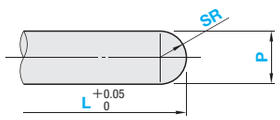


8A (Inward R with F designation)



・P＜R≦15
・L−F＞R−$\sqrt{R^2-P^2}$

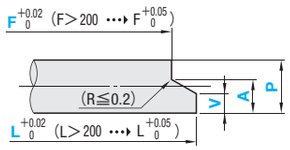
9A (Spherical surface)



・Default:SR=$\frac{P}{2}$

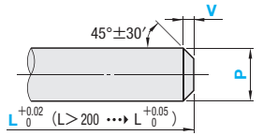
SR may be designated within
・$\frac{P}{2}$＜SR≦2P range.

10A (Trapezoid)



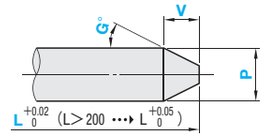
・1.5≦V＜P
・V≦A＜P
・L−F≦5
⊗ R designation not available.

11A (C chamfered)



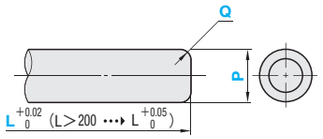
・0.1≦V≦$\left(\frac{P}{2}-0.1\right)$

12A (Tapered)



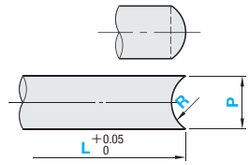
・0.1≦V≦(P×2), $\frac{P}{2}$−VtanG≧0.1
・0°＜G≦45°

13A (R chamfered)



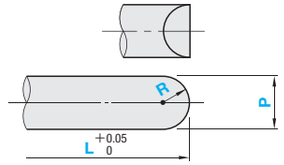
・0.2≦Q≦$\left(\frac{P}{2}-0.1\right)$

14A (R groove)



・(P×1.2)≦R≦(P×2)

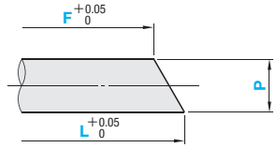
15A (R surface)



・Default:R=$\frac{P}{2}$

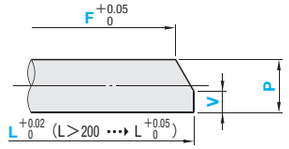
R may be designated within
・$\frac{P}{2}$＜R≦2P range.

16A (Bezel・F designation)



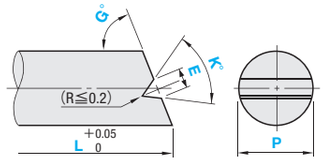
・0.05≦(L−F)≦P

17A (Partial bezel with F designation)



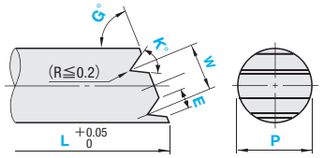
・0.05≦(L−F)≦(P−V)
・1.5≦V＜P

18A (Bezel＋1 groove)



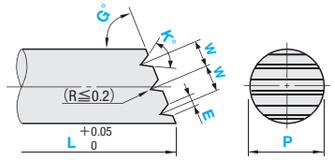
・45°≦G＜90°
・E≦$\frac{P}{2}$
・0.3≦E≦3.0
・K Selection 60° or 90°
⊗ R designation not available.

19A (Bezel＋2 grooves)



・45°≦G＜90°
・0.3≦E≦3.0
・E≦$\frac{P}{3}$
・(E＋0.2)≦W≦(P−E−0.4)
・K Selection 60° or 90°
⊗ R designation not available.

20A (Bezel＋3 grooves)



・45°≦G＜90°
・0.3≦E≦3.0
・E≦$\frac{P}{4}$
・(E＋0.2)≦W≦(P−$\frac{E}{2}$−0.2)
・K Selection 60° or 90°
⊗ R designation not available.

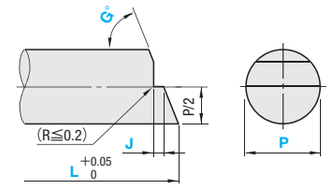
SHAPE VARIATIONS OF STEPPED EJECTOR PINS WITH TIP PROCESS ②

—SHAPES 21A～32A—

Shapes 1A～20A
P.163・164

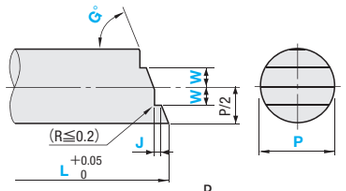
Non JIS material definition is listed on P.1351 - 1352

21A (Bezel＋1 vertical groove)



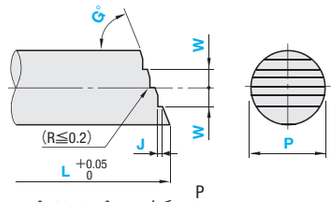
- 45°≦G＜90°
- J≦ P/(3 tanG)
- 0.3≦J≦3.0
- ⊗ R designation not available.

22A (Bezel＋2 vertical grooves)



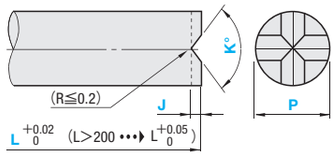
- 45°≦G＜90°
- 0.3≦J≦3.0
- J≦ P/(4 tanG)
- 0.1＋JtanG≦W≦(P/2－0.2)

23A (Bezel＋3 vertical grooves)



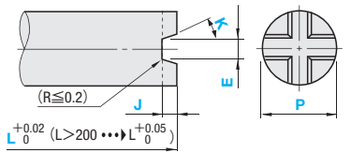
- 45°≦G＜90°
- 0.3≦J≦3.0
- J≦ P/(5 tanG)
- 0.1＋JtanG≦W≦(P/2－0.2)

24A (Cross groove・Triangle shaped)



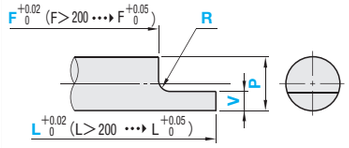
- 0.3≦J≦3.0
- J≦ P/3
- 30°≦K°≦90° (5° increments)

25A (Cross groove・Trapezoid-shaped)



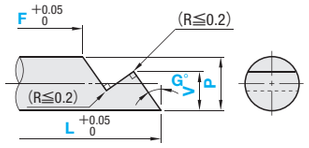
- 0.3≦J≦3.0
- 0.3≦E≦3.0
- J≦ P/3
- E≦ P/3
- 0°≦K°≦45°(5° increments)

26A (L-shaped・R designation)



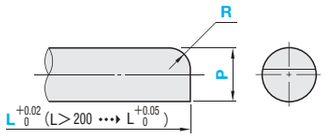
- 0.3≦R≦(P－V) and R≦(L－F)
- 0.2≦(L－F)≦(V×5)
- 1≦V＜P

27A (Bezel・Z groove)



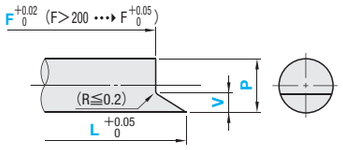
- 1≦(L－F)≦(V×5)
- 0°＜G≦45°
- 1.5≦V＜P
- ⊗ R designation not available.

28A (Half R)



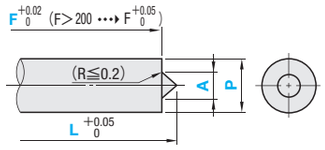
- (P×0.1)≦R＜(P×0.8)

29A (L-shaped・Tapered)



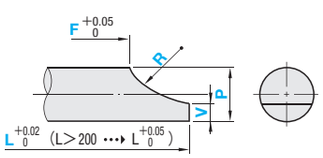
- 0.2≦(L－F)≦V×5
- 0.3≦V＜P
- ⊗ R designation not available.

30A (Umbo)



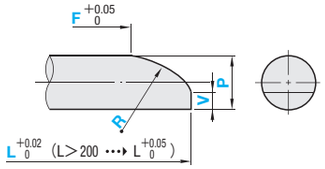
- 1≦A≦(P－1) and P/3 ≦A
- 1≦(L－F)≦(A×3)
- ⊗ R designation not available.

31A (Inward R with F/V designation)



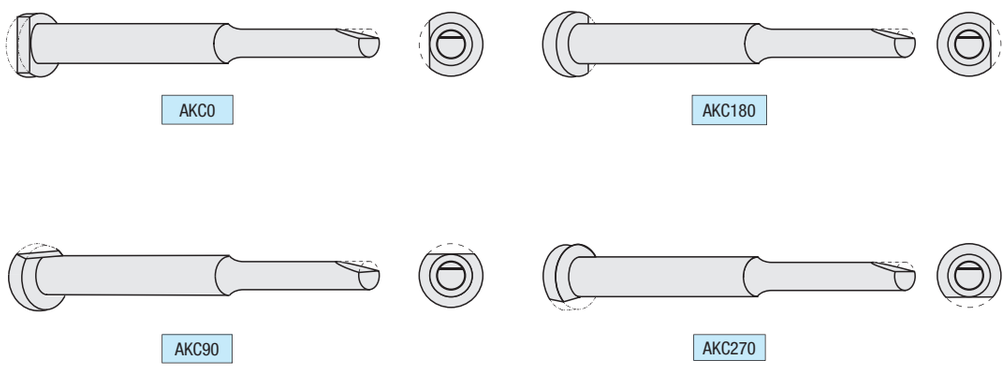
- P＜R≦15
- L－F＞R－$\sqrt{R^2-(P-V)^2}$
- 1.5≦V＜P

32A (Outward R with F/V designation)



- P＜R≦15
- L－F＞R－$\sqrt{R^2-(P-V)^2}$
- 1.5≦V＜P

■**Flats cutting position for 2A shape**



■**Products list**

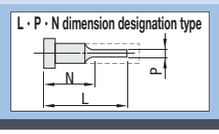
Classification \ Shape			Tip Processed (L/P/N dimension designation type)	
Material	**Head Thickness (T)**	**Tip diameter (P) tolerance**	**Part Number**	**Page**
SKH51 equivalent	4mm (T4)	0 −0.005	EHSF□A	P.167
		−0.01 −0.02	EHSFE□A	
	6・8mm (JIS)	0 −0.005	EHSJF□A	
		−0.01 −0.02	EHSJFE□A	

■**Unit of designation**

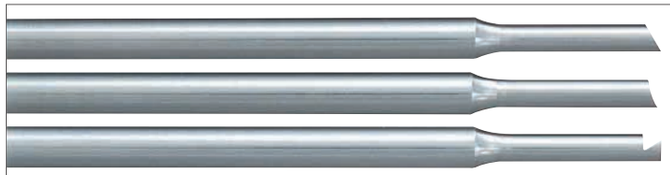
T	Unit of designation
G±30′	1° increments
K±30′	Select 60° or 90° for 18A,19A and 20A.
	24A・25A 5° increments
R±0.02 (15A Shape・26A Shape ••• R±0.1)	0.1mm increments
SR±0.1	0.1mm increments
A±0.05	0.1mm increments
V±0.05	0.1mm increments
E±0.02	0.1mm increments
J±0.02	0.1mm increments
W±0.02	0.1mm increments
Q±0.1	0.1mm increments
F (For tolerance, refer to the drawing)	0.01mm increments

High Speed Steel
SKH51
equivalent

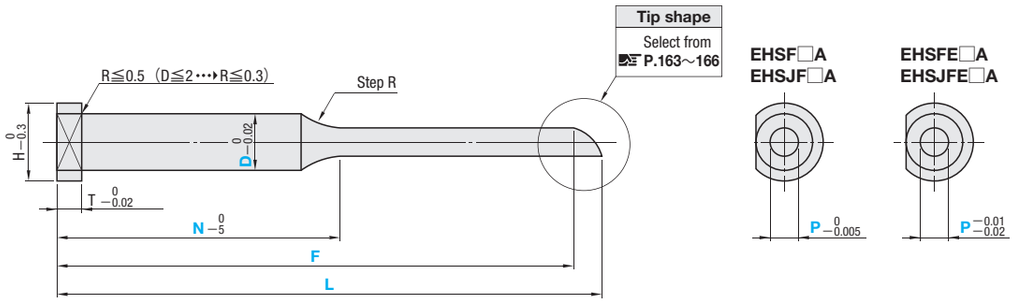
STEPPED EJECTOR PINS WITH TIP PROCESS



Non JIS material definition is listed on P.1351 - 1352



RoHS



To determine the engraving position, key flat cutting is made at the standard 0°

Part Number	Head Thickness	T P
EHSF□A	4mm(T4)	0 −0.005
EHSJF□A	6・8mm(JIS)	
EHSFE□A	4mm(T4)	−0.01 −0.02
EHSJFE□A	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Tip shape	D	0.01mm increments L	0.01mm increments P	1mm increments N
4	4	—	—	EHSF (P −0.005) EHSFE (P −0.01 −0.02)	—	1A 17A	2	50.00～250.00	1.50 ～ 1.90	N≧15 and 15≦(L−N)≦200
5						2A 18A	2.5		1.50 ～ 2.40	
6						3A 19A	3	50.00～300.00	1.50 ～ 2.90	・N≧15 (T4) ・N≧30 (JIS) and 20≦(L−N)≦200
7						4A 20A	3.5		1.50 ～ 3.40	
		8	6		EHSJF (P −0.005) EHSJFE (P −0.01 −0.02)	5A 21A	4		2.00 ～ 3.90	
8						6A 22A	4.5		2.50 ～ 4.40	
		9				7A 23A	5	50.00～350.00	3.00 ～ 4.90	
9						8A 24A	5.5		3.50 ～ 5.40	
		10				9A 25A	6		4.00 ～ 5.90	
10		11				10A 26A	6.5		4.50 ～ 6.40	
						11A 27A	7		5.00 ～ 6.90	
11		13	8			12A 28A	8		6.00 ～ 7.90	
14		14				13A 29A	9		7.00 ～ 8.90	
15		15				14A 30A	10		7.90 ～ 9.90	
17		17				15A 31A	12		8.90 ～11.90	
						16A 32A				

Select a tip shape 1A～32A P.163～166
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of EHSF□A (P −0.005), EHSFE□A (P −0.01 −0.02).

Order

Part Number										
Type	Tip shape	D	—	L	—	P	—	N	—	In order of A・V・E・J・W・R・SR・F・G・K・Q
EHSF	8A	6	—	140.00	—	P5.30	—	N80	—	R10 — F130.00

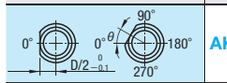
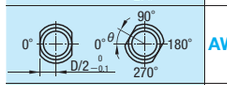
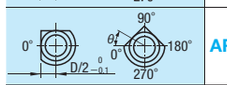
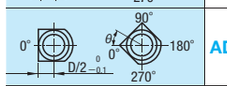
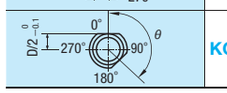
Days to Ship **Quotation**

Alterations

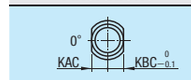
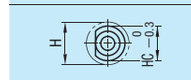
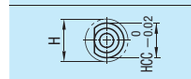
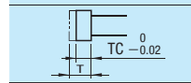
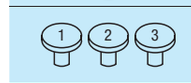
Part Number	—	L	—	P	—	N	—	A,V,E,J,W,R,SR,F,G,K,Q	—	(AKC・AWC…etc.)
EHSF8A 6	—	140.00	—	P5.30	—	N80	—	R10 — F130.00	—	AWC60

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Price **Quotation**

Alterations	Code	Spec.	1Code
	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	Quotation
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L, F and N remain unchanged.) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.128	
	NHN	Automatic sequential numbering on the head How to order P.128	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Combination only with HC・HCC・TC・NHC・NHN available.	

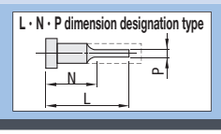
Stepped Ejector Pins

High Speed Steel SKH51 equivalent

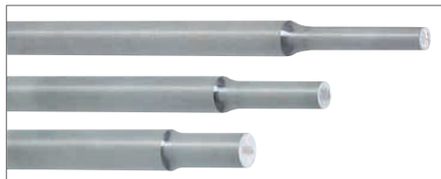
High Speed Steel
SKH51
equivalent

STEPPED EJECTOR PINS WITH ENGRAVING

— L・P・N DIMENSION DESIGNATION TYPE —

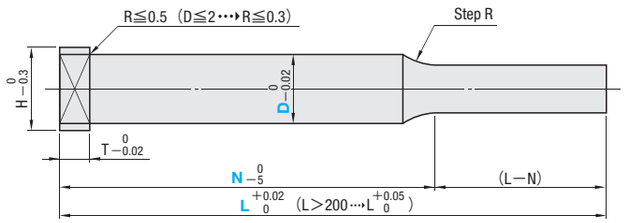


Non JIS material definition is listed on P.1351 - 1352



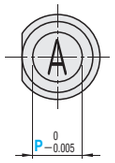
RoHS

Part Number Type	Part Number Character	Head Thickness	T P
EHSF	□M	4mm(T4)	0 −0.005
EHSJF	□M	6・8mm(JIS)	0 −0.005
EHSFE	□MR	4mm(T4)	−0.01 −0.02
EHSJFE	□MR	6・8mm(JIS)	−0.01 −0.02

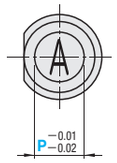


To determine the engraving position,key flat cutting is made at the standard 0° .

EHSF□M・EHSF□MR
EHSJF□M・EHSJF□MR

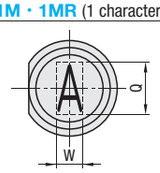
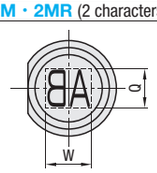
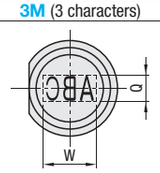
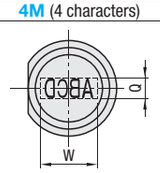
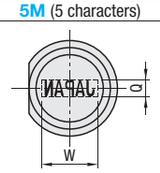


EHSFE□M・EHSFE□MR
EHSJFE□M・EHSJFE□MR



※ Range of guaranteed shaft diameter precision (D) (Details P.1301)
※ Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.30≦P≦11.90	1.50≦P≦11.90	2.80≦P≦11.90	3.60≦P≦11.90	4.50≦P≦11.90

Please place order by the character order of molding products. Refer to P.118 for character font.

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Character	D	0.01mm increments L	0.01mm increments P	1mm increments N
3	4	—	—	EHSF (P 0 −0.005)	—	1M	1	40.00～100.00	0.30 ～ 0.90	N≧15 and 15≦(L−N)≦100
								100.01～150.00	0.60 ～ 0.90	
							1.5	40.00～200.00	0.60 ～ 1.40	N≧15 and 15≦(L−N)≦150
4						2M	2	40.00～250.00 (50.00)	0.80 ～ 1.90	
5							2.5		0.80 ～ 2.40	
6						3M	3		1.00 ～ 2.90	・N≧15 (T4)
7							3.5		1.50 ～ 3.40	
		8	6			4M	4		1.50 ～ 3.90	
8					EHSJF (P 0 −0.005)	5M	4.5		2.50 ～ 4.40	
		9		EHSFE (P −0.01 −0.02)			5		3.00 ～ 4.90	・N≧30 (JIS) and 20≦(L−N)≦200
9							5.5		3.50 ～ 5.40	
		10					6		4.00 ～ 5.90	
10		11				(Sequential numbering designation)	6.5		4.50 ～ 6.40	
							7		4.90 ～ 6.90	
11		13	8		EHSJFE (P −0.01 −0.02)	1MR	8		5.90 ～ 7.90	
14		14					9		6.90 ～ 8.90	
15		15				2MR	10		7.90 ～ 9.90	
17		17					12		8.90 ～11.90	

Characters for engraving (Round Gothic type)

0	1	2	3	4
5	6	7	8	9
A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z				

Name	Characters for engraving	Order code
Slash	/	¥
Greater	>	>
Less	<	<
Plus	+	+
Minus	−	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating/(slash), # for -(minus), % for ⬚ (space), @ for ・(centered dot), and & for.(period).
The figure in ( ) for L dimension are applicable for EHSJF□M・EHSJFE□M only.
For head thickness JIS less than D4 is T=4, please place the order for head thickness 4mm type of EHSF□M (P 0 −0.005) EHSFE□M (P −0.01 −0.02).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the 1st digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the 2nd digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.
- When placing the order for 5 pieces of EHSF1MR2—150—P1.5—1, characters for engraving"1 2 3 4 5"
- When placing the order for 3 pieces of EHSF1MR3—150—P2.0—Z, characters for engraving "Z A B"
- When placing the order for 4 pieces of EHSF2MR4—100—P2.5—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of EHSF2MR4—100—P2.5—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of EHSF2MR6—150—P4.5—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Order

Part Number Type	Character	D	—	L	—	P	—	N	—	Characters for engraving (0～9, A～Z, /><+−⬚・.)
EHSJF	3M	5	—	250.00	—	P4.50	—	N130	—	DEF

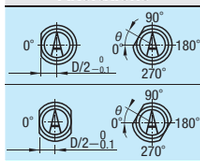
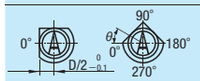
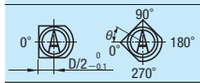
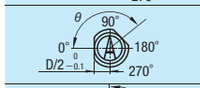
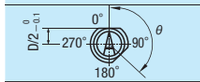
Days to Ship **Quotation**

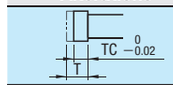
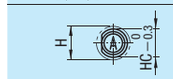
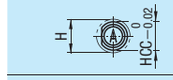
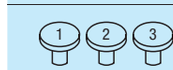
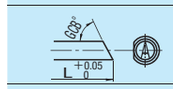
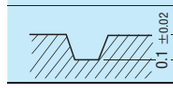
Alterations

Part Number	—	L	—	P	—	N	—	Characters for engraving (0~9, A~Z,/><+−⬚・.)	—	(AKC・AWC···etc.)
EHSJF3M 5	—	250.00	—	P4.50	—	N130	—	DEF	—	AWC45

Quotation

Alteration details P.127

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 When combined with GCB/GCD, 90° increments only No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with GCB/GCD, 90° increments only	
	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	ARC	ARC=1° increments 0≦ARC<360 When combined with GCB/GCD, 90° increments only	
	ADC	ADC=1° increments 0≦ADC<360 When combined with GCB/GCD, 90° increments only	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L	
	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
	NHC	Numbering on the head How to order P.128	Quotation
	NHN	Automatic sequential numbering on the head How to order P.128	
	GCB	GCB=1° increments 60≦GCB<90 Available when L≦200, P≧2, D≧3 Combination with GCD not available.	
	GCD	GCD=1° increments 60≦GCD<90 Available when L≦200, P≧2, D≧3 Combination with GCB not available.	
	EC	Engraving depth alteration 0.05 ··· 0.1 Available when P≧1 Combination with GCB, GCD not available.	

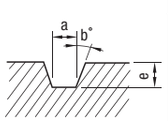
Price **Quotation**

■Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1M 1MR (1 character)	0.30 ～ 0.39	0.2	0.1
	0.40 ～ 0.49	0.25	0.13
	0.50 ～ 0.59	0.35	0.18
	0.60 ～ 0.79	0.4	0.2
	0.80 ～ 0.90	0.6	0.3
	1.00 ～ 1.29	0.8	0.4
	1.30 ～ 1.49	1.0	0.5
	1.50 ～ 1.99	1.2	0.6
	2.00 ～ 2.49	1.5	0.8
	2.50 ～ 3.49	2.0	1.0
	3.50 ～ 4.49	3.0	1.5
	4.50 ～ 5.49	4.0	2.0
	5.50 ～11.90	5.0	2.5
2M 2MR (2 characters)	1.50 ～ 1.90	0.7	1.1
	2.00 ～ 2.29	0.8	1.2
	2.30 ～ 2.99	1.0	1.3
	3.00 ～ 3.99	1.5	2.0
	4.00 ～ 4.99	2.0	2.6
	5.00 ～ 5.99	2.5	3.3
	6.00 ～ 7.99	3.0	3.9
	8.00 ～11.90	4.0	5.2
3M (3 characters)	2.80 ～ 3.09	0.8	1.8
	3.10 ～ 4.49	1.0	2.1
	4.50 ～ 5.49	1.5	3.2
	5.50 ～ 6.99	2.0	4.2
	7.00 ～11.90	2.5	5.3
4M (4 characters)	3.60 ～ 3.89	0.8	2.4
	3.90 ～ 5.49	1.0	2.9
	5.50 ～ 6.99	1.5	4.4
	7.00 ～11.90	2.0	5.8
5M (5 characters)	4.50 ～ 4.99	0.8	3.0
	5.00 ～ 6.99	1.0	3.7
	7.00 ～11.90	1.5	5.6

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Convex character)

Engraving Details



Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ± 2°
Depth of engraving (e)	When P≦0.9 0.03±0.01 When P≧1.0 0.05±0.02 When EC code is used 0.1 ± 0.02

Stepped Ejector Pins

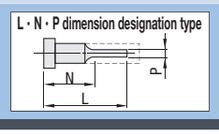
High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent
+
Nitrided

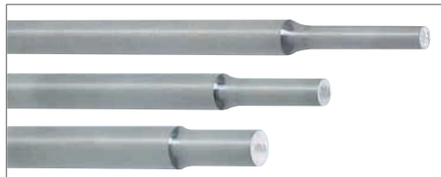
STEPPED EJECTOR PINS WITH ENGRAVING

— L・P・N DIMENSION DESIGNATION TYPE —

L・N・P dimension designation type

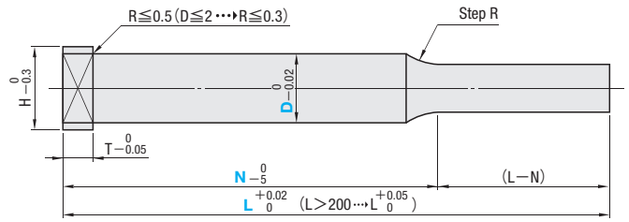


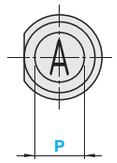
Non JIS material definition is listed on P.1351 - 1352



RoHS

Part Number	Head Thickness	T T	T P 4≦D≦8	T P 10≦D≦20
EJSF□M EJSF□MR	6・8mm(JIS)	0 −0.05	−0.01 −0.02	−0.01 −0.03

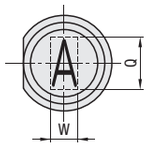
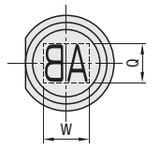
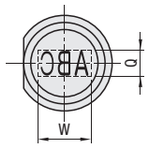
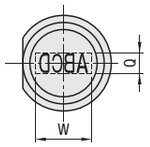
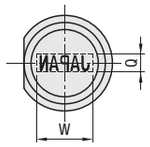




※ Range of guaranteed shaft diameter precision (D) (Details P.1301)
※ Step R (Details P.1302)

To determine the engraving position,key flat cutting is made at the standard 0°.

M SKD61 equivalent+Nitrided
H Surface900HV～Base material40～45HRC
Range of guaranteed base material hardness (Details P.1303)

1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
1.50≦P≦19.90	1.50≦P≦19.90	2.80≦P≦19.90	3.60≦P≦19.90	4.50≦P≦19.90

Please place order by the character order of molding products. Refer to P.118 for character font.

JIS head H	JIS head T	Part Number Type / JIS head	Character	D	0.01mm increments L	0.01mm increments P	1mm increments N
8	6	EJSF	1M	4	50.00～300.00	1.50～ 3.90	・N≧L/3 and (L−N)≧10
				4.5		2.50～ 4.40	
9			2M	5		3.00～ 4.90	
			3M	5.5		3.50～ 5.40	
10			4M	6		4.00～ 5.90	
11			5M	6.5		4.50～ 6.40	
				7		4.90～ 6.90	
13	8		(Sequential numbering designation) 1MR	8		5.90～ 7.90	
15				10		7.90～ 9.90	
17				12		8.90～11.90	
20				15		10.90～14.90	
21			2MR	16		11.90～15.90	
25				20		15.90～19.90	

Characters for engraving (Round Gothic type)

0 1 2 3 4
5 6 7 8 9
A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z

Name	Characters for engraving	Order code
Slash	/	¥
Greater	>	>
Less	<	<
Plus	+	+
Minus	−	#
Space	⬚	%
Centered dot	・	@
Period	.	&

Use ¥ for indicating/(slash), # for -(minus), % for ⬚ (space), @ for ・(centered dot), and & for.(period).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the 1st digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the 2nd digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

- When placing the order for 5 pieces of EJSF1MR2—150—P1.5—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of EJSF1MR3—150—P2.5—Z, characters for engraving "Z A B"
- When placing the order for 4 pieces of EJSF2MR4—100—P3.5—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of EJSF2MR4—100—P3.5—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of EJSF2MR6—150—P5.5—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Order

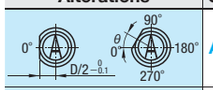
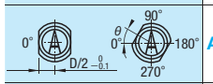
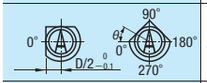
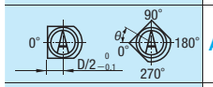
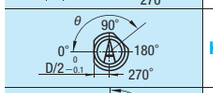
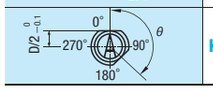
Part Number			—	L	—	P	—	N	—	Characters for engraving
Type	Character	D								0～9, A～Z / > < + − ⬚ ・ .
EJSF	1M	4	—	200.00	—	P3.50	—	N150	—	A

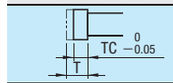
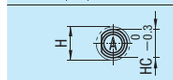
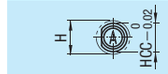
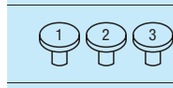
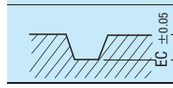
Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	N	—	Characters for engraving (0~9, A~Z, / > < + − ⬚ ・ .)	—	(AKC・AWC…etc.)
EJSF3M 5	—	250.00	—	P4.50	—	N130	—	ABC	—	AWC45

Alteration details P.127

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2 Combination with other key flat cutting not available	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	Quotation
	NHC	Numbering on the head How to order P.128	
	NHN	Automatic sequential numbering on the head How to order P.128	
	EC	Engraving depth alteration 0.2 ··· 0.1 Designation method EC0.1 0.2 ··· 0.3 Designation method EC0.3	

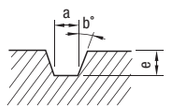
Price: Quotation

■Relationship between Shaft Diameter (P) and Character Size (Q, W)

No. of characters	P	Q	W
1M 1MR (1 character)	1.50 ～ 1.99	1.2	0.6
	2.00 ～ 2.49	1.5	0.8
	2.50 ～ 3.49	2.0	1.0
	3.50 ～ 4.49	3.0	1.5
	4.50 ～ 5.49	4.0	2.0
	5.50 ～11.99	5.0	2.5
	12.00 ～19.90	9.0	4.5
2M 2MR (2 characters)	1.50 ～ 1.90	0.7	1.1
	2.00 ～ 2.29	0.8	1.2
	2.30 ～ 2.99	1.0	1.3
	3.00 ～ 3.99	1.5	2.0
	4.00 ～ 4.99	2.0	2.6
	5.00 ～ 5.99	2.5	3.3
	6.00 ～ 7.99	3.0	3.9
	8.00 ～11.99	4.0	5.2
	12.00 ～19.90	6.5	8.0
3M (3 characters)	2.80 ～ 3.09	0.8	1.8
	3.10 ～ 4.49	1.0	2.1
	4.50 ～ 5.49	1.5	3.2
	5.50 ～ 6.99	2.0	4.2
	7.00 ～11.99	2.5	5.3
	12.00 ～19.90	4.5	8.5
4M (4 characters)	3.60 ～ 3.89	0.8	2.4
	3.90 ～ 5.49	1.0	2.9
	5.50 ～ 6.99	1.5	4.4
	7.00 ～11.99	2.0	5.8
	12.00 ～19.90	3.5	8.8
5M (5 characters)	4.50 ～ 4.99	0.8	3.0
	5.00 ～ 6.99	1.0	3.7
	7.00 ～11.99	1.5	5.6
	12.00 ～19.90	3.0	9.0

Ejector pins	Finished products
Reversed reading (Concave character)	Right reading (Convex character)

Engraving Details



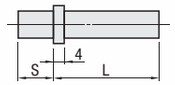
Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	20° ± 2°
Depth of engraving (e)	0.2±0.05

Stepped Ejector Pins

Dies Steel SKD61 equivalent + Nitrided

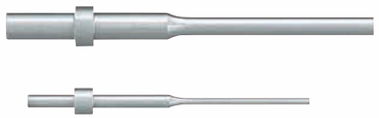
FREE FLANGE-POSITION EJECTOR PINS

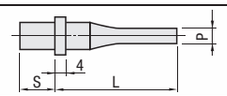
STRAIGHT EJECTOR PINS WITH FREE FLANGE POSITION



Classification / Material	Head Thickness (T)	Shaft Diameter (P) Tolerance	L dimension designation type Part Number	Page	L・P demension designation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	EPSH	P.175	EPSHB	P.175
		−0.01 / −0.02	EPSHE		EPSHBE	
SKD61 equivalent	4mm(T4)	−0.01 / −0.02	EPSN	P.177	EPSNB	P.177

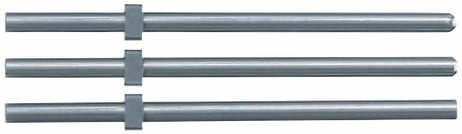
STEPPED EJECTOR PINS WITH FREE FLANGE POSITION

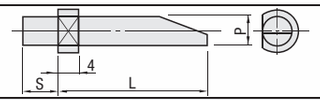




Classification / Material	Head Thickness (T)	Tip Diameter (P) Tolerance	L・N・P dimension designation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	EPSHS	P.179
		−0.01 / −0.02	EPSHSE	

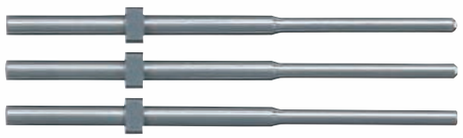
FREE FLANGE POSITION STRAIGHT EJECTOR PINS WITH TIP PROCESS

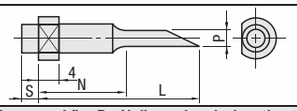




Classification / Material	Head Thickness (T)	Shaft Diameter (P) Tolerance	Tip Processed: L dimension designation type Part Number	Page	L・P dimension designation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	EPSH□A	P.185	EPSHB□A	P.185
		−0.01 / −0.02	EPSHE□A		EPSHBE□A	

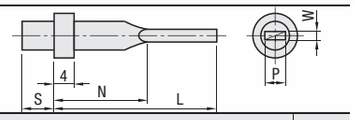
FREE FLANGE POSITION STEPPED EJECTOR PINS WIH TIP PROCESS





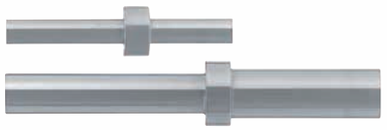
Classification / Material	Head Thickness (T)	Tip Diameter (P) Tolerance	Tip Processed (L・P・N dimension designation type) Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	EPSHS□A	P.187
		−0.01 / −0.02	EPSHSE□A	

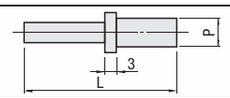
RECTANGULAR EJECTOR PINS WITH FREE FLANGE POSITION



Classification / Material	Head Thickness (T)	Tip (P・W) Tolerance	Part Number	Page
SKH51 equivalent	4mm (T4)	0 / −0.005	ERSH	P.189
		0 / −0.01	ERSHE	

PUSHER PINS WITH SPRING GUIDE



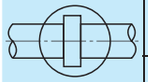
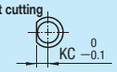
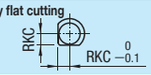
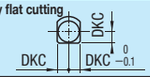
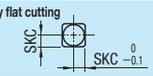
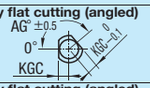
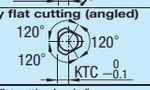
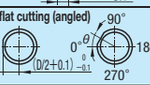
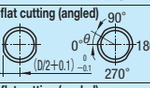
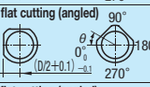
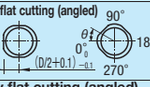
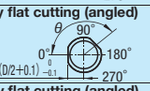
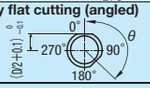
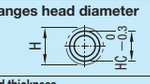
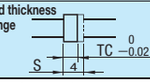


Classification / Material	Head Thickness (T)	Tip (P) Tolerance	Part Number	Page
SKH51 equivalent	3mm	0 / −0.005	EPCH	P.191
		−0.01 / −0.02	EPCHE	

ALTERATION GUIDE FOR FREE FLANGE-POSITION EJECTOR PINS

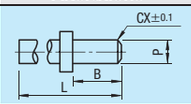
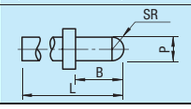
Non JIS material definition is listed on P.1351 - 1352

■Alteraton Guide for Free Flange-Position Ejector Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Head alteration 	Free Flange-Position Ejector Pins (*Except tip processing)	Key flat cutting 	KC	Single flat cutting Designation range D/2+0.1≦KC<H/2	Quotation
		Key flat cutting	WKC	Two parallel flats cutting Designation range D/2+0.1≦WKC<H/2	
		Key flat cutting	KAC KBC	Varied width parallel flats cutting Designation range D/2+0.1≦KAC KAC<KBC<H/2	
		Key flat cutting 	RKC	Right angled two falts cutting Designation range D/2+0.1≦RKC<H/2	
		Key flat cutting 	DKC	Three flats cutting Designation range D/2+0.1≦DKC<H/2	
		Key flat cutting 	SKC	Four flats cutting Designation range D/2+0.1≦SKC<H/2	
		Key flat cutting (angled) 	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Designation range D/2+0.1≦KGC<H/2 AG=1° increments 0° <AG<360°	
		Key flat cutting (angled) 	KTC	Three flats cutting at 120° Designation range D/2+0.1≦KTC<H/2	
	Free Flange-position Ejector Pins with Tip Process	Key flat cutting (angled) 	AKC	Adds two flats at the standard (0°) position, or at the designation angle (clockwise in 1° increments from the standard position). Designation range 0° <AKC<360° No need to designate AKC0 Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=45° ··· AKC45	
		Key flat cutting (angled) 	AWC	Adds two parallel flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Designation range 0° ≦AWC<360° Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=0° ··· AWC0, θ=45° ··· AWC45	
		Key flat cutting (angled) 	ARC	Adds two right-angled flats at the standard (0°) position, moreover at the designated angle (clockwise in 1° increments from the standard position). Designation range 0° ≦ARC<360° Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=0° ··· ARC0, θ=45° ··· ARC45	
		Key flat cutting (angled) 	ADC	Adds three flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Designation range 0° ≦ADC<360° Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=0° ··· ADC0, θ=45° ··· ADC45	
		Key flat cutting (angled) 	KGA	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Adds another flat so that two flats are added totally. Designation range 0° <KGA<360° Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=135° ··· KGA135	
		Key flat cutting (angled) 	KGB	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position). Adds another flat so that two flats are added totally. Designation range 0° <KGB<360° Key flat cutting position is (D/2+0.1) Unit of designation 1° increments Designation method θ=135° ··· KGB135	
	Free Flange-Position Ejector Pins	Changes head diameter 	HC	Reduces head diameter. Designation range P+1≦HC<H Unit of designation 0.1mm increments Designation method HC6.5	
		Head thickness change 	TC	Reduces the head thickness. Designation range 2.0≦TC≦10 and TC≦(L−10) or (N−10) or (F−10) (Dimensions L, N and S remain unchanged.)	

Note that designating H/2−0.15 or more for Key flat cutting alteration will create hardly any flat on the head.

■Alteration Guide for Pusher Pins with Spring Guide

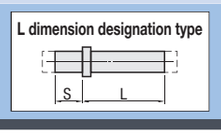
Items	Applicable Products	Alterations	Codes	Specifications	1Code
Tip process	Pusher Pins with Spring Guide		CX	Performs C chamfering on the tip. Designation range CX=0.1mm increments 0.3≦CX≦0.5 Available for B−CX≧10 Designation method CX 0.3	Quotation
			SR	Finishes the top in spherical shape (SR). Designation range SR=P/2 Available for B−P/2≧10 Designation method SR	

High Speed Steel
SKH51 equivalent

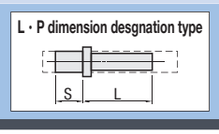
STRAIGHT EJECTOR PINS WITH FREE FLANGE POSITION

— L DIMENSION DESIGNATION TYPE / L・P DIMENSION DESIGNATION TYPE —

L dimension designation type

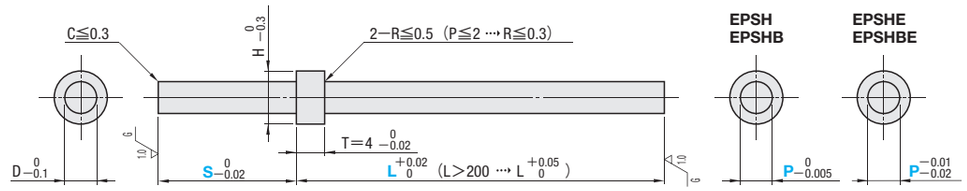


L・P dimension desgnation type



Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number	Head Thickness	T P
EPSH (L dimension designation type) EPSHB (L・P dimension designation type)	4mm (T4)	0 −0.005
EPSHE (L dimension designation type) EPSHBE (L・P dimension designation type)		−0.01 −0.02

Range of guaranteed shaft diameter precision (Details P.1301)
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

■L Dimension Designation Type

H	D	Part Number Type	P	0.01mm increments L	S
3	1	EPSH (P 0 −0.005) EPSHE (P −0.01 −0.02)	1	5.00～150.00	5.00～40.00
	1.5		1.5		
4	2		2	5.00～200.00	
5	2.5		2.5		
6	3		3	5.00～250.00	5.00～50.00
7	3.5		3.5		
	4		4		
8	4.5		4.5		
	5		5		
9	5.5		5.5		
	6		6		
10	6.5		6.5		
	7		7		

■L・P Dimension Designation Type

H	D	Part Number Type	No.	0.01mm increments L	P	S
3	1.5	EPSHB (P 0 −0.005) EPSHBE (P −0.01 −0.02)	1.5	5.00～150.00	1.00～1.49	5.00～40.00
4	2		2	5.00～200.00	1.50～1.99	
5	2.5		2.5		2.00～2.49	
6	3		3	5.00～250.00	2.50～2.99	5.00～50.00
7	3.5		3.5		3.00～3.49	
	4		4		3.50～3.99	
8	4.5		4.5		4.00～4.49	
	5		5		4.50～4.99	
9	5.5		5.5		5.00～5.49	
	6		6		5.50～5.99	
10	6.5		6.5		6.00～6.49	
	7		7		6.50～6.99	

Order

Part Number	L	P	S
EPSH 5	60.00		S10.00
EPSHB 3.5	117.32	P3.25	S26.30

Days to Ship: Quotation

Alterations

Part Number	L	P	S	(HC・TC・DC···etc.)
EPSH 5	60.00		S10.00	TC3.0
EPSHB 5	60.00	P4.50	S10.00	TC3.0

Alteration details P.174

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	KC=0.1mm increments D/2+0.1≦KC<H/2	Quotation
WKC 0 −0.1	WKC	WKC=0.1mm increments D/2+0.1≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	KAC, KBC=0.1mm increments D/2+0.1≦KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	RKC=0.1mm increments D/2+0.1≦RKC<H/2	
DKC DKC 0 −0.1	DKC	DKC=0.1mm increments D/2+0.1≦DKC<H/2	
SKC SKC 0 −0.1	SKC	SKC=0.1mm increments D/2+0.1≦SKC<H/2	

Alterations	Code	Spec.	1Code
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	KGC=0.1mm increments AG=1° increments D/2+0.1≦KGC<H/2, 0<AG<360	Quotation
120° 120° 120° KTC 0 −0.1	KTC	KTC=0.1mm increments D/2+0.1≦KTC<H/2	
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H	
TC 0 −0.02 S 4	TC	TC=0.1mm increments 2.0≦TC≦10 and TC≦L−10 (Dimensions L and S remain unchanged.)	
DC 0 −0.1 D	DC	DC=0.1mm increments P−1≦DC<D and DC≧1.5 Available for L・P Dimension designation type only. Only available combination is with HC・TC	

Price: Quotation

Example

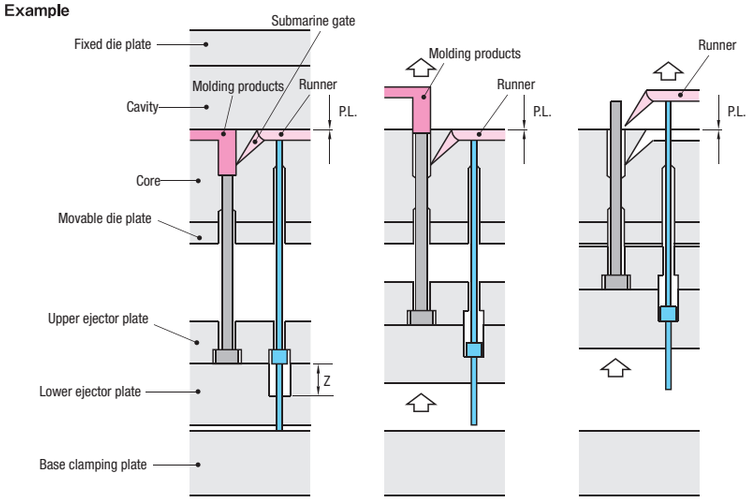
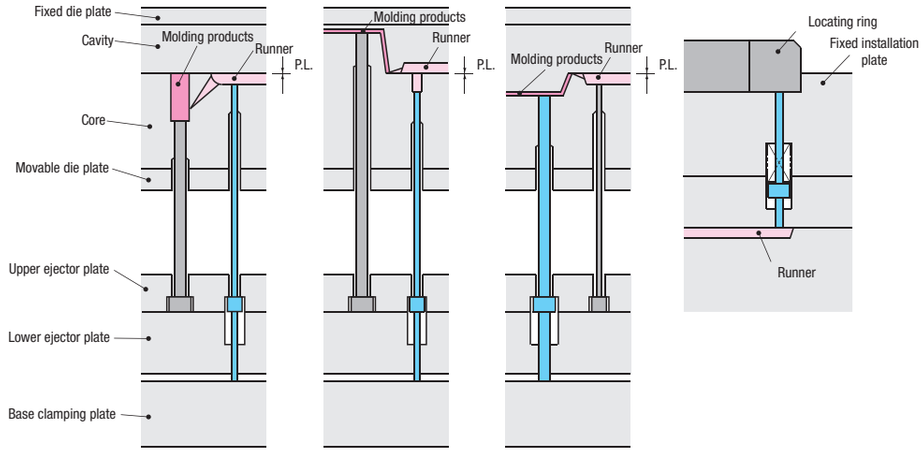


Fig. 1 ● Mold closed
Fig. 2 ● Mold opening
Fig. 3 ● Mold opened

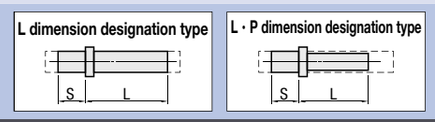
Free flange position ejector pins can be ejected in differential time.
The runner can be slowly ejected by the depth of counter bore Z (Fig.1).
They are applicable to ejection of molded products and two-step ejection.



Dies Steel
SKD61 equivalent
+
Nitrided

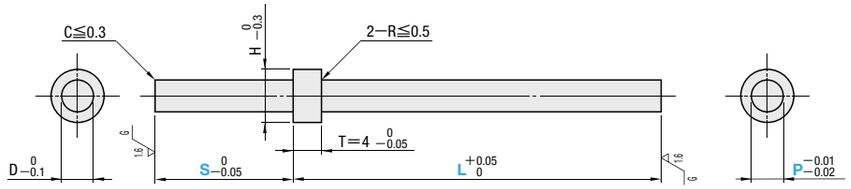
STRAIGHT EJECTOR PINS WITH FREE FLANGE POSITION

— L DIMENSION DESIGNATION TYPE ／ L・P DIMENSION DESIGNATION TYPE —



Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number	Head Thickness	T P
EPSN (L dimension designation type)	4mm (T4)	−0.01 −0.02
EPSNB (L・P dimension designation type)		

M SKD61 equivalent＋Nitrided
H Surface : 900HV～
Base material:40～45HRC
Range of guaranteed base material hardness
(Details P.1303)

Both end faces are not nitrided to prevent them from chipping.

H	D	Part Number Type	P	0.01mm increments L	S
7	4	EPSN	4	5.00～400.00	5.00～80.00
8	5		5		
9	6		6		
10	7		7	5.00～500.00	5.00～80.00
11	8		8		
15	10		10		
17	12		12		
20	15		15		

H	D	Part Number Type	No.	0.01mm increments L	P	S
7	4	EPSNB	4	5.00～400.00	3.50～ 3.99	5.00～80.00
8	5		5		4.00～ 4.99	
9	6		6		5.00～ 5.99	
10	7		7	5.00～500.00	6.00～ 6.99	5.00～80.00
11	8		8		7.00～ 7.99	
15	10		10		8.00～ 9.99	
17	12		12		10.00～11.99	
20	15		15		12.00～14.99	

Order

Part Number — L — P — S

EPSN5 — 60.00 — S10.00

EPSNB5 — 117.32 — P4.25 — S26.30

Days to Ship Quotation

Alterations

Part Number — L — P — S — (HC・TC・DC…etc.)

EPSN5 — 60.00 — S10.00 — TC3.0

EPSNB5 — 60.00 — P4.50 — S10.00 — TC3.0

Alteration details P.174

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	KC=0.1mm increments D/2+0.1≦KC<H/2	
WKC 0 −0.1	WKC	WKC=0.1mm increments D/2+0.1≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	KAC, KBC=0.1mm increments D/2+0.1≦KAC<KBC<H/2	Quotation
RKC RKC 0 −0.1	RKC	RKC=0.1mm increments D/2+0.1≦RKC<H/2	
DKC DKC DKC 0 −0.1	DKC	DKC=0.1mm increments D/2+0.1≦DKC<H/2	
SKC SKC 0 −0.1	SKC	SKC=0.1mm increments D/2+0.1≦SKC<H/2	

Alterations	Code	Spec.	1Code
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	KGC=0.1mm increments AG=1° increments D/2+0.1≦KGC<H/2, 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	KTC=0.1mm increments D/2+0.1≦KTC<H/2	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments P+1≦HC<H	
TC 0 −0.02 S 4	TC	TC=0.1mm increments 2.0≦TC≦10 and TC≦L−10 (Dimensions L and S remain unchanged.)	
DC 0 −0.1 D	DC	DC=0.1mm increments P−1≦DC<D Available for L・P Dimension designation type only. Only available combination is with HC・TC	

Price Quotation

Example

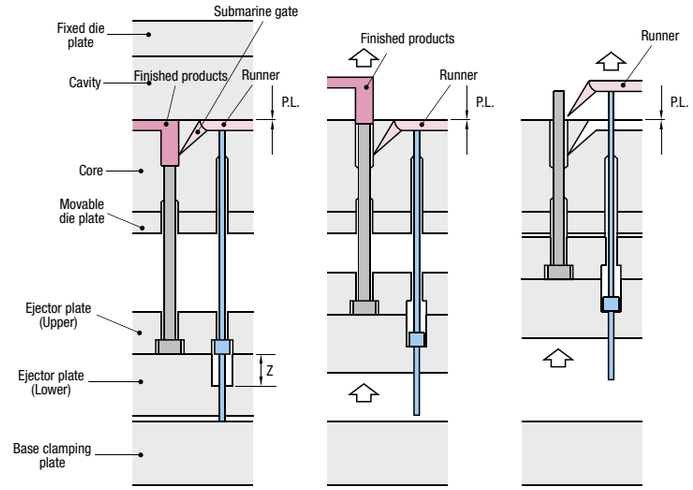


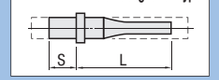
Fig. 1 • Mold closed Fig. 2 • Mold opening Fig. 3 • Mold opened

Free flange position ejector pins can be ejected in differential time.
The runner can be slowly ejected by the depth of counter bore Z (Fig.1).
They are applicable to ejection of molded products and two-step ejection.

High Speed Steel
SKH51 equivalent

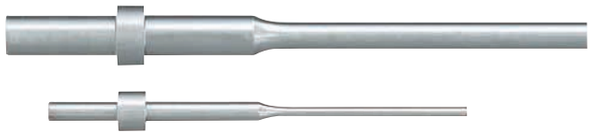
STEPPED EJECTOR PINS WITH FREE FLANGE POSITION

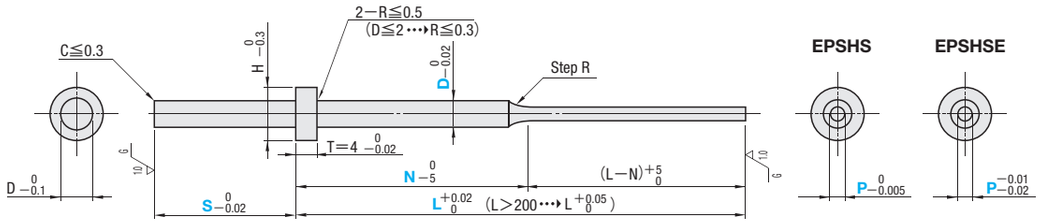
L・P・N dimension desgnation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head Thickness	T P
EPSHS	4mm(T4)	0 −0.005
EPSHSE		−0.01 −0.02

※ Range of guaranteed shaft diameter precision (D) (Details P.1301)
※ Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	Part Number Type	D	0.01mm increments L	0.01mm increments P	1mm increments N	0.01mm increments S
3	EPSHS (P 0 −0.005) EPSHSE (P −0.01 −0.02)	1.5	35.00～200.00	0.80～1.40	N≧15 and 20≦(L−N)≦150	5.00～40.00
4		2		0.80～1.90		
5		2.5		0.80～2.40		
6		3	35.00～250.00	1.00～2.90	N≧15 and 20≦(L−N)≦185	5.00～50.00
7		3.5		1.50～3.40		
		4		1.50～3.90		
8		4.5		2.50～4.40		
		5		3.00～4.90		
9		5.5		3.50～5.40		
		6		4.00～5.90		

Order

Part Number	L	P	N	S
EPSHS 5	60.00	P4.62	N30	S10.00

Days to Ship **Quotation**

Alterations

Part Number	L	P	N	S	(HC・TC・DC…etc.)
EPSHS 5	60.00	P4.62	N30	S10.00	TC3.0

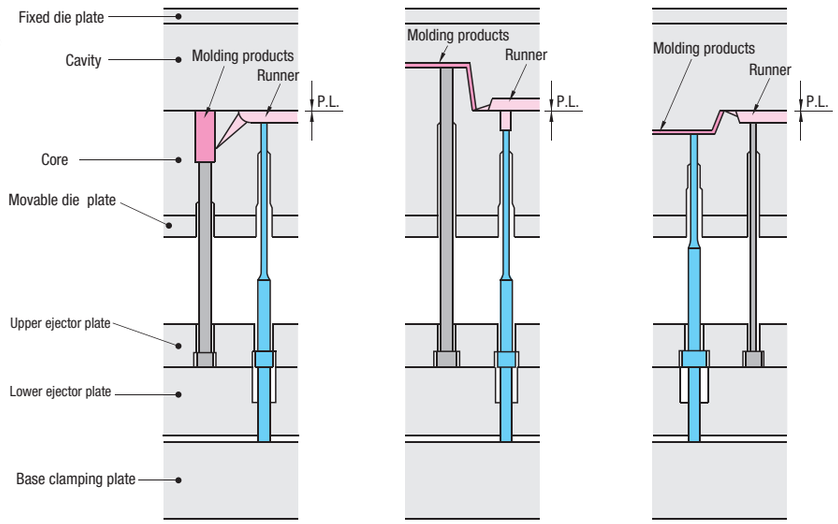
Alteration details P.174

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	KC=0.1mm increments D/2+0.1≦KC<H/2	Quotation
WKC 0 −0.1	WKC	WKC=0.1mm increments D/2+0.1≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	KAC, KBC=0.1mm increments D/2+0.1≦KAC<KBC<H/2	
RKC 0 −0.1	RKC	RKC=0.1mm increments D/2+0.1≦RKC<H/2	
DKC 0 −0.1	DKC	DKC=0.1mm increments D/2+0.1≦DKC<H/2	
SKC 0 −0.1	SKC	SKC=0.1mm increments D/2+0.1≦SKC<H/2	

Alterations	Code	Spec.	1Code
AG° ±0.5 0° KGC 0 −0.1	KGC	KGC=0.1mm increments AG=1° increments D/2+0.1≦KGC<H/2, 0<AG<360	Quotation
120° 120° 120° KTC 0 −0.1	KTC	KTC=0.1mm increments D/2+0.1≦KTC<H/2	
H HC 0 −0.3	HC	HC=0.1mm increments D+1≦HC<H	
S 4 TC 0 −0.02	TC	TC=0.1mm increments 2.0≦TC≦10 and TC≦N−10 (Dimensions L, N and S remain unchanged.)	
DC 0 −0.1 D	DC	DC=0.1mm increments D−2≦DC<D and DC≧1.5 Alteration of D size applies on the S dimension side only.	

Price **Quotation**

Example



Free Flange-Position Ejector Pins

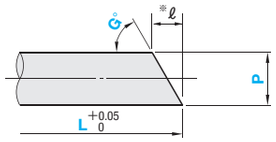
High Speed Steel SKH51 equivalent

SHAPE VARIATION OF FREE FLANGE POSITION STRAIGHT EJECTOR PINS WITH TIP PROCESS ①

—1A～20A SHAPE—

21A～32A Shape
P.183・184

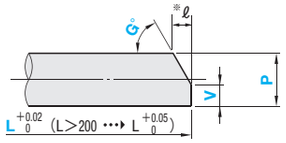
1A (Bezel・Angle designation)



※ℓ calculation $\ell=\frac{P}{\tan G}$

・45° ≦G＜90°

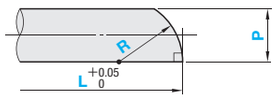
2A (Partial bezel・Angle designation)



※ℓ calculation $\ell=\frac{P-V}{\tan G}$

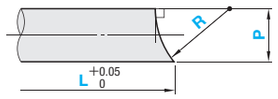
・45° ≦G＜90°
・1.5≦V＜P

3A (Outer R processing)



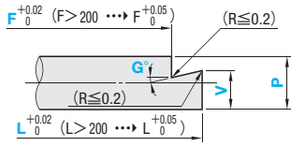
・P≦R≦15

4A (Inward R)



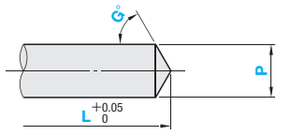
・P≦R≦15

5A (Z groove)



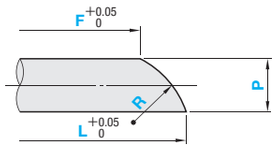
・0° ≦G≦45°
・1.5≦V＜P
・L−F≦10
・V−(L−F)tanG≧1
⊗ R designation not available.

6A (Cone)



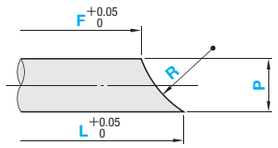
・45° ≦G＜90°

7A (Outer R processing・F designation)



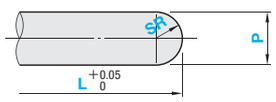
・L−F≦P＜R≦15

8A (Inward R with F designation)



・L−F≦P＜R≦15

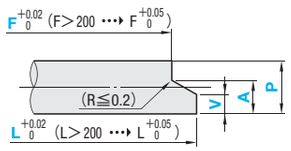
9A (Spherical)



・Default:SR=$\frac{P}{2}$

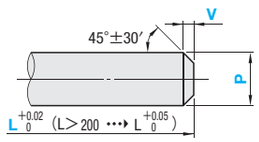
SR may be designated within
・$\frac{P}{2}$＜SR≦2P range.

10A (Trapezoid)



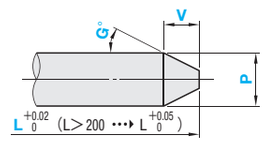
・1.5≦V＜P
・V≦A＜P
・L−F≦5
⊗ R designation not available.

11A (C chamfered)



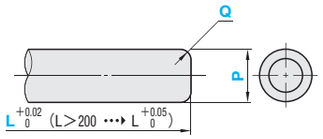
・0.1≦V≦$\left(\frac{P}{2}-0.1\right)$

12A (Tapered)



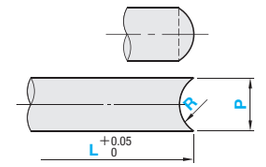
・0.1≦V≦(P×2), $\frac{P}{2}$−VtanG≧0.1
・0° ＜G≦45°

13A (R chamfered)



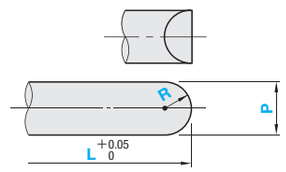
・0.2≦Q≦$\left(\frac{P}{2}-0.1\right)$

14A (R groove)



・(P×1.2)≦R≦(P×2)

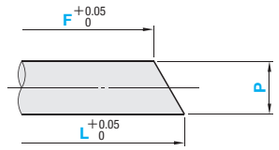
15A (R surface)



・Default:R=$\frac{P}{2}$

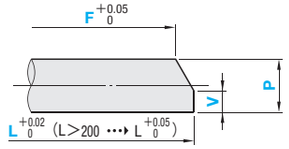
R may be designated within
・$\frac{P}{2}$＜R≦2P range.

16A (Bezel・F specification)



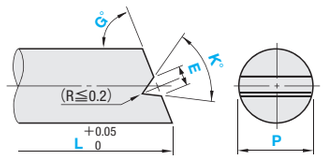
・0.05≦(L−F)≦P

17A (Partial bezel・F specification)



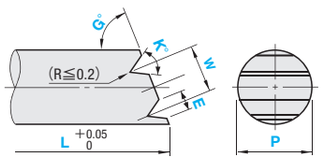
・0.05≦(L−F)≦(P−V)
・1.5≦V＜P

18A (Bezel＋1 groove)



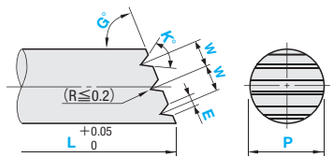
・45° ≦G＜90°
・E≦$\frac{P}{2}$
・0.3≦E≦3.0
・K Selection 60° or 90°
⊗ R designation not available.

19A (Bezel＋2 groove)



・45° ≦G＜90°
・0.3≦E≦3.0
・E≦$\frac{P}{2}$
・(E＋0.2)≦W≦(P−E−0.4)
・K Selection 60° or 90°
⊗ R designation not available.

20A (Bezel＋3 groove)



・45° ≦G＜90°
・0.3≦E≦3.0
・E≦$\frac{P}{2}$
・(E＋0.2)≦W≦(P−$\frac{E}{2}$−0.2)
・K Selection 60° or 90°
⊗ R designation not available.

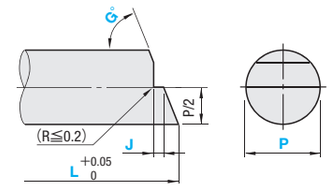
SHAPE VARIATION OF FREE FLANGE POSITION STRAIGHT EJECTOR PINS WITH TIP PROCESS ②

—21A～32A SHAPES—

1A～20A Shape
P.181・182

Non JIS material definition is listed on P.1351 - 1352

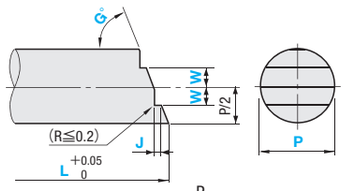
21A (Bezel＋1 vertical groove)



- 45° ≦G＜90°
- 0.3≦J≦3.0

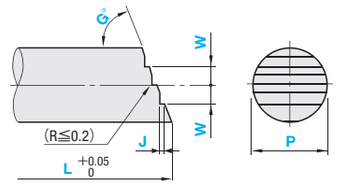
⊗ R designation not available.
- J≦ P/(3 tanG)

22A (Bezel＋2 vertical groove)



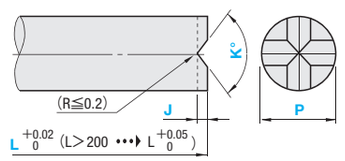
- 45° ≦G＜90°
- J≦ P/(4 tanG)
- 0.3≦J≦3.0
- 0.1＋JtanG≦W≦(P/2－0.2)

23A (Bezel＋3 vertical groove)



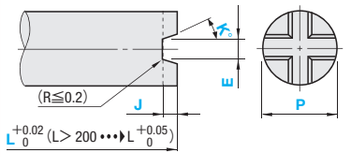
- 45° ≦G＜90°
- J≦ P/(5 tanG)
- 0.3≦J≦3.0
- 0.1＋JtanG≦W≦(P/2－0.2)

24A (Cross groove・Triangle shaped)



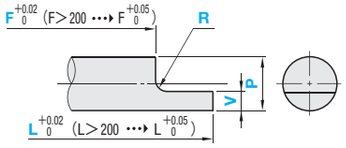
- 0.3≦J≦3.0
- J≦ P/3
- 30° ≦K° ≦90° (5° increments)

25A (Cross groove・Trapezoid-shaped)



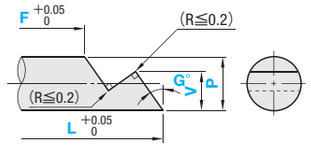
- 0.3≦J≦3.0
- E≦ P/3
- 0.3≦E≦3.0
- 0° ≦K° ≦45° (5° increments)
- J≦ P/3

26A (L-shaped processing・R designation)



- 0.3≦R≦(P－V) and R≦(L－F)
- 0.2≦(L－F)≦(V×5)
- 1≦V＜P

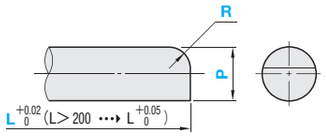
27A (Bezel・Z groove)



- 1≦(L－F)≦(V×5)・0° ＜G≦45°
  1.5≦V＜P

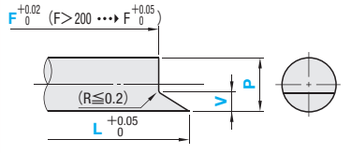
⊗ R designation not available.

28A (Half R)



- (P×0.1)≦R＜(P×0.8)

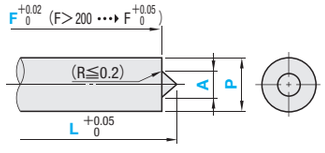
29A (L-shaped processing・Tapered)



- 0.2≦(L－F)≦V×5
- 0.3≦V＜P

⊗ R designation not available.

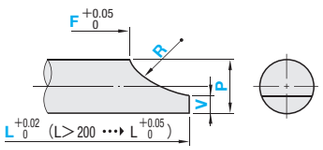
30A (Umbo)



- 1≦A≦(P－1) and P/3 ≦A
- 1≦(L－F)≦(A×3)

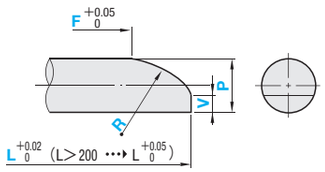
⊗ R designation not available.

31A (Inward R with F/V designation)



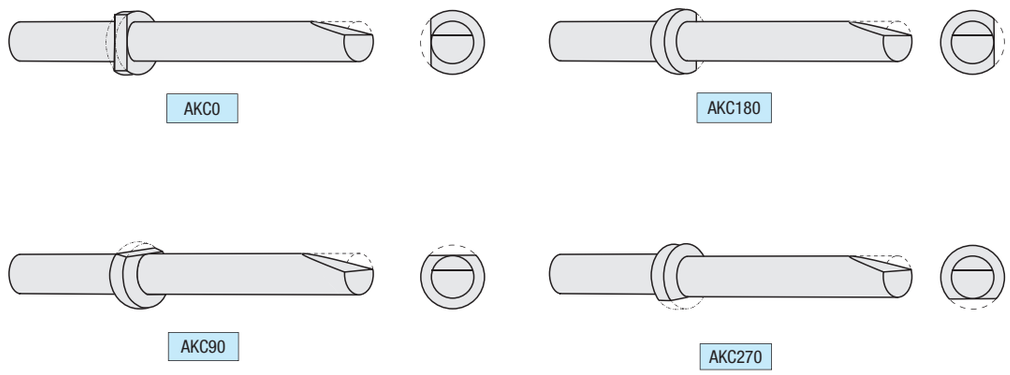
- P＜R≦15
- 1.5≦V＜P
- L－F＞R－$\sqrt{R^2-(P-V)^2}$

32A (Outward R with F/V designation)



- P＜R≦15
- 1.5≦V＜P
- L－F＞R－$\sqrt{R^2-(P-V)^2}$

■Flats cutting position for 2A shape



■Products list

Classification \ Shape						
Material	Head Thickness (T)	Tip Diameter (P) Tolerance	Tip Processed: L dimension designation type — Part Number	Page	L・P dimension designation type — Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	EPSH□A	P.185	EPSHB□A	P.185
		−0.01 −0.02	EPSHE□A		EPSHBE□A	

Classification \ Shape				
Material	Head Thickness (T)	Tip Diameter (P) Tolerance	Tip Processed (L・P・N dimension designation type) — Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	EPSHS□A	P.187
		−0.01 −0.02	EPSHSE□A	

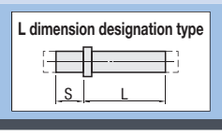
■Unit of designation

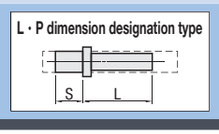
T	Unit of designation
G±30′	1° increments
K±30′	Select 60° or 90° for 18A, 19A and 20A.
	24A・25A 5° increments
R±0.02 (15A Shape・26A Shape ••• R±0.1)	0.1mm increments
SR±0.1	0.1mm increments
A±0.05	0.1mm increments
V±0.05	0.1mm increments
E±0.02	0.1mm increments
J±0.02	0.1mm increments
W±0.02	0.1mm increments
Q±0.1	0.1mm increments
F	0.01mm increments

High Speed Steel
SKH51 equivalent

FREE FLANGE POSITION STRAIGHT EJECTOR PINS WITH TIP PROCESS

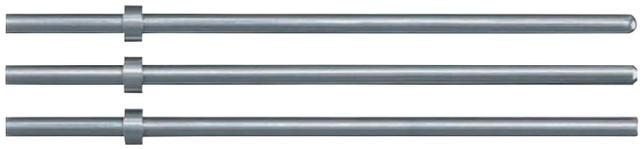
— L DIMENSION DESIGNATION TYPE / L・P DIMENSION DESIGNATION TYPE —

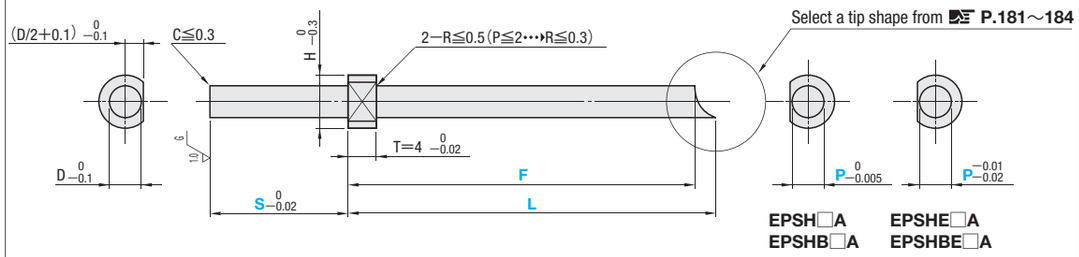




Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head Thickness	T P
EPSH□A (L dimension designation type) EPSHB□A (L・P dimension designation type)	4mm (T4)	0 −0.005
EPSHE□A (L dimension designation type) EPSHBE□A (L・P dimension designation type)		−0.01 −0.02

Key flat is made on the standard 0° to determine the tip shape position.
Key flat cutting position is (D/2+0.1).

Range of guaranteed shaft diameter precision (Details P.1301)

M SKH51 equivalent
H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)

■L Dimension Designation Type

H	D	Part Number			0.01mm increments	
		Type	Tip shape	P	L	S
3	1.5	EPSH (P 0 −0.005) EPSHE (P −0.01 −0.02)	1A 12A 23A 2A 13A 24A 3A 14A 25A 4A 15A 26A 5A 16A 27A 6A 17A 28A 7A 18A 29A 8A 19A 30A 9A 20A 31A 10A 21A 32A 11A 22A	1.5	50.00～150.00	5.00～40.00
4	2			2	50.00～200.00	
5	2.5			2.5		
6	3			3	50.00～250.00	5.00～50.00
7	3.5			3.5		
	4			4		
8	4.5			4.5		
	5			5		
9	5.5			5.5		
	6			6		
10	6.5			6.5		
	7			7		

Please select a tip shape of 1A～32A from P.181～184

■L・P Dimension Designation Type

H	D	Part Number			0.01mm increments		
		Type	Tip shape	No.	L	P	S
4	2	EPSHB (P 0 −0.005) EPSHBE (P −0.01 −0.02)	1A 12A 23A 2A 13A 24A 3A 14A 25A 4A 15A 26A 5A 16A 27A 6A 17A 28A 7A 18A 29A 8A 19A 30A 9A 20A 31A 10A 21A 32A 11A 22A	2	50.00～200.00	1.50～1.99	5.00～40.00
5	2.5			2.5		2.00～2.49	
6	3			3	50.00～250.00	2.50～2.99	5.00～50.00
7	3.5			3.5		3.00～3.49	
	4			4		3.50～3.99	
8	4.5			4.5		4.00～4.49	
	5			5		4.50～4.99	
9	5.5			5.5		5.00～5.49	
	6			6		5.50～5.99	
10	6.5			6.5		6.00～6.49	
	7			7		6.50～6.99	

Please select a tip shape of 1A～32A from P.181～184

Order

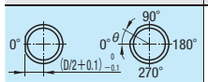
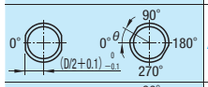
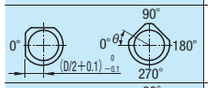
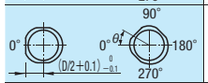
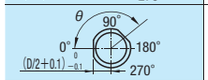
Part Number										
Type	Tip shape	PorNo.	—	L	—	P	—	S	—	Sequence of A・V・E・J・W・R・SR・F・G・K・Q
EPSH	1A	5	—	60.00			—	S10.00	—	G60
EPSHB	1A	5	—	117.32	—	P4.75	—	S26.30	—	G60

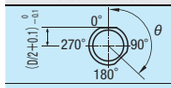
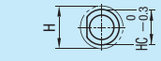
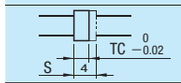
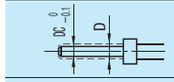
Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	S	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC…etc.)
EPSH1A5	—	60.00			—	S10.00	—	G60	—	TC3.0
EPSHB1A5	—	117.32	—	P4.75	—	S26.30	—	G60	—	HC6

Alteration details P.174

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	

Alterations	Code	Spec.	1Code
	KGB	KGB=1° increments 0<KGB<360	Quotation
	HC	HC=0.1mm increments P+1≦HC<H	
	TC	TC=0.1mm increments 2.0≦TC≦10 and TC≦F−10 (Dimensions L and S remain unchanged)	
	DC	DC=0.1mm increments P−1≦DC<D and DC≧1.5 Available for L・P Dimension designation type only. Only available combination is with HC・TC	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Only available combination is with HC・TC	

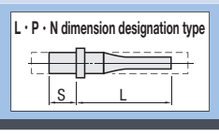
Price: Quotation

High Speed Steel
SKH51 equivalent

FREE FLANGE POSITION STEPPED EJECTOR PINS WITH TIP PROCESS

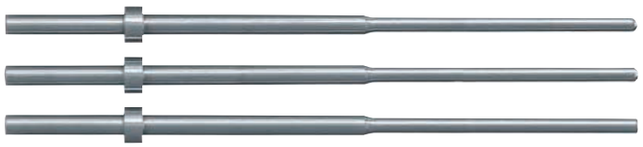
— L・P・N DIMENSION DESIGNATION TYPE —

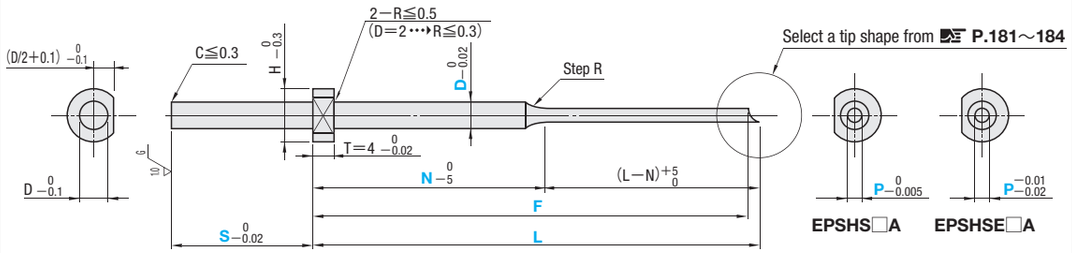
L・P・N dimension designation type



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head Thickness	T P
EPSHS□A	4mm(T4)	0 −0.005
EPSHSE□A		−0.01 −0.02

Key flat is made on the standard 0° to determine the tip shape position.
Key flat cutting position is (D/2+0.1).

※ Range of guaranteed shaft diameter precision (D) (Details P.1301)
※ Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	Part Number			0.01mm increments		1mm increments	0.01mm increments
	Type	Tip shape	D	L	P	N	S
4	EPSHS (P 0 −0.005) EPSHSE (P −0.01 −0.02)	1A 14A 27A 2A 15A 28A 3A 16A 29A	2	50.00～200.00	1.50～1.90	N≧15 and 20≦(L−N)≦150	5.00～40.00
5			2.5		1.50～2.40		
6		4A 17A 30A 5A 18A 31A 6A 19A 32A	3	50.00～250.00	1.50～2.90	N≧15 and 20≦(L−N)≦185	5.00～50.00
7			3.5		1.50～3.40		
		7A 20A 8A 21A 9A 22A	4		1.50～3.90		
8			4.5		2.50～4.40		
		10A 23A 11A 24A 12A 25A	5		3.00～4.90		
9			5.5		3.50～5.40		
		13A 26A	6		4.00～5.90		

Please select a tip shape of 1A～32A from P.181～184

Order

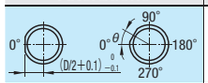
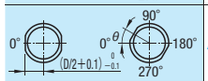
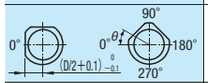
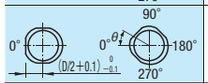
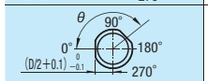
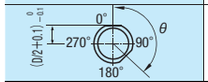
Part Number												
Type	Tip shape	D	—	L	—	P	—	N	—	S	—	Sequence of A・V・E・J・W・R・SR・F・G・K・Q
EPSHS	5A	5	—	60.00	—	P4.62	—	N30	—	S10.00	—	V2.4—F58—G30

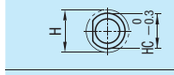
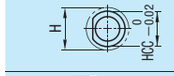
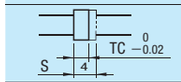
Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	N	—	S	—	A・V・E・J・W・R・SR・F・G・K・Q	—	(AKC・AWC…etc.)
EPSHS5A 5	—	60.00	—	P4.62	—	N30	—	S10.00	—	R10—F130.00	—	AWC60

Alteration details P.174

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0<AKC<360 No need to designate AKC0	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGB	KGB=1° increments 0<KGB<360	

Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	Quotation
	TC	TC=0.1mm increments 2.0≦TC≦10 and TC≦N−10 (Dimensions L, N and S remain unchanged.)	
	NKC	Without key flat cutting Available for tip shapes 6A・9A・11A・12A・13A・30A Only available combination is with HC・HCC・TC	

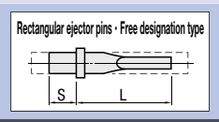
Price: Quotation

Free Flange-Position Ejector Pins

High Speed Steel SKH51 equivalent

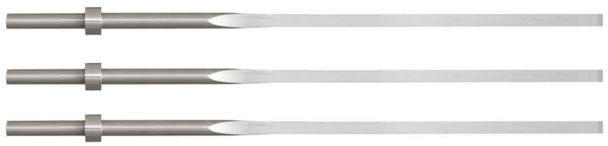
High Speed Steel
SKH51 equivalent

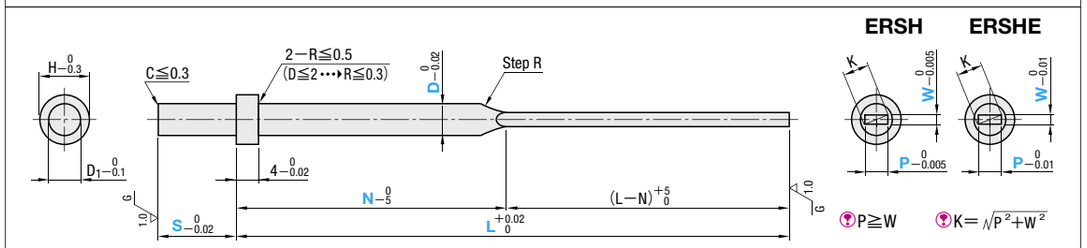
RECTANGULAR EJECTOR PINS WITH FREE FLANGE POSITION



Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	Head Thickness	T P · W
ERSH	4mm (T4)	0 −0.005
ERSHE		0 −0.01

※ Range of guaranteed shaft diameter precision (Details P.1301)
※ Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	D1	Part Number Type	D	L (0.01mm increments)	S (0.01mm increments)	P (0.01mm increments)	W (0.01mm increments)	K max.	N 1mm increments	N min.
3	1	ERSH ERSHE	1	50.00～100.00	5.00～40.00	0.30～0.80	0.30～	0.9	30≦(L−N)≦50	23
	1.5		1.5			0.60～1.30		1.4		
4	2		2	50.00～200.00		0.80～1.80		1.9	30≦(L−N)≦150	
5	2.5		2.5			0.80～2.30		2.4		26
6	3		3		5.00～50.00	0.80～2.80		2.9		27
7	3.5		3.5			1.00～3.30		3.4		
	4		4			1.00～3.80		3.9		29
8	4.5		4.5			1.20～4.30	0.40～	4.4		
	5		5			1.50～4.80		4.9		31
9	5.5		5.5			1.80～5.30	0.50～	5.4		
	6		6			2.00～5.80		5.9		33

Designate P · W dimensions within the Kmax. K=√(P²+W²) P≧W

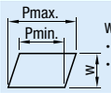
Order

Part Number	L	S	P	W	N
ERSH 5	150.00	S10.00	P3.00	W2.00	N80

Days to Ship Quotation

Price Quotation

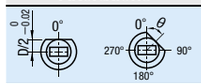
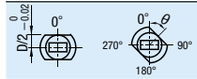
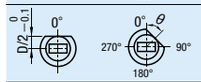
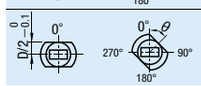
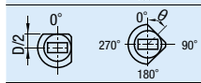
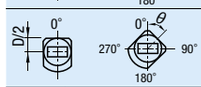
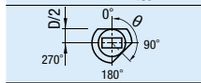
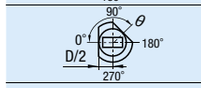
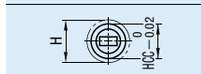
Precision Standard

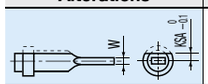
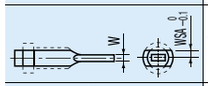
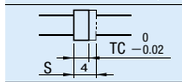
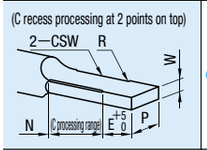
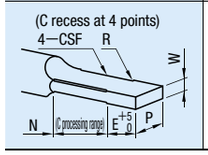
Squareness of the tip corner		W plane as the base • ERSH (Pmax.−Pmin.)≦0.01 • ERSHE (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P · W dimensions. (Details P.1313)

Alterations

Part Number	L	S	P	W	N	(HC · TC···etc.)
ERSH 5	150.00	S10.00	P3.00	W2.00	N80	TC3.0

Alteration details P.174 · P.195

Alterations	Code	Spec.	1Code
	VAK	VAK=45° increments 0≦VAK<360 Combination with KSA/WSA not available.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	

Alterations	Code	Spec.	1Code
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1 D≧1.5	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1 D≧1.5	
	TC	TC=0.1mm increments 2.0≦TC≦4 (Dimensions L, N and S remain unchanged.)	Quotation
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25 CSW, CSF: Range of designation: W 1.0≦W<1.5 CSW, CSF 0.3; W≧1.5 0.5, 1, 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

Example
- Rectangular ejector pins with free flange positon can be ejected in differential time.
- The molding products can be slowly ejected by the depth of counter bore Z (Fig.1).

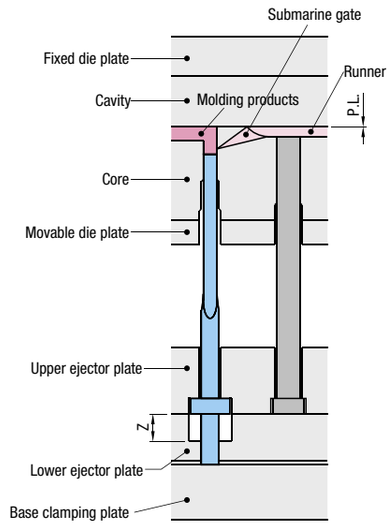


Fig. 1 · Mold closed

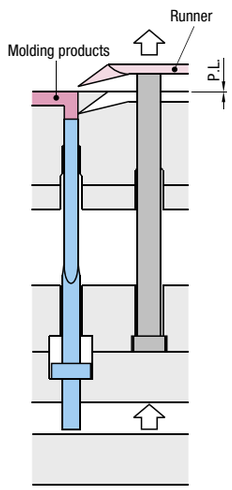


Fig. 2 · Mold opening

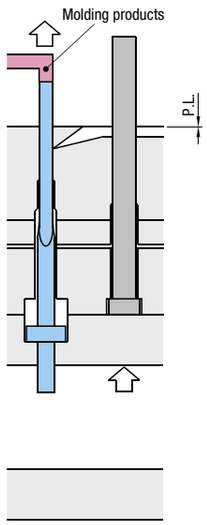
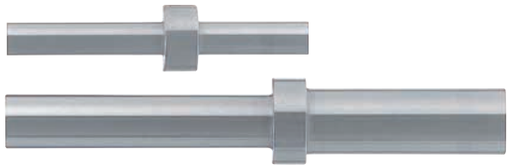


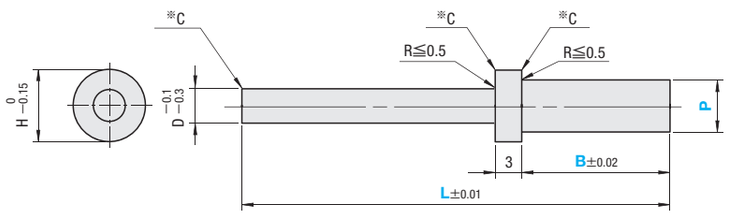
Fig. 3 · Mold opened

PUSHER PINS WITH SPRING GUIDE

Non JIS material definition is listed on P.1351 - 1352

RoHS





Part Number	T P
EPCH	0 −0.005
EPCHE	−0.01 −0.02

※C Performs C chamfering of 0.1mm or less on the head of upper and lower sides end of spring guide.

M SKH51 equivalent
H 58～60HRC

H	D	Part Number Type	P	0.01mm increments L	B	U/Price 1～4
6	3	EPCH (P 0 −0.005)	2	18.00～45.00	5.00～20.00	Quotation
			2.5	L−(B+3)≧5		
			3			
		EPCHE (P −0.01 −0.02)	3.5	18.00～60.00	5.00～40.00	
			4	L−(B+3)≧5		
8	5		5			
			6			

L−(B+3)≧5

Order

Part Number	L	B
EPCH 2	30.00	B14.00
EPCHE 6	45.00	B21.25

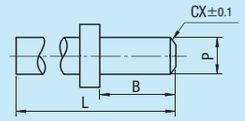
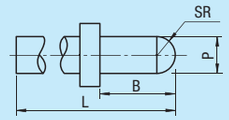
Days to Ship Quotation

Price Quotation

Alterations

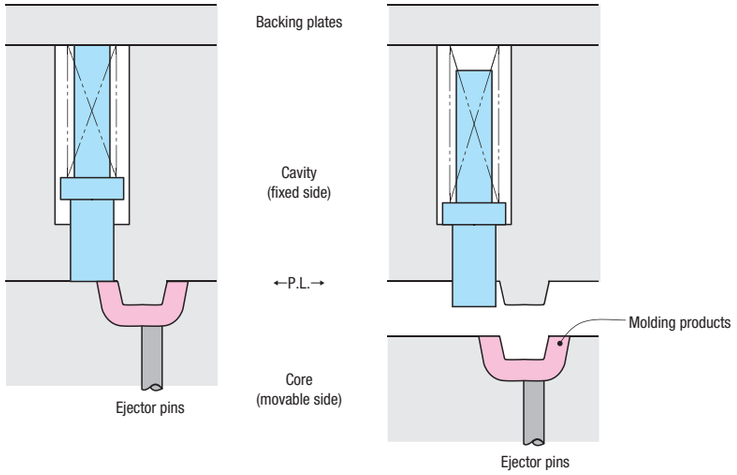
Part Number	L	B	(CX・SR)
EPCH 2	30.00	B14.00	CX 0.3

Alteration details P.174

Alterations	Code	Spec.	1Code
	CX	Performs C chamfering on the tip. CX=0.1mm increments Designation method CX 0.3 0.3≦CX≦0.5 Available when B−CX≧10	Quotation
	SR	Finishes the top in spherical shape (SR). SR=P/2 Designation method SR Available when B−P/2≧10	

Example

1.For the molding product with wall relief on the fixed side, defective releasing might occur since molding product is pulled to a fixed side. In that case, pulling the mold product apart from a fixed side is effective.
The pusher pins with spring guide are used for such a usage.
2.It can be used as suppression to prevent metallic insert from floating when the insert molding is done.



For wire springs (WR・WF・WL), refer to P.1223～1226
Use when spring dia.≦H.
The plate hole on the spring guide side is recommended for (H+1)mm end milling.

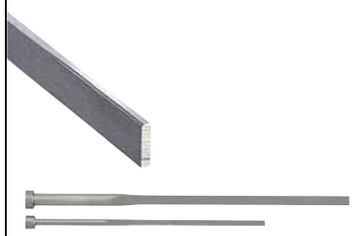
RECTANGULAR EJECTOR PINS

RECTANGULAR EJECTOR PINS

Material		Head Thickness (T)	P・W Tolerance	Standard Part Number	Page	L dimension designation type (L dimension cutting) Part Number	Page	Free disignation type Part Number	Page	N dimension short type (Free designation) Part Number	Page
SKH51 equivalent	Angular tip corner	4mm (T4)	0 −0.003	—		—		P−ERZF	P.213	—	
			0 −0.005	—		P−ERVL	P.207	P−ERVF	P.209	—	
		4mm (T4) Small diameter	0 −0.005	—		—		P−ERVYF	P.209	—	
	Normal	4mm (T4)	0 −0.003	—		—		ERZF	P.213	—	
			0 −0.005	ERVB	P.205	ERVL	P.207	ERVF	P.209	ERVSF	P.211
			0 −0.01	ERPH	P.197	ERL	P.199	ERF	P.201	ERSF	P.203
		4mm (T4) Small diameter	0 −0.005	—		—		ERVYF	P.209	—	
		4・6・8mm (JIS)	0 −0.005	ERVJB	P.205	ERVJL	P.207	ERVJ	P.209	ERVSJF	P.211
			0 −0.01	ERJ	P.197	ERJL	P.199	ERJF	P.201	ERSJF	P.203
		8mm (JIS)	0 −0.02	ERJXB	P.253	ERJXL	P.253	ERJX	P.255	—	
SKD61 equivalent+Nitrided				ERNXB	P.259	ERNXL	P.259	ERNX	P.261	—	
Flat bar: SKH51 equivalent Shaft: SK4		6・8mm (JIS)		ERHK−B	P.265	ERHK−L	P.265	ERHK−F*	P.267	—	

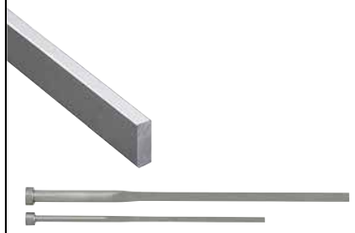
*W dimension for ERHK−F can be selected.

R-CHAMFERED RECTANGULAR EJECTOR PINS



Material	Head Thickness (T)	P・W Tolerance	L dimension designation type (L dimension cutting) Part Number	Page	Free disignation type Part Number	Page	R position selection type (Free designation) Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	ERVLWR ERVLFR	P.221	ERVWR ERVFR	P.223	ERV□□R	P.225
		0 −0.01	ERLWR ERLFR	P.215	ERWR ERFR	P.217	ER□□R	P.219
	4・6・8mm (JIS)	0 −0.005	—		ERVJWR ERVJFR	P.223	ERVJ□□R	P.225
		0 −0.01	—		ERJWR ERJFR	P.217	ERJ□□R	P.219
	8mm (JIS)	0 −0.02	—		ERJXWR ERJXFR	P.257	—	
SKD61 equivalent+Nitrided	8mm (JIS)	0 −0.02	—		ERNXWR ERNXFR	P.275	—	

C-CHAMFERED RECTANGULAR EJECTOR PINS



Material	Head Thickness (T)	P・W Tolerance	Free disignation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	ERVF□□C	P.229
		0 −0.01	ERF□□C	P.227
	4・6・8mm (JIS)	0 −0.005	—	
		0 −0.01	ERJF□□C	P.227

■Characteristics of materials for straight ejector pins

			High Speed Steel SKH51 (M2)(1.3343)	Dies Steel SKD61 (H13)(1.2344)+Nitrided
M				
H		HRC	58～60	Surface base: 900HV～ Material:40～45
Machining characteristics	Wear resistance		5	4
	Ability to be mirror-finished		4	3
	Toughness		3	4
	Corrosion resistance		3	3
Physical characteristics	Density	[g/cm³]	8.2	7.75
	Modulus of longitudinal elasticity	[kgf/mm²]	22300	21000
	Coefficient of thermal expansion	[×10⁻⁶/℃]	10.1	10.8
	Thermal conductivity	[cal/cm・sec・℃]	0.051	0.061
Mechanical characteristics	Tensile strength	[kgf/mm²]	235	135
	Charpy impact values	[kgf・m/cm²]	2	4

Machining characteristics: 1 (Poor) — 3 (Good) — 5 (Excellent)

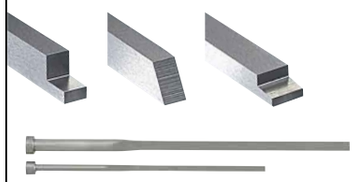
Conversion expression
1kgf/mm²=9.81N/mm²
1cal/cm・sec・℃=418.6W/M.K
1kgf・m/cm²=9.81J/cm²

Data may vary depending on heat processing and working conditions; use the data as reference.

GAS RELEASE RECTANGULAR EJECTOR PINS

Material	Head Thickness (T)	P・W Tolerance	Free disignation type Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	GV−ERVF	P.233
		0 −0.01	GV−ERF	P.231
	4・6・8mm (JIS)	0 −0.005	GV−ERVJ	P.233
		0 −0.01	GV−ERJF	P.231

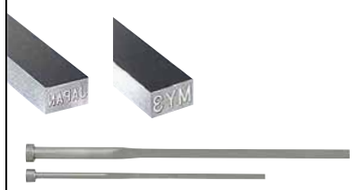
RECTANGULAR EJECTOR PINS WITH TIP PROCESS



Material	Head Thickness (T)	P・W Tolerance	Free designation type Part Number	Page	Rectangular Ejector Pins with Tip Process (Free designation) Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	ERV□□	P.241	ERVWR□□ ERVFR□□	P.243
		0 −0.01	ER□□	P.237	ERWR□□ ERFR□□	P.239
	4・6・8mm (JIS)	0 −0.005	ERVJ□□	P.241	ERVJWR□□ ERVJFR□□	P.243
		0 −0.01	ERJ□□	P.237	ERJWR□□ ERJFR□□	P.239

・For tip shapes, refer to P.235・236

RECTANGULAR EJECTOR PINS WITH ENGRAVING



Material	Head Thickness (T)	P・W Tolerance	Free designation type Part Number	Page	Rectangular Ejector Pins with Tip Process (Free designation) Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	ERVF□M ERVF□MR	P.249	ERVWR□M ERVFR□M ERVWR□MR ERVFR□MR	P.251
		0 −0.01	ERF□M ERF□MR	P.245	ERWR□M ERFR□M ERWR□MR ERFR□MR	P.247

PRECISION RECTANGULAR EJECTOR PINS—RECTANGULAR SHANK TYPE—

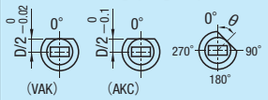
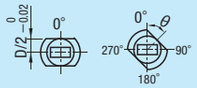
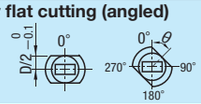
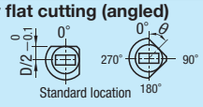
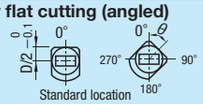
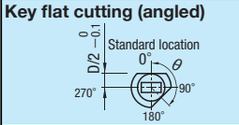
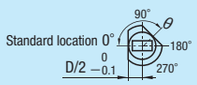
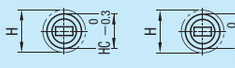
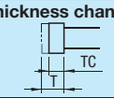
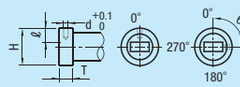
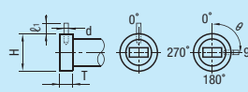
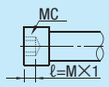
Material	Head Thickness (T)	P・W Tolerance	One Step Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.005	ERSRP	P.269

D-SHAPED EJECTOR PINS

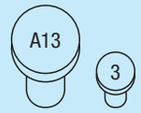
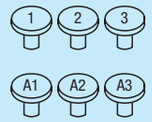
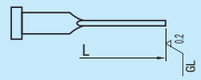
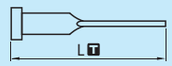
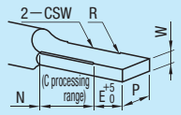
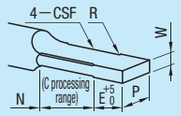
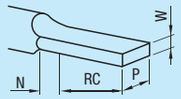
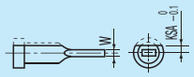
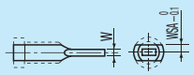
Material	Head Thickness (T)	D・P・W Tolerance	Normal type Part Number	Page	Stepped type Part Number	Page
SKH51 equivalent	4mm (T4)	0 −0.01	ERDP	P.271	ERDF	P.271
	4・6・8mm (JIS)		ERDPJ	P.271	ERDFJ	P.271

ALTERATION GUIDE FOR RECTANGULAR EJECTOR PINS

■Alteration Guide for Rectangular Ejector Pins and D-shaped Ejector Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Head alteration	Rectangular Ejector Pins & D-shaped Ejector Pins	**Key flat cutting (angled)**  	VAK (Precision) AKC	Changes the flat position clockwise from the standard position (standard: 0°). Range of designation 0≦VAK or AKC＜360 Unit of designation (VAK) (AKC) Designation method θ＝0° ⋯→ VAK0 AKC0 45° increments 1° increments θ＝45° ⋯→ VAK45 AKC45 (P—)ERVYF 90° increments ⊗ VAK not available for R-chamfered/C-chamfered/With tip process/D-shaped/With engraving type.	Quotation
		Precision key flat cutting (angled)  	VAW	Adds two parallel flats at the standard (0°) position, or at the designated angle (clockwise in 45° increments from the standard position). Range of designation 0≦VAW＜360 Unit of designation 45° increments (P—)ERVYF 90° increments Designation method θ＝0° ⋯→ VAW0, θ＝45° ⋯→ VAW45 ⊗ Not available for R-chamfered/C-chamfered/With tip process/D-shaped/With engraving type.	
		Key flat cutting (angled)  	AWC	Adds two parallel flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0≦AWC＜360 Unit of designation 1° increments (P—)ERVYF 90° increments Designation method θ＝0° ⋯→ AWC0, θ＝45° ⋯→ AWC45	
		Key flat cutting (angled)  	ARC	Adds two right-angled flats at the standard (0°) position, moreover at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0≦ARC＜360 Unit of designation 1° increments ⊗ (P—) ERVYF not available. Designation method θ＝0° ⋯→ ARC0, θ＝45° ⋯→ ARC45	
		Key flat cutting (angled)  	ADC	Adds three flats at the standard (0°) position, moreover at the designated angle (clockwise in 1° increments from the standard position). Range of designation 0≦ADC＜360 Unit of designation 1° increments ⊗ (P—) ERVYF not available. Designation method θ＝0° ⋯→ ADC0, θ＝45° ⋯→ ADC45	
		Key flat cutting (angled)  	KGA	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position), so that two flats are added totally. Range of designation 0＜KGA＜360 ⊗ (P—) ERVYF not available. Unit of designation 1° increments Designation method θ＝135° ⋯→ KGA135	
		Key flat cutting (angled)  	KGD	Adds a flat at the standard (0°) position and another at the designated angle (clockwise in 1° increments from the standard position), so that two flats are added totally. Please note that standard position 0° is different from other alterations as per the drawing in the left. Range of designation 0＜KGD＜360 Unit of designation 1° increments ⊗ (P—)ERVYF not available. Designation method θ＝135° ⋯→ KGD135	
		Head diameter change  	HC HCC (Precision)	Reduces the head diameter. Range of designation D＋1≦HC＜H and D≧1.5 D＋1≦HCC＜H—0.3 and D≧1.5 Unit of designation 0.1mm increments Designation method HC6.5 HCC6.1	
		Head thickness change  	TC	Reduces the head thickness. Dimension L remains unchanged except blank type. Range of designation T/2≦TC＜T Available when D≧1.5 T—TC≦Lmax.—L	
		Dowel hole boring  	NC	Dowel hole boring Adds a dowel hole for use with WSP and MS. Range of designation 0≦NC＜360 Unit of designation 90° increments Designation method θ＝0° ⋯→ NC0, θ＝90° ⋯→ NC90 Available when head diameter H≧4 ⊗ Combination with other than NHC・NHN not available. T: 4, 6, 8, 10; d: 2, 3, 3, 4; ℓ: 3, 5, 5, 5	
		Dowel hole＋Spring pin  	NCW	Dowel hole boring and spring pin driving. Range of designation 0≦NCW＜360 Unit of designation 90° increments Designation method θ＝0° ⋯→ NCW0, θ＝90° ⋯→ NCW90 Available when head diameter H≧4 ⊗ Combination with other than NHC・NHN not available. T: 4, 6, 8, 10; d: 2, 3, 3, 4; ℓ1: 5; Spring pin: WSP2, WSP3, WSP3, WSP4	
		Tapping  	MC	Creates a tap on the head. Designation method MC When D8.00～9.99 M4 When D10.00～11.99 M5 When D12.00～15.00 M6 ⊗ Combination with key flat cutting or NHC/NHN/HC/HCC not available. Available when D≧8, H≧13, T≧8. ⊗ Not Available for Caulking/Rectangular shank type	

■Alteration Guide for Rectangular Ejector Pins and D-shaped Ejector Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Head alteration	Rectangular Ejector Pins & D-shaped Ejector Pins	**Numbering**  	NHC	Numbering on the head Electrolytic marking of ID code on the head(in 5 point, Round Gothic type). Available characters Numerals: 0～9; Alphabets: A～Z Range of designation 1 character when 2≦H＜4.9, 1 or 2 characters when 5≦H＜6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) Designation method NHC—6. NHC—23. NHC—A90 ⊗ Combination with MC not available. Available when head diameter H≧2 ⊗ Not Available for Caulking/Rectangular shank type	
		Numbering  	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each ejector pin when two or more pieces of identical size are ordered. Range of designation Same as NHC (see above) Unit of designation Same as NHC (see above) Designation method When 3 pieces are ordered with NHN—1: A sequential number starting from 1 to 3 is added on the head of each piece. When 10 pieces are ordered with NHN—A15: A sequential number starting from A15 (through A24) is added on the head of each piece. ⊗ Combination with MC not available. Available when head diameter H≧2 Only available when two or more pieces of identical size are ordered. ⊗ Not Available for Caulking/Rectangular shank type	
Tip alteration		**Lapping on the tip face**  	TMC	Performs lapping on the tip face. Available for L and L・P・W dimension designation types. Available when P≧0.6 ⊗ Not available for (P—), ERVYF/For large size/Caulking type/Rectangluar shank type. Designation method TMC	
Total length alteration		**L dimension tolerance alteration**  	LKC	L dimension tolerance $^{+0.02}_{0}$ can be changed to $^{+0.01}_{0}$. Available when L≦200, and for free designation type Designation method LKC	Quotation
Flat bar alteration		**C relief processing (2 points on top)**  	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25 CSW, CSF: Range of designation W: 1.0≦W＜1.5 — CSW, CSF: 0.3 W≧1.5 — CSW, CSF: 0.5 1 1.5 P≧1.5 CSW, CSF＜W/2 E＝1mm increments 5≦E≦(L—N)—20 When E＜20, R process range ＝ E. When E≧20, straight part sometimes remains between R and C processing range. ⊗ Not available for Blank/Caulking/Rectangular shank type.	
		C relief processing (4 points)  	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	
		R-chamfering length change **(Only applicable to R-chamfered precision type)**  	RC	Changes the length of R-chamfered part 5≦RC≦(L—N)—30 and RC≦40 RC＝1mm increments Adds RC recess processing at all places R-chamfered. Designation method RC25	
Shaft alteration		**Shoulder cutting (1 plate)**  	KSA	Performs shoulder cutting (1 plane) on the shaft diameter (D). Range of designation W/2＋0.1≦KSA≦D/2—0.1 Available when D≧1.5 Unit of designation 0.1mm increments Designation method KSA5.3 ⊗ Not Available for Caulking/Rectangular shank type	
		Shoulder cutting (2 parallel plates)  	WSA	Performs shoulder cutting (2 parallel planes) on the shaft diameter (D). Range of designation W/2＋0.1≦WSA≦D/2—0.1 Available when D≧1.5 Unit of designation 0.1mm increments Designation method WSA6.2 ⊗ Not Available for Caulking/Rectangular shank type	

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

P・W$_{-0.01}^{0}$
Blank

RECTANGULAR EJECTOR PINS

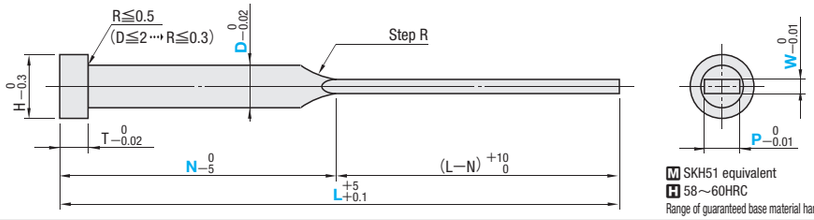
— STANDARD —

Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERPH	4mm(T4)	0 / −0.01
ERJ	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Order

Part Number	L	P	W	N
ERJ8	120	P6.0	W1.0	N60

Days to Ship: Quotation

Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERJ 8	120	P6.0	W1.0	N60	AKC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
(VAK) (AKC)	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	

Alterations	Code	Spec.	1Code
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T Dimensions L and N become shorter by (T−TC)	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	Quotation
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	MC	Tapping D8・8.5 ⇢ M4 D10・10.5 ⇢ M5 D12 ⇢ M6 Not available for ERPH. Available when D≧8	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	L	P	W	N
3	4	—	—	ERPH (4mm head)	—	1.5	100	0.8 1.0 1.2	0.3 0.4 0.5 0.6	40 50 60
							150			50 60 70 80
4						2	100	1.0	0.4 0.5 0.6 0.7 0.8 1.0	30 40 50 60
							150	1.2		40 50 60 70 80
							200	1.5		60 70 80
5						2.5	100	1.5 (2.0)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	30 40 50 60
							150			40 50 60 70 80
							200			60 70 80 90 100
6						3	100	2.0 (2.5)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5) (2.0)	40 50 60
							150			40 50 60 70 80 90
							200			60 70 80 100 120
7						3.5	100	2.5 (3.0)	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5 (2.0)	40 50 60
							150			40 50 60 70 80
							200			60 70 80 100
							250			80 100
		8	6		ERJ (JIS Head)	4	100	3.0 (3.5)	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5 (2.0)	40 50 60
							(120)			40 50 60 70
							150			40 50 60 70 80 90
							200			60 70 80 100 120
							250			80 100
8						4.5	100	3.5 (4.0)	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8 (2.0) (2.5)	40 50 60 70
							120			40 50 60 70
							150			40 50 60 70
							200			60 70 80 90 100
							250			90 100 120
		9				5	100	4.0	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60 70
							(120)			40 50 60 70
							150			40 50 60 70 80 90
							(175)			60 70 80
							200			60 70 80 100
							250			100 120
9						5.5	100	4.5 (5.0)	0.8 0.9 1.0 1.2 1.5 1.8 2.0 (2.5)	40 50 60 70
							120			40 50 60 70
							150			40 50 60 70
							175			60 70
							200			60 70 80 100
							250			100 120
		10				6	(120)	5.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5 3.0	40 50 60 70
							150			40 50 60 70 80
							(175)			60 70 80
							200			60 70 80 90 100
							250			90 100 120
10		11				6.5	150	6.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0	40 50 60
							200			70 80
							250			100
						7	120	6.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							150			40 50 60
							175			60 70
							200			60 70 80 100
							250			100 120 160
							(300)			150 180
11		13				8	(120)	6.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							150			40 50 60
							(175)			60 70
							200			60 70 80 100
							250			100 120 130 160
							(300)			150 180
14		14				8.5	150	7.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50
							200			80 100
							250			100
							(300)			150 180
15		15				10	(120)	8.0	0.8 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							(150)			50 60
							(175)			60 70
							200			80 100
							250		1.0 1.2 1.5 1.8 2.0 2.5	100 120 130 160
							(300)			100 120 150 180
17		17				10.5	150	10.0	1.2 1.5 2.0	40 50
							200			80 100
							250			100
							(300)			150 200
—	—			—		12	150	10.0	1.2 1.5 1.8 2.0	40 60
							200			80 100
							250			100
							300			100 150

L(120)(150)(175)(300) are available only for ERJ. Selections in which both the P and W dimensions are enclosed in brackets ( ) cannot be made.

Price: Quotation

Precision Standard	
Squareness of the tip corner	Pmax. Pmin. W W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner	Rmax. Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

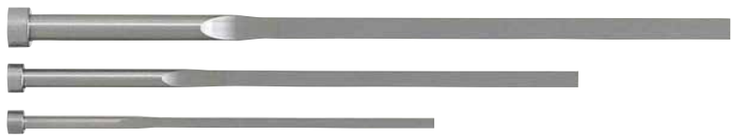
High Speed Steel
SKH51 equivalent

P・W$^{0}_{-0.01}$
L dimension designation

RECTANGULAR EJECTOR PINS

— L DIMENSION DESIGNATION TYPE —

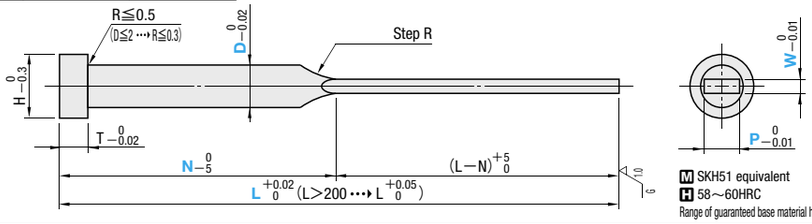
Non JIS material definition is listed on P.1351 - 1352



RoHS

Part Number	Head Thickness	T P・W
ERL	4mm(T4)	0 / −0.01
ERJL	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



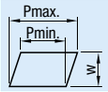
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Order

Part Number	L	P	W	N
ERJL8	185.05	P6.0	W1.0	N80

Days to Ship: Quotation

Precision Standard

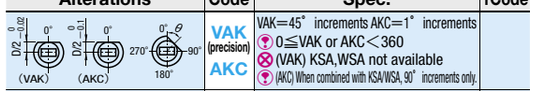
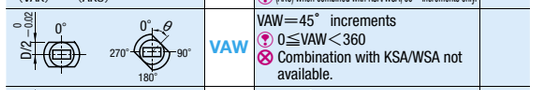
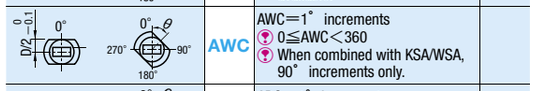
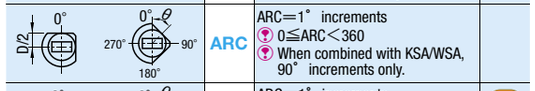
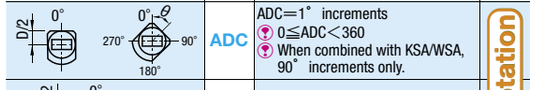
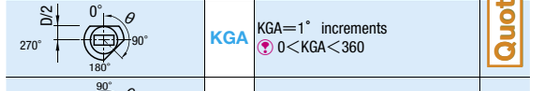
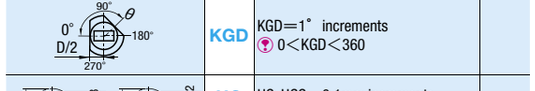
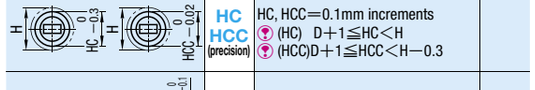
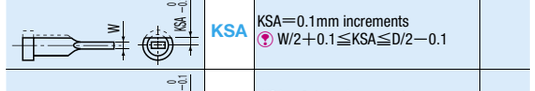
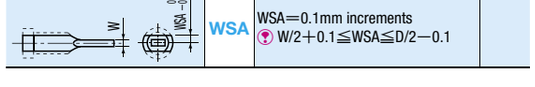
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

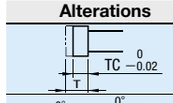
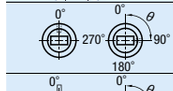
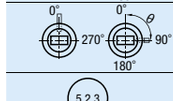
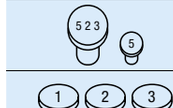
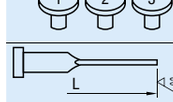
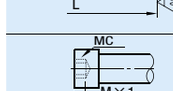
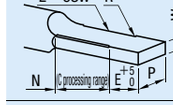
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERJL 8	185.05	P6.0	W1.0	N80	AKC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T Dimensions N becomes shorter by (T−TC). (Dimension L remains unchanged.) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	Quotation
	TMC	Lapping on the tip face	
	MC	Tapping D8・8.5 ··· M4 D10・10.5 ··· M5 D12 ··· M6 Not available for ERL Available when D≧8 Only available combination is with CSW・CSF・TMC	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	L 0.01mm increments	P	W	N
3	4	—	—	ERL (4mm head)	ERJL (JIS Head)	1.5	50.00～100.00	0.8	0.3 0.4 0.5 0.6	40 50 60
							100.01～150.00	1.0 1.2		50 60 70 80
4						2	50.00～100.00	1.0	0.4 0.5 0.6 0.7 0.8 1.0	30 40 50 60
							100.01～150.00	1.2		40 50 60 70 80
							150.01～200.00	1.5		60 70 80
5						2.5	50.00～100.00	1.5 (2.0)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	30 40 50 60
							100.01～150.00			40 50 60 70 80
							150.01～200.00			60 70 80 90 100
6						3	50.00～100.00	2.0 (2.5)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5) (2.0)	40 50 60
							100.01～150.00			40 50 60 70 80 90
							150.01～200.00			60 70 80 100 120
7						3.5	50.00～100.00	2.5 (3.0)	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5 (2.0)	40 50 60
							100.01～150.00			40 50 60 70 80
							150.01～200.00			60 70 80 100
							200.01～250.00			80 100
		8	6			4	50.00～100.00	3.0 (3.5)	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5 (2.0)	40 50 60
							100.01～150.00			40 50 60 70 80 90
							150.01～200.00			60 70 80 100 120
							200.01～250.00			80 100
8						4.5	50.00～100.00	3.5 (4.0)	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8 (2.0) (2.5)	40 50 60 70
							100.01～150.00			
							150.01～200.00			60 70 80 90 100
							200.01～250.00			90 100 120
		9				5	50.00～100.00	4.0	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60 70
							100.01～150.00			40 50 60 70 80 90
							150.01～200.00			60 70 80 100
							200.01～250.00			100 120
9						5.5	50.00～100.00	4.5 (5.0)	0.8 0.9 1.0 1.2 1.5 1.8 2.0 (2.5)	40 50 60 70
							100.01～150.00			
							150.01～200.00			60 70 80 100
							200.01～250.00			100 120
		10				6	50.00～100.00	5.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5 3.0	40 50 60 70
							100.01～150.00			40 50 60 70 80
							150.01～200.00			60 70 80 90 100
							200.01～250.00			90 100 120
10		11				6.5	50.00～100.00	6.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0	40 50 60
							100.01～150.00			
							150.01～200.00			70 80
							200.01～250.00			100
						7	50.00～100.00	6.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							100.01～150.00			
							150.01～200.00			60 70 80 100
							200.01～250.00			100 120 160
							(250.01～300.00)			150 180
11		13				8	50.00～100.00	6.0 7.0 7.5	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							100.01～150.00			40 50 60
							150.01～200.00			60 70 80 100
							200.01～250.00			100 120 130 160
							(250.01～300.00)			150 180
14		14				8.5	50.00～100.00	7.0 8.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5	40 50
							100.01～150.00			
							150.01～200.00			80 100
							200.01～250.00			100
							(250.01～300.00)			150 180
15		15	8			10	50.00～100.00	8.0	0.8 1.0 1.2 1.5 1.8 2.0 2.5	40 50 60
							100.01～150.00			40 50 60 80
							150.01～200.00			60 70 80 100
							200.01～250.00		1.0 1.2 1.5 1.8 2.0 2.5	100 120 130 160
							(250.01～300.00)			100 120 150 180
17		17				10.5	50.00～100.00	10.0	1.2 1.5 2.0	40 50
							100.01～150.00			
							150.01～200.00			80 100
							200.01～250.00			100
							(250.01～300.00)			150 200
—	—			—		12	100.00～150.00	10.0	1.2 1.5 1.8 2.0	40 60
							150.01～200.00			80 100
							200.01～250.00			100
							250.01～300.00			100 150

L(250.01～300.00) is standard dimension only for ERJL. Selections in which both the P and W dimensions are enclosed in brackets ( ) cannot be made. L−N≧10

Price: Quotation

Rectangular Ejector Pins

High Speed Steel SKH51 equivalent

P・W$^{0}_{-0.01}$ L dimension designation

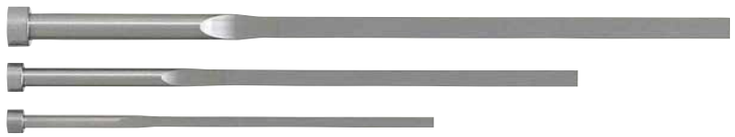
High Speed Steel
SKH51 equivalent

P・W$^{0}_{-0.01}$
Free designation

RECTANGULAR EJECTOR PINS

— FREE DESIGNATION TYPE —

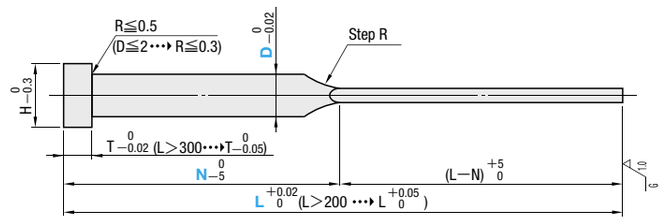
Non JIS material definition is listed on P.1351 - 1352

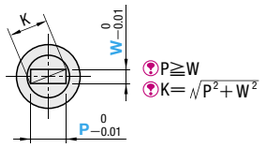


RoHS

Part Number	Head Thickness	T P・W
ERF	4mm(T4)	$^{0}_{-0.01}$
ERJF	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

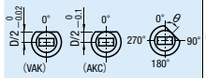
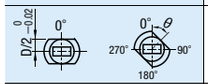
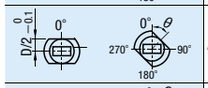
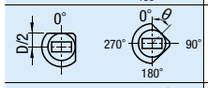
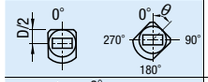
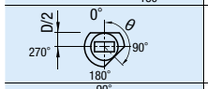
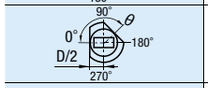
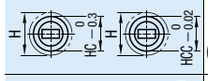
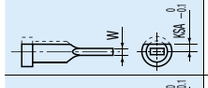
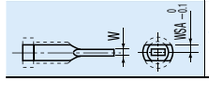
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness
(Details P.1303)

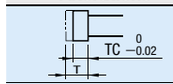
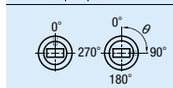
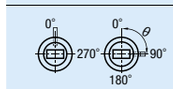
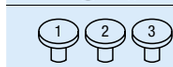
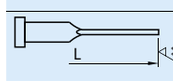
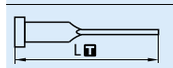
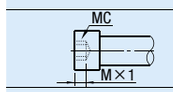
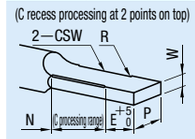
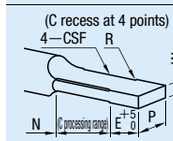
Alterations

Part Number	L	P	W	N	(AKC・AWC···etc.)
ERF5	120.25	P3.50	W1.50	N60	AWC60

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA, WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H,D≧1.5 (HCC)D+1≦HCC<H−0.3, D≧1.5	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1 D≧1.5	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1 D≧1.5	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged.) T−TC≦Lmax.−L,D≧1.5	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NHC	Numbering on the head ※How to order and detailed specifications P.196	
	NHN	Automatic sequential numbering on the head ※How to order and detailed specifications P.196	
	TMC	Lapping on the tip face Available when P≧0.6 Available when L−N≦31	Quotation
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ···, $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8・8.5 ··· M4 D10・10.5 ··· M5 D12・15 ··· M6 Not available for ERF Available when D≧8 Only available combination is with CSW・CSF・TMC	
(C recess processing at 2 points on top) 	CSW	C-chamfering processing at 2 corners of the blade (except tip) for relief. Designation method CSW1−E25 CSW,CSF: Range of designation W / CSW,CSF 1.0≦W<1.5 / 0.3 W≧1.5 / 0.5, 1, 1.5	
(C recess at 4 points) 	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5−E30 P≧1.5 CSW,CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	Kmax.	N 1mm increments	Nmin.
3	4	—	—	ERF (4mm head)	—	1.1	40.00～200.00	0.30～ 0.90	0.20～	1.0	10≦(L−N)≦150	23
						1.2		0.30～ 1.00		1.1		
						1.3		0.30～ 1.10		1.2		
						1.4		0.30～ 1.20		1.3		
		3	4		ERJF (JIS head)	1.5	40.00～250.00	0.50～ 1.30	0.30～	1.4	10≦(L−N)≦250	
4		4				2	40.00～300.00	0.80～ 1.80		1.9		
5		5				2.5		0.80～ 2.30		2.4		26
6		6				3	40.00～350.00	0.80～ 2.80		2.9		27
7		7				3.5		1.00～ 3.30		3.4		
		8	6			4		1.00～ 3.80		3.9		29
8						4.5		1.20～ 4.30		4.4		
		9				5	50.00～350.00	1.50～ 4.80	0.40～	4.9		31
9						5.5		1.80～ 5.30		5.4		
		10				6		2.00～ 5.80	0.50～	5.9		33
10		11				6.5		2.00～ 6.30		6.4		40
						7		2.30～ 6.80		6.9		
11		13	8			8		2.30～ 7.80		7.9		
14		14				8.5		2.30～ 8.30		8.4		
15		15				10		3.00～ 9.80		9.9		
17		17				10.5		3.00～10.30		10.4		
						12		3.50～11.80	0.80～	11.9		
—	—	20		—		15		3.50～14.80	1.00～	14.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W

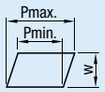
Order

Part Number	L	P	W	N
ERF5	120.25	P3.50	W1.50	N60

Days to Ship: Quotation

Price: Quotation

Precision Standard

Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. Details P.1313

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

P・W$^{0}_{-0.01}$
Free designation

High Speed Steel
SKH51 equivalent

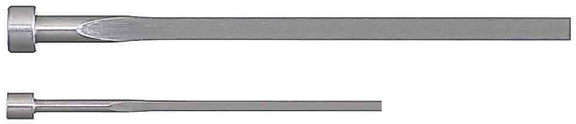
P・W$^{0}_{-0.01}$
Free designation

RECTANGULAR EJECTOR PINS

—N DIMENSION SHORT TYPE—

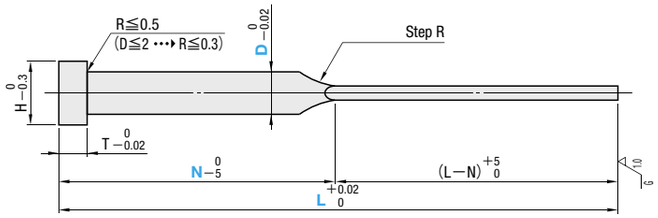
Non JIS material definition is listed on P.1351 - 1352

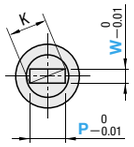
RoHS



Part Number	Head Thickness	T P・W
ERSF	4mm(T4)	$^{0}_{-0.01}$
ERSJF	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details: see below of the right page)





P≧W
K=$\sqrt{P^2+W^2}$

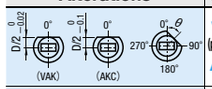
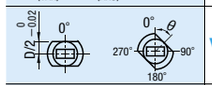
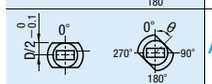
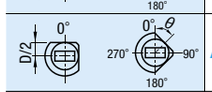
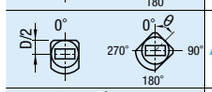
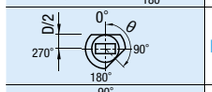
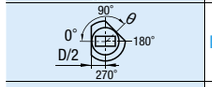
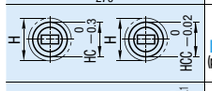
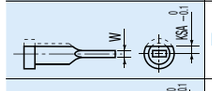
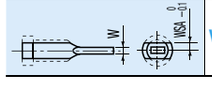
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

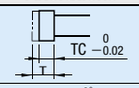
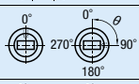
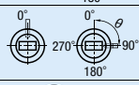
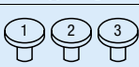
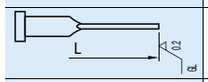
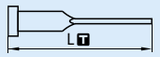
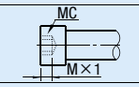
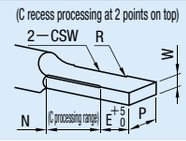
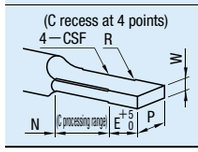
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERSF 1.5	100.00	P0.60	W0.30	N20	AWC60

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T (Dimension L and N remain unchanged.) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	Quotation
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ···, $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8 ··· M4 D10 ··· M5 D12 ··· M6 Not available for ERSF Available when D≧8 Only available combination is with CSW・CSF・TMC	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W / CSW, CSF 1.0≦W<1.5 / 0.3 W≧1.5 / 0.5, 1, 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	Kmax.	N 1mm increments	Nmin.
3	4	3	4	ERSF (4mm head)	ERSJF (JIS Head)	1.5	40.00～100.00	0.60～ 1.30	0.30～	1.4	10≦(L−N)≦80	20
4		4				2		0.80～ 1.80		1.9		
5		5				2.5		1.00～ 2.30	0.40～	2.4		23
6		6				3		1.00～ 2.80		2.9		25
7		7				3.5		1.20～ 3.30	0.50～	3.4		
		8	6			4	40.00～120.00	1.50～ 3.80		3.9	10≦(L−N)≦90	27
8						4.5		1.50～ 4.30		4.4		
		9				5	50.00～150.00	1.80～ 4.80		4.9	10≦(L−N)≦120	29
9						5.5		2.00～ 5.30		5.4		
		10				6		2.00～ 5.80	0.60～	5.9		31
10		11				6.5		2.50～ 6.30		6.4		35
						7		2.50～ 6.80		6.9		
11		13	8			8		3.00～ 7.80		7.9		
15		15				10		3.00～ 9.80	0.80～	9.9		
—	—	17		—		12	50.00～200.00	4.00～11.80	1.00～	11.9	10≦(L−N)≦165	

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W

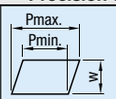
Order

Part Number	L	P	W	N
ERSF 1.5	100.00	P0.60	W0.30	N20

Days to Ship: Quotation

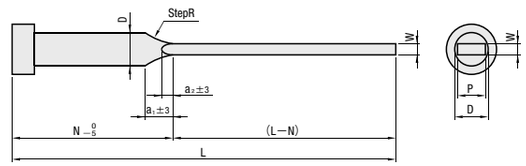
Price: Quotation

Precision Standard

Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

■ Step R of Rectangular Ejector Pins -N dimension short type-

For N short type, Step R becomes smaller comparing with that of conventional rectangular ejector pin.



- Step radius (R): R65～75*
  (*This is the size of grindstone used to process R section. This is not a guaranteed value for R.)
- Formula used for calculating the length (a_1) and (a_2) of step R:

$$a_1=5+\sqrt{\frac{D-W}{2}\times\left(2R-\frac{D-W}{2}\right)}$$

$$a_2=5+\sqrt{\frac{D-P}{2}\times\left(2R-\frac{D-P}{2}\right)}$$

*The left formulas include profile error from rough and finish processing.

- Concentricity of the rectangular tip section (P・W) and shaft diameter (D): 0.2mm or less

High Speed Steel
SKH51 equivalent

Precision
P・W$_{-0.005}^{0}$
Blank

PRECISION RECTANGULAR EJECTOR PINS

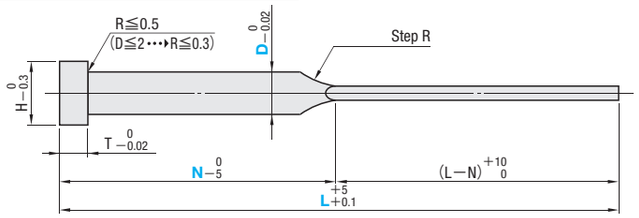
—STANDARD—

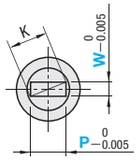
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERVB	4mm(T4)	$^{0}_{-0.005}$
ERVJB	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Order

Part Number	L	P	W	N
ERVB 4	100	P3.0	W2.0	N40

Days to Ship: Quotation

■Express T applicable sizes

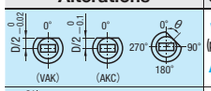
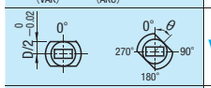
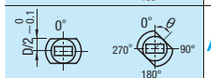
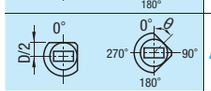
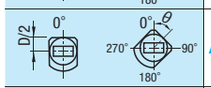
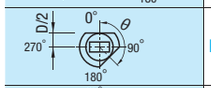
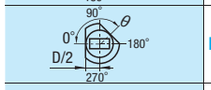
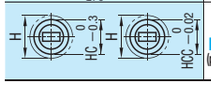
Part Number	D	L	P	W	N
ERVB (Head Thickness 4mm)	1.5	100	1.0 1.2	0.4 0.5	50
	2	100	1.2 1.5	0.4 0.5 0.6	50
		150			60
	2.5	150	2.0	0.5 0.6 0.7 0.8	60
		200			70
	3	150	2.5	0.7 0.8 1.0	50 60
		200			70
	3.5	150	3.0	0.8 1.0	50 60
		200			70

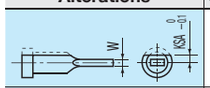
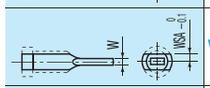
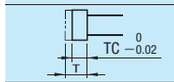
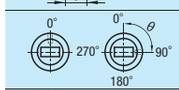
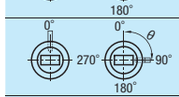
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERVB 4	100	P3.0	W2.0	N40	AWC 0

Quotation

Alteration details P.195

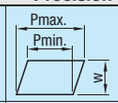
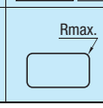
Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC,HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	

Alterations	Code	Spec.	1Code
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T Dimensions L and N become shorter by (T−TC)	Quotation
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	L	P	W	N
3	4	—	—	ERVB (4mm head)	—	1.5	100	0.6 0.7 0.8 1.0 (1.2)	0.3 0.4 0.5 0.6 (0.8)	40 50 60
							150			50 60 70 75 80 90 100
4						2	100	1.0 1.2 1.5 1.6 (1.8)	0.3 0.4 0.5 0.6 0.7 (0.8) (1.0)	40 50 60
							150			40 50 60 70 80 90 100
5						2.5	100	1.5 1.6 (2.0)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	40 50 60
							150			40 50 60 70 80 90 100
							200		0.4 0.5 0.6 0.7 0.8 1.0	50 60 70 80 90 100
6						3	100	2.0 (2.5)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	40 50 60
							150			40 50 60 70 80 90 100
							200		0.4 0.5 0.6 0.7 0.8 1.0	60 70 80 90 100
7						3.5	100	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5 2.0	40 50 60
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	
							150	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	40 50 60 70 80 90 100
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	
							200	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
						4	100	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	40 50 60
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	
							150	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	40 50 60 70 80 90 100
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	
							200	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
8						4.5	150	4.0	0.6 0.8 1.0 1.2 1.5	40 50 60 70
							200			60 70 80
						5	150	4.0	0.8 1.0 2.0	50 60 80
							200			60 70 80
9						5.5	150	5.0	0.5 0.6 1.0	50 60 80
							200			50 60 70 80
						6	150	5.0	0.8 1.0 1.5	50 60 70 80
							200			60 75 80
—	—	9	6	—	ERVJB (JIS Head)	5	150	4.0	0.5 0.8 1.0 1.2	50 60 70
							200			90 100
		10				6	150	5.0	0.8 1.0 1.2	50 60
							200			100
		13	8			8	200	7.5	1.2 1.5	100
							250			150
							300			120 130
		15				10	200	8.0 9.0	1.5 3.0 5.0 5.5	80 100
							250			120
							300			120 150
		17				12	200	10.0	2.0 2.5 3.0 5.0	100
							250			120 150
							300			150

Selections in which both the P and W dimensions are enclosed in brackets ( ) cannot be made.

Price: Quotation

Precision Standard		
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

High Speed Steel
SKH51 equivalent

Precision
P・W$_{-0.005}^{0}$
L dimension designation

PRECISION RECTANGULAR EJECTOR PINS

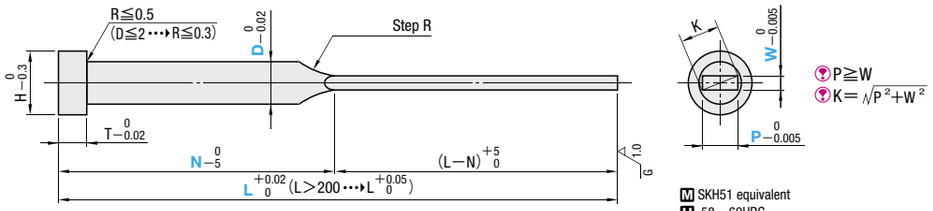
— L DIMENSION DESIGNATION TYPE —

Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERVL ※P—ERVL(Angular tip corner)	4mm(T4)	$^{0}_{-0.005}$
ERVJL	6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



※For P—ERVL, the deburring of tip is not carried out. (For details, refer to the right page.)

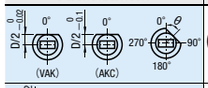
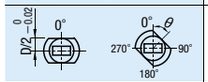
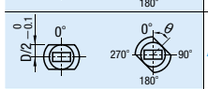
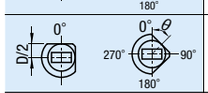
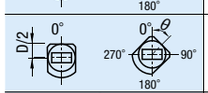
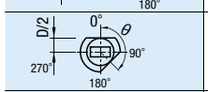
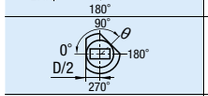
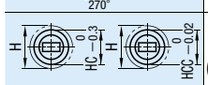
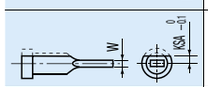
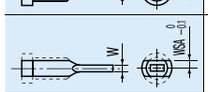
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

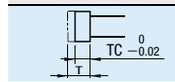
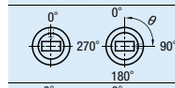
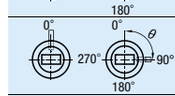
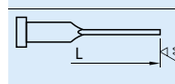
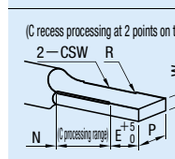
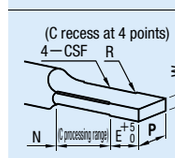
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERVL 4	105.03	P3.0	W2.0	N50	AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H,D≧1.5 (HCC)D+1≦HCC<H−0.3,D≧1.5	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1 D≧1.5	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1 D≧1.5	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T Dimensions N becomes shorter by (T−TC). (Dimension L remains unchanged.) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	Quotation
	TMC	Lapping on the tip face Available when P≧0.6	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

CSW, CSF: Range of designation	
W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5 1 1.5

P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	L 0.01mm increments	P	W	N
2	4	—	—	ERVL (4mm head) P—ERVL (Angular tip corner)	—	1	50.00～100.00	0.3 0.4 0.5 0.6	0.3 0.4 0.5 0.6	40 50 60
3						1.5	50.00～100.00	0.6 0.7 0.8 1.0(1.2)	0.3 0.4 0.5 0.6 (0.8)	40 50 60
							100.01～150.00			50 60 70 75 80 90 100
4						2	50.00～100.00	1.0 1.2 1.5 1.6(1.8)	0.3 0.4 0.5 0.6 0.7 (0.8) (1.0)	40 50 60
							100.01～150.00			40 50 60 70 80 90 100
5						2.5	50.00～100.00	1.5 1.6(2.0)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	40 50 60
							100.01～150.00			40 50 60 70 80 90 100
							150.01～200.00		0.4 0.5 0.6 0.7 0.8 1.0	50 60 70 80 90 100
6						3	50.00～100.00	2.0(2.5)	0.4 0.5 0.6 0.7 0.8 1.0 1.2 (1.5)	40 50 60
							100.01～150.00			40 50 60 70 80 90 100
							150.01～200.00		0.4 0.5 0.6 0.7 0.8 1.0	60 70 80 90 100
7						3.5	50.00～100.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5 2.0	40 50 60
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	
							100.01～150.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	40 50 60 70 80 90 100
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	
							150.01～200.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
								3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
						4	50.00～100.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	40 50 60
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	
							100.01～150.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	40 50 60 70 80 90 100
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	
							150.01～200.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
								3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	60 70 80 90 100
8						4.5	100.00～150.00	4.0	0.6 0.8 1.0 1.2 1.5	40 50 60 70
							150.01～200.00			60 70 80
						5	100.00～150.00	4.0	0.8 1.0 2.0	50 60 80
							150.01～200.00			60 70 80
9						5.5	100.00～150.00	5.0	0.5 0.6 1.0	50 60 80
							150.01～200.00			50 60 70 80
						6	100.00～150.00	5.0	0.8 1.0 1.5	50 60 70 80
							150.01～200.00			60 75 80
10						6.5	100.00～150.00	6.0	0.8 1.0 1.2	50 60 80
							150.01～200.00			60 80 100
11						8	100.00～150.00	6.0 7.0	0.8 1.0 1.2	50 60 80
							150.01～200.00			60 80 100
15						10	100.00～150.00	8.0	0.8 1.0 1.2 2.0	50 60 80
							150.01～200.00			60 80 100
—	—	9	6	—	ERVJL (JIS Head)	5	100.00～150.00	4.0	0.5 0.8 1.0 1.2	50 60 70
							150.01～200.00			90 100
		10				6	100.00～150.00	5.0	0.8 1.0 1.2	50 60
							150.01～200.00			100
		13	8			8	150.00～200.00	7.5	1.2 1.5	100
							200.01～250.00			150
							250.01～300.00			120 130
		15				10	150.00～200.00	8.0 9.0	1.5 3.0 5.0 5.5	80 100
							200.01～250.00			120
							250.01～300.00			120 150
		17				12	150.00～200.00	10.0	2.0 2.5 3.0 5.0	100
							200.01～250.00			120 150
							250.01～300.00			150

Selections in which both the P and W dimensions are enclosed in brackets ( ) cannot be made. (L−N)≧10

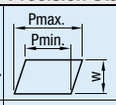
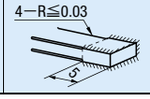
Order

Part Number	L	P	W	N
ERVL 4	105.03	P3.0	W2.0	N50

Days to Ship Quotation

Price Quotation

Precision Standard

Squareness of the tip corner	ERVL P—ERVL ERVJL		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner	ERVL ERVJL		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)
	P—ERVL		Approximately within 5mm from the tip is without deburring process. 5mm onward, deburring R is within ≦0.03).

High Speed Steel
SKH51 equivalent

Precision
P・W$_{-0.005}^{0}$
Free designation

PRECISION RECTANGULAR EJECTOR PINS

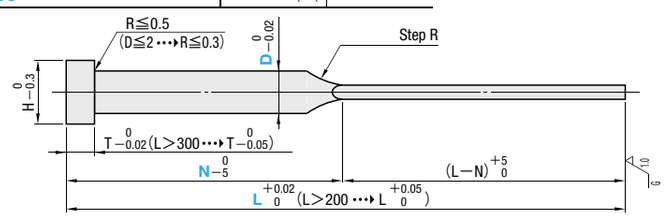
— FREE DESIGNATION TYPE —

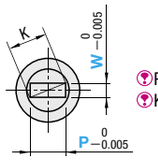
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERVYF(Small diameter) ※P—ERVYF(Small diameter angular tip corner)	4mm(T4)	$^{0}_{-0.005}$
ERVF ※P—ERVF(Angular tip corner)		
ERVJ	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

※For P—ERVYF and P—ERVF, the deburring of tip is not carried out. (For details, refer to the right page.)

Order

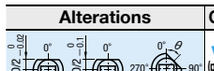
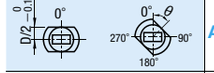
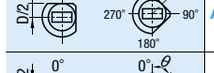
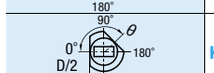
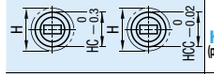
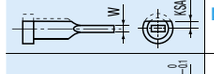
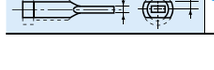
Part Number	L	P	W	N
ERVF 5.5	105.03	P3.50	W0.65	N55

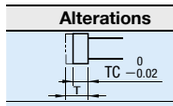
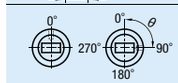
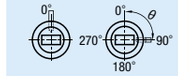
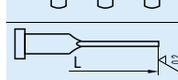
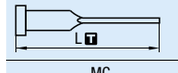
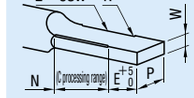
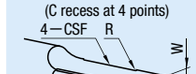
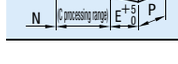
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERVF 5.5	105.03	P3.50	W0.65	N55	AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only. (P—)ERVYF 90° increments	Quotation
	VAW	VAW=45° increments (P—)ERVYF 90° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments (P—)ERVYF 90° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only. (P—) ERVYF not available.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only. (P—) ERVYF not available.	
	KGA	KGA=1° increments 0<KGA<360 (P—) ERVYF not available.	
	KGD	KGD=1° increments 0<KGD<360 (P—) ERVYF not available.	
	HC HCC (precision)	HC, HCC=0.1mm increments (HC) D+1≦HC<H,D≧1.5 (HCC)D+1≦HCC<H−0.3,D≧1.5	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1 D≧1.5	
	WSA	W/2+0.1≦WSA≦D/2−0.1 D≧1.5	

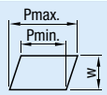
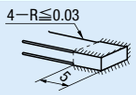
Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T Dimensions L and N remain unchanged. T−TC≦Lmax.−L,D≧1.5	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face Available when P≧0.6 (P—) ERVYF not available.	Quotation
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ...→ $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8 ••• M4 D10 ••• M5 D12・15 ••• M6 Only available combination is with CSW・CSF・TMC Available for ERVJ only Available when D≧8	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25 CSW, CSF: Range of designation W / CSW, CSF 1.0≦W<1.5 / 0.3 W≧1.5 / 0.5, 1, 1.5	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method 8 ptCSF0.5—E30 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	Kmax.	N 1mm increments	Nmin.
2	4	—	—	ERVYF (4mm head) P—ERVYF (Angular tip corner)	—	0.8	40.00～100.00	0.30～ 0.60	0.20～	0.7	10≦(L−N)≦50	23
						0.9		0.30～ 0.70		0.8		
						1		0.30～ 0.80		0.9		
3						1.1	40.00～200.00	0.30～ 0.90		1.0	10≦(L−N)≦150	
						1.2		0.30～ 1.00		1.1		
						1.3		0.30～ 1.10		1.2		
						1.4		0.30～ 1.20		1.3		
		3	4	ERVF (4mm head) P—ERVF (Angular tip corner)	ERVJ (JIS Head)	1.5	40.00～250.00	0.50～ 1.30		1.4	10≦(L−N)≦250	
4		4				2	40.00～300.00	0.80～ 1.80		1.9		
5		5				2.5		0.80～ 2.30		2.4		26
6		6				3		0.80～ 2.80	0.30～	2.9		27
7		7				3.5		1.00～ 3.30		3.4		
		8	6			4	40.00～300.00 (40.00～350.00)	1.00～ 3.80		3.9		29
8						4.5		1.20～ 4.30		4.4		
		9				5	50.00～300.00 (50.00～350.00)	1.50～ 4.80	0.40～	4.9		31
9						5.5		1.80～ 5.30	0.50～	5.4		
		10				6		2.00～ 5.80		5.9		33
10		11				6.5		2.00～ 6.30		6.4		40
						7		2.30～ 6.80		6.9		
11		13	8			8		2.30～ 7.80		7.9		
15		15				10		3.00～ 9.80		9.9		
—	—	17		—		12		3.50～11.80	0.80～	11.9		
		20				15		3.50～14.80	1.50～	14.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W L dimension in ( ) is for ERVJ.

Days to Ship — Quotation

Price — Quotation

Precision Standard			
Squareness of the tip corner	ERVYF P—ERVYF ERVF P—ERVF ERVJ		W plane as the base (Pmax.—Pmin.)≦0.01
Corner R value of the tip corner	ERVYF ERVF ERVJ		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)
	P—ERVYF P—ERVF		Approximately within 5mm from the tip is without deburring process. 5mm onward, deburring R is within ≦0.03).

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

Precision
P・W$_{-0.005}^{0}$
Free designation

High Speed Steel
SKH51 equivalent

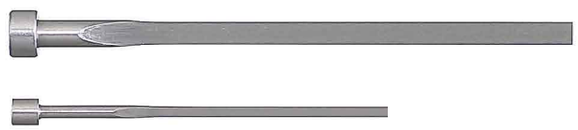
Precision
P・W$^{0}_{-0.005}$
Free designation

PRECISION RECTANGULAR EJECTOR PINS

— N DIMENSION SHORT TYPE —

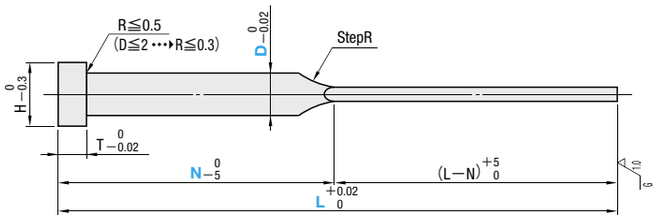
Non JIS material definition is listed on P.1351 - 1352

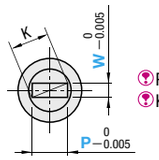
RoHS



Part Number	Head Thickness	T P・W
ERVSF	4mm(T4)	$^{0}_{-0.005}$
ERVSJF	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details: see below of the right page)





P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	Kmax.	N 1mm increments	Nmin.
3	4	3	4	ERVSF (4mm head)	ERVSJF (JIS Head)	1.5	40.00～100.00	0.60～1.30	0.30～	1.4	10≦(L−N)≦80	20
4		4				2		0.80～1.80		1.9		
5		5				2.5		1.00～2.30	0.40～	2.4		23
6		6				3		1.00～2.80		2.9		25
7		7				3.5		1.20～3.30	0.50～	3.4		
		8	6			4	40.00～120.00	1.50～3.80		3.9	10≦(L−N)≦90	27
8						4.5		1.50～4.30		4.4		
		9				5	50.00～150.00	1.80～4.80		4.9	10≦(L−N)≦120	29
9						5.5		2.00～5.30		5.4		
		10				6		2.00～5.80	0.60～	5.9		31
10		11				6.5		2.50～6.30		6.4		35
						7		2.50～6.80		6.9		
11		13	8			8		3.00～7.80		7.9		
15		15				10		3.00～9.80	0.80～	9.9		
—	—	17		—		12	50.00～200.00	4.00～11.80	1.00～	11.9	10≦(L−N)≦215	
		20				15	50.00～250.00	5.00～14.80	1.50～	14.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W

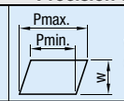
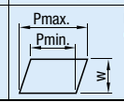
Order

Part Number	L	P	W	N
ERVSF 1.5	100.00	P1.20	W0.30	N20

Days to Ship: Quotation

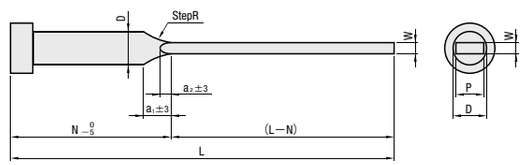
Price: Quotation

Precision Standard

Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

■ STEP R OF RECTANGULAR EJECTOR PINS -N dimension short type-

For N short type, Step R becomes smaller comparing with that of conventional rectangular ejector pin.



- Step radius (R): R65～75*

(*This is the size of grindstone used to process R section.
This is not a guaranteed value for R.)

- Formula used for calculating the length (a_1) and (a_2) of step R:

$$a_1=5+\sqrt{\frac{D-W}{2}\times\left(2R-\frac{D-W}{2}\right)}$$

$$a_2=5+\sqrt{\frac{D-P}{2}\times\left(2R-\frac{D-P}{2}\right)}$$

*The left formulas include profile error from rough and finish processing.

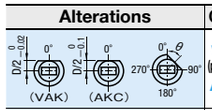
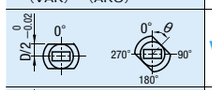
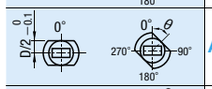
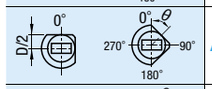
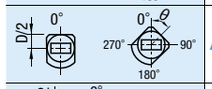
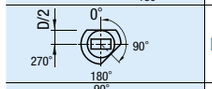
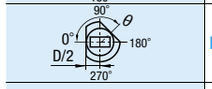
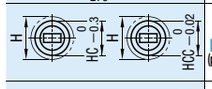
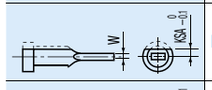
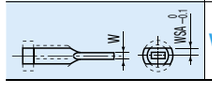
- Concentricity of the rectangular tip section (P・W) and shaft diameter (D): 0.2mm or less

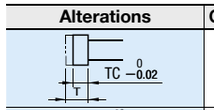
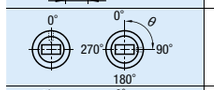
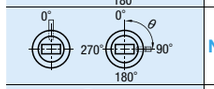
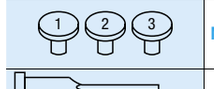
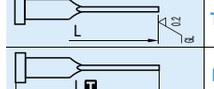
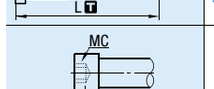
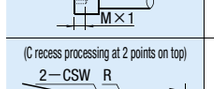
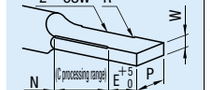
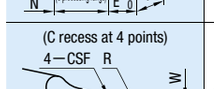
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERVSF 1.5	100.00	P1.20	W0.30	N20	AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK (precision) AKC	VAK=45° increments AKC=1° increments 0≦VAK or AKC<360 (VAK) KSA,WSA not available (AKC) When combined with KSA/WSA, 90° increments only.	
	VAW	VAW=45° increments 0≦VAW<360 Combination with KSA/WSA not available.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T Dimensions L and N remain unchanged. T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	Quotation
	LKC	L dimension tolerance alteration L$^{+0.02}_{0}$ ..., $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8 ···→ M4 D10 ···→ M5 D12・15 ···→ M6 Not available for ERVSF Available when D≧8 Only available combination is with CSW・CSF・TMC	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

Rectangular Ejector Pins

High Speed Steel SKH51 equivalent

Precision P・W$^{0}_{-0.005}$ Free designation

High Speed Steel
SKH51 equivalent

Extra precision
P・W$^{0}_{-0.003}$
Free designation

EXTRA PRECISION RECTANGULAR EJECTOR PINS

— FREE DESIGNATION ／ ANGULAR TIP CORNER・FREE DESIGNATION TYPE —

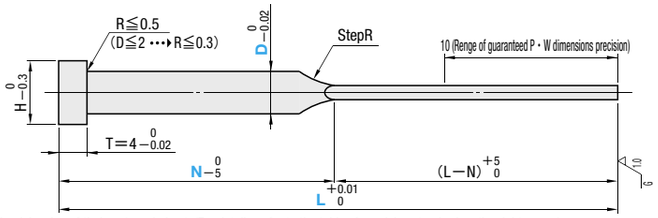
Non JIS material definition is listed on P.1351 - 1352

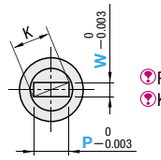
Enlarged view of angular tip corner

RoHS

Part Number	Head Thickness	T P・W
ERZF ※P—ERZF(Angular tip corner)	4mm(T4)	$^{0}_{-0.003}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
$K=\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

※For P—ERZF, the deburring of tip is not carried out. (For details, refer to the table of precision standard on the right page.)

H	T	Part Number Type	D	0.01mm increments L	P	W	Kmax.	N 1mm increments	Nmin.
2	4	ERZF (4mm head) / P—ERZF (4mm head angular tip corner)	1	40.00～100.00	0.30～0.80	0.30～	0.9	10≦(L—N)≦200	23
3			1.2		0.30～1.00		1.1		
			1.5		0.60～1.30		1.4		
4			2	40.00～150.00	0.80～1.80		1.9		
5			2.5		0.80～2.30		2.4		26
6			3		0.80～2.80		2.9		27
7			3.5		1.00～3.30		3.4		
			4	40.00～200.00	1.00～3.80		3.9		29
8			4.5		1.20～4.30	0.40～	4.4		
			5		1.50～4.80		4.9		31
9			5.5		1.80～5.30	0.50～	5.4		
			6		2.00～5.80		5.9		33

Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ P≧W

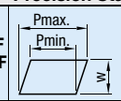
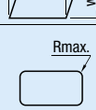
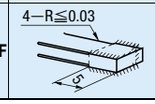
Order

Part Number	L	P	W	N
ERZF 2	105.03	P1.30	W0.30	N55

Days to Ship: Quotation

Price: Quotation

Precision Standard

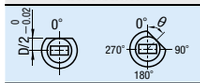
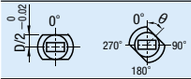
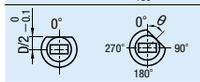
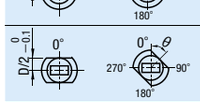
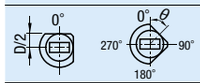
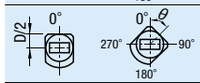
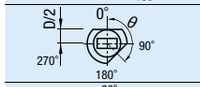
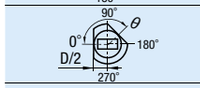
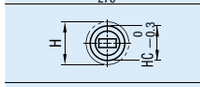
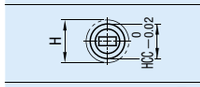
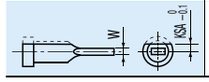
Squareness of the tip corner	ERZF P—ERZF		W plane as the base (Pmax.—Pmin.)≦0.005
Corner R value of the tip corner	ERZF		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)
	P—ERZF		Approximately within 5mm from the tip is without deburring process. 5mm onward, deburring R is within ≦0.03).

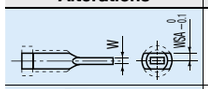
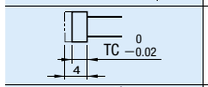
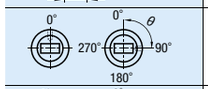
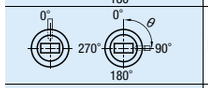
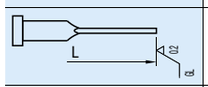
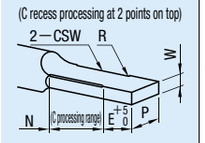
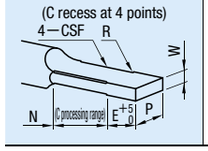
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERZF 5.5	105.03	P3.50	W0.65	N55	AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK	VAK=45° increments 0≦VAK<360 ⊗ Combination with KSA/WSA not available.	Quotation
	VAW	VAW=45° increments 0≦VAW<360 ⊗ Combination with KSA/WSA not available.	
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H Available when D≧1.5	
	HCC	HCC=0.1mm increments D+1≦HCC<H—0.3 Available when D≧1.5	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2—0.1 Available when D≧1.5	

Alterations	Code	Spec.	1Code
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2—0.1 Available when D≧1.5	
	TC	TC=0.1mm increments 2.0≦TC<4 Dimension L and N remains unchanged. (ERZF) Dimensions N becomes shorter by (4—TC). (P—ERZF) (Dimension L remains unchanged.) 4—TC≦Lmax.—L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 ⊗ Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 ⊗ Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	Quotation
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face Available when P≧0.6	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CSW, CSF<W/2

E=1mm increments
5≦E≦(L—N)—20

High Speed Steel
SKH51 equivalent

R-chamfered P・W$^{0}_{-0.01}$ L dimension designation

R-CHAMFERED RECTANGULAR EJECTOR PINS

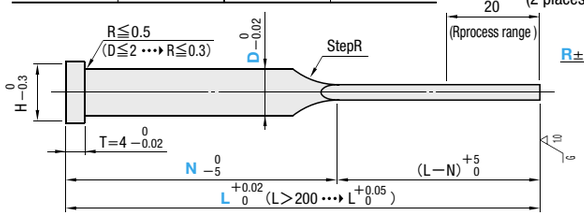
—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

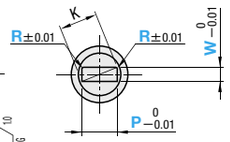
RoHS

Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERLWR	ERLFR	4mm(T4)	$^{0}_{-0.01}$

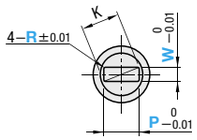
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



ERLWR
(2 places on the upper side are rounded.)



ERLFR
(4 places are rounded.)



P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

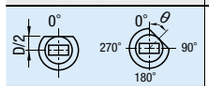
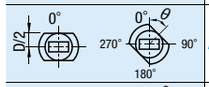
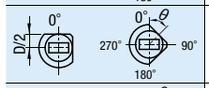
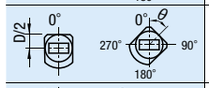
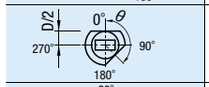
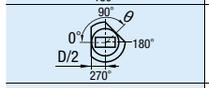
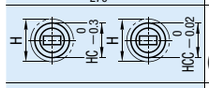
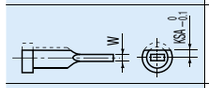
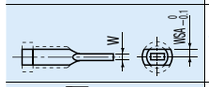
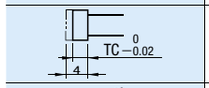
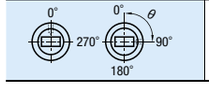
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

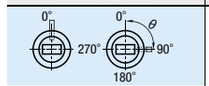
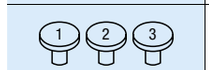
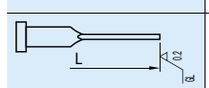
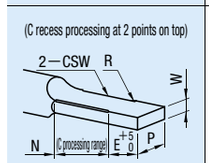
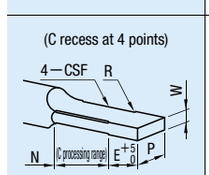
Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ERLFR 3	200.00	P2.0	W0.8	R0.1	N100	AKC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 2.0≦TC<4 Dimensions N become shorter by (4−TC) (Dimension L remains unchanged.) 4−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	

Alterations	Code	Spec.	1Code
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	Quotation
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

CSW, CSF: Range of designation

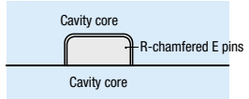
W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5 1 1.5

P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20
R process range P.196

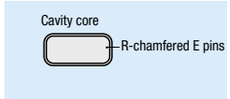
ex Example

Please select the chamfering R size to suit for the corner R on the cavity core generated by WEDM.

①Separable Piece



②Cavity core in wire hole.



H	T	Part Number Type	D	L 0.01mm increments	P	W	R	N
3	4	ERLWR (2 places on the upper side are rounded.) ERLFR (4 places are rounded.)	1.5	60.00～100.00 100.01～150.00	0.8 1.0 1.2	0.3 0.4 0.5 0.6	0.1 0.15 0.2 0.3 R≦W/2−0.05	40 50 60 50 60 70 80 90
4			2	60.00～100.00 100.01～150.00 150.01～200.00	1.0 1.2 1.5	0.4 0.5 0.6 0.7 0.8 1.0		40 50 60 50 60 70 80 90 100 60 70 80
5			2.5	60.00～100.00 100.01～150.00 150.01～200.00	1.5 2.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2		40 50 60 50 60 70 80 90 60 70 80 90 100
6			3	60.00～100.00 100.01～150.00 150.01～200.00	2.0 2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2		40 50 60 50 60 70 80 90 60 70 80 100 120
7			3.5	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	2.5 3.0	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5		40 50 60 50 60 70 80 90 60 70 80 90 100 80 100
8			4	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	3.0 3.5	0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.5		40 50 60 50 60 70 80 90 60 70 80 90 100 80 100
8			4.5	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	3.5 4.0	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8		40 50 60 70 50 60 70 80 90 60 70 80 90 100 90 100 120
9			5	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	4.0	0.6 0.7 0.8 0.9 1.0 1.2 1.5 1.8 2.0		40 50 60 70 50 60 70 80 90 60 70 80 90 100 100 120
9			5.5	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	4.5 5.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0		40 50 60 70 50 60 70 80 90 60 70 80 90 100 100 120
9			6	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	5.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0		40 50 60 70 50 60 70 80 90 60 70 80 90 100 70 80 90 100 120
11			8	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	6.0 7.0	0.8 0.9 1.0 1.2 1.5 1.8 2.0 2.5		40 50 60 50 60 70 80 90 100 70 80 90 100 120 80 90 100 120 150
15			10	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	8.0	1.0 1.2 1.5 1.8 2.0 2.5		40 50 60 50 60 70 80 90 100 60 70 80 90 100 120 90 100 120 150
17			12	60.00～100.00 100.01～150.00 150.01～200.00 200.01～250.00	10.0	1.2 1.5 1.8 2.0		40 60 60 70 80 90 100 70 80 90 100 120 80 90 100 120 150

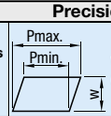
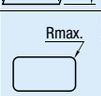
Select R dimension from the range of R≦$\frac{W}{2}$−0.05. L−N≧20

Order

Part Number	L	P	W	R	N
ERLFR3	200.00	P2.0	W0.8	R0.1	N100

Days to Ship: Quotation

Price: Quotation

Precision Standard	
Squareness of the tip corner	 W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner	 Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Rectangular Ejector Pins

High Speed Steel SKH51 equivalent

R-chamfered P・W$^{0}_{-0.01}$ L dimension designation

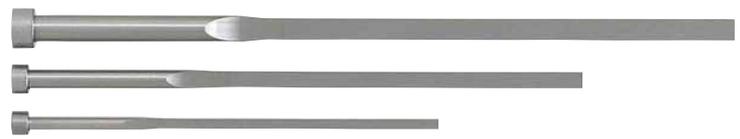
High Speed Steel
SKH51 equivalent

R-chamfered | P・W$^{0}_{-0.01}$ | Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS

—FREE DESIGNATION TYPE—

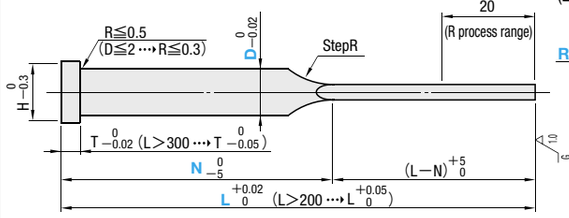
Non JIS material definition is listed on P.1351 - 1352



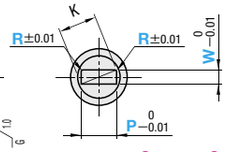
RoHS

Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERWR	ERFR	4mm(T4)	$^{0}_{-0.01}$
ERJWR	ERJFR	4・6・8mm(JIS)	

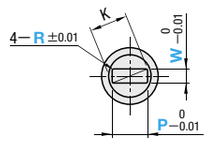
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



ERWR
ERJWR
(2 places on top are rounded.)



ERFR
ERJFR
(4 places are rounded.)



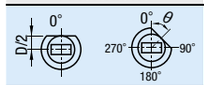
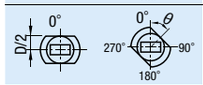
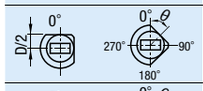
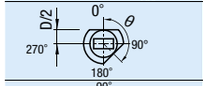
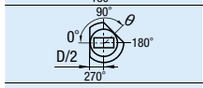
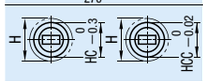
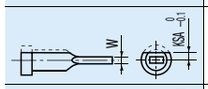
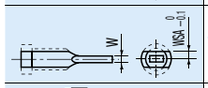
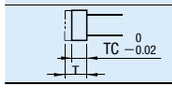
P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

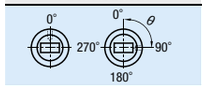
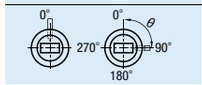
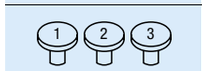
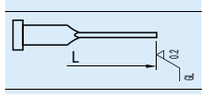
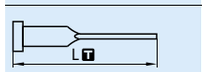
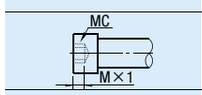
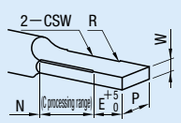
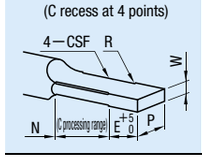
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Alterations

Part Number	L	P	W	R	N	(AKC・AWC···etc.)
ERFR 4	200.00	P2.00	W0.80	R0.1	N150	AKC 0

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments /2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	

Alterations	Code	Spec.	1Code
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	Quotation
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ···, $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8・8.5 ··· M4 D10・10.5 ··· M5 D12・15 ··· M6 Not available for ERWR・ERFR. Available when D≧8 Only available combination is with CSW・CSF・TMC	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CSW, CSF<W/2

E=1mm increments
5≦E≦(L−N)−20

R process range
P.196

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	R	Kmax.	N 1mm increments	Nmin.
3	4	3	4	ERWR (2 places on the upper side are rounded.)	ERJWR (2 places on the upper side are rounded.)	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.1 0.15 0.2 0.3 R≦W/2−0.05	1.4	20≦(L−N) (L−N)≦250	23
4		4				2	50.00～300.00	0.80～ 1.80			1.9		
5		5				2.5		0.80～ 2.30			2.4		26
6		6				3	50.00～350.00	0.80～ 2.80			2.9		27
7		7				3.5		1.00～ 3.30			3.4		
		8	6			4		1.00～ 3.80			3.9		29
8						4.5		1.20～ 4.30			4.4		
		9		ERFR (4 places are rounded.)	ERJFR (4 places are rounded.)	5	50.00～350.00	1.50～ 4.80	0.40～		4.9		31
9						5.5		1.80～ 5.30	0.50～		5.4		
		10				6		2.00～ 5.80			5.9		33
10		11				6.5		2.00～ 6.30			6.4		40
						7		2.30～ 6.80			6.9		
11		13	8			8		2.30～ 7.80			7.9		
14		14				8.5		2.30～ 8.30			8.4		
15		15				10		3.00～ 9.80			9.9		
17		17				10.5		3.00～10.30			10.4		
						12		3.50～11.80	0.80～		11.9		
—	—	20		—		15		3.50～14.80	1.50～		14.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ (Dimention before R processing) P≧W Select R dimension from the range of R≦$\frac{W}{2}$−0.05.

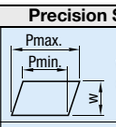
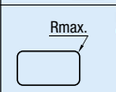
Order

Part Number	L	P	W	R	N
ERFR 4	200.00	P2.00	W0.80	R0.1	N150

Days to Ship: Quotation

Price: Quotation

Precision Standard

Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

R-chamfered
P・W$^{0}_{-0.01}$
Free designation

High Speed Steel
SKH51 equivalent

R-chamfered | P・W$_{-0.01}^{0}$ | Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS

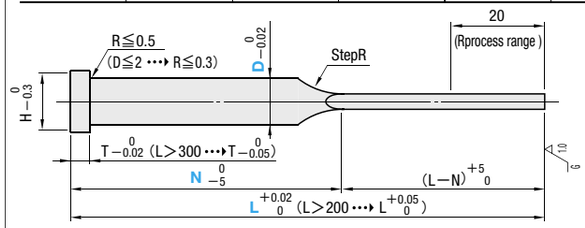
—FREE DESIGNATION・R POSITION SELECTION TYPE—

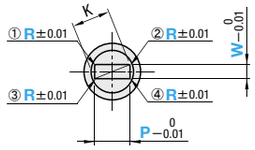
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number				Head Thickness	T P・W
1 place is rounded.	2 places are rounded.	3 places are rounded.	4 places are rounded.		
ER1AR ER1BR	ERWR ER2BR ER2CR ER2DR	ER3AR ER3BR	ERFR	4mm(T4)	$^{0}_{-0.01}$
ERJ1AR ERJ1BR	ERJWR ERJ2BR ERJ2CR ERJ2DR	ERJ3AR ERJ3BR	ERJFR	4・6・8mm(JIS)	

No. of R	Shape	R parts			
		① Upper left	② Upper right	③ Lower left	④ Lower right
1	1AR	①	—	—	—
	1BR	—	②	—	—
2	WR	①	②	—	—
	2BR	①	—	③	—
	2CR	①	—	—	④
	2DR	—	②	③	—
3	3AR	①	②	③	—
	3BR	①	②	—	④
4	FR	①	②	③	④





R position is selected from R–position Designation Shape

P≧W　K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

Range of guaranteed shaft diameter precision (D) (Details P.1301)

Step R (Details P.1302)

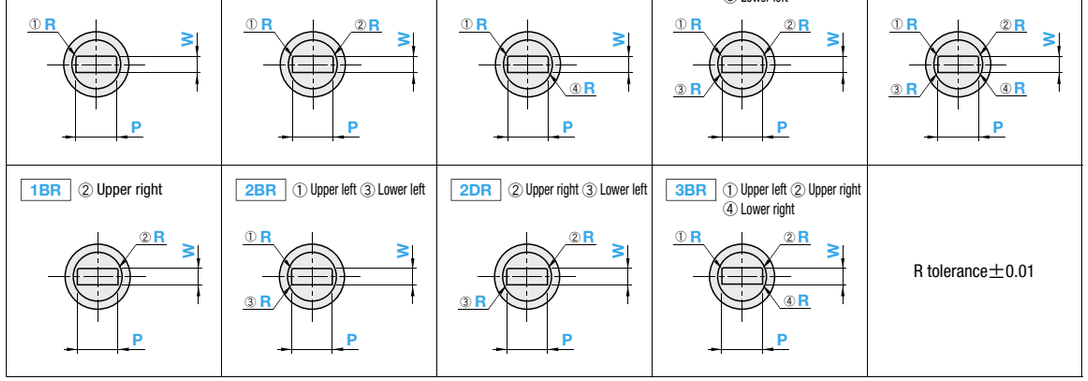
M SKH51 equivalent

H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)

■R-position Designation

Shape				
One place of R	Two places of R		Three places of R	Four places of R
	Horizontal/Longitudinal	Diagonal		
1AR ① Upper left	WR ① Upper left ② Upper right	2CR ① Upper left ④ Lower right	3AR ① Upper left ② Upper right ③ Lower left	FR 4 places
1BR ② Upper right	2BR ① Upper left ③ Lower left	2DR ② Upper right ③ Lower left	3BR ① Upper left ② Upper right ④ Lower right	R tolerance±0.01



Order

Part Number	L	P	W	R	N
ER1AR 4	200.00	P2.00	W1.00	R0.1	N150

Days to Ship　Quotation

Price　Quotation

Precision Standard		
Squareness of the tip corner	Pmax. Pmin. W	W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner	Rmax.	Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type	Part Number Shape	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	R	Kmax.	N 1mm increments	Nmin.
3	4	3	4	ER (4mm head D1.5～12) ERJ (JIS head D1.5～15)	1AR	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.1	1.4	20≦(L−N)≦250	23
4		4				2	50.00～300.00	0.80～ 1.80			1.9		
5		5				2.5		0.80～ 2.30			2.4		26
6		6			1BR	3	50.00～350.00	0.80～ 2.80			2.9		27
7		7				3.5		1.00～ 3.30			3.4		
		8	6		WR	4		1.00～ 3.80		0.15	3.9		29
8						4.5		1.20～ 4.30	0.40～		4.4		
		9			2BR	5		1.50～ 4.80			4.9		31
9					2CR	5.5		1.80～ 5.30	0.50～	0.2	5.4		
		10				6		2.00～ 5.80			5.9		33
10		11			2DR	6.5		2.00～ 6.30		0.3	6.4		40
					3AR	7		2.30～ 6.80			6.9		
11		13	8			8		2.30～ 7.80		R≦W/2−0.05	7.9		
14		14			3BR	8.5		2.30～ 8.30			8.4		
15		15				10		3.00～ 9.80			9.9		
17		17			FR	10.5		3.00～10.30			10.4		
						12		3.50～11.80	0.80～		11.9		
—	—	20				15		3.50～14.80	1.50～		14.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$(Dimention before R processing)　P≧W

Select R dimension from the range of R≦$\frac{W}{2}$−0.05.

Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ER1AR 4	200.00	P2.00	W1.00	R0.1	N150	AKC 0−CS1−E30

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	

Alterations	Code	Spec.	1Code
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	
	LKC	L dimension tolerance alteration L$^{+0.02}_{0}$ ..., $^{+0.01}_{0}$ Available when L≦200	
	MC	Tapping D8・8.5 ••• M4 D10・10.5 ••• M5 D12・15 ••• M6 Available when D≧8 Only available combination is with CS・CSF・TMC	Quotation
(C recess processing at desinated points) □places−CS	CS	Process C recess at the bottom of R processed (except tip) Process C recess at all places R processed. Designation method CS1−E25	
(C recess at 4 points) 4−CSF	CSF	C recess processing at 4 points (except tip) Designation method CSF0.5−E30	

Range of designation W	CS, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CS, CSF<W/2

E=1mm increments
5≦E≦(L−N)−20
R process range P.196

Rectangular Ejector Pins

High Speed Steel SKH51 equivalent

R-chamfered P・W$_{-0.01}^{0}$ Free designation R position selection

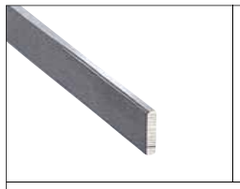
High Speed Steel
SKH51 equivalent

R-chamfered | Precision P・W$_{-0.005}^{0}$ | L dimension designation

R-CHAMFERED PRECISION RECTANGULAR EJECTOR PINS

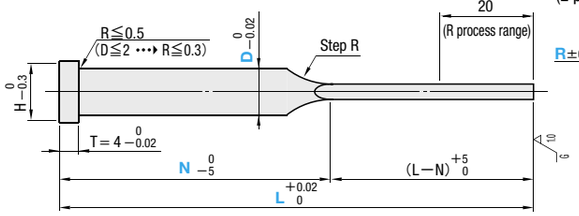
—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

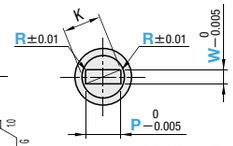


Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERVLWR	ERVLFR	4mm(T4)	$^{0}_{-0.005}$

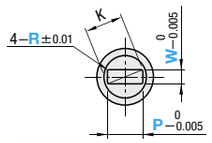
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



ERVLWR
(2 places on top are rounded.)



ERVLFR
(4 places are rounded.)



P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

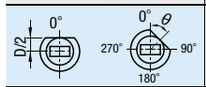
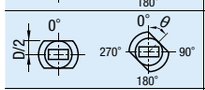
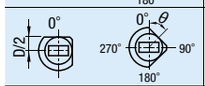
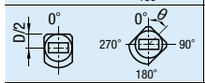
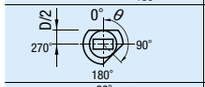
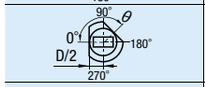
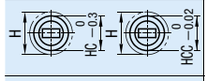
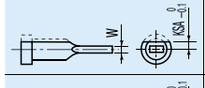
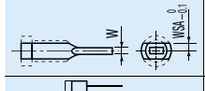
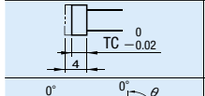
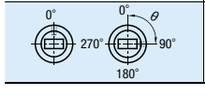
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

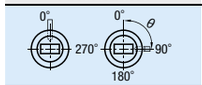
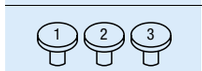
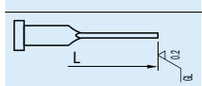
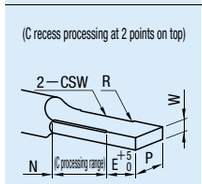
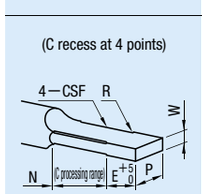
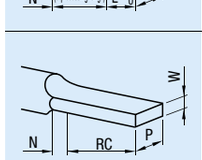
Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ERVLFR 3	200.00	P2.0	W0.8	R0.1	N100	AKC0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments /2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 2.0≦TC<4 Dimensions N become shorter by (4−TC) (Dimension L remains unchanged.) 4−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	

Alterations	Code	Spec.	1Code
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	
(C recess processing at 2 points on top) 	CSW	C-chamfering processing at 2 corners of the blade (except tip) for relief. Designation method CSW1—E25 CSW, CSF: Range of designation W: 1.0≦W<1.5: CSW, CSF 0.3; W≧1.5: 0.5, 1, 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196 RC processing is prioritized when combining with RC.	Quotation
(C recess at 4 points) 	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5—E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed.	

H	T	Part Number Type	D	L 0.01mm increments	P	W	R	N
3	4	ERVLWR (2 places on the upper side are rounded.) ERVLFR (4 places are rounded.)	1.5	60.00～100.00	0.6 0.7 0.8 1.0 1.2	0.3 0.4 0.5 0.6	0.05	40 50 60
				100.01～150.00				50 60 70 75 80 90
4			2	60.00～100.00	1.0 1.2 1.5 1.6 1.8	0.3 0.4 0.5 0.6 0.7 0.8 1.0		40 50 60
				100.01～150.00				50 60 70 80 90 100
5			2.5	60.00～100.00	1.5 1.6 2.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2		40 50 60
				100.01～150.00				50 60 70 80 90 100
				150.01～200.00		0.4 0.5 0.6 0.7 0.8 1.0		50 60 70 80 90 100
6			3	60.00～100.00	2.0 2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2		40 50 60
				100.01～150.00				50 60 70 80 90 100
				150.01～200.00		0.4 0.5 0.6 0.7 0.8 1.0		60 70 80 90 100
7			3.5	60.00～100.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5 2.0	0.1	40 50 60
					3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5		
				100.01～150.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2 1.5	0.15	50 60 70 80 90 100
					3.0			
				150.01～200.00	2.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2	0.2	60 70 80 90 100
					3.0			
			4	60.00～100.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	0.3	40 50 60
					3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2		
				100.01～150.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2 2.0	R≦W/2−0.05	50 60 70 80 90 100
					3.5	0.4 0.5 0.6 0.7 0.8 1.0 1.2		
				150.01～200.00	3.0	0.4 0.5 0.6 0.7 0.8 1.0 1.2		60 70 80 90 100
					3.5			
8			4.5	100.00～150.00	4.0	0.6 0.8 1.0 1.2 1.5		40 50 60 70 80 90
				150.01～200.00				60 70 80 90 100
			5	100.00～150.00	4.0	0.8 1.0 2.0		50 60 70 80 90
				150.01～200.00				60 70 80 90 100
9			5.5	100.00～150.00	5.0	0.5 0.6 1.0		50 60 70 80 90
				150.01～200.00				70 80 90 100
			6	100.00～150.00	5.0	0.8 1.0 1.5		50 60 70 80 90
				150.01～200.00				75 80 90 100

Select R dimension from the range of R≦W/2−0.05. L−N≧20

Order

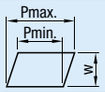
Part Number	L	P	W	R	N
ERVLFR 3	200.00	P2.0	W0.8	R0.1	N100

Days to Ship: Quotation

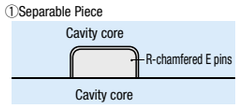
Price: Quotation

Example: Please select the chamfering R size to suit for the corner R on the cavity core generated by WEDM.

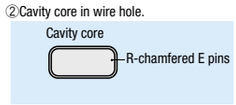
Precision Standard

Squareness of the tip corner	 W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner	Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

①Separable Piece



②Cavity core in wire hole.



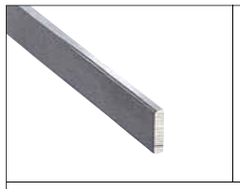
High Speed Steel
SKH51 equivalent

R-chamfered | Precision
P・W$_{-0.005}^{0}$
Free designation

R-CHAMFERED PRECISION RECTANGULAR EJECTOR PINS

—FREE DESIGNATION TYPE—

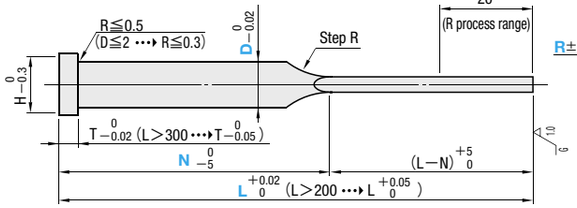
Non JIS material definition is listed on P.1351 - 1352



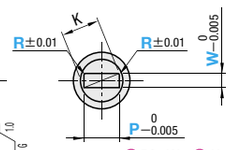
RoHS

Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERVWR	ERVFR	4mm(T4)	$^{0}_{-0.005}$
ERVJWR	ERVJFR	4・6・8mm(JIS)	

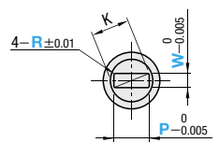
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



ERVWR
ERVJWR
(2 places on the upper side are rounded.)



ERVFR
ERVJFR
(4 places are rounded.)



P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head		JIS head		Part Number			0.01mm increments			R	Kmax.	N 1mm increments	Nmin.
H	T	H	T	4mm head	JIS head	D	L	P	W				
3	4	3	4	ERVWR (2 places on the upper side are rounded.) ERVFR (4 places are rounded.)	ERVJWR (2 places on the upper side are rounded.) ERVJFR (4 places are rounded.)	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.05 0.1 0.15 0.2 0.3 R≦W/2−0.05	1.4	20≦(L−N)≦250	23
4		4				2	50.00～300.00	0.80～ 1.80			1.9		
5		5				2.5		0.80～ 2.30			2.4		26
6		6				3		0.80～ 2.80			2.9		27
7		7				3.5		1.00～ 3.30			3.4		
		8	6			4	50.00～300.00 (50.00～350.00)	1.00～ 3.80			3.9		29
8						4.5		1.20～ 4.30			4.4		
		9				5	50.00～300.00 (50.00～350.00)	1.50～ 4.80	0.40～		4.9		31
9						5.5		1.80～ 5.30	0.50～		5.4		
		10				6		2.00～ 5.80			5.9		33
10		11				6.5		2.00～ 6.30			6.4		40
						7		2.30～ 6.80			6.9		
11		13	8			8		2.30～ 7.80			7.9		
15		15				10		3.00～ 9.80			9.9		
—	—	17		—		12		3.50～11.80	0.80～		11.9		
		20				15		3.50～14.80	1.50～		14.9		

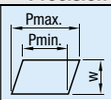
Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$(Dimention before R processing) P≧W
Select R dimension from the range of R≦$\frac{W}{2}$−0.05. L dimension in ( ) is only for ERVJWR・ERVJFR.

Order

Part Number	L	P	W	R	N
ERVFR 4	200.00	P2.00	W0.80	R0.1	N150

Days to Ship: Quotation

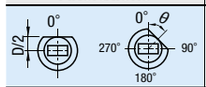
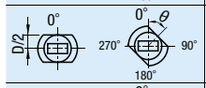
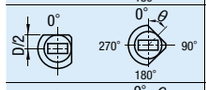
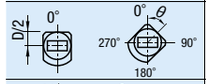
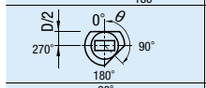
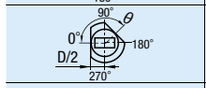
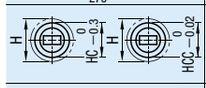
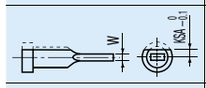
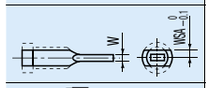
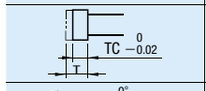
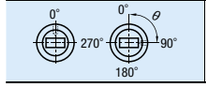
Price: Quotation

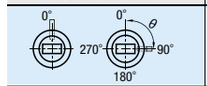
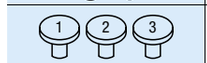
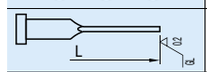
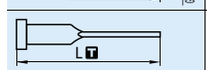
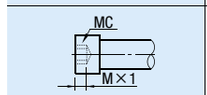
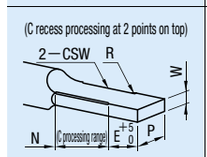
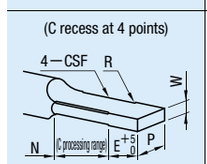
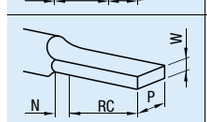
Precision Standard		
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ERVFR 4	200.00	P2.00	W0.80	R0.1	N150	AKC 0

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	

Alterations	Code	Spec.	1Code
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	
	LKC	L dimension tolerance alteration L$_{0}^{+0.02}$…$_{0}^{+0.01}$ Available when L≦200	
	MC	Tapping D8 ••• M4 D10 ••• M5 D12・15 ••• M6 Only available combination is with CSW・CSF・TMC Not available for ERVWR・ERVFR Available when D≧8	Quotation
	CSW	C-chamfering processing at 2 corners of the blade (except tip) for relief. Designation method CSW1−E25 CSW, CSF: Range of designation (W / CSW, CSF: 1.0≦W<1.5: 0.3; W≧1.5: 0.5, 1, 1.5) P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196 RC processing is prioritized when combining with RC.	
	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5−E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed	

High Speed Steel
SKH51 equivalent

R-chamfered | Precision P・W$_{-0.005}^{0}$ Free designation

R-CHAMFERED PRECISION RECTANGULAR EJECTOR PINS

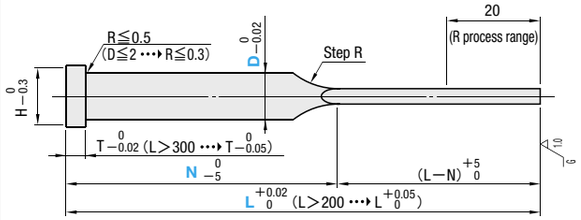
—FREE DESIGNATION・R POSITION SELECTION TYPE—

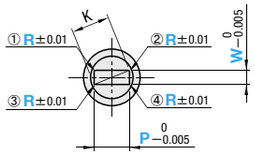
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number				Head thickness	T P・W
1 place is rounded.	2 places are rounded.	3 places are rounded.	4 places are rounded.		
ERV1AR ERV1BR	ERVWR ERV2BR ERV2CR ERV2DR	ERV3AR ERV3BR	ERVFR	4mm(T4)	0 −0.005
ERVJ1AR ERVJ1BR	ERVJWR ERVJ2BR ERVJ2CR ERVJ2DR	ERVJ3AR ERVJ3BR	ERVJFR	4・6・8mm(JIS)	

No. of R	Shape	R parts			
		①Upper left	②Upper right	③Lower left	④Lower right
1	1AR	①	—	—	—
	1BR	—	②	—	—
2	WR	①	②	—	—
	2BR	①	—	③	—
	2CR	①	—	—	④
	2DR	—	②	③	—
3	3AR	①	②	③	—
	3BR	①	②	—	④
4	FR	①	②	③	④





R position is selected from R–position Designation Shape.

P≧W　K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

Range of guaranteed shaft diameter precision (D) (Details P.1301)

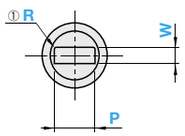
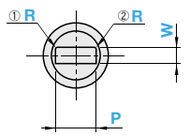
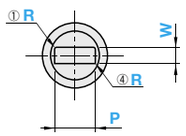
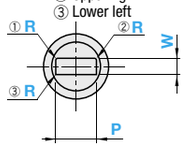
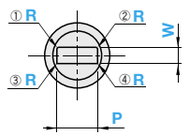
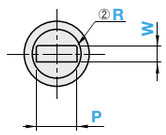
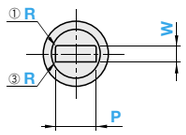
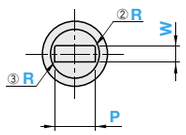
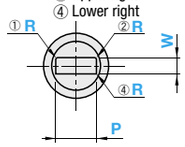
Step R (Details P.1302)

M SKH51 equivalent

H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)

■R-position Designation

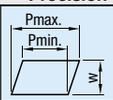
Shape				
One place of R	Two places of R: Horizontal/Longitudinal	Two places of R: Diagonal	Three places of R	Four places of R
1AR ① Upper left 	WR ① Upper left ② Upper right 	2CR ① Upper left ④ Lower right 	3AR ① Upper left ② Upper right ③ Lower left 	FR 4 places 
1BR ② Upper right 	2BR ① Upper left ③ Lower left 	2DR ② Upper right ③ Lower left 	3BR ① Upper left ② Upper right ④ Lower right 	R tolerance±0.01

Order

Part Number	L	P	W	R	N
ERV1AR 4	200.00	P2.00	W1.00	R0.1	N150

Days to Ship: Quotation

Price: Quotation

Precision Standard		
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

4mm head		JIS head		Part Number			0.01mm increments			R	Kmax.	N 1mm increments	Nmin.
H	T	H	T	Type	Shape	D	L	P	W				
3	4	3	4	ERV (4mm head D1.5～10) / ERVJ (JIS head D1.5～15)	1AR 1BR WR 2BR 2CR 2DR 3AR 3BR FR	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.05 0.1 0.15 0.2 0.3 R≦W/2−0.05	1.4	20≦(L−N)≦250	23
4		4				2	50.00～300.00	0.80～ 1.80			1.9		
5		5				2.5		0.80～ 2.30			2.4		26
6		6				3		0.80～ 2.80			2.9		27
7		7				3.5		1.00～ 3.30			3.4		
		8	6			4	50.00～300.00 (50.00～350.00)	1.00～ 3.80			3.9		29
8						4.5		1.20～ 4.30	0.40～		4.4		
		9				5	50.00～300.00 (50.00～350.00)	1.50～ 4.80			4.9		31
9						5.5		1.80～ 5.30	0.50～		5.4		
		10				6		2.00～ 5.80			5.9		33
10		11				6.5		2.00～ 6.30			6.4		40
						7		2.30～ 6.80			6.9		
11		13	8			8		2.30～ 7.80			7.9		
15		15				10		3.00～ 9.80			9.9		
—	—	17		—		12		3.50～11.80	0.80～		11.9		
		20				15		3.50～14.80	1.50～		14.9		

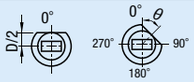
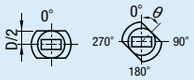
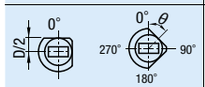
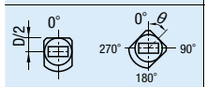
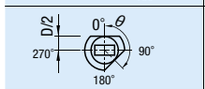
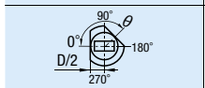
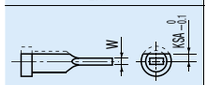
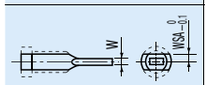
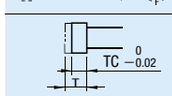
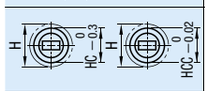
Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$(Dimention before R processing)　P≧W

Select R dimension from the range of R≦$\frac{W}{2}$−0.05.　L dimension in ( ) will be available for ERVJ□□R.

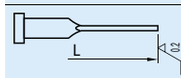
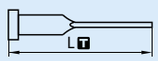
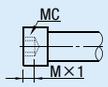
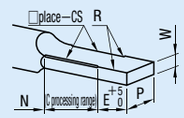
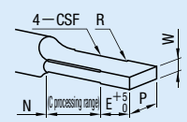
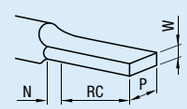
Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ERV1AR 4	200.00	P2.00	W1.00	R0.1	N150	AKC 0-CS1-E30-RC25

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	HC HCC (precision)	HC・HCC=0.1mm increments (HC) D+1≦HC<H (HCC)D+1≦HCC<H−0.3	

Quotation

Alterations	Code	Spec.	1Code
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face	
	LKC	L dimension tolerance alteration L +0.02 0 ..., +0.01 0 Available when L≦200	
	MC	Tapping D8 ••• M4 D10 ••• M5 D12・15 ••• M6 Available when D≧8 Only available combination is with CS・CSF・TMC	
(Crecess processing at desinated points) 	CS	Process C recess at the bottom of R processed (except tip). Process C recess at all places R processed. Designation method CS1−E25 Range of designation: W / CS, CSF: 1.0≦W<1.5: 0.3; W≧1.5: 0.5, 1, 1.5 P≧1.5 CS, CSF<W/2	
(C recess at 4 points) 	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5−E30 E=1mm increments 5≦E≦(L−N)−20 R process range P.196 RC processing is prioritized when combining with RC.	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed RC processing is prioritized when combining with CSW・CSF.	

Quotation

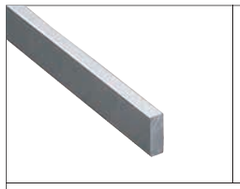
High Speed Steel
SKH51 equivalent

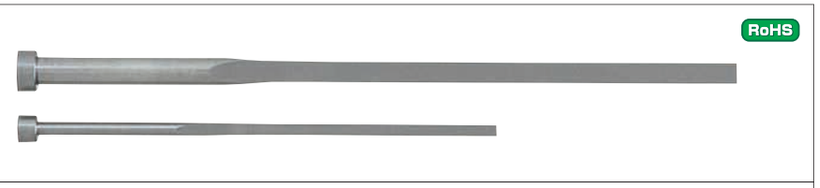
C-chamfered | P・W$^{0}_{-0.01}$ | Free designation

C-CHAMFERED RECTANGULAR EJECTOR PINS

—FREE DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

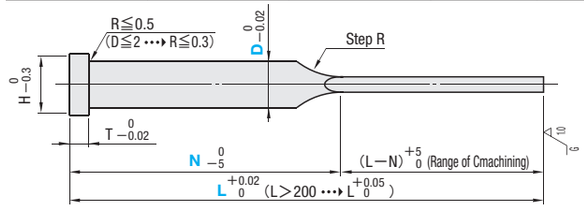


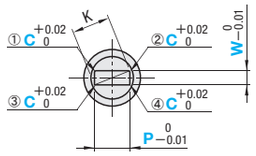


RoHS

Part Number			Head Thickness	T P・W
1 place is chamfered.	2 places are chamfered.	4 places are chamfered.		
ERF1AC ERF1BC	ERF2AC ERF2BC ERF2CC ERF2DC	ERF4AC	4mm(T4)	$^{0}_{-0.01}$
ERJF1AC ERJF1BC	ERJF2AC ERJF2BC ERJF2CC ERJF2DC	ERJF4AC	4・6・8mm(JIS)	$^{0}_{-0.01}$

No. of C	Shape	C parts			
		①Upper left	②Upper right	③Lower left	④Lower right
1	1AC	①	—	—	—
	1BC	—	②	—	—
2	2AC	①	②	—	—
	2BC	①	—	③	—
	2CC	①	—	—	④
	2DC	—	②	③	—
4	4AC	①	②	③	④





Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

C position is selected from C–position selection Shape.
P≧W K=$\sqrt{P^2+W^2}$ (Dimension before C processing)
Range of guaranteed base material hardness (Details P.1303)

M SKH51 equivalent
H 58～60HRC

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type	Shape	D	0.01mm increments L	P	W	C	Kmax.	N 1mm increments	Nmin.
3	4	3	4	ERF (4mm head) ERJF (JIS head)	1AC 1BC 2AC 2BC 2CC 2DC 4AC	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.06 0.1 0.15 0.2 0.3 C≦W/2−0.07	1.4	20≦(L−N)≦200	23
4		4				2		0.80～ 1.80			1.9		
5		5				2.5		0.80～ 2.30			2.4		26
6		6				3		0.80～ 2.80			2.9		27
7		7				3.5		1.00～ 3.30			3.4		
8		8	6			4		1.00～ 3.80			3.9		29
						4.5		1.20～ 4.30	0.40～		4.4		
		9				5		1.50～ 4.80			4.9		31
9						5.5		1.80～ 5.30	0.50～		5.4		
		10				6		2.00～ 5.80			5.9		33
10		11				7		2.30～ 6.80			6.9		40
11		13	8			8		2.30～ 7.80			7.9		
15		15				10		3.00～ 9.80			9.9		
17		17				12		3.50～11.80	0.80～		11.9		

Designate P・W dimensions within the Kmax. Select a dimension from the range of C≦W/2−0.07.

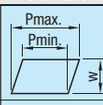
Order

Part Number	L	P	W	C	N
ERF2AC4	150.00	P3.0	W1.0	C0.1	N60

Days to Ship: Quotation

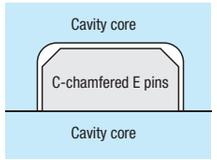
Price: Quotation

Precision Standard

Squareness of the tip corner	 W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner	Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Example

Separable Piece

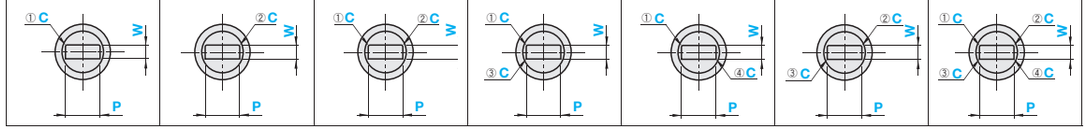


- As a result of C-chamfering machining, a clearance between the E pin and the cavity core becomes larger, enabling this construction to be used as a gas vent as well.
- C-chamfering machining is performed as far as the step R(L−N), enabling the extra machining of gas vent to be omitted.

When using a highly fluid resin, resin burrs sometimes occur, so it is recommended using the conventional rectangular ejector pins in such a case.

■C-position Designation

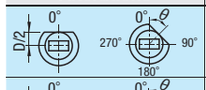
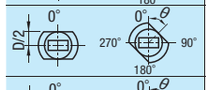
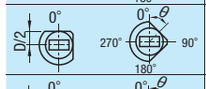
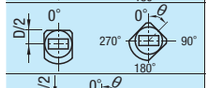
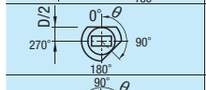
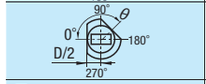
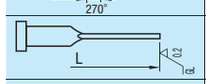
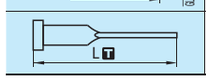
Shape						
One place of C		Two places of C				Four places of C
1AC	1BC	2AC	2BC	2CC	2DC	4AC
① Upper left	② Upper right	① Upper left ② Upper right	① Upper left ③ Lower left	① Upper left ④ Lower right	② Upper right ③ Lower left	4 places

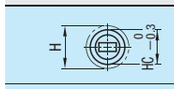
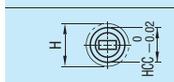
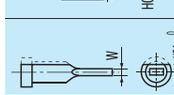
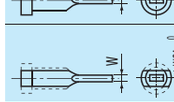
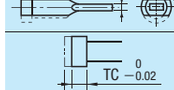
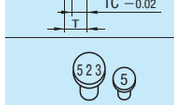


Alterations

Part Number	L	P	W	C	N	(AKC・AWC…etc.)
ERF2AC4	150.00	P3.0	W1.0	C0.1	N60	AKC90

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	TMC	Lapping on the tip face	
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ••• $^{+0.01}_{0}$ Available when L≦200	

Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments D+1≦HC<H	Quotation
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	

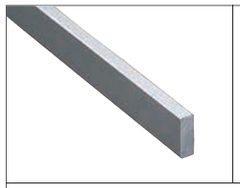
High Speed Steel
SKH51 equivalent

C-chamfered | Precision P・W$_{-0.005}^{0}$ Free designation

C-CHAMFERED PRECISION RECTANGULAR EJECTOR PINS

—FREE DESIGNATION TYPE—

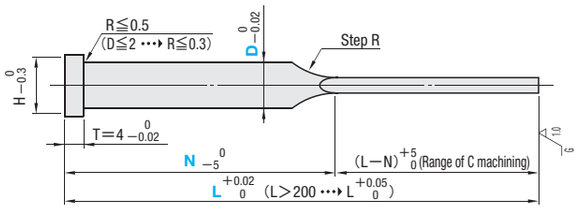
Non JIS material definition is listed on P.1351 - 1352

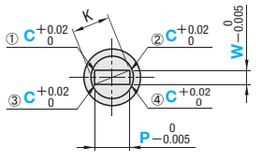


RoHS

Part Number			Head Thickness	T P・W
1 place is chamfered.	2 places are chamfered.	4 places are chamfered.		
ERVF1AC ERVF1BC	ERVF2AC ERVF2BC ERVF2CC ERVF2DC	ERVF4AC	4mm(T4)	$^{0}_{-0.005}$

No. of C	Shape	C parts			
		①Upper left	②Upper right	③Lower left	④Lower right
1	1AC	①	—	—	—
	1BC	—	②	—	—
2	2AC	①	②	—	—
	2BC	①	—	③	—
	2CC	①	—	—	④
	2DC	—	②	③	—
4	4AC	①	②	③	④





C position is selected from C–position selection Shape.

P≧W K=$\sqrt{P^2+W^2}$ (Dimension before C processing)

Range of guaranteed shaft diameter precision (D) (Details P.1301)

Step R (Details P.1302)

M SKH51 equivalent

H 58～60HRC

Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	Shape	D	0.01mm increments L	P	W	C	Kmax.	N 1mm increments	Nmin.
3	4	ERVF (4mm head)	1AC 1BC 2AC 2BC 2CC 2DC 4AC	1.5	50.00～250.00	0.60～ 1.30	0.30～	0.06 0.1 0.15 0.2 0.3 C≦W/2−0.07	1.4	20≦(L−N)≦200	23
4				2		0.80～ 1.80			1.9		
5				2.5		0.80～ 2.30			2.4		26
6				3		0.80～ 2.80			2.9		27
7				3.5		1.00～ 3.30			3.4		
				4		1.00～ 3.80			3.9		29
8				4.5		1.20～ 4.30	0.40～		4.4		
				5		1.50～ 4.80			4.9		31
9				5.5		1.80～ 5.30	0.50～		5.4		
				6		2.00～ 5.80			5.9		33
10				7		2.30～ 6.80			6.9		40
11				8		2.30～ 7.80			7.9		
15				10		3.00～ 9.80			9.9		
17				12		3.50～11.80	0.80～		11.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$(Dimension before C processing) P≧W Select C dimension from the range of C≦$\frac{W}{2}$−0.07.

Order

Part Number	L	P	W	C	N
ERVF2AC4	150.00	P3.0	W1.0	C0.1	N60

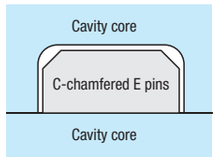
Days to Ship Quotation

Price Quotation

Precision Standard

Squareness of the tip corner	Pmax. Pmin. W — W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner	Rmax. — Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Example Separable Piece

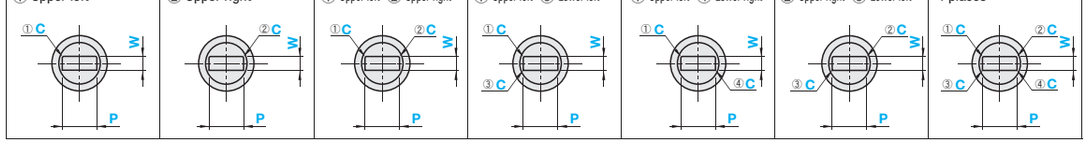


- As a result of C-chamfering machining, a clearance between the E pin and the cavity core becomes larger, enabling this construction to be used as a gas vent as well.
- C-chamfering machining is performed as far as the step R(L−N), enabling the extra machining of gas vent to be omitted.

When using a highly fluid resin, resin burrs sometimes occur, so it is recommended using the conventional rectangular ejector pins in such a case.

■C-position Designation

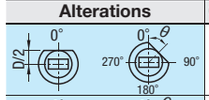
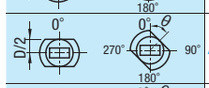
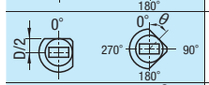
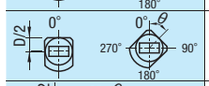
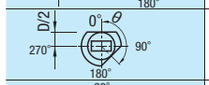
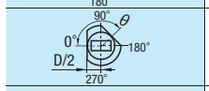
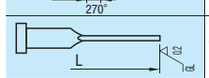
Shape						
One place of C		Two places of C				Four places of C
1AC	1BC	2AC	2BC	2CC	2DC	4AC
① Upper left	② Upper right	① Upper left ② Upper right	① Upper left ③ Lower left	① Upper left ④ Lower right	② Upper right ③ Lower left	4 places

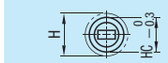
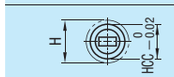
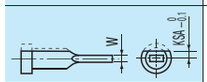
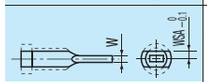
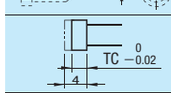


Alterations

Part Number	L	P	W	C	N	(AKC・AWC…etc.)
ERVF2AC4	150.00	P3.0	W1.0	C0.1	N60	AKC90

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	TMC	Lapping on the tip face	
	LKC	L dimension tolerance alteration L $^{+0.02}_{0}$ ..., $^{+0.01}_{0}$ Available when L≦200	

Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	Quotation
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and N remain unchanged) 4−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	

High Speed Steel
SKH51 equivalent

GAS RELEASE RECTANGULAR EJECTOR PINS

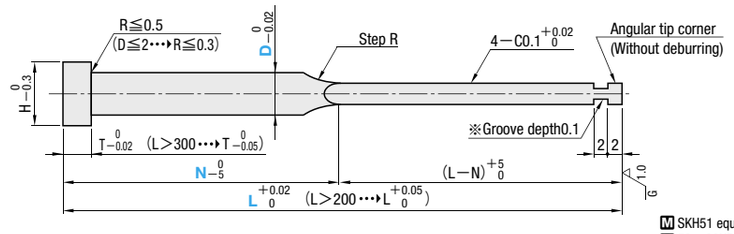
— FREE DESIGNATION TYPE —

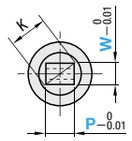
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
GV—ERF	4mm(T4)	$^{0}_{-0.01}$
GV—ERJF	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
$K=\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

※When W<1.5, the groove depth is 0.05.
Details of the tip: see below of the right page

4mm head		JIS head		Part Number			0.01mm increments			Kmax.	N 1mm increments	Nmin.
H	T	H	T	4mm head	JIS head	D	L	P	W			
3	4	3	4	GV—ERF	GV—ERJF	1.5	40.00～250.00	1.00～ 1.30	1.00～	1.4	10≦(L−N)≦250	23
4		4				2	40.00～300.00	1.00～ 1.80		1.9		
5		5				2.5		1.00～ 2.30		2.4		26
6		6				3		1.00～ 2.80		2.9		27
7		7				3.5		1.00～ 3.30		3.4		
8		8	6			4	40.00～300.00 (40.00～350.00)	1.00～ 3.80		3.9		29
						4.5		1.20～ 4.30		4.4		
9		9				5	50.00～300.00 (50.00～350.00)	1.50～ 4.80		4.9		31
						5.5		1.80～ 5.30		5.4		
		10				6		2.00～ 5.80		5.9		33
10		11				6.5		2.00～ 6.30		6.4		40
						7		2.30～ 6.80		6.9		
11		13	8			8		2.30～ 7.80		7.9		
15		15				10		3.00～ 9.80		9.9		
—	—	17		—		12		3.50～11.80		11.9		
		20				15		3.50～14.80		14.9		

Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ P≧W L dimension in ( ) will be available for GV—ERJF.

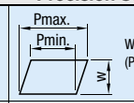
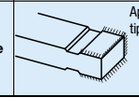
Order

Part Number	L	P	W	N
GV—ERF5.5	105.03	P3.50	W1.50	N55

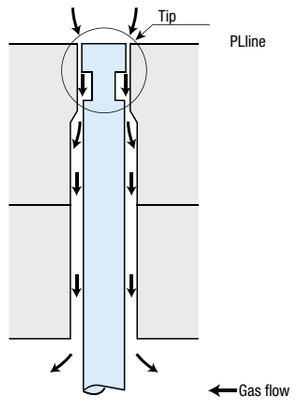
Days to Ship Quotation

Price Quotation

Precision Standard

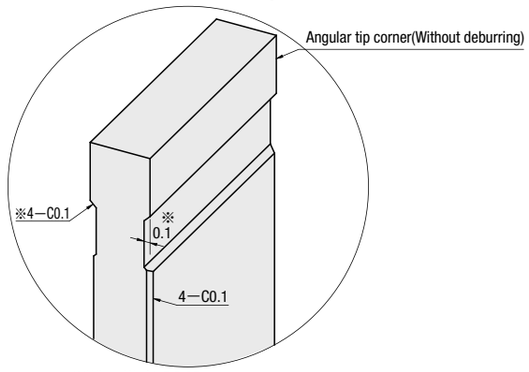
Squareness of the tip corner	 W plane as the base (Pmax.—Pmin.)≦0.02
Corner R value of the tip corner	 Approximately within 2mm from the tip is without deburring process.

Example



・The tip section releases gas through the clearance, and the gas can be more smoothly released under the groove through effects of C chamfering.
・Stress concentration is relieved and made hard to break through C chamfering.

・Details of the tip



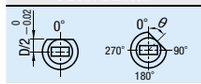
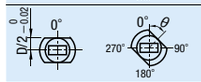
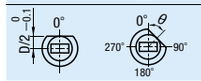
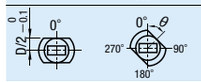
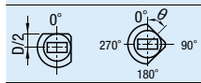
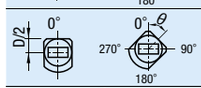
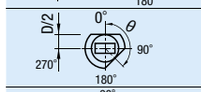
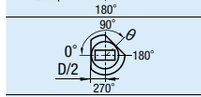
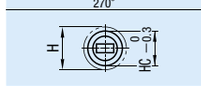
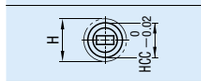
※When W<1.5,0.05.

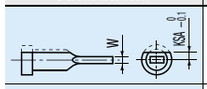
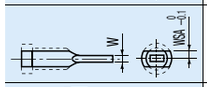
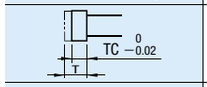
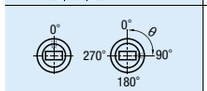
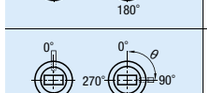
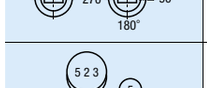
Alterations

Part Number — L — P — W — N — (AKC・AWC…etc.)
GV—ERF5.5 — 105.03 — P3.50 — W1.50 — N50 — AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK	VAK=45° increments 0≦VAK<360 ⊗ Combination with KSA/WSA not available.	
	VAW	VAW=45° increments 0≦VAW<360 ⊗ Combination with KSA/WSA not available.	
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	

Alterations	Code	Spec.	1Code
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T Dimensions N becomes shorter by (T−TC). (Dimension L remains unchanged.) T−TC≦Lmax.−L	Quotation
	NC	Dowel hole boring Available when H≧4 ⊗ Combination with other than NHC・NHN not available. How to order P.195	
	NCW	Dowel hole+Spring pin driving Available when H≧4 ⊗ Combination with other than NHC・NHN not available. How to order P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

High Speed Steel
SKH51 equivalent

PRECISION GAS RELEASE RECTANGULAR EJECTOR PINS

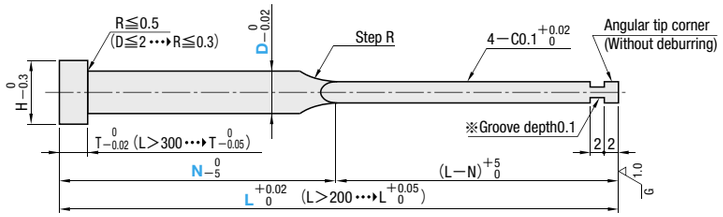
— FREE DESIGNATION TYPE —

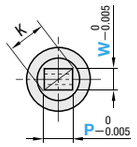
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
GV—ERVF	4mm(T4)	$^{0}_{-0.005}$
GV—ERVJ	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
$K=\sqrt{P^2+W^2}$
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

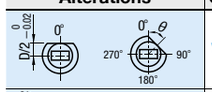
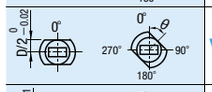
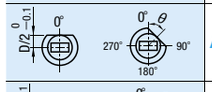
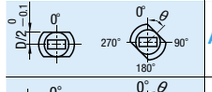
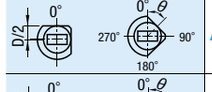
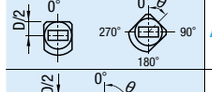
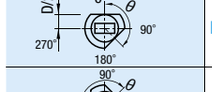
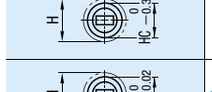
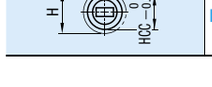
※When W<1.5, the groove depth is 0.05.
Details of the tip: see below of the right page

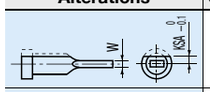
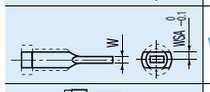
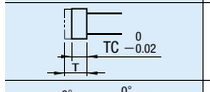
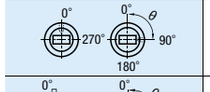
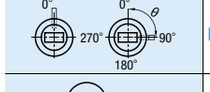
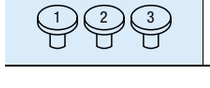
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
GV—ERVF5.5	105.03	P3.50	W1.50	N50	AWC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	VAK	VAK=45° increments 0≦VAK<360 ⊗ Combination with KSA/WSA not available.	
	VAW	VAW=45° increments 0≦VAW<360 ⊗ Combination with KSA/WSA not available.	
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H, D≧1.5	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	

Alterations	Code	Spec.	1Code
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments /2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T Dimensions N becomes shorter by (T−TC). (Dimension L remains unchanged.) T−TC≦Lmax.−L	Quotation
	NC	Dowel hole boring Available when H≧4 ⊗ Combination with other thanNHC・NHN not available. How to order P.195	
	NCW	Dowel hole+Spring pin driving Available when H≧4 ⊗ Combination with other than NHC・NHN not available. How to order P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number 4mm head	Part Number JIS head	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	Kmax.	N 1mm increments	Nmin.
3	4	3	4	GV—ERVF	GV—ERVJ	1.5	40.00～250.00	1.00～ 1.30	1.00～	1.4	10≦(L−N)≦250	23
4		4				2	40.00～300.00	1.00～ 1.80		1.9		
5		5				2.5		1.00～ 2.30		2.4		26
6		6				3		1.00～ 2.80		2.9		27
7		7				3.5		1.00～ 3.30		3.4		
8		8	6			4	40.00～300.00 (40.00～350.00)	1.00～ 3.80		3.9		29
						4.5		1.20～ 4.30		4.4		
9		9				5	50.00～300.00 (50.00～350.00)	1.50～ 4.80		4.9		31
						5.5		1.80～ 5.30		5.4		
		10				6		2.00～ 5.80		5.9		33
10		11				6.5		2.00～ 6.30		6.4		40
						7		2.30～ 6.80		6.9		
11		13	8			8		2.30～ 7.80		7.9		
15		15				10		3.00～ 9.80		9.9		
—	—	17		—		12		3.50～11.80		11.9		
		20				15		3.50～14.80		14.9		

Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ P≧W L dimension in ( ) will be available for GV—ERVJ.

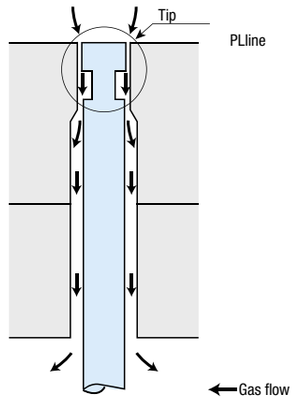
Order

Part Number	L	P	W	N
GV—ERVF5.5	105.03	P3.50	W1.50	N50

Days to Ship: Quotation

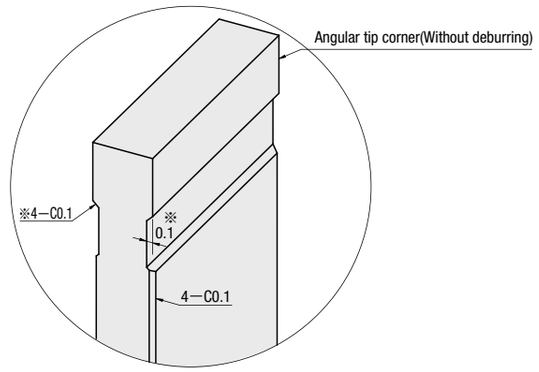
Price: Quotation

Example



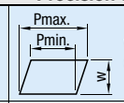
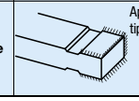
・The tip section releases gas through the clearance, and the gas can be more smoothly released under the groove through effects of C chamfering.
・Stress concentration is relieved and made hard to break through C chamfering.

・Details of the tip



※When W<1.5,0.05.

Precision Standard

Squareness of the tip corner	 W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner	 Approximately within 2mm from the tip is without deburring process.

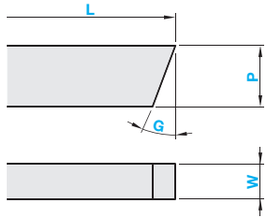
Rectangular Ejector Pins

High Speed Steel SKH51 equivalent

Precision P・W $^{0}_{-0.005}$ L dimension designation

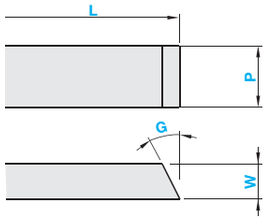
SHAPE VARIATIONS OF RECTANGULAR EJECTOR PINS WITH TIP PROCESS

1X Bezel・Angle designation



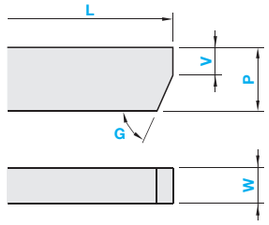
• 1°≦G≦45°

1Y Bezel・Angle designation



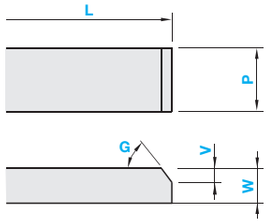
• 1°≦G≦45°

2X Partial bezel・Angle designation



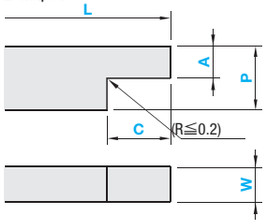
• 45°≦G≦90° • 0.3≦V<P

2Y Partial bezel・Angle designation

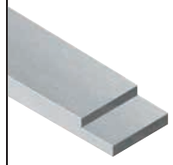


• 45°≦G≦90° • 0.3≦V<W

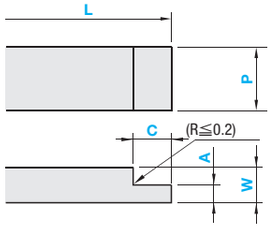
3X L-shaped



• 0.5≦C≦5 • 0.3≦A<P ⊗R designation not available.

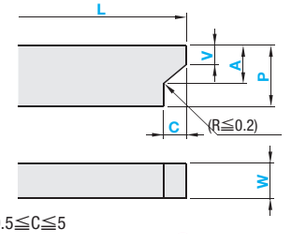


3Y L-shaped



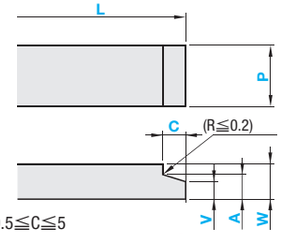
• 0.5≦C≦5 • 0.3≦A<W ⊗R designation not available.

4X Trapezoid



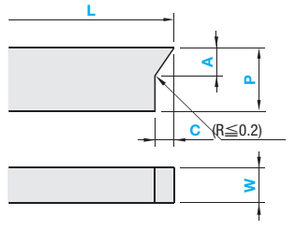
• 0.5≦C≦5
• 0.1≦V≦A • A<P ⊗R designation not available.

4Y Trapezoid



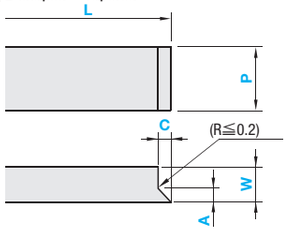
• 0.5≦C≦5
• 0.1≦V≦A • A<W ⊗R designation not available.

5X L-shaped・Tapered



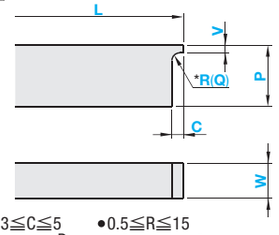
• 0.5≦C≦5 • 0.3≦A<P ⊗R designation not available.

5Y L-shaped・Tapered



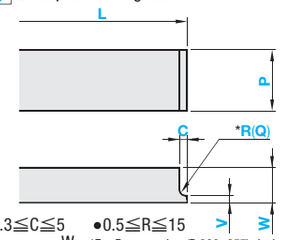
• 0.5≦C≦5 • 0.3≦A<W ⊗R designation not available.

6X L-shaped・Rdesignation



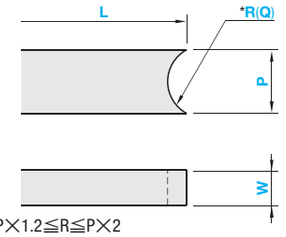
•0.3≦C≦5 •0.5≦R≦15
•0.1≦V≦ P/2 *For R processing (P.239, 257) designate R dimension with Q dimension.

6Y L-shaped・Rdesignation



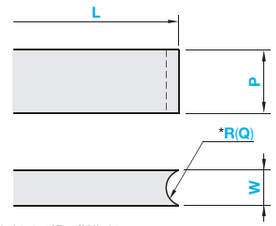
•0.3≦C≦5 •0.5≦R≦15
•0.1≦V≦ W/2 *For R processing (P.239, 257) designate R dimension with Q dimension.

7X R groove



•P×1.2≦R≦P×2
*For R processing (P.239, 257) designate R dimension with Q dimension.

7Y R groove



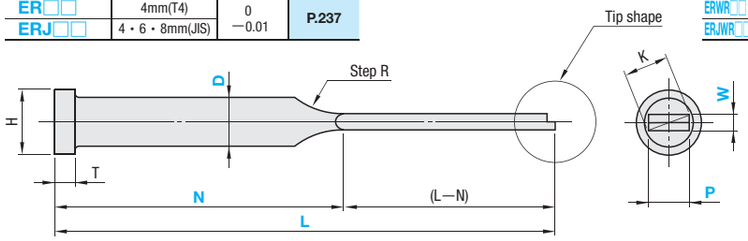
•W×1.2≦R≦W×2
*For R processing (P.239, 257) designate R dimension with Q dimension.

・Regular product

Part Number	Head Thickness	T P・W	Page
ERV□□ ERVJ□□	4mm(T4) 4・6・8mm(JIS)	0 −0.005	P.241
ER□□ ERJ□□	4mm(T4) 4・6・8mm(JIS)	0 −0.01	P.237

・R-chamfered

Part Number	Head Thickness	T P・W	Page
ERVWR□□ ERVFR□□ ERVJWR□□ ERVJFR□□	4mm(T4) 4・6・8mm(JIS)	0 −0.005	P.243
ERWR□□ ERFR□□ ERJWR□□ ERJFR□□	4mm(T4) 4・6・8mm(JIS)	0 −0.01	P.239

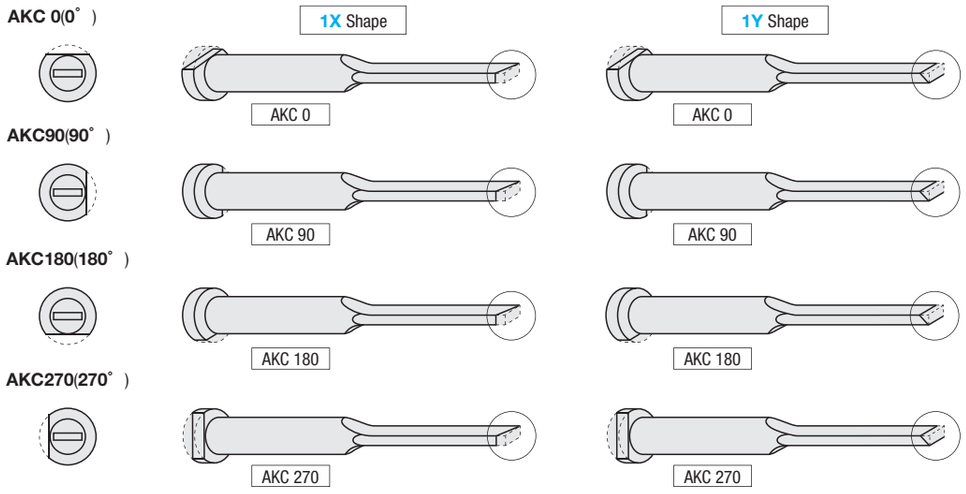


■Unit of designation

T		Unit of designation
G	±10″	1° increments
R(Q)	±0.05	0.1mm increments
A	±0.02	0.01mm increments
V	±0.02	0.01mm increments
C	±0.02	0.01mm increments

*For R processing(P.239, P.243) designate R dimension with Q dimension.

Rectangular Ejector Pins with Tip Process・Head Cutting Position

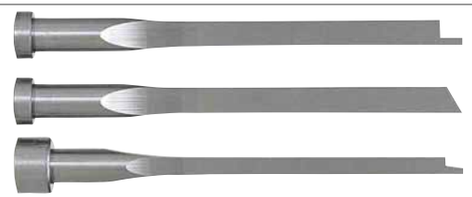


High Speed Steel
SKH51 equivalent

Shape processing
P・W$^{0}_{-0.01}$
Free designation

RECTANGULAR EJECTOR PINS WITH TIP PROCESS

Non JIS material definition is listed on P.1351 - 1352



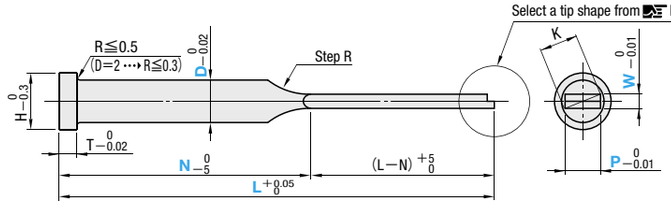
RoHS

Part Number	Head Thickness	T P・W
ER□X・ER□Y	4mm(T4)	$^{0}_{-0.01}$
ERJ□X・ERJ□Y	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

T	Unit of designation
G±10′	1° increments
R±0.05	0.1mm increments
A±0.02	0.01mm increments
V±0.02	0.01mm increments
C±0.02	0.01mm increments

Select a tip shape from P.235・236



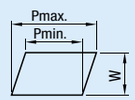
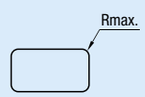
P≧W, $K=\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head		JIS head		Part Number			0.01mm increments			Kmax.	N 1mm increments	Nmin.
H	T	H	T	Type	Tip shape	D	L	P	W			
4	4	4	4	ER (4mm head) ERJ (JIS Head)	1X 1Y	2	50.00～250.00	0.80～ 1.80	0.60～	1.9	(L−N)≧20 (L−N)≦200	N≧33 (L>200 ··· N≧50)
5		5				2.5		0.80～ 2.30		2.4		
6		6				3	50.00～300.00	1.00～ 2.80		2.9		
7		7			2X 2Y	3.5		1.00～ 3.30		3.4		
		8	6			4		1.00～ 3.80		3.9		
8					3X 3Y	4.5		1.20～ 4.30		4.4		
		9				5		1.50～ 4.80		4.9		
9					4X 4Y	5.5		1.80～ 5.30	0.80～	5.4		N≧40 (L>200 ··· N≧50)
		10				6		2.00～ 5.80		5.9		
10		11			5X 5Y	6.5		2.00～ 6.30		6.4		
						7		2.30～ 6.80		6.9		
11		13	8		6X 6Y	8		2.30～ 7.80		7.9		
14		14			7X 7Y	8.5		2.30～ 8.30		8.4		
15		15				10		3.00～ 9.80		9.9		
17		17				10.5		3.00～10.30		10.4		

Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ P≧W Select a tip shape for 1X～7Y P.235・236

■Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Price **Quotation**

Order

Part Number												
Type	Tip shape	D	—	L	—	P	—	W	—	N	—	In the order of V・A・C・R・G
ER	1X	4	—	150.00	—	P3.00	—	W1.00	—	N50	—	G15

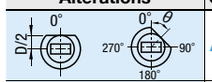
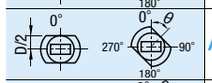
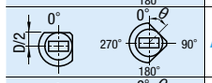
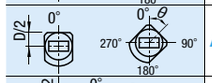
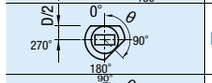
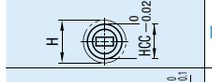
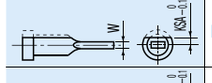
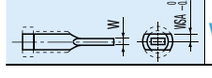
Days to Ship **Quotation**

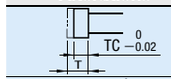
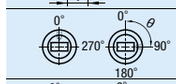
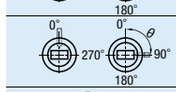
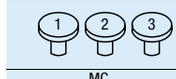
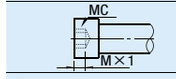
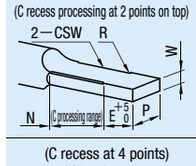
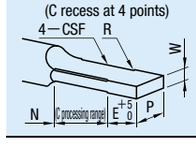
Alterations

Part Number								
	—	L	—	P	—	W	—	N	—	In the order of V・A・C・R・G	—	(AKC・AWC・NHC···etc.)
ER1X4	—	150.00	—	P3.00	—	W1.00	—	N50	—	G15	—	NHC−3

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T (Dimension L and N remain unchanged.)	
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	Quotation
	MC	Tapping D8・8.5 ··· M4 D10・10.5 ··· M5 ERJA vailable when D≧8 Only available combination is with CSW・CSF	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

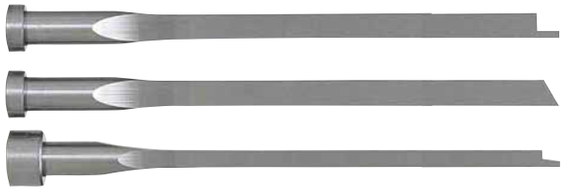
P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

High Speed Steel
SKH51 equivalent

Shape processing
P・W$^{0}_{-0.01}$
Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS WITH TIP PROCESSED

Non JIS material definition is listed on P.1351 - 1352

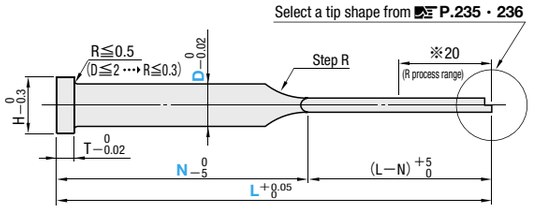


RoHS

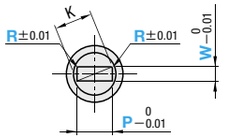
Part Number	R position	Head Thickness	T P・W
ERWR□X ERWR□Y	2 places on the upper side are rounded.	4mm(T4)	$^{0}_{-0.01}$
ERFR□X ERFR□Y	4 places are rounded.		
ERJWR□X ERJWR□Y	2 places on the upper side are rounded.	4・6・8mm(JIS)	
ERJFR□X ERJFR□Y	4 places are rounded.		

T	Unit of designation
G±10′	1° increments
R±0.05	0.1mm increments
A±0.02	0.01mm increments
V±0.02	0.01mm increments
C±0.02	0.01mm increments

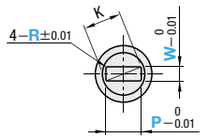
Select a tip shape from P.235・236



(2 places on the upper side are rounded.)
ERWR□X ERWR□Y
ERJWR□X ERJWR□Y



(4 places are rounded.)
ERFR□X ERFR□Y
ERJFR□X ERJFR□Y



P≧W $K=\sqrt{P^2+W^2}$ (Dimension before R processing)

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

※R processing includes the tip processing part.

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Part Number Tip shape	Part Number D	0.01mm increments L	0.01mm increments P	0.01mm increments W	R	Kmax.	N 1mm increments	Nmin.
4	4	4	4	ERWR (2 places on the upper side are rounded.) ERFR (4 places are rounded.)	ERJWR (2 places on the upper side are rounded.) ERJFR (4 places are rounded.)	1X 1Y 2X 2Y 3X 3Y 4X 4Y 5X 5Y 6X 6Y 7X 7Y	2	50.00～250.00	0.80～1.80	0.60～	0.1	1.9	20≦(L−N)≦200	N≧33 (L>200 ··· N≧50)
5		5					2.5		0.80～2.30			2.4		
6		6					3	50.00～300.00	1.00～2.80			2.9		
7		7					3.5		1.00～3.30		0.15	3.4		
		8	6				4		1.00～3.80			3.9		
8							4.5		1.20～4.30		0.2	4.4		
		9					5		1.50～4.80			4.9		
9							5.5		1.80～5.30	0.80～	0.3	5.4		
		10					6		2.00～5.80			5.9		
10		11					6.5		2.00～6.30		R≦W/2−0.05	6.4		N≧40 (L>200 ··· N≧50)
							7		2.30～6.80			6.9		
11		13	8				8		2.30～7.80			7.9		
15		15					10		3.00～9.80			9.9		

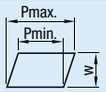
Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ (Dimension before R processing) P≧W Select R dimension from the range of R≦W/2−0.05.

Order

Part Number															
Type	Tip shape	D	—	L	—	P	—	W	—	R	—	N	—	V・In the order of A・C・Q・G
ERWR	1X	4	—	150.00	—	P3.00	—	W1.00	—	R0.1	—	N50	—	G15

Days to Ship Quotation

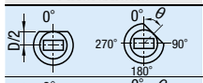
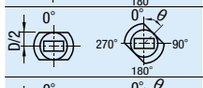
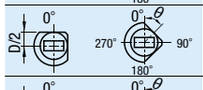
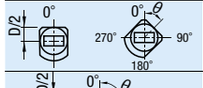
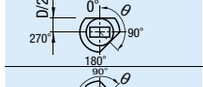
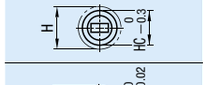
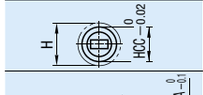
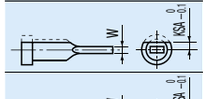
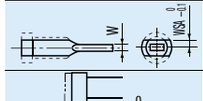
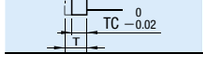
Price Quotation

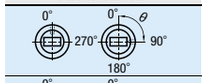
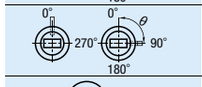
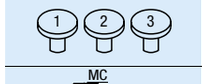
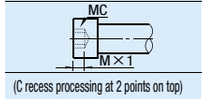
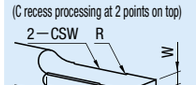
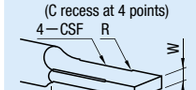
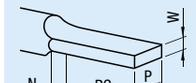
Precision Standard		
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Alterations

Part Number		L		P		W		R		N		V・In the order of A・C・Q・G		(AKC・AWC・NHC···etc.)
ERWR1X4	—	150.00	—	P3.00	—	W1.00	—	R0.1	—	N50	—	G15	—	NHC−3

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments /2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimension L and N remain unchanged.)	

Alterations	Code	Spec.	1Code
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	MC	Tapping D8 ··· M4 D10 ··· M5 ERJWR ERJFR Available when D≧8 Only available combination is with CSW・CSF	Quotation
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20
R process range P.196

Rectangular Ejector Pins
High Speed Steel SKH51 equivalent
Shape processing P・W$^{0}_{-0.01}$ Free designation

High Speed Steel
SKH51 equivalent

Shape processing: Precision P・W$_{-0.005}^{0}$ Free designation

PRECISION RECTANGULAR EJECTOR PINS WITH TIP PROCESS

Non JIS material definition is listed on P.1351 - 1352

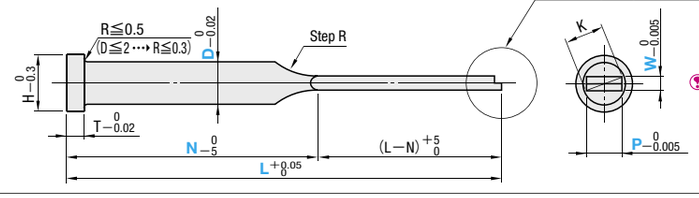
RoHS

Part Number	Head Thickness	T P・W
ERV□X・ERV□Y	4mm(T4)	$^{0}_{-0.005}$
ERVJ□X・ERVJ□Y	4・6・8mm(JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

T	Unit of designation
G±10′	1° increments
R±0.05	0.1mm increments
A±0.02	0.01mm increments
V±0.02	0.01mm increments
C±0.02	0.01mm increments

Select a tip shape from P.235・236



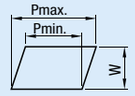
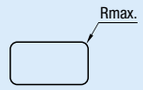
P≧W, $K=\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

4mm head H	4mm head T	JIS head H	JIS head T	Type	Tip shape	D	L	P	W	Kmax.	N 1mm increments	Nmin.
3	4	—	—	ERV (4mm head) / ERVJ (JIS Head)	1X 1Y / 2X 2Y / 3X 3Y / 4X 4Y / 5X 5Y / 6X 6Y / 7X 7Y	*1.5	50.00～250.00	0.80～1.30	0.60～	1.4	(L−N)≧20 / (L−N)≦200	N≧33 (L＞200 ··· N≧50)
4		4	4			2		0.80～1.80		1.9		
5		5				2.5		0.80～2.30		2.4		
6		6				3	50.00～300.00	1.00～2.80		2.9		
7		7				3.5		1.00～3.30		3.4		
8		8	6			4		1.00～3.80		3.9		
						4.5		1.20～4.30		4.4		
		9				5		1.50～4.80		4.9		
9						5.5		1.80～5.30	0.80～	5.4		
		10				6		2.00～5.80		5.9		
10		11				6.5		2.00～6.30		6.4		N≧40 (L＞200 ··· N≧50)
						7		2.30～6.80		6.9		
11		13	8			8		2.30～7.80		7.9		
15		15				10		3.00～9.80		9.9		

*D1.5 is only for ERV□□ Designate P・W dimensions within the Kmax. $K=\sqrt{P^2+W^2}$ P≧W Select a tip shape for 1X～7Y P.235・236

Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.01	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Order

Part Number												
Type	Tip shape	D	L	P	W	N	In the order of V・A・C・R・G					
ERV	1X	4	150.00	P3.00	W1.00	N50	G15					

Days to Ship: Quotation

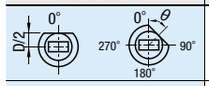
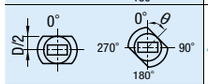
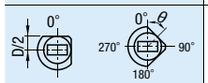
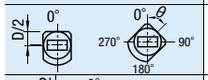
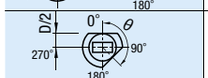
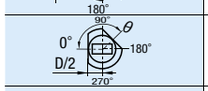
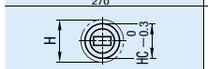
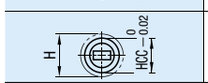
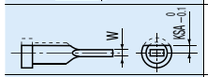
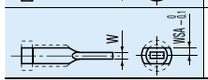
Price: Quotation

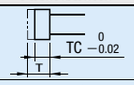
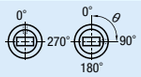
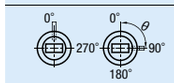
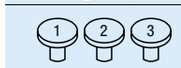
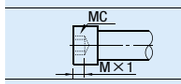
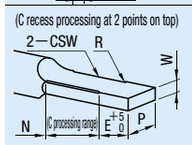
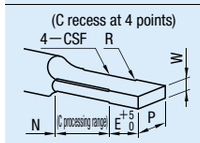
Alterations

Part Number	L	P	W	N	In the order of V・A・C・R・G	(AKC・AWC···etc.)
ERV1X4	150.00	P3.00	W1.00	N50	G15	NHC−3

Quotation

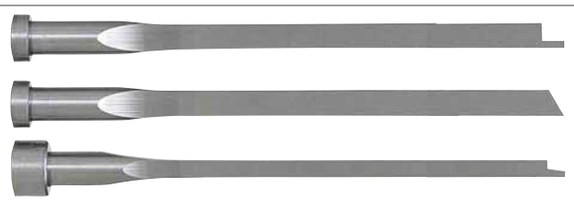
Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC＜360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC＜360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC＜360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC＜360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0＜KGA＜360	
	KGD	KGD=1° increments 0＜KGD＜360	
	HC	HC=0.1mm increments D+1≦HC＜H	
	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC＜T (Dimension L and N remain unchanged.)	
	NC	Dowel hole boring NC=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Available when H≧4 Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	Quotation
	NHN	Automatic sequential numbering on the head How to order P.196	
	MC	Tapping D8 ··· M4 D10 ··· M5 ERVJ Available when D≧8 Only available combination is with CSW・CSF	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W: 1.0≦W＜1.5 — CSW, CSF 0.3 W≧1.5 — CSW, CSF 0.5 / 1 / 1.5 P≧1.5 CSW, CSF＜W/2 E=1mm increments 5≦E≦(L−N)−20	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

PRECISION R-CHAMFERED RECTANGULAR EJECTOR PINS WITH TIP PROCESSED

Non JIS material definition is listed on P.1351 - 1352

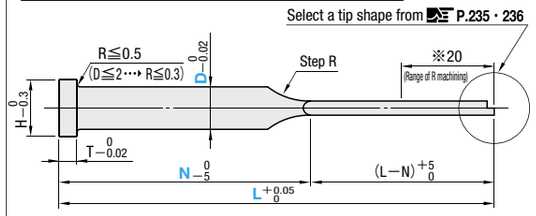


RoHS

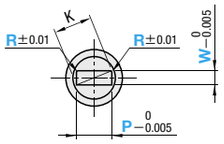
Part Number	R position	Head Thickness	T P・W
ERVWR□X ERVWR□Y	2 places on the upper side are rounded.	4mm(T4)	$^{0}_{-0.005}$
ERVFR□X ERVFR□Y	4 places are rounded.		
ERVJWR□X ERVJWR□Y	2 places on the upper side are rounded.	4・6・8mm(JIS)	
ERVJFR□X ERVJFR□Y	4 places are rounded.		

T	Unit of designation
G±10′	1° increments
R±0.05	0.1mm increments
A±0.02	0.01mm increments
V±0.02	0.01mm increments
C±0.02	0.01mm increments

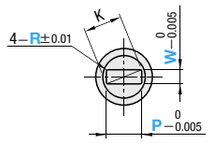
Select a tip shape from P.235・236



(2 places on the upper side are rounded.)
ERVWR□X ERVWR□Y
ERVJWR□X ERVJWR□Y



(4 places are rounded.)
ERVFR□X ERVFR□Y
ERVJFR□X ERVJFR□Y



P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

※R processing includes the tip processing part.

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Part Number Tip shape	Part Number D	0.01mm increments L	0.01mm increments P	0.01mm increments W	R	Kmax.	N 1mm increments	Nmin.
4	4	4	4	ERVWR (2 places on the upper side are rounded.) ERVFR (4 places are rounded.)	ERVJWR (2 places on the upper side are rounded.) ERVJFR (4 places are rounded.)	1X 1Y 2X 2Y 3X 3Y 4X 4Y 5X 5Y 6X 6Y 7X 7Y	2	50.00～250.00	0.80～1.80	0.60～	0.1	1.9	20≦(L−N)≦200	N≧33 (L>200··· N≧50)
5		5					2.5		0.80～2.30			2.4		
6		6					3	50.00～300.00	1.00～2.80			2.9		
7		7					3.5		1.00～3.30		0.15	3.4		
		8	6				4		1.00～3.80			3.9		
8							4.5		1.20～4.30		0.2	4.4		
		9					5		1.50～4.80			4.9		
9							5.5		1.80～5.30	0.80～	0.3	5.4		
		10					6		2.00～5.80			5.9		
10		11					6.5		2.00～6.30		R≦W/2−0.05	6.4		N≧40 (L>200··· N≧50)
							7		2.30～6.80			6.9		
11		13	8				8		2.30～7.80			7.9		
15		15					10		3.00～9.80			9.9		

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ (Dimension before R processing) P≧W Select R dimension from the range of R≦$\frac{W}{2}$−0.05.

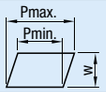
Order

Part Number									
Type	Tip shape	D	L	P	W	R	N	V・In the order of A・C・Q・G
ERVWR	1X	4	150.00	P3.00	W1.00	R0.1	N50	G15

Days to Ship Quotation

Price Quotation

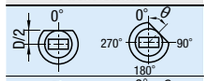
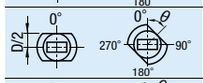
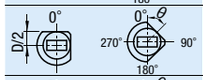
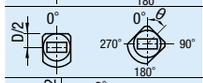
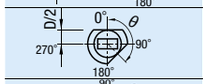
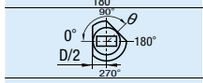
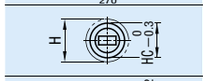
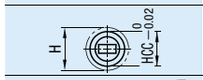
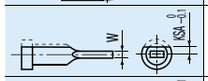
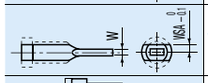
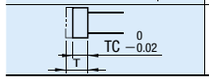
Precision Standard

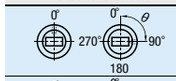
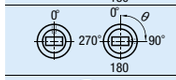
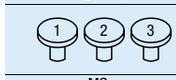
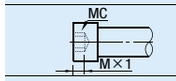
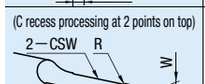
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Alterations

Part Number	L	P	W	R	N	V・In the order of A・C・Q・G	(AKC・AWC・NHC···etc.)
ERVWR1X4	150.00	P3.00	W1.00	R0.1	N50	G15	NHC−3

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments T/2≦TC<T (Dimension L and N remain unchanged.)	

Alterations	Code	Spec.	1Code
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	MC	Tapping D8 ··· M4 D10 ··· M5 ERVJWR・ERVJFR Available when D≧8 Only available combination is with CSW・CSF	Quotation
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
(C recess at 4 points)	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

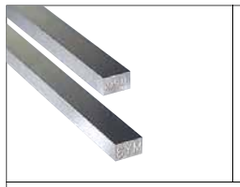
P≧1.5
CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20
R process range P.196

High Speed Steel
SKH51 equivalent

With Engraving
P・W$^{0}_{-0.01}$
Free designation

RECTANGULAR EJECTOR PINS WITH ENGRAVING

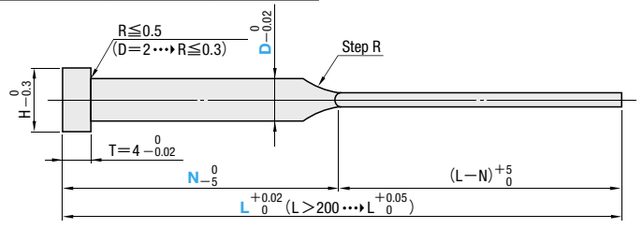
Non JIS material definition is listed on P.1351 - 1352

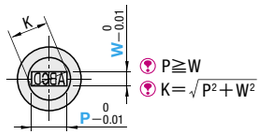


RoHS

Part Number	Head Thickness	T P・W
ERF□M / ERF□MR (Sequential numbering designation)	4mm	$^{0}_{-0.01}$

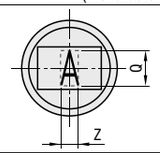
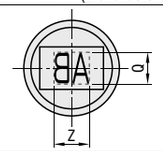
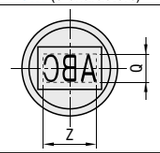
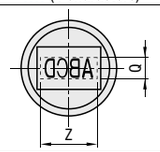
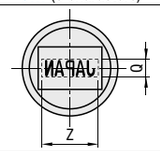
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58~60HRC
Range of guaranteed base material hardness (Details P.1303)

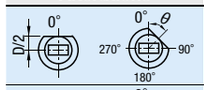
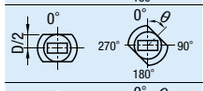
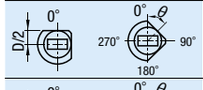
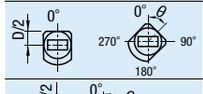
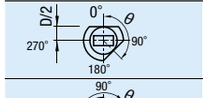
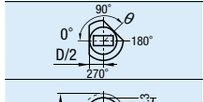
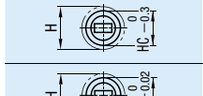
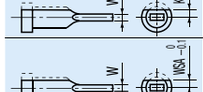
1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.80≦P≦10.30	2.30≦P≦10.30	3.10≦P≦10.30	3.90≦P≦10.30	5.00≦P≦10.30

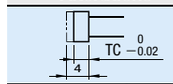
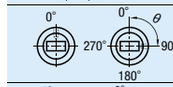
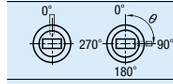
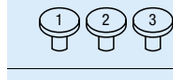
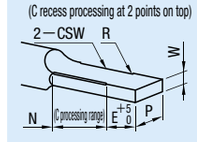
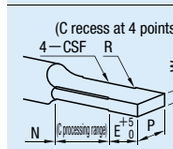
Alterations

Part Number	L	P	W	N	Characters for engraving (0~9,A~Z,／><+−⬚・.)	(AKC・AWC…etc.)
ERF3M 5	120.25	P3.50	W1.5	N60	MY3	AWC 60

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and N remain unchanged) 4−TC≦Lmax.−L	Quotation
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Unit of designation CSW1−E25 CSW, CSF: Range of designation W: 1.0≦W<1.5 — CSW, CSF: 0.3 W≧1.5 — CSW, CSF: 0.5 / 1 / 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Unit of designation CSF0.5−E30	

H	Part Number Type	Character	D	0.01mm increments L	P	W	Kmax.	N 1mm increments	Nmin.
4	ERF	1M	2	40.00~250.00	0.80~ 1.70	0.30~	1.9	10≦(L−N)≦200	23
5			2.5		0.80~ 2.20		2.4		26
6		2M	3		1.00~ 2.70		2.9		27
7			3.5		1.00~ 3.20		3.4		
		3M	4		1.00~ 3.70		3.9		29
8			4.5		1.20~ 4.20		4.4		
		4M	5	50.00~250.00	1.50~ 4.80	0.40~	4.9		31
9		5M	5.5		1.80~ 5.30		5.4		
			6		2.00~ 5.80	0.50~	5.9		33
10		Sequential numbering designation	6.5		2.00~ 6.30		6.4		40
			7		2.30~ 6.80		6.9		
11		1MR	8		2.30~ 7.80		7.9		
14		2MR	8.5		2.30~ 8.30		8.4		
15			10		3.00~ 9.80		9.9		
17			10.5		3.00~10.30		10.4		

Characters for engraving (Round Gothic type): 0 1 2 3 4 / 5 6 7 8 9 / A B C D E / F G H I J / K L M N O / P Q R S T / U V W X Y / Z

Name	Slash	Greater	Less
Characters for engraving	／	>	<
Order code	¥	>	<

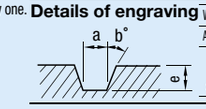
Name	Plus	Minus	Space
Characters for engraving	+	−	⬚
Order code	+	#	%

Name	Centered dot	Period
Characters for engraving	・	.
Order code	@	&

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W
Use ¥ for indicating ／ (slash), # for − (minus), % for ⬚ (space), @ for ・ (centered dot), and & for . (period)
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the ones digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the tens digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.
・When placing the order for 5 pieces of ERF1MR2−150−P1.5−W0.5−N70−1, characters for engraving "1 2 3 4 5"
・When placing the order for 3 pieces of ERF1MR3−150−P2.5−W1.2−N70−Z, characters for engraving "Z A B"
・When placing the order for 4 pieces of ERF2MR4−100−P3.0−W2.0−N50−01, characters for engraving "01 02 03 04"
・When placing the order for 4 pieces of ERF2MR4−100−P3.5−W2.2−N50−A8, characters for engraving "A8 A9 B0 B1"
・When placing the order for 6 pieces of ERF2MR6−150−P5.0−W2.6−N70−, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Ejector pins	Finished products
Reversed reading (Concave character)	Normal character (Convex character)

Details of engraving



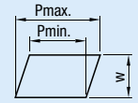
Width of engraving (a)	0.1×Q~0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	・When P≦0.99: 0.03±0.01 ・When P≧1.00: 0.05±0.02

■Relationship between Dimension (P) and Character Size (Q,Z)

P (Horizontal size)	W (Vertical size)	Q (Character Height)	Z(Character Width) 1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
P≧Z+0.2	0.30~ 0.39	0.2	0.1	0.6	0.9	1.2	1.5
	0.40~ 0.49	0.25	0.15	0.65	1	1.3	1.65
	0.50~ 0.59	0.35	0.2	0.75	1.15	1.5	1.9
	0.60~ 0.79	0.4	0.2	0.8	1.2	1.6	2
	0.80~ 0.99	0.6	0.3	1	1.5	2	2.5
	1.00~ 1.29	0.8	0.4	1.2	1.8	2.4	3
	1.30~ 1.49	1.0	0.5	1.4	2.1	2.9	3.7
	1.50~ 1.99	1.2	0.6	1.6	2.4	3.3	4.2
	2.00~ 2.49	1.5	0.8	2	3.2	4.4	5.6
	2.50~ 3.49	2.0	1.0	2.6	4.2	5.8	7
	3.50~ 4.49	3.0	1.5	3.9	5.9	8	9.7
	4.50~ 5.49	4.0	2.0	5.2	7.5	10.2	12.4
	5.50~10.30	5.0	2.5	6.2	9.0	12.2	14.9

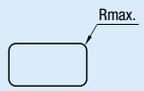
■Precision Standard

Squareness of the tip corner



W plane as the base
(Pmax.−Pmin.)≦0.02

Corner R value of the tip corner



Rmax.≦0.03 (Trimming R)
The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Order

Part Number Type	Character	D	L	P	W	N	Characters for engraving (0~9, A~Z ／><+− ⬚.)
ERF	3M	5	120.25	P3.50	W1.5	N60	MY3

Days to Ship: Quotation

Price: Quotation

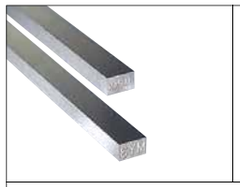
Rectangular Ejector Pins
High Speed Steel SKH51 equivalent
With Engraving P・W$^{0}_{-0.01}$ Free designation

High Speed Steel
SKH51 equivalent

With Engraving
P・W$_{-0.01}^{0}$
Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS WITH ENGRAVING

Non JIS material definition is listed on P.1351 - 1352

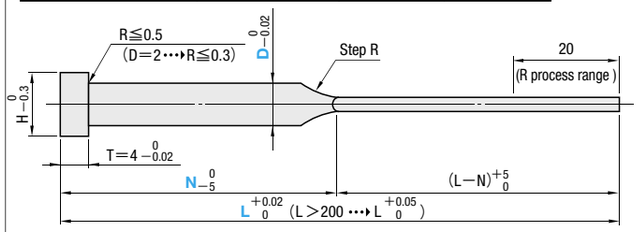


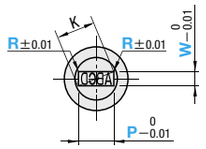
RoHS

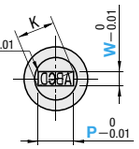
Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERWR□M ERWR□MR	ERFR□M ERFR□MR	4mm	$^{0}_{-0.01}$

(2 places on the upper side are rounded.) ERWR□M / ERWR□MR

(4 places are rounded.) ERFR□M / ERFR□MR



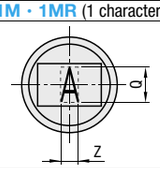
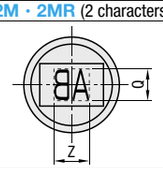
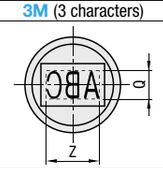
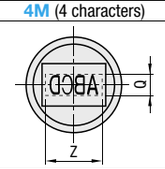
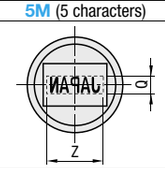




Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

P≧W K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

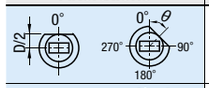
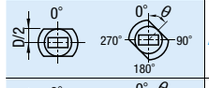
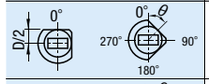
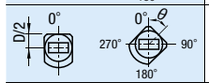
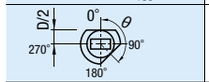
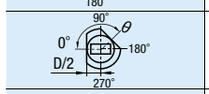
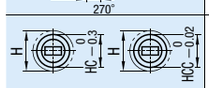
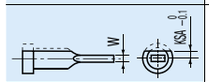
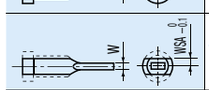
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

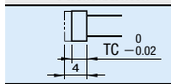
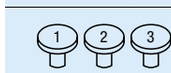
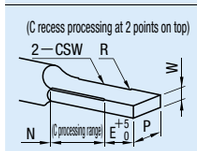
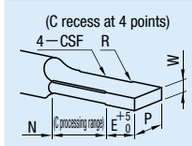
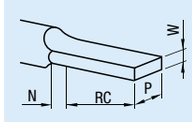
1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.80≦P≦10.30	2.30≦P≦10.30	3.10≦P≦10.30	3.90≦P≦10.30	5.00≦P≦10.30

Alterations

Part Number	L	P	W	R	N	Characters for engraving (0~9,A~Z,/>><+−⬚•.)	(AKC・AWC…etc.)
ERWR3M 5	120.25	P3.50	W1.50	R0.1	N60	MY3	AWC 60

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC	HC(HCC)=0.1mm increments ・HC ••• Head diameter tolerance ・HCC ••• Head diameter tolerance$_{-0.02}^{0}$ D+1≦HC<H, DH≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and N remain unchanged) 4−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W — CSW, CSF 1.0≦W<1.5 — 0.3 W≧1.5 — 0.5, 1, 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196	Quotation
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed	

H	Part Number Type	Character	D	0.01mm increments L	P	W	R	Kmax.	N 1mm increments	Nmin.
4	ERWR (2 places on the upper side are rounded.) ERFR (4 places are rounded.)	1M	2	50.00～250.00	0.80～1.80	0.30～	0.1	1.9	20≦(L−N)≦200	23
5			2.5		0.80～2.30			2.4		26
6		2M	3		1.00～2.80			2.9		27
7		3M	3.5		1.00～3.30		0.15	3.4		
		4M	4		1.00～3.80			3.9		29
8		5M	4.5		1.20～4.30		0.2	4.4		
			5		1.50～4.80	0.40～		4.9		31
9		(Sequential numbering designation)	5.5		1.80～5.30		0.3	5.4		
			6		2.00～5.80	0.50～	R≦W/2−0.05	5.9		33
10			6.5		2.00～6.30			6.4		40
		1MR	7		2.30～6.80			6.9		
11		2MR	8		2.30～7.80			7.9		
15			10		3.00～9.80			9.9		

Characters for engraving (Round Gothic type): 0 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

(others)

Name	Slash	Greater	Less
Characters for engraving	/	>	<
Order code	¥	>	<

Name	Plus	Minus	Space
Characters for engraving	+	−	⬚
Order code	+	#	%

Name	Centered dot	Period
Characters for engraving	•	.
Order code	@	&

Use ¥ for indicating /(slash), # for −(minus), % for ⬚(space), @ for • (centered dot), and & for . (period).
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the ones digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the tens digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

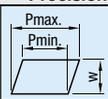
- When placing the order for 5 pieces of ERWR1MR2—150—P1.5—W0.5—R0.1—N70—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of ERWR1MR3—150—P2.5—W1.2—R0.1—N70—Z, characters for engraving "Z A B"
- When placing the order for 4 pieces of ERWR2MR4—100—P3.0—W2.0—R0.1—N50—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of ERWR2MR4—100—P3.5—W2.2—R0.1—N50—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of ERWR2MR6—150—P5.0—W2.6—R0.1—N70—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Order

Part Number Type	Character	D	L	P	W	R	N	Characters for engraving (0~9, A~Z /><+− ⬚•.)
ERWR	3M	5	120.25	P3.50	W1.50	R0.1	N60	MY3

Days to Ship: Quotation

Price: Quotation

Precision Standard		
Squareness of the tip corner		W plane as the base (Pmax.−Pmin.)≦0.02
Corner R value of the tip corner		Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

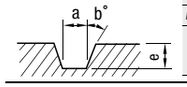
With Engraving
P・W$_{-0.01}^{0}$
Free designation

■ Relationship between Dimension (P)・(W) and Character Size (Q)・(Z)

P (Horizontal size)	W (Vertical size)	Q (Character Height)	Z(Character Width) 1M・1MR	2M・2MR	3M	4M	5M
P≧Z+0.2	0.30～ 0.39	0.2	0.1	0.6	0.9	1.2	1.5
	0.40～ 0.49	0.25	0.15	0.65	1	1.3	1.65
	0.50～ 0.59	0.35	0.18	0.76	1.14	1.52	1.9
	0.60～ 0.79	0.4	0.2	0.8	1.2	1.6	2
	0.80～ 0.99	0.6	0.3	1	1.5	2	2.5
	1.00～ 1.29	0.8	0.4	1.2	1.8	2.4	3.0
	1.30～ 1.49	1.0	0.5	1.4	2.1	2.9	3.7
	1.50～ 1.99	1.2	0.6	1.6	2.4	3.3	4.2
	2.00～ 2.49	1.5	0.8	2	3.2	4.4	5.6
	2.50～ 3.49	2.0	1.0	2.6	4.2	5.8	7
	3.50～ 4.49	3.0	1.5	3.9	5.9	8	9.7
	4.50～ 5.49	4.0	2.0	5.2	7.5	10.2	12.4
	5.50～10.30	5.0	2.5	6.2	9.0	12.2	14.9

Ejector pins	Finished products
Reversed reading (Concave character)	Normal character (Convex character)

Details of engraving



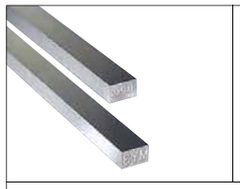
Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	・When P≦0.99, 0.03±0.01 ・When P≧1.00, 0.05±0.02

High Speed Steel
SKH51 equivalent

With Engraving
P・W$_{-0.005}^{0}$
Free designation

PRECISION RECTANGULAR EJECTOR PINS WITH ENGRAVING

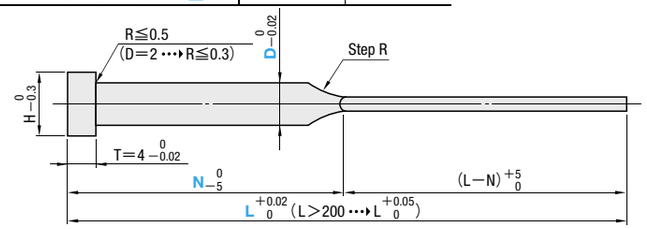
Non JIS material definition is listed on P.1351 - 1352

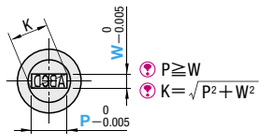


RoHS

Part Number	Head Thickness	T P・W
ERVF□M (Sequential numbering designation) ERVF□MR	4mm	$^{0}_{-0.005}$

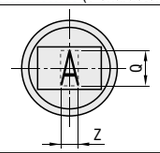
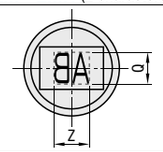
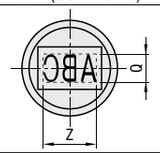
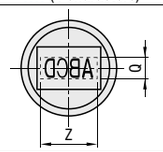
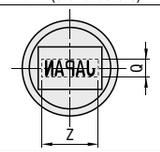
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

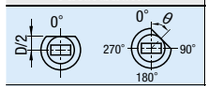
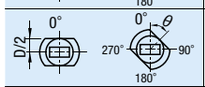
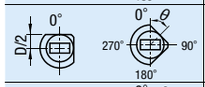
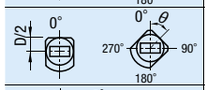
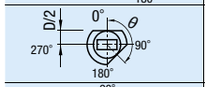
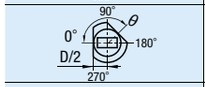
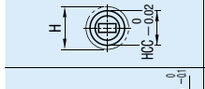
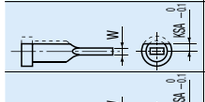
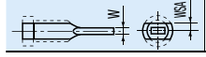
1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.80≦P≦10.30	2.30≦P≦10.30	3.10≦P≦10.30	3.90≦P≦10.30	5.00≦P≦10.30

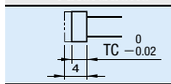
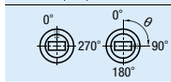
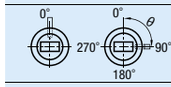
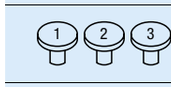
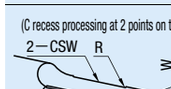
Alterations

Part Number — L — P — W — N — Characters for engraving (0～9,A～Z,/><+−⬚・.) — (AKC・AWC…etc.)
ERVF3M 5 — 120.25 — P3.50 — W1.5 — N60 — MY3 — AWC 60

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and N remain unchanged) 4−TC≦Lmax.−L	Quotation
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W: 1.0≦W<1.5 — CSW, CSF: 0.3 W≧1.5 — 0.5, 1, 1.5	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20	

H	Part Number Type	Character	D	0.01mm increments L	P	W	Kmax.	N 1mm increments	Nmin.
4	ERVF	1M	2	40.00～250.00	0.80～ 1.70	0.30～	1.9	10≦(L−N)≦200	23
5			2.5		0.80～ 2.20		2.4		26
6		2M	3		1.00～ 2.70		2.9		27
7			3.5		1.00～ 3.20		3.4		
		3M	4		1.00～ 3.70		3.9		29
8			4.5		1.20～ 4.20		4.4		
		4M	5	50.00～250.00	1.50～ 4.80	0.40～	4.9		31
9		5M	5.5		1.80～ 5.30	0.50～	5.4		
			6		2.00～ 5.80		5.9		33
10		Sequential numbering designation	6.5		2.00～ 6.30		6.4		40
			7		2.30～ 6.80		6.9		
11		1MR	8		2.30～ 7.80		7.9		
14		2MR	8.5		2.30～ 8.30		8.4		
15			10		3.00～ 9.80		9.9		
17			10.5		3.00～10.30		10.4		

Characters for engraving (Round Gothic type)

0 1 2 3 4
5 6 7 8 9
A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z

Name	Slash	Greater	Less
Characters for engraving	/	>	<
Order code	¥	>	<

Name	Plus	Minus	Space
Characters for engraving	+	−	⬚
Order code	+	#	%

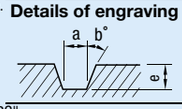
Name	Centered dot	Period
Characters for engraving	・	.
Order code	@	&

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W
Use ¥ for indicating / (slash), # for − (minus), % for ⬚ (space), @ for ・ (centered dot), and & for . (period)
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the ones digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the tens digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

- When placing the order for 5 pieces of ERVF1MR2−150−P1.5−W0.5−N70−1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of ERVF1MR3−150−P2.5−W1.2−N70−Z, characters for engraving "Z A B"
- When placing the order for 4 pieces of ERVF2MR4−100−P3.0−W2.0−N50−01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of ERVF2MR4−100−P3.5−W2.2−N50−A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of ERVF2MR6−150−P5.0−W2.6−N70−1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Ejector pins	Finished products
Reversed reading (Concave character)	Normal character (Convex character)

Details of engraving



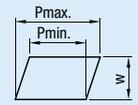
Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	・When P≦0.99 0.03±0.01 ・When P≧1.00 0.05±0.02

■Relationship between Dimension (P) and Character Size (Q,Z)

P (Horizontal size)	W (Vertical size)	Q (Character Height)	Z(Character Width) 1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
P≧Z+0.2	0.30～ 0.39	0.2	0.1	0.6	0.9	1.2	1.5
	0.40～ 0.49	0.25	0.15	0.65	1	1.3	1.65
	0.50～ 0.59	0.35	0.2	0.75	1.15	1.5	1.9
	0.60～ 0.79	0.4	0.2	0.8	1.2	1.6	2
	0.80～ 0.99	0.6	0.3	1	1.5	2	2.5
	1.00～ 1.29	0.8	0.4	1.2	1.8	2.4	3.0
	1.30～ 1.49	1.0	0.5	1.4	2.1	2.9	3.7
	1.50～ 1.99	1.2	0.6	1.6	2.4	3.3	4.2
	2.00～ 2.49	1.5	0.8	2	3.2	4.4	5.6
	2.50～ 3.49	2.0	1.0	2.6	4.2	5.8	7
	3.50～ 4.49	3.0	1.5	3.9	5.9	8	9.7
	4.50～ 5.49	4.0	2.0	5.2	7.5	10.2	12.4
	5.50～10.30	5.0	2.5	6.2	9.0	12.2	14.9

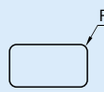
■Precision Standard

Squareness of the tip corner



W plane as the base
(Pmax.−Pmin.)≦0.01

Corner R value of the tip corner



Rmax.≦0.03 (Trimming R)
The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Order

Part Number — L — P — W — N — Characters for engraving (0～9, A～Z /><+−⬚.)
Type Character D
ERVF 3M 5 — 120.25 — P3.50 — W1.5 — N60 — MY3

Days to Ship: Quotation

Price: Quotation

High Speed Steel
SKH51 equivalent

With Engraving
P・W$_{-0.005}^{0}$
Free designation

PRECISION R-CHAMFERED RECTANGULAR EJECTOR PINS WITH ENGRAVING

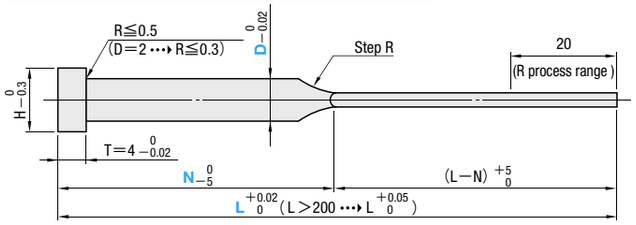
Non JIS material definition is listed on P.1351 - 1352

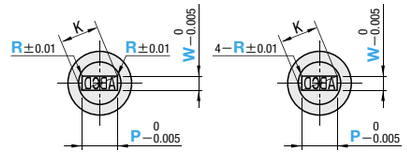
RoHS

Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERVWR□M ERVWR□MR	ERVFR□M ERVFR□MR	4mm	$^{0}_{-0.005}$

(2 places on the upper side are rounded.)
ERVWR□M
ERVWR□MR

(4 places are rounded.)
ERVFR□M
ERVFR□MR



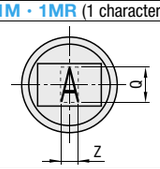
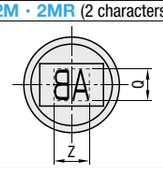
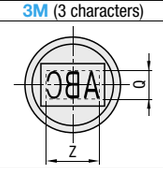
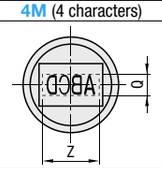
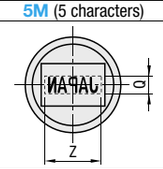


P≧W

K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

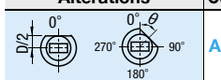
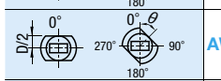
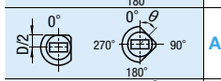
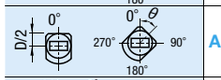
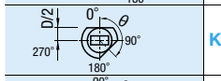
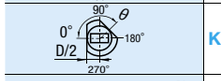
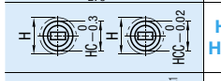
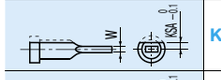
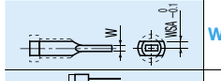
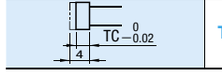
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)

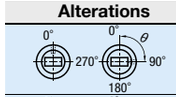
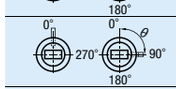
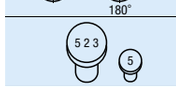
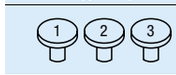
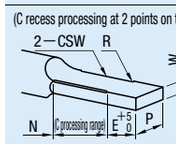
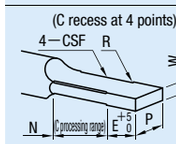
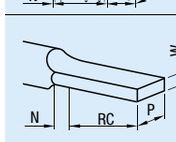
1M・1MR (1 character)	2M・2MR (2 characters)	3M (3 characters)	4M (4 characters)	5M (5 characters)
				
0.80≦P≦10.30	2.30≦P≦10.30	3.10≦P≦10.30	3.90≦P≦10.30	5.00≦P≦10.30

Alterations

Part Number	L	P	W	R	N	Characters for engraving (0~9,A~Z,/><+−□・.)	(AKC・AWC…etc.)
ERVFR3M	5	120.25	P3.50	W1.50	R0.1	N60	MY3	AWC 60

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC HCC	HC(HCC)=0.1mm increments ・HC ••• Head diameter tolerance$_{-0.3}^{0}$ ・HCC ••• Head diameter tolerance$_{-0.02}^{0}$ D+1≦HC<H,D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 2.0≦TC<4 (Dimensions L and N remain unchanged) 4−TC≦Lmax.−L	

Alterations	Code	Spec.	1Code
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W: 1.0≦W<1.5 — CSW, CSF: 0.3 W≧1.5 — 0.5, 1, 1.5 P≧1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196	Quotation
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	
	RC	Designate the length of R processed part. 5≦RC≦(L−N)−30 and RC≦40 RC=1mm increments Designation method RC25 Adds RC recess processing at all places R processed	

H	Part Number Type	Character	D	0.01mm increments L	P	W	R	Kmax.	N 1mm increments	Nmin.	Characters for engraving (Round Gothic type)
4	ERVWR (2 places on the upper side are rounded.) ERVFR (4 places are rounded.)	1M 2M 3M 4M 5M (Sequential numbering designation) 1MR 2MR	2	50.00～250.00	0.80～1.80	0.30～	0.1 0.15 0.2 0.3 R≦W/2−0.05	1.9	20≦(L−N)≦200	23	0 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z (others)
5			2.5		0.80～2.30			2.4		26	
6			3		1.00～2.80			2.9		27	
7			3.5		1.00～3.30			3.4			
			4		1.00～3.80			3.9		29	
8			4.5		1.20～4.30			4.4			
			5		1.50～4.80	0.40～		4.9		31	
9			5.5		1.80～5.30			5.4			
			6		2.00～5.80	0.50～		5.9		33	
10			6.5		2.00～6.30			6.4		40	
			7		2.30～6.80			6.9			
11			8		2.30～7.80			7.9			
15			10		3.00～9.80			9.9			

Name	Slash	Greater	Less
Characters for engraving	/	>	<
Order code	¥	>	<

Name	Plus	Minus	Space
Characters for engraving	+	−	□
Order code	+	#	%

Name	Centered dot	Period
Characters for engraving	・	.
Order code	@	&

Use ¥ for indicating / (slash), # for − (minus), % for □ (space), @ for ・ (centered dot), and & for . (period)
1MR and 2MR are sequential numbering designation. In the case of bulk order of two or more ejector pins with the same size, the sequential numbering engraving is performed.
In case of 1MR,"0" is next to "9" while "A" is next to "Z".
In case of 2MR, the ones digit is sequential, and if next to "9" or "Z", it starts from "0" or "A" while the tens digit is increased by one.
In case of 1MR and 2MR, other engraving characters cannot be used for designation.

- When placing the order for 5 pieces of ERVWR1MR2—150—P1.5—W0.5—R0.1—N70—1, characters for engraving "1 2 3 4 5"
- When placing the order for 3 pieces of ERVWR1MR3—150—P2.5—W1.2—R0.1—N70—Z, characters for engraving "Z A B"
- When placing the order for 4 pieces of ERVWR2MR4—100—P3.0—W2.0—R0.1—N50—01, characters for engraving "01 02 03 04"
- When placing the order for 4 pieces of ERVWR2MR4—100—P3.5—W2.2—R0.1—N50—A8, characters for engraving "A8 A9 B0 B1"
- When placing the order for 6 pieces of ERVWR2MR6—150—P5.0—W2.6—R0.1—N70—1X, characters for engraving "1X 1Y 1Z 2A 2B 2C"

Order

Part Number Type	Character	D	L	P	W	R	N	Characters for engraving (0~9, A~Z /><+− □・.)
ERVFR	3M	5	120.25	P3.50	W1.50	R0.1	N60	MY3

Days to Ship: Quotation

Price: Quotation

Precision Standard

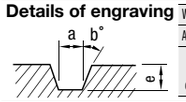
Squareness of the tip corner	Pmax. Pmin. W W plane as the base (Pmax.−Pmin.)≦0.01
Corner R value of the tip corner	Rmax. Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

■Relationship between Dimension (P)・(W) and Character Size (Q)・(Z)

P (Horizontal size)	W (Vertical size)	Q (Character Height)	Z(Character Width) 1M・1MR	2M・2MR	3M	4M	5M
P≧Z+0.2	0.30～ 0.39	0.2	0.1	0.6	0.9	1.2	1.5
	0.40～ 0.49	0.25	0.15	0.65	1	1.3	1.65
	0.50～ 0.59	0.35	0.18	0.76	1.14	1.52	1.9
	0.60～ 0.79	0.4	0.2	0.8	1.2	1.6	2
	0.80～ 0.99	0.6	0.3	1	1.5	2	2.5
	1.00～ 1.29	0.8	0.4	1.2	1.8	2.4	3.0
	1.30～ 1.49	1.0	0.5	1.4	2.1	2.9	3.7
	1.50～ 1.99	1.2	0.6	1.6	2.4	3.3	4.2
	2.00～ 2.49	1.5	0.8	2	3.2	4.4	5.6
	2.50～ 3.49	2.0	1.0	2.6	4.2	5.8	7
	3.50～ 4.49	3.0	1.5	3.9	5.9	8	9.7
	4.50～ 5.49	4.0	2.0	5.2	7.5	10.2	12.4
	5.50～10.30	5.0	2.5	6.2	9.0	12.2	14.9

Ejector pins	Finished products
Reversed reading (Concave character)	Normal character (Convex character)

Details of engraving



Width of engraving (a)	0.1×Q～0.2×Q
Angle of engraving (b°)	35° ±2°
Depth of engraving (e)	・When P≦0.99, 0.03±0.01 ・When P≧1.00, 0.05±0.02

High Speed Steel
SKH51 equivalent

For Large Size
P・W$_{-0.02}^{0}$
Standard・L dimension designation

RECTANGULAR EJECTOR PINS FOR LARGE MOLD

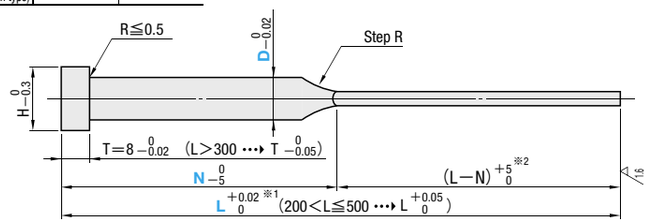
—STANDARD・L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

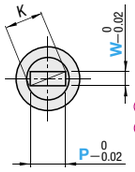
RoHS

Part Number	Head Thickness	T P・W
ERJXB (Standard) ERJXL (L dimension designation type)	8mm	$^{0}_{-0.02}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



※1 ERJXB is $^{+5}_{+0.1}$.
※2 ERJXB is $^{+10}_{0}$.



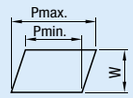
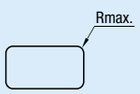
P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	D	L ERJXB	L ERJXL 0.01mm increments	P	W	N
15	8	ERJXB (Standard) ERJXL (L dimension designation type)	10	200	100.00～200.00	7.0 8.0	1.0 2.0 3.0 4.0 5.0	80 100
				300	200.01～300.00			100 120 150
				400	300.01～400.00			130 150 160
17			12	200	100.00～200.00	10.0	2.0 3.0 4.0 5.0 6.0	80 100
				300	200.01～300.00			100 120 150
				400	300.01～400.00			130 160 180
18			13	200	100.00～200.00	10.0	3.0 4.0 5.0 6.0 7.0	80 100
				300	200.01～300.00			120 130
				400	300.01～400.00			150 160 180
20			15	300	200.00～300.00	10.0 12.0	4.0 5.0 6.0 7.0 8.0	100 120
				400	300.01～400.00			160 180
				500	400.01～500.00			230
21			16	300	200.00～300.00	14.0	4.0 5.0 6.0	100 120
				400	300.01～400.00			130 180 230
				500	400.01～500.00			230 260 300
25			20	300	200.00～300.00	16.0 17.0	7.0 8.0 10.0	100 120
				400	300.01～400.00			130 160 230 260
				500	400.01～500.00			230 260 300

L−N≧10 (ERJXL)

Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Price **Quotation**

Order

Part Number	L	P	W	N
ERJXL 15	205.00	P10.0	W5.0	N 120

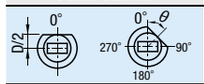
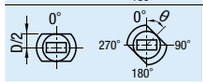
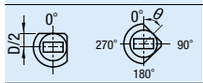
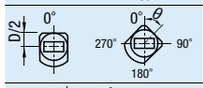
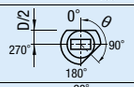
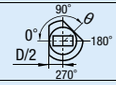
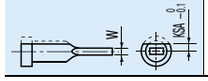
Days to Ship **Quotation**

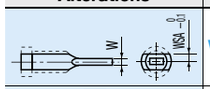
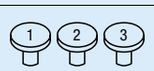
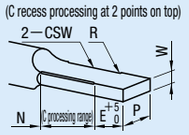
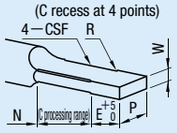
Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERJXL 15	205.00	P10.0	W5.0	N120	AKC 0

Quotation

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 4.0≦TC<8 Dimensions L and N become shorter by (8−TC). (ERJXB) Dimensions N becomes shorter by (8−TC). (ERJXL) (Dimension L remains unchanged.) 8−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	Quotation
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20
Available for ERJXL only

High Speed Steel
SKH51 equivalent

For Large Size
P・W$^{0}_{-0.02}$
Free designation

RECTANGULAR EJECTOR PINS FOR LARGE MOLD

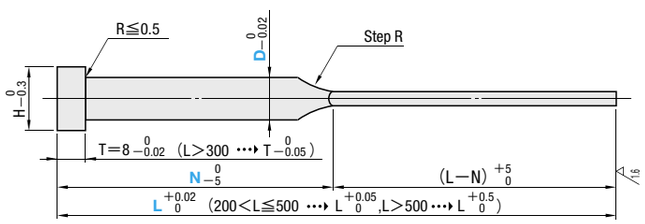
—FREE DESIGNATION TYPE—

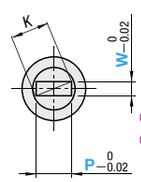
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERJX	8mm	$^{0}_{-0.02}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





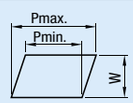
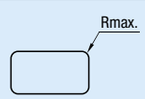
P≧W
K=$\sqrt{P^2+W^2}$

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

H	T	Part Number Type	D	0.01mm increments L	P	W	K max.	N 1mm increments
15	8	ERJX	10	100.00～500.00	5.00～ 9.80	1.00～	9.9	・D10～16 N≧50 ・D20 N≧55 and N≧L/3 (L−N)≧10
17			12	100.00～600.00	6.00～11.80	1.00～	11.9	
18			13		6.00～12.80	1.00～	12.9	
20			15		8.00～14.80	1.50～	14.9	
21			16		8.00～15.80	1.50～	15.9	
25			20		10.00～19.80	1.50～	19.9	

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W

■Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Price **Quotation**

Order

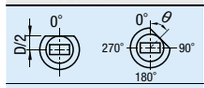
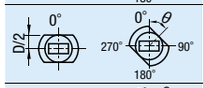
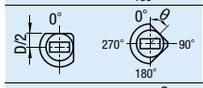
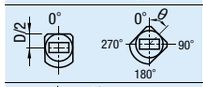
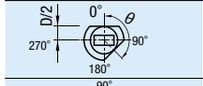
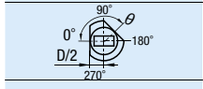
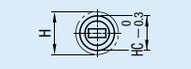
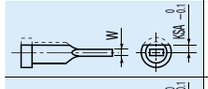
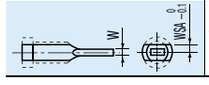
Part Number	L	P	W	N
ERJX 15	505.00	P10.00	W5.00	N170

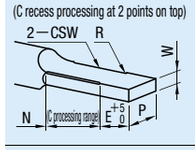
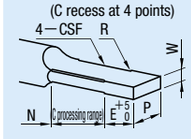
Days to Ship **Quotation**

Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERJX 15	505.00	P10.00	W5.00	N170	AKC 0

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 4.0≦TC<8 (Dimensions L and N remain unchanged) 8−TC≦Lmax.−L	Quotation
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25	
	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

CSW, CSF: Range of designation

W	CSW, CSF
1.0≦W<1.5	0.3
W≧1.5	0.5
	1
	1.5

CSW, CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

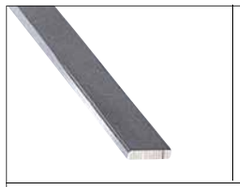
High Speed Steel
SKH51 equivalent

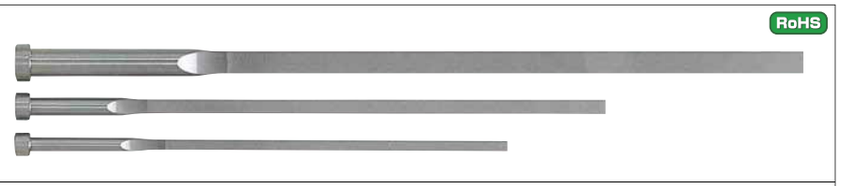
R-chamfered | For Large Size | P・W$^{0}_{-0.02}$ | Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS FOR LARGE MOLD

—FREE DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

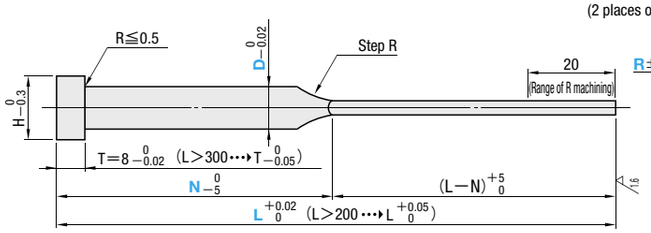




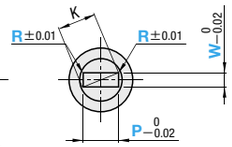
RoHS

Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERJXWR	ERJXFR	8mm	$^{0}_{-0.02}$

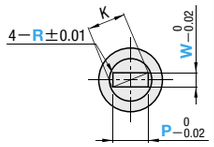
Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



ERJXWR
(2 places on the upper side are rounded.)



ERJXFR
(4 places are rounded.)



P≧W
K=$\sqrt{P^2+W^2}$ (Dimension before R processing)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Order

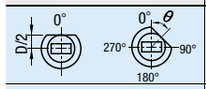
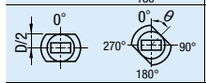
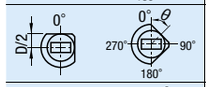
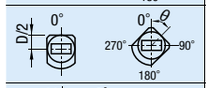
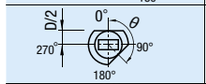
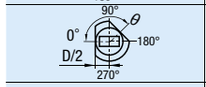
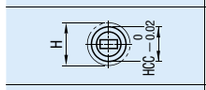
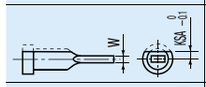
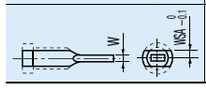
Part Number	L	P	W	R	N
ERJXWR 15	420.00	P10.00	W5.00	R0.15	N170

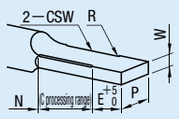
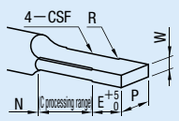
Days to Ship Quotation

Alterations

Part Number	L	P	W	R	N	(AKC・AWC···etc.)
ERJXWR 15	420.00	P10.00	W5.00	R0.15	N170	AKC 0

Alteration details P.195

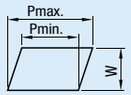
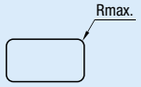
Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	KSA	KSA=0.1mm increments W/2+0.1≦KSA≦D/2−0.1	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 4.0≦TC<8 (Dimensions L and N remain unchanged) 8−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1—E25 CSW, CSF: Range of designation W / CSW, CSF 1.0≦W<1.5 / 0.3 W≧1.5 / 0.5, 1, 1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196	Quotation
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5—E30	

H	T	Part Number Type	D	0.01mm increments L	P	W	R	K max.	N 1mm increments
15	8	ERJXWR (2 places on the upper side are rounded.) ERJXFR (4 places are rounded.)	10	100.00～450.00	5.00～ 9.80	1.00～	0.1	9.9	• D10～16 N≧50 • D20 N≧55 and N≧L/3 (L−N)≧10
17			12		6.00～11.80	1.00～	0.15	11.9	
18			13		6.00～12.80	1.00～	0.2	12.9	
20			15		8.00～14.80	1.50～	0.3	14.9	
21			16		8.00～15.80	1.50～	0.5	15.9	
25			20		10.00～19.80	1.50～	0.7 R≦W/2−0.05	19.9	

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ (Dimension before R processing) P≧W

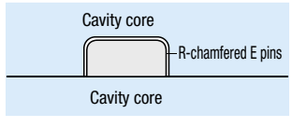
■Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

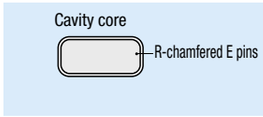
Price Quotation

Example

①Separable Piece



②Cavity core in wire hole.



RECTANGULAR EJECTOR PINS FOR LARGE MOLD

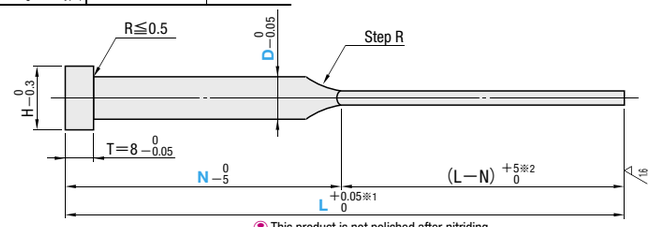
— STANDARD・L DIMENSION DESIGNATION TYPE —

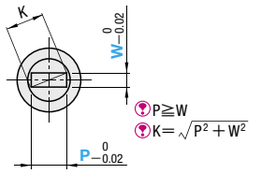
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERNXB (Standard) ERNXL (L dimension designation type)	8mm	$^{0}_{-0.02}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)





P≧W
K=$\sqrt{P^2+W^2}$

※1 ERNXB is $^{+5}_{+0.1}$
※2 ERNXB is $^{+10}_{0}$

This product is not polished after nitriding.
There is hardly any color unevenness, and no problem with the quality.

M SKD61 equivalent+Nitrided
H Surface 900HV～ Base material40～45HRC
Range of guaranteed surface hardness for nitriding (Details Right page)

Order

Part Number	L	P	W	N
ERNXL13	205.00	P10.0	W5.0	N120

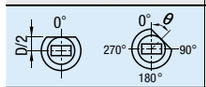
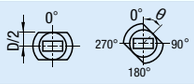
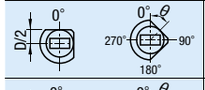
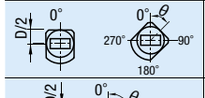
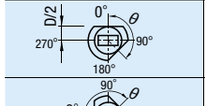
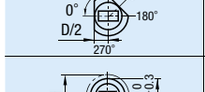
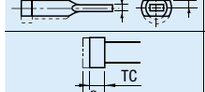
Days to Ship

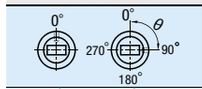
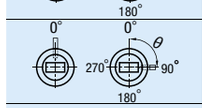
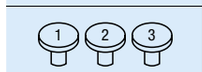
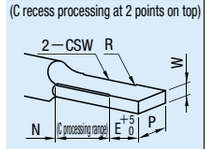
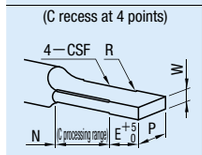
Quotation

Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERNXL13	205.00	P10.0	W5.0	N120	AKC 0

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	Quotation
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	
	TC	TC=0.1mm increments 4.0≦TC<8 Dimensions L and N become shorter by (8−TC). (ERNXB) Dimensions N becomes shorter by (8−TC). (ERNXL) (Dimension L remains unchanged.) 8−TC≦Lmax.−L	

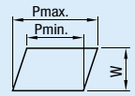
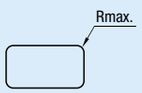
Alterations	Code	Spec.	1Code
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. How to order and detailed specifications P.195	
	NHC	Numbering on the head How to order P.196	
	NHN	Automatic sequential numbering on the head How to order P.196	Quotation
(C recess processing at 2 points on top) 	CSW	C chamfering processing at 2 points on top (except tip) for relief is performed. Designation method CSW1−E25 CSW, CSF: Range of designation W: 1.0≦W<1.5 — CSW, CSF: 0.3 W≧1.5 — 0.5, 1, 1.5 CSW, CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 Available for ERNXL only	
(C recess at 4 points) 	CSF	C chamfering processing at 4 points (except tip) for relief is performed. Designation method CSF0.5−E30	

H	T	Part Number Type	D	L	P	W	N
15	8	ERNXB (Standard)	10	200 300 400	7.0 8.0	2.0 3.0 4.0 5.0	80 100 100 120 150 130 150 160
17			12	200 300 400	10.0	2.0 3.0 4.0 5.0 6.0	80 100 100 120 150 130 160 180
18			13	200 300 400	10.0	3.0 4.0 5.0 6.0 7.0	80 100 120 130 150 160 180
20			15	300 400 500	10.0 12.0	4.0 5.0 6.0 7.0 8.0	100 120 160 180 230
21			16	300 400 500	14.0	4.0 5.0 6.0	100 120 130 180 230 230 260 300
25			20	300 400 500	16.0 17.0	7.0 8.0 10.0	100 120 130 160 230 260 230 260 300

H	T	Part Number Type	D	L 0.01mm increments	P	W	N
15	8	ERNXL (L dimension designation type)	10	200.00～300.00 300.01～400.00	7.0 8.0	2.0 3.0 4.0 5.0	100 120 150 130 150 160
17			12	200.00～300.00 300.01～400.00	10.0	2.0 3.0 4.0 5.0 6.0	100 120 150 130 160 180
18			13	200.00～300.00 300.01～400.00	10.0	3.0 4.0 5.0 6.0 7.0	120 130 150 160 180
20			15	200.00～300.00 300.01～400.00 400.01～500.00	10.0 12.0	4.0 5.0 6.0 7.0 8.0	100 120 160 180 230
21			16	200.00～300.00 300.01～400.00 400.01～500.00	14.0	4.0 5.0 6.0	100 120 130 180 230 230 260 300
25			20	200.00～300.00 300.01～400.00 400.01～500.00	16.0 17.0	7.0 8.0 10.0	100 120 130 160 230 260 230 260 300

L−N≧10

Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

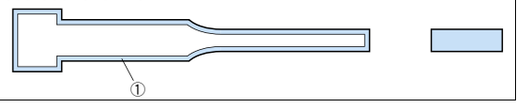
Price

Quotation

Guaranteed Ranges of Nitriding and Surface Hardness

RECTANGULAR EJECTOR PINS FOR LARGE MOLD

※ Cross-sectional view



M	Ejector Pin Surface Hardness (Guaranteed range of nitrided surface hardness)
SKD61 equivalent + Nitrided	900HV～

Dies Steel
SKD61 equivalent
+
Nitrided

For Large Size
P・W$^{0}_{-0.02}$
Free designation

RECTANGULAR EJECTOR PINS FOR LARGE MOLD

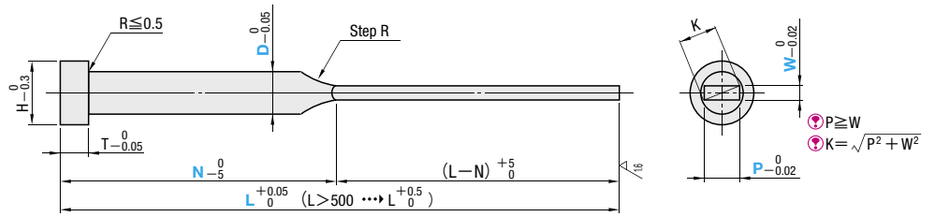
— FREE DESIGNATION TYPE —

Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness	T P・W
ERNX	6・8mm(JIS)	$^{0}_{-0.02}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



This product is not polished after nitriding.
There is hardly any color unevenness, and no problem with the quality.

M SKD61 equivalent+Nitrided
H Surface 900HV～ Base material 40～45HRC
Range of guaranteed of nitrided surface hardness
(Details P.1303)

Order

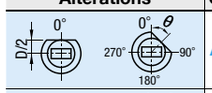
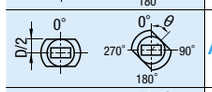
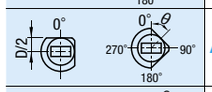
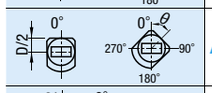
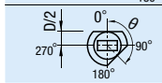
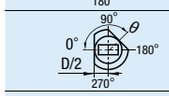
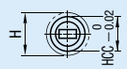
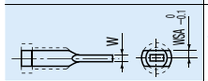
Part Number	L	P	W	N
ERNX15	505.00	P10.00	W5.00	N170

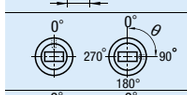
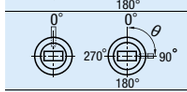
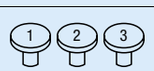
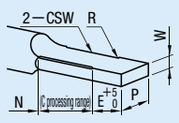
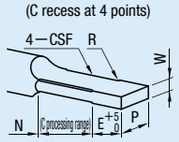
Days to Ship: Quotation

Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERNX15	505.00	P10.00	W5.00	N170	AKC 0

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 4.0≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NHC	Numbering on the head ※How to order and detailed specifications P.196	Quotation
	NHN	Automatic sequential numbering on the head ※How to order and detailed specifications P.196	
(C recess processing at 2 points on top) 	CSW	C-chamfering processing at 2 corners of the blade (except tip) for relief. Designation method CSW1—E25	
(C recess at 4 points) 	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5—E30	

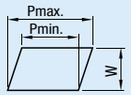
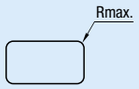
CSW, CSF: Range of designation	
W	CSW,CSF
1.0≦W<1.5	0.3
W≧1.5	0.5 1 1.5

CSW,CSF<W/2
E=1mm increments
5≦E≦(L−N)−20

H	T	Part Number Type	D	0.01mm increments L	P	W	K max.	N 1mm increments
8	6	ERNX	4	200.00～350.00	2.00～ 3.70	1.00～	3.9	N≧40 and (L−N)≦200
9			5		2.50～ 4.70	1.00～	4.9	
10			6	200.00～500.00	3.00～ 5.50	2.00～	5.9	・D6～8 N≧45 ・D10～16 N≧50 ・D20・25 N≧55 and N≧L/3 350≧(L−N)≧10
11			7		3.30～ 6.60	2.00～	6.9	
13	8		8		3.30～ 7.60	2.00～	7.9	
15			10		5.00～ 9.60	2.00～	9.9	
17			12	200.00～500.00	6.00～11.70	2.00～	11.9	
18			13		6.00～12.70	2.00～	12.9	
20			15		8.00～14.70	2.00～	14.9	
21			16	200.00～500.00	8.00～15.70	2.00～	15.9	
25			20		10.00～19.70	2.00～	19.9	
30			25		13.00～24.70	2.50～	24.9	

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ P≧W

Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

Price: Quotation

Dies Steel
SKD61 equivalent
+
Nitrided

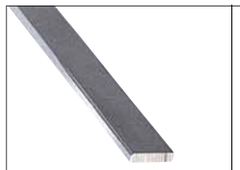
R-chamfered

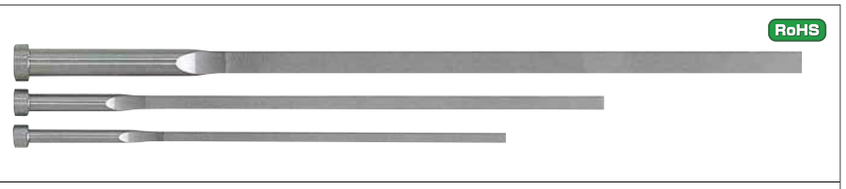
For Large Size
P・W$_{-0.02}^{0}$
Free designation

R-CHAMFERED RECTANGULAR EJECTOR PINS FOR LARGE MOLD

—FREE DESIGNATION TYPE—

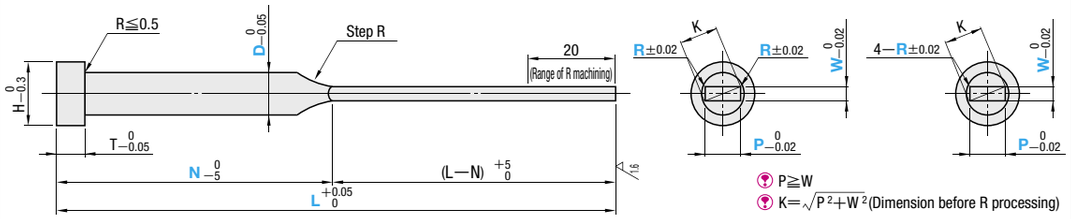
Non JIS material definition is listed on P.1351 - 1352





Part Number		Head Thickness	T P・W
2 places on the upper side are rounded.	4 places are rounded.		
ERNXWR	ERNXFR	6・8mm(JIS)	$^{0}_{-0.02}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R (Details P.1302)



R tolerance has been changed to ±0.02.
This product is not polished after nitriding.
There is hardly any color unevenness, and no problem with the quality.

P≧W
K=$\sqrt{P^2+W^2}$(Dimension before R processing)

M SKD61 equivalent+Nitrided
H Surface 900HV～ Base material 40～45HRC
Range of guaranteed base material hardness
(Details P.1303)

Order

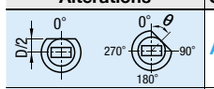
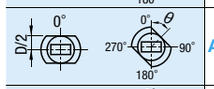
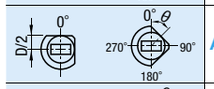
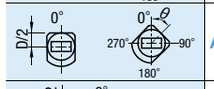
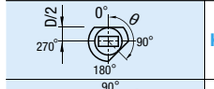
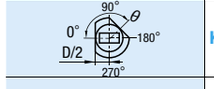
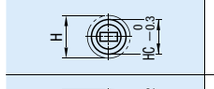
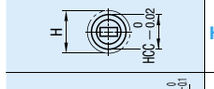
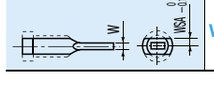
Part Number	L	P	W	R	N
ERNXWR13	420.00	P10.00	W5.00	R0.15	N170

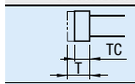
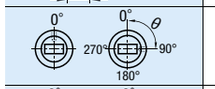
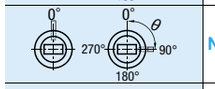
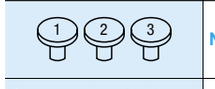
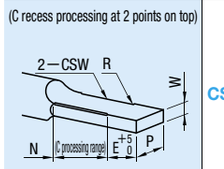
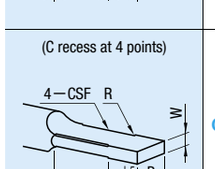
Days to Ship Quotation

Alterations

Part Number	L	P	W	R	N	(AKC・AWC…etc.)
ERNXWR13	420.00	P10.00	W5.00	R0.15	N170	AKC 0

Alteration details P.195

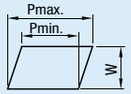
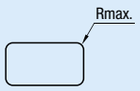
Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360 When combined with KSA/WSA, 90° increments only.	Quotation
	AWC	AWC=1° increments 0≦AWC<360 When combined with KSA/WSA, 90° increments only.	
	ARC	ARC=1° increments 0≦ARC<360 When combined with KSA/WSA, 90° increments only.	
	ADC	ADC=1° increments 0≦ADC<360 When combined with KSA/WSA, 90° increments only.	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	WSA	WSA=0.1mm increments W/2+0.1≦WSA≦D/2−0.1	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 4.0≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NC	Dowel hole boring NC=90° increments ⊗ Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NCW	Dowel hole boring+Spring pin driving NCW=90° increments ⊗ Combination with other than NHC・NHN not available. ※How to order and detailed specifications P.195	
	NHC	Numbering on the head ※How to order and detailed specifications P.196	
	NHN	Automatic sequential numbering on the head ※How to order and detailed specifications P.196	Quotation
(C recess processing at 2 points on top) 	CSW	C-chamfering processing at 2 corners of the blade (except tip) for relief. Designation method CSW1—E25 CSW,CSF: Range of designation W / CSW,CSF 1.0≦W<1.5 / 0.3 W≧1.5 / 0.5, 1, 1.5 CSW,CSF<W/2 E=1mm increments 5≦E≦(L−N)−20 R process range P.196	
(C recess at 4 points) 	CSF	C-chamfering processing at 4 corners of the blade (except tip) for relief. Designation method CSF0.5—E30	

H	T	Part Number Type	D	0.01mm increments L	P	W	R	K max.	N 1mm increments
8	6	ERNXWR (2 places on the upper side are rounded.) ERNXFR (4 places are rounded.)	4	200.00～350.00	2.00～ 3.70	1.00～	0.1, 0.15, 0.2, 0.3, 0.5, 0.7, R≦W/2−0.05	3.9	N≧40 and (L−N)≦200
9			5		2.50～ 4.70	1.00～		4.9	
10			6	200.00～450.00	3.00～ 5.50	2.00～		5.9	・D6～8 N≧45 ・D10～16 N≧50 ・D20 N≧55 and N≧L/3 350≧(L−N)≧10
11			7		3.30～ 6.60	2.00～		6.9	
13	8		8		3.30～ 7.60	2.00～		7.9	
15			10		5.00～ 9.60	2.00～		9.9	
17			12		6.00～11.70	2.00～		11.9	
18			13		6.00～12.70	2.00～		12.9	
20			15		8.00～14.70	2.00～		14.9	
21			16		8.00～15.70	2.00～		15.9	
25			20		10.00～19.70	2.00～		19.9	

Designate P・W dimensions within the Kmax. K=$\sqrt{P^2+W^2}$ (Dimension before R processing) P≧W

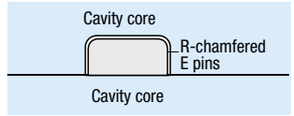
Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.02	 Rmax.≦0.03 (Trimming R) Corner R value outside R processing range The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

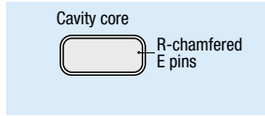
Price Quotation

Example

① Separable Piece



② Cavity core in wire hole.



RECTANGULAR EJECTOR PINS FOR LARGE MOLD

—CAULKING・STANDARD／CAULKING・L DIMENSION DESIGNATION TYPE—

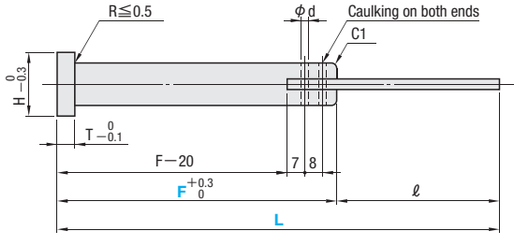
Non JIS material definition is listed on P.1351 - 1352

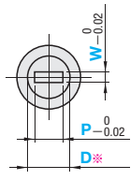
RoHS

Part Number	Head Thickness	T L	T P・W
ERHK—B (Standard)	6・8mm (JIS)	$^{+5}_{+0.1}$	$^{0}_{-0.02}$
ERHK—L (L dimension designation type)		$^{+0.1}_{0}$ (L≧630.1 ··· L $^{+0.5}_{0}$)	

(※)ℓmax.

P	W	ℓ max.
6～ 8	1.0～2.0	280
10～15	1.0・1.2	
	1.5～6.0	380





※

D	Tolerance
6～12	$^{-0.01}_{-0.02}$
16	$^{-0.01}_{-0.03}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)

M SKH51 equivalent (Flat bar)
SK4 (Shaft)
H 58～60HRC (Flat bar)
SK4 is not annealed.

The flat bar is inserted into the shank and caulked; though grinding is performed to eliminate any trace of caulking.

■Standard ERHK—B

H	T	d	Part Number Type	Part Number D	L 10mm increments	P Selection	W Selection	F 10mm increments
10	6	2	ERHK—B	6	80～680	6	1.0	※60～400
11		3		7			1.2	
13	8			8		6 7 8	1.5	
15		4		10	80～780	8 10	1.8	
17				12	80～880	10 12	2.0	※60～500
21				16		10 12 15	4.0 (D12・16 only)	
							6.0 (D12・16 only)	

※ℓmax. before designating. (Left page)

■L dimension designation type ERHK—L

H	T	d	Part Number Type	Part Number D	L 0.1mm increments	P Selection	W Selection	F 10mm increments
10	6	2	ERHK—L	6	80.0～680.0	6	1.0	※60～400
11		3		7			1.2	
13	8			8		6 7 8	1.5	
15		4		10	80.0～780.0	8 10	1.8	
17				12	80.0～880.0	10 12	2.0	※60～500
21				16		10 12 15	4.0 (D12・16 only)	
							6.0 (D12・16 only)	

※ℓmax. before designating. (Left page)

Price **Quotation**

Order

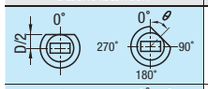
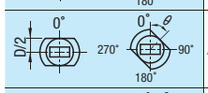
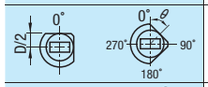
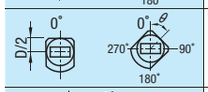
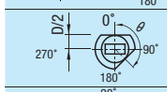
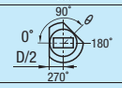
Part Number	L	P	W	F
ERHK—B12	300	P12	W1.2	F160

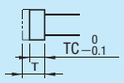
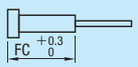
Days to Ship **Quotation**

Alterations

Part Number	L	P	W	F(FC)	(AKC・AWC···etc.)
ERHK—L12	300.0	P12	W1.2	FC165	AKC60

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T T—TC≦Lmax.—L ERHK—B ···→Dimensions L and F become shorter by (T—TC). ERHK—L ···→Dimension L remains unchanged. Dimensions F become shorter by (T—TC). (Dimension F remains unchanged when FC code is combined.)	Quotation
	FC	FC=1mm increments 40<FC<Fmax. Not available for ERHK—B.	

High Speed Steel
SKH51 equivalent

For Large Size
Caulking type
P • W$^{0}_{-0.02}$

RECTANGULAR EJECTOR PINS FOR LARGE MOLD

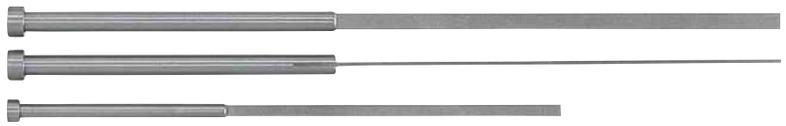
— CAULKING • FREE DESIGNATION TYPE —

High Speed Steel
SKH51 equivalent

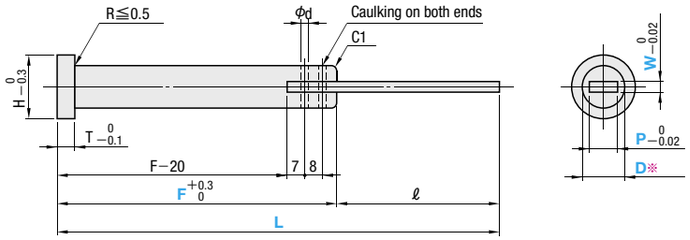
RECTANGULAR EJECTOR BLANKS FOR LARGE MOLD

Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number	Head Thickness	T L	T P・W
ERHK—F (Free designation type)	6・8mm (JIS)	$^{+0.1}_{0}$ (L≧630.1…L $^{+0.5}_{0}$)	$^{0}_{-0.02}$



(※)ℓmax.

P	W	ℓmax.
4.0～ 8.0	1.0～2.5	280
8.1～15.0	1.0～2.5	
	4.0～6.0	380

※

D	Tolerance
6～12	$^{-0.01}_{-0.02}$
16	$^{-0.01}_{-0.03}$

Range of guaranteed shaft diameter precision (D) (Details P.1301)

M SKH51 equivalent (Flat bar)
SK4 (Shaft)
H 58～60HRC (Flat bar)
SK4 is not annealed.

The flat bar is inserted into the shank and caulked; though grinding is performed to eliminate any trace of caulking.

H	T	d	Part Number Type	D	0.1mm increments L	P	W Selection	F 10 mm increments
10	6	*2	ERHK—F	6	80.0～680.0	4.0～ 6.0	1.0 1.2 1.5 1.8 2.0 2.5 (Available when D≧8) 4.0 (Available when D≧10) 5.0 (Available when D≧12) 6.0 (Available when D≧12)	※60～400
11		*3		7				
13	8			8		4.0～ 8.0		
15		*4		10	80.0～780.0	6.0～10.0		
17				12	80.0～880.0	8.0～12.0		※60～500
21				16		10.0～15.0		

※ℓmax. before designating. *When 4≦P<6, d=2, when 6≦P<8, d=3, and when P≧8, d=4.

Order

Part Number	L	P	W	F
ERHK—F12	300.0	P11.5	W1.2	F160

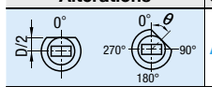
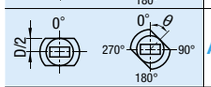
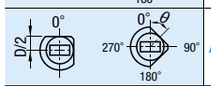
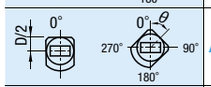
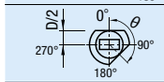
Days to Ship: Quotation

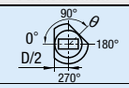
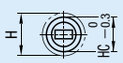
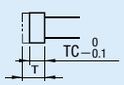
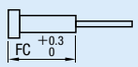
Price: Quotation

Alterations

Part Number	L	P	W	F(FC)	(AKC・AWC…etc.)
ERHK—F12	300.0	P11.5	W1.2	FC165	AKC60

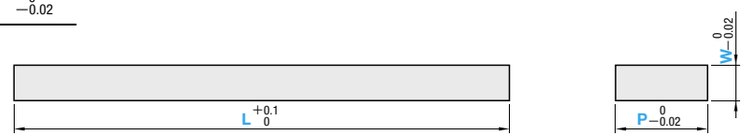
Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	

Alterations	Code	Spec.	1Code
	KGD	KGD=1° increments 0<KGD<360	Quotation
	HC	HC=0.1mm increments D+1≦HC<H	
	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L Dimension L remains unchanged. Dimensions F become shorter by (T−TC). (Dimension F remains unchanged when FC code is combined.)	
	FC	FC=1mm increments 40<FC<Fmax.	

RoHS

Part Number	T P・W
ERKB	$^{0}_{-0.02}$



M SKH51 equivalent
H 58～60HRC

Part Number	L 10mm increments	P	W
ERKB	30～300	6 8	1.0 1.2 1.5 2.0
		10 12 15	1.0 1.2
	30～400		1.5 2.0

Order

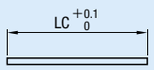
Part Number	L	P	W
ERKB	300	P10	W1.2

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	L(LC)	P	W
ERKB	LC293.4	P10	W1.2

Alteration	Code	Spec.	1Code
	LC	LC=0.1mm increments 30<LC<Lmax.	Quotation

Rectangular Ejector Pins

High Speed Steel
SKH51 equivalent

For Large Size
Caulking type
P • W$^{0}_{-0.02}$

High Speed Steel
SKH51 equivalent

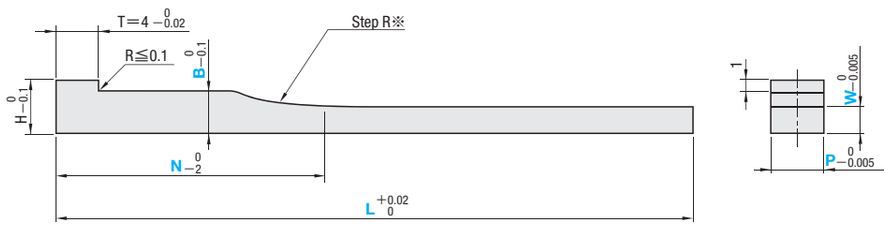
PRECISION RECTANGULAR EJECTOR PINS

— RECTANGULAR SHANK TYPE —

Non JIS material definition is listed on P.1351 - 1352

RoHS

ERSRP



※Step radius (R): 50～75R (This is the size of grindstone used to process R section. This is not a guaranteed value for R.)

M SKH51 equivalent
H 58～60HRC

H	T	Part Number		0.01mm increments			1mm increments	N min.
		Type	B	L	P	W	N	
2.5	4	ERSRP	1.5	50.00 ～ 100.00	0.30 ～ 3.00	0.30 ～ 1.30	N≦(L−5)	25
3.5			2.5	50.00 ～ 120.00	0.40 ～ 5.00	0.40 ～ 2.30		28
4.5			3.5	50.00 ～ 150.00	0.50 ～ 10.00	0.50 ～ 3.30		32

Order

Part Number	L	P	W	N
ERSRP2.5	105.10	P4.00	W0.40	N60

Days to Ship: Quotation

Price: Quotation

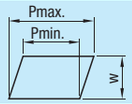
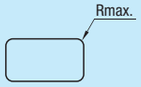
Alterations

Part Number	L	P	W	N	(HC・TC)
ERSRP2.5	90.05	P1.00	W0.40	N50	HC3.0 — TC2

Alteration	Code	Spec.	1Code
	HC	Changes flange width B≦HC＜H 0.1mm increments In relation to the flange width tolerance, alteration may create a straight piece.	Quotation

Alteration	Code	Spec.	1Code
	TC	Changes flange thickness 2.0≦TC＜4 TC=0.1mm increments Dimensions L and N remain unchanged 4−TC≦Lmax.−L	Quotation

■ Precision Standard

Squareness of the tip corner	Corner R value of the tip corner
 W plane as the base (Pmax.−Pmin.)≦0.01	 Rmax.≦0.03 (Trimming R) The tip corners have been slightly trimmed to measure the P・W dimensions. (Details P.1313)

High Speed Steel
SKH51 equivalent

D-shaped
P・W$_{-0.01}^{0}$

D-SHAPED EJECTOR PINS

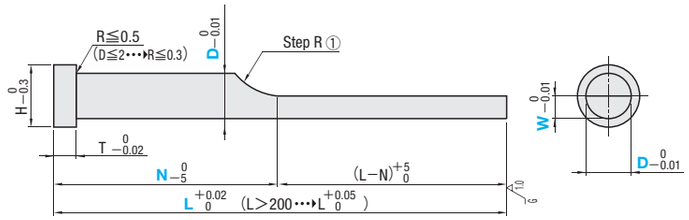
Non JIS material definition is listed on P.1351 - 1352

RoHS

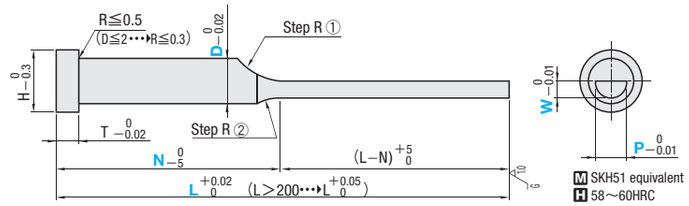
Part Number		Head Thickness (Flange)	Tip part T P・W
Normal type	Stepped type		
ERDP	ERDF	4mm (T4)	$_{-0.01}^{0}$
ERDPJ	ERDFJ	4・6・8mm (JIS)	

Range of guaranteed shaft diameter precision (D) (Details P.1301)
Step R ① (Details P.1302 Step R for rectangular ejector pins)
Step R ② (Details P.1302 Step R for stepped ejector pins)

(Normal type)
ERDP
ERDPJ



(Stepped type)**ERDF**
ERDFJ

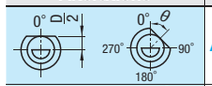
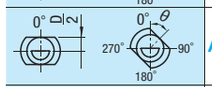
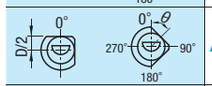
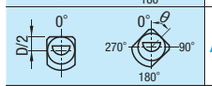
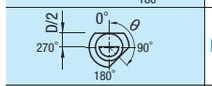
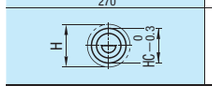


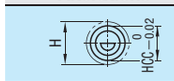
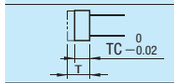
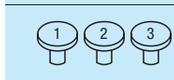
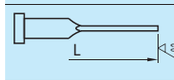
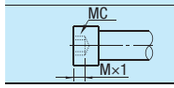
M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1303)

Alterations

Part Number	L	P	W	N	(AKC・AWC…etc.)
ERDF 2	150.00	P1.00	W0.60	N80	AKC 90

Alteration details P.195

Alterations	Code	Spec.	1Code
	AKC	AKC=1° increments 0≦AKC<360	Quotation
	AWC	AWC=1° increments 0≦AWC<360	
	ARC	ARC=1° increments 0≦ARC<360	
	ADC	ADC=1° increments 0≦ADC<360	
	KGA	KGA=1° increments 0<KGA<360	
	KGD	KGD=1° increments 0<KGD<360	
	HC	HC=0.1mm increments D+1≦HC<H	

Alterations	Code	Spec.	1Code
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T (Dimensions L and N remain unchanged) T−TC≦Lmax.−L	
	NHC	Numbering on the head How to order P.196	Quotation
	NHN	Automatic sequential numbering on the head How to order P.196	
	TMC	Lapping on the tip face Available when W≧0.6	
	MC	Tapping D8・9 ••• M4 D10 ••• M5 D12 ••• M6 ERDPJ, ERDFJ Available when D≧8 Combination with other than TMC not available.	

■Normal type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type	D	0.01mm increments L	0.01mm increments W	N 1mm increments
3	4	3	4	ERDP (T4) ERDPJ(JIS)	1.5	50.00～200.00	0.75～ 1.40	N≧30 20≦(L−N)≦150
4		4			2	50.00～250.00	1.00～ 1.90	
5		5			2.5		1.25～ 2.40	
6		6			3	50.00～300.00	1.50～ 2.90	N≧30 20≦(L−N)≦200
7		7			3.5		1.75～ 3.40	
		8	6		4		2.00～ 3.90	
8					4.5		2.25～ 4.40	
		9			5	50.00～350.00	2.50～ 4.90	
9					5.5		2.75～ 5.40	
		10			6		3.00～ 5.90	
10		11			6.5		3.25～ 6.40	
					7		3.50～ 6.90	
11		13	8		8		4.00～ 7.90	
14		14			9		4.50～ 8.90	
15		15			10		5.00～ 9.90	
17		17			12		6.00～11.90	

■Stepped type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type	D	0.01mm increments L	0.01mm increments P	0.01mm increments W	N 1mm increments
3	4	3	4	ERDF (T4) ERDFJ(JIS)	1.5	50.00～200.00	0.60～ 1.40	P/2≦W≦(P−0.1)	N≧30 20≦(L−N)≦150
4		4			2	50.00～250.00	0.80～ 1.90		
5		5			2.5		0.80～ 2.40		
6		6			3	50.00～300.00	1.00～ 2.90		N≧30 20≦(L−N)≦200
7		7			3.5		1.50～ 3.40		
		8	6		4		2.00～ 3.90		
8					4.5		2.50～ 4.40		
		9			5	50.00～350.00	3.00～ 4.90		
9					5.5		3.50～ 5.40		
		10			6		4.00～ 5.90		
10		11			6.5		4.50～ 6.40		
					7		5.00～ 6.90		
11		13	8		8		6.00～ 7.90		
14		14			9		6.90～ 8.90		
15		15			10		7.90～ 9.90		
17		17			12		8.90～11.90		

Order

Part Number	L	P	W	N
(Normal type)ERDP5	145.05		W3.20	N95
(Stepped type)ERDF2	150.00	P1.00	W0.60	N80

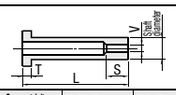
Days to Ship: Quotation

Price: Quotation

Rectangular Ejector Pins
High Speed Steel SKH51 equivalent
D-shaped P・W$_{-0.01}^{0}$

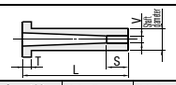
EJECTOR SLEEVE

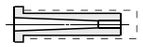
Straight Ejector Sleeve



Material	Head Thickness (T)	Concentricity between the hole and shaft diameters	Hole diameter (V) Finishing	Hole diameter (V)	Smax.	Shaft diameter tolerance	Blank type	Page	L dimension designation type	Page	L・V dimension designation type: Shaft diameter selection	Page	Shaft diameter designation	Page
SKH51 equivalent	4mm (T4)	◎0.005	Grinding	+0.005 0	V×3 and S≦25	0 −0.005	—		—		ESV	P.279	ESVB	P.279
				+0.01 0	V×5 and S≦25						ESV−H	P.279	ESVB−H	P.279
	6・8mm (JIS)			+0.005 0	V×3 and S≦25						ESVJ	P.279	ESVJB	P.279
	4mm (T4)	◎0.01	Wire cutting & Polishing	+0.01 0	V×10 and S≦50		—		—		ESVK−H	P.281	ESVKB−H	P.281
	6・8mm (JIS)										ESVKJ−H	P.281	ESVKJB−H	P.281
SKD61 equivalent + Nitrided	4mm (T4)	◎0.03	Reaming	H7	50	−0.01 −0.02	ESNV	P.295	ESNV−LC	P.297	ESNV−L	P.299	ESNVB	P.299
	6・8mm (JIS)						—		—		ESNVJ	P.301	ESJVB	P.301
	4mm (T4)	◎0.06			100 (150)	−0.01 −0.02	ESN	P.303	ESN−LC	P.307	ESN−L	P.311	ESNB	P.311
	6・8mm (JIS)					−0.01 −0.02 (−0.03)	ESJ	P.305	ESJL	P.309	ESNJ	P.313	ESJB	P.313

Straight Ejector Sleeves—Tapered Type—

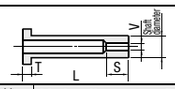




Material	Head Thickness (T)	Concentricity between the hole and shaft diameters	Hole diameter (V) Finishing	Hole diameter (V)	Smax.	Tip diameter (P) tolerance	L・V dimension designation type	Page
SKH51 equivalent	4mm (T4)	◎0.003	Grinding	+0.005 0	V×3	0 −0.005	ESVX	P.277

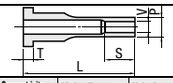
Short Ejector Sleeves (Straight Core Sleeves)

Straight Core Sleeves are published on index of Shaped Inlay Core Pins for Boss



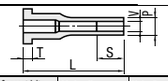
Product Name	Material	Head Thickness (T)	Concentricity between the hole and shaft diameters	Hole diameter (V) Finishing	Hole diameter (V)	Smax. (Reference)	Shaft diameter tolerance	L・V dimension designation type: Shaft diameter selection	Page	Shaft diameter designation	Page
Short Ejector Sleeves	SKD61 equivalent + Nitrided	4mm (T4)	◎0.06	Reamers	H7	30	−0.01 −0.02	ECB ECBB	P.315	—	—
	SKH51 equivalent		◎0.01	Wire cutting & Polishing	+0.005 0	3	0 −0.005	EPBBH	P.283		
					+0.01 0		−0.01 −0.02	EPBB-H EPBB-M			
Straight Core Sleeves	SKH51 equivalent	4mm (T4)	◎0.005	Grinding	+0.005 0	V×3 fixed	0 −0.005	CSV4T	P.531	CSVB4T	P.531
						V×3 designated		CSHKV4T	P.529	CSHKBV4T	P.529
					+0.01 0	V×3 fixed		CSHL4T	P.531	CSHB4T	P.531
				Wire cutting & Polishing		V×10 designated		CSHK4T	P.529	CSHKB4T	P.529
		6・8mm (JIS)		Grinding	+0.005 0	V×3 fixed		CSV	P.531	CSVB	P.531
						V×3 designated		CSHKV	P.529	CSHKBV	P.529
					+0.01 0	V×3 fixed		CSHL	P.531	CSHB	P.531
				Wire cutting & Polishing		V×10 designated		CSHK	P.529	CSHKB	P.529
	NAK80	4mm (T4)	◎0.005	Grinding	+0.005 0	V×3 fixed	0 −0.005	CSGLV4T	P.531	CSGBV4T	P.531
						V×3 designated		CSGKV4T	P.529	CSGKBV4T	P.529
					+0.01 0	V×3 fixed		CSGL4T	P.531	CSGB4T	P.531
				Wire cutting & Polishing		V×10 designated		CSGK4T	P.529	CSGKB4T	P.529
		6・8mm (JIS)		Grinding	+0.005 0	V×3 fixed		CSGLV	P.531	CSGBV	P.531
						V×3 designated		CSGKV	P.529	CSGKBV	P.529
					+0.01 0	V×3 fixed		CSGL	P.531	CSGB	P.531
				Wire cutting & Polishing		V×10 designated		CSGK	P.529	CSGKB	P.529

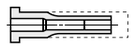
Stepped Ejector Sleeve



Material	Head Thickness (T)	Concentricity between the hole and shaft diameters	Hole diameter (V) Finishing	Hole diameter (V)	Smax.	Tip diameter (P) tolerance	Blank type	Page	L dimension designation type	Page	L・V dimension designation type: Shaft diameter selection	Page	Shaft diameter designation	Page
SKH51 equivalent	4mm (T4)	◎0.005	Grinding	+0.005 0	V×3	0 −0.005	—		—		ESVF	P.287	ESVFB	P.287
					V×3 and S≦25		—		—		ESVFE	P.289	ESVBF	P.289
				+0.01 0	V×3 and S≦25						ESVFE−H	P.289	ESVBF−H	P.289
	6・8mm (JIS)			+0.005 0	V×3 and S≦25		—		—		ESVJFE	P.289	ESVJBF	P.289
	4mm (T4)	◎0.01	Wire cutting & Polishing	+0.01 0	V×10 and S≦30		—		—		ESVKF−H	P.291	ESVKFB−H	P.291
					V×10 and S≦50		—		—		ESVKFE−H	P.293	ESVKBF−H	P.293
	6・8mm (JIS)				V×10 and S≦50						ESVKJFE−H	P.293	ESVKJBF−H	P.293
SKD61 equivalent + Nitrided	4mm (T4)	◎0.03	Reaming	H7	50	−0.01 −0.02 (−0.03)	—		—		ESNVF	P.317	—	
	6・8mm (JIS)										ESJVF	P.317		
	4mm (T4)	◎0.06			100		ESNFT	P.319	ESNF−LC	P.321	ESNF	P.323	—	
	6・8mm (JIS)						ESJFT	P.319	ESJF−LC	P.321	ESJF	P.325		

Stepped Ejector Sleeve—Tapered Type—





Material	Head Thickness (T)	Concentricity between the hole and shaft diameters	Hole diameter (V) Finishing	Hole diameter (V)	Smax.	Tip diameter (P) tolerance	L・V dimension designation type	Page
SKH51 equivalent	4mm (T4)	◎0.005	Grinding	+0.005 0	V×3	0 −0.005	ESVFX	P.285

Ejector Sleeve & One-step Center Pin Sets

Material	Head Thickness (T)	Sleeve shape	Center Pin shape	L dimension designation	Free designation	Page
SKH51 equivalent	4mm (T4)	Straight	Tip stepped straight	ESV−S−□	—	P.327
SKD61 equivalent + Nitrided	4mm (T4)	Straight	Tip stepped straight	ESNS−□	ESNP−□	P.329,P.331
	6・8mm (JIS)			ESJS−□	ESJP−□	P.329,P.331
	4mm (T4)	Stepped	Tip stepped straight	ESNM−□	ESND−□	P.333,P.335
	6・8mm (JIS)			ESJM−□	ESJD−□	P.333,P.335

■Ejector Sleeve and Center Pin Combination Example

		Center Pin Shaft Diameter (DorP) Tolerance: 0 −0.005		Center Pin Shaft Diameter (DorP) Tolerance: −0.01 −0.02	
Ejector sleeve hole diameter (V) tolerance	+0.005 0 (precision class)	○ Suitable	Because the clearance between the ejector sleeve and center pin is kept to 0.01 mm and below, this is used in cases where the plastic is conducive to the development of burrs, and for precision molds.	○ Suitable	Because the clearance between the ejector sleeve and the center pin is large, this is used in applications where smooth sliding is required. (※The hole diameter of the ejector sleeve can also be made 0.01 mm larger.)
	+0.01 0 and H7	× Unsuitable	Combination of the ejector sleeves and 0 −0.005 shaft-diameter tolerance center pins is unsuitable, due to the large contact surface with the center pins. Where the same dimensions have been specified for hole diameter and shaft diameter, take caution as there have been problems with the pins not fitting the holes, the pins stopping partially into the holes and sliding not being smooth.	○ Suitable	The minimum clearance required for fit between the ejector sleeve and center pin (0.01 mm) can be achieved. This is widely used in general applications, where the plastic is not conducive to the development of burrs.

ALTERATION GUIDE FOR EJECTOR SLEEVE

■Alteration Guide for Ejector Sleeve

Items	Alterations	Codes	Specifications	1Code
Head alteration	**Key flat cutting** (KC T) — For SKH51 equivalent, key flat (angled) cutting tolerance is 0 / −0.02; For SKD61 equivalent, key flat(angled) cutting tolerance is 0 / −0.1	KC	Single flat cutting Range of designation D/2(P/2)≦KC＜H/2	Quotation
	Key flat cutting (WKC T)	WKC	Two parallel flats cutting Range of designation D/2(P/2)≦WKC＜H/2	
	Key flat cutting (KAC, KBC T)	KAC KBC	Varied width parallel flats cutting Range of designation D/2(P/2)≦KAC KAC＜KBC＜H/2	
	Key flat cutting (RKC T)	RKC	Right angled two falts cutting Range of designation D/2(P/2)≦RKC＜H/2	
	Key flat cutting (DKC, DKC T)	DKC	Three flats cutting Range of designation D/2(P/2)≦DKC＜H/2	
	Key flat cutting (SKC, SKC T)	SKC	Four flats cutting Range of designation D/2(P/2)≦SKC＜H/2	
	Key flat cutting (angled) (AG° ±0.5, 0°, KGC, AGC)	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation D/2(P/2)≦KGC＜H/2 AG=1° increments 0＜AG＜360	
	Key flat cutting (angled) (120°, 120°, KTC T)	KTC	Three flats cutting at 120° Range of designation D/2(P/2)≦KTC＜H/2	
	Head diameter change (H, HC 0 / −0.3)	HC	Reduces the head diameter. Range of designation D(P)≦HC＜H Unit of designation 0.1mm increments Designation method HC6.5 In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	Head diameter change (precision) (H, HCC 0 / −0.02)	HCC	Reduces the head diameter. (precision) Range of designation D(P)＋1≦HCC＜H−0.3 Unit of designation 0.1mm increments Designation method HCC6.1	
	Head thickness change (TC, T)	TC	Reduces the head thickness from the standard. Dimension L remains unchanged (except blank type). Range of designation T/2≦TC＜T T−TC≦Lmax.−L	

To make a flat at the shaft diameter position for both straight types and stepped types

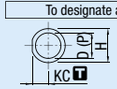
Material	T KC
SKH51 equivalent	0 / −0.02
SKD61 equivalent＋Nitrided	0 / −0.1

Unit of designation
Straight shaft diameter selection type (D/2)……0.05mm increments possible
Straight shaft diameter designation type (P/2)……0.005mm increments possible
Stepped type (D/2)……0.05mm increments possible

Designation method
- KC2.61 (When P5.22)
- WKC3.085 (When P6.17)
- KAC3.25—KBC4 (When D6.5)
- RKC2.77 (When P5.54)
- DKC3 (When D6)
- SKC2.5 (When P5)
- KGC3.5—AG125 (When D7)
- KTC3.085 (When P6.17)

The tolerance is SKH51 equivalent 0 / −0.02, SKD61 equivalent＋Nitrided 0 / −0.1, even when (D or P)/2 is designated to fit to the shaft diameter (straight).
The tolerance is SKH51 equivalent 0 / −0.02, SKD61 equivalent＋Nitrided 0 / −0.1, even when D/2 is designated to fit to the shaft diameter (stepped).

To designate an arbitrary flat size



Material	T KC
SKH51 equivalent	0 / −0.02
SKD61 equivalent＋Nitrided	0 / −0.1

Unit of designation 0.1mm increments only
Designation method
- KC1.4
- WKC2.3
- KAC1.4—KBC1.6
- RKC1.4
- DKC1.7
- SKC5.8
- KGC1.4—AGB5
- KTC2.3

■Alteration Guide for Ejector Sleeve

Items	Alterations	Codes	Specifications	1Code
Changes recess	CW±0.1, C±0.1, W +5 / 0	CW	Two-step recessing Enlarges the recess C by adding a step. • CW=0.1mm increments CW≧C＋0.5 CW≦Cmax. • W=5mm increments W≧10 W≦L−S−10 W≦200 Stepped sleeves *and (W≦L−N−20) Designation method CW8.7−W35	Quotation
Tip process	CGX±0.05, 45°, 0.1, V, L	CGX	Performs C chamfering on the tip. • CGX=0.1mm increments Available when L≦300 0.2≦CGX≦1.5 and CGX≦ (D(P)−V)/2 −0.1 Designation method CGX0.2	
	RGX±0.1, 0.1, V, L	RGX	Performs R chamfering on the tip. • RGX=0.1mm increments Available when L≦300 0.3≦RGX≦1.5 and RGX≦ (D(P)−V)/2 −0.1 Designation method RGX0.3	
	CGZ±0.05, 0.1, V, L, 45°	CGZ	Performs C boring on the tip. • CGZ=0.1mm increments Available when L≦300 0.2≦CGZ≦1.0 and CGZ≦ (D(P)−V)/2 −0.1 Designation method CGZ0.2	
	RGZ±0.1, 0.1, V, L	RGZ	Performs R boring on the tip. • RGZ=0.1mm increments Available when L≦300 0.5≦RGZ≦1.0 and RGZ≦ (D(P)−V)/2 −0.1 Designation method RGZ0.5	

Note that designating H/2−0.15 or more for key flat cutting alteration will create hardly any flat on the head.

■Alteration Guide for Ejector Sleeve & One-step Center Pin Sets

Items	Alterations	Codes	Specifications	1Code
Head alteration	**Turning stopper processing** (WC 0 / −0.1)	WC	Adds a flat on the head. Range of designation V/2≦WC＜Q/2 Unit of designation ① WC=0.1mm increments ② When WC=V/2, 0.05 mm increments available. Designation method ① WC 1.4 ② WC 1.75	
	Turning stopper processing (WWC 0 / −0.1)	WWC	Adds two parallel flats on the head. Range of designation V/2≦WWC＜Q/2 Unit of designation ① WWC=0.1mm increments ② When WWC=V/2, 0.05 mm increments available. Designation method ① WWC 1.8 ② WWC 2.75	Quotation
	Head diameter change (Q, QC 0 / −0.3)	QC	Reduces the head diameter. Range of designation V≦QC＜Q Unit of designation 0.1mm increments Designation method QC 6.5	
	Head thickness change (JC, J)	JC	Reduces the head thickness from the standard. Dimensions X and F remain unchanged. However, for ESNS and ESJS, the dimension X becomes shorter by (J−JC). J−JC≦Xmax.−X Range of designation J/2≦JC＜J Unit of designation 0.1mm increments Designation method JC 3.5	

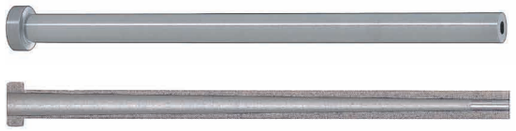
SKH51 equivalent
Thin-wall
Wall thickness
0.3mm～

STRAIGHT EJECTOR SLEEVES

—TAPERED TYPE—

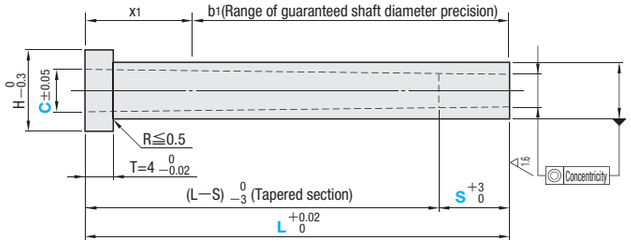
Non JIS material definition is listed on P.1351 - 1352

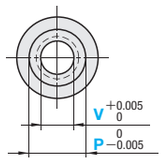
RoHS



Part Number	T P	T V	Applicable center pin shaft diameter tolerance	Concentricity
ESVX	$^{0}_{-0.005}$	$^{+0.005}_{0}$	$^{0}_{-0.005}$	◎ ϕ0.003
ESVXN	$^{0}_{-0.005}$	$^{+0.005}_{0}$	$^{0}_{-0.005}$	◎ ϕ0.005

b1 (Range of guaranteed shaft diameter precision)
x1 max.=10





C=designated dimension

M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness
(Details P.1307)
Overall quenching (No annealing on head)

H	T	Part Number Type	Part Number No.	L	P	V	C	S 1mm increments
				0.01mm increments				
6	4	ESVX ESVXN	3	20.00～110.00	2.50～3.00	1.0≦V≦P—0.6	V+0.2≦C≦P—0.4	2≦S≦V×3
7			4		3.01～4.00			
8			5		4.01～5.00			
9			6		5.01～6.00			
10			7		6.01～7.00			
11			8		7.01～8.00			

Order

Part Number	—	L	—	P	—	V	—	C	—	S
ESVX5	—	70.00	—	P4.50	—	V3.50	—	C4.00	—	S3

Days to Ship: Quotation

Alterations

Part Number	—	L	—	P	—	V	—	C	—	S	—	(KC・WKC…etc.)
ESVX5	—	70.00	—	P4.50	—	V3.50	—	C4.00	—	S3	—	KC2.5

Alteration details P.275

Alterations	Code	Spec.		1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting P/2≦KC＜H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting P/2≦WKC＜H/2		
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting P/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.005mm increments possible	
RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting P/2≦RKC＜H/2		
DKC $^{0}_{-0.02}$	DKC	Three flats cutting P/2≦DKC＜H/2		
SKC $^{0}_{-0.02}$	SKC	Four flats cutting P/2≦SKC＜H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting P/2≦KGC＜H/2 AG=1° increments 0＜AG＜360		
120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° P/2≦KTC＜H/2		

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ 4	TC	TC=0.1mm increments (4—TC)≦Lmax.—L 2.0≦TC＜4 Dimensions L and (L—S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments Shaft diameter P≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments P+1≦HCC＜H—0.3	

Ejector Sleeves

High Speed Steel
SKH51 equivalent

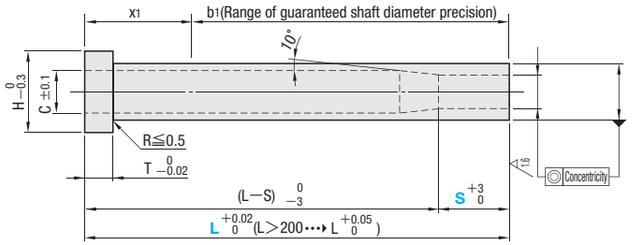
SKH51 equivalent
Wall thickness
0.6mm～

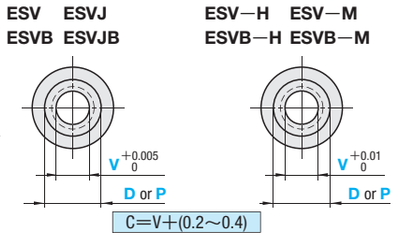
PRECISION STRAIGHT EJECTOR SLEEVES

Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number: Shaft diameter selection type	Part Number: Shaft diameter designation (0.01mm increments) type	Head Thickness	T D・P	T V	Concentricity	Applicable center pin shaft diameter tolerance
ESV	ESVB	4mm(T4)	0 / −0.005	+0.005 / 0	◎ φ0.005	0 / −0.005
ESVJ	ESVJB	6・8mm(JIS)				
ESV−H	ESVB−H	4mm(T4)		+0.01 / 0		−0.01 / −0.02 ※Note that for sleeves with V dimension tolerance of +0.01/0, combination with center pins that have shaft diameter tolerance +0.005/0 is not recommended. 0/−0.005 The reason for this is the fitting sections S are longer than ones with tolerance.
ESV−M	ESVB−M		−0.01 / −0.02		◎ φ0.01	





M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness
(Details P.1307)
Overall quenching (No annealing on head)

■Shaft diameter (D) selection type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	D	L (0.01mm increments)	V (0.01mm increments)	S 0.5mm increments
7	4	—	—	ESV (V +0.005 0)	—	3.5	40.00～225.00	0.80～ 2.30	ESV・ESVJ 1.0≦S≦(V×3) and S≦25
8						4	40.00～250.00 ESVJ…L≦225.00	0.80～ 2.80	
9		10	6		ESVJ (V +0.005 0)	5		0.80～ 3.80	
10		11				6		0.80～ 4.80	
11		13	8	ESV−H (V +0.01 0)		7		0.80～ 5.80	
14		14				8	40.00～250.00	2.00～ 6.20	ESV−H・ESV−M 1.0≦S≦(V×5) and S≦25
15		15				9		2.00～ 7.20	
16		17		ESV−M (V +0.01 0)		10		2.00～ 8.20	
17						11		2.00～ 9.20	
18		19				12		2.00～10.20	
19						13		2.00～11.20	
						14		2.00～12.20	

■Shaft diameter (P) designation 0.01mm increments type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	No.	L (0.01mm increments)	P	V (0.01mm increments)	S 0.5mm increments
7	4	—	—	ESVB (V +0.005 0)	—	4	40.00～225.00	3.20～ 3.99	0.80≦V≦(P−1.20)	ESVB・ESVJB 1.0≦S≦(V×3) and S≦25
8						5	40.00～250.00 ESVJB…L≦225.00	4.00～ 4.99		
9		10	6		ESVJB (V +0.005 0)	6		5.00～ 5.99		
10		11				7		6.00～ 6.99		
11		13	8	ESVB−H (V +0.01 0)		8	40.00～250.00	7.00～ 7.99	2.00≦V≦(P−1.80)	ESVB−H・ESVB−M 1.0≦S≦(V×5) and S≦25
14		14				9		8.00～ 8.99		
15		15				10		9.00～ 9.99		
16		17		ESVB−M (V +0.01 0)		11		10.00～10.99		
17						12		11.00～11.99		
18		19				13		12.00～12.99		
19						14		13.00～13.99		

Order

Part Number	L	P	V	S
(Shaft diameter (D) selection type) ESV6	150.00		V4.00	S12
(Shaft diameter (P) designation type) ESVB6	140.00	P5.95	V3.95	S11.5

Days to Ship Quotation

Price Quotation

Alterations

Part Number	L	P	V	S	(KC・WKC…etc.)
ESV6	100.52		V4.00	S12	KC 3.0

Alteration details P.275

Alterations	Code	Spec.		1Code
KC −0.02 0	KC	Single flat cutting (D or P)/2≦KC<H/2	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation Shaft diameter (D) selection 0.05mm increments possible Shaft diameter (P) designation 0.005mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	Quotation
WKC −0.02 0	WKC	Two flats cutting (D or P)/2≦WKC<H/2		
KAC KBC −0.02 0	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		
RKC −0.02 0	RKC	Two flats (right angled) cutting (D or P)/2≦RKC<H/2		
DKC −0.02 0	DKC	Three flats cutting (D or P)/2≦DKC<H/2		
SKC −0.02 0	SKC	Four flats cutting (D or P)/2≦SKC<H/2		
AG° ±0.5 0° KGC −0.02 0	KGC	Two flats (angled) cutting (D or P)/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC −0.02 0	KTC	Three flats cutting at 120° (D or P)/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
TC −0.02 0	TC	TC=0.1mm increments (T−TC)≦Lmax.−L T/2≦TC<T Dimensions L and (L−S) remain unchanged.	Quotation
H HC −0.3 0	HC	HC=0.1mm increments Shaft diameter (DorP)≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC −0.02 0	HCC	HCC=0.1mm increments (D or P)+1≦HCC<H−0.3	
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ (D or P)−V / 2 −0.1 Combination with RGX not available.	
RGX ±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ (D or P)−V / 2 −0.1 Combination with CGX not available.	

Ejector Sleeves

High Speed Steel
SKH51 equivalent

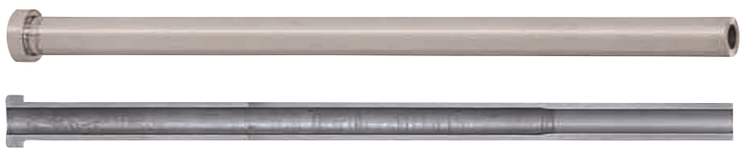
SKH51 equivalent
Concentricity◎0.01
Wall thickness 0.6mm～

PRECISION STRAIGHT EJECTOR SLEEVES

—S DIMENSION LONG TYPE—

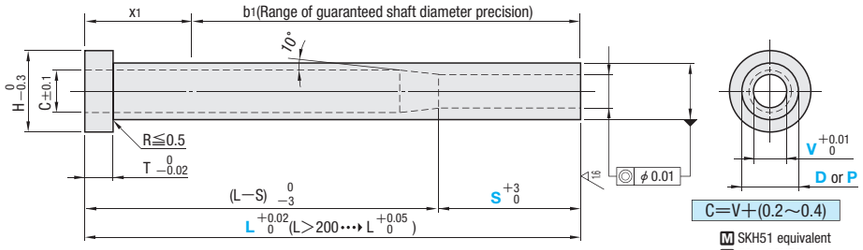
Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number		Head Thickness	T D・P	T V	Applicable center pin shaft diameter tolerance
Shaft diameter selection type	Shaft diameter designation (0.01mm increments) type				
ESVK—H	ESVKB—H	4mm (T4)	$^{0}_{-0.005}$	$^{+0.01}_{0}$	$^{-0.01}_{-0.02}$ ※ Note that for sleeves with V dimension tolerance of $^{+0.01}_{0}$, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not available. The reason for this is fitting sections S are longer.
ESVKJ—H	ESVKJB—H	6・8mm (JIS)			
ESVK—M	ESVKB—M	4mm (T4)	$^{-0.01}_{-0.02}$		

When 30＜S≦50, guaranteed range of V dimension precision is 10mm from tip.



M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness (Details P.1307)
Overall quenching (No annealing on head)

■Shaft diameter (D) selection type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L (0.01mm increments)	V (0.01mm increments)	S 0.5mm increments
7	4	—	—	ESVK—H ($D^{0}_{-0.005}$) ESVK—M ($D^{-0.01}_{-0.02}$)	—	3.5	40.00～225.00	0.80～ 2.30	1.0≦S≦(V×10) and S≦50
						4		0.80～ 2.80	
8						5		0.80～ 3.80	
9		10	6		ESVKJ—H ($D^{0}_{-0.005}$)	6		0.80～ 4.80	
10		11				7		0.80～ 5.80	
11		13	8			8	40.00～250.00	2.00～ 6.20	
14		14				9		2.00～ 7.20	
15		15				10		2.00～ 8.20	
16		17				11		2.00～ 9.20	
17						12		2.00～10.20	
18		19				13		2.00～11.20	
19						14		2.00～12.20	

When 30＜S≦50, guaranteed range of V dimension precision is 10mm from tip.

■Shaft diameter (P) designation 0.01mm increments type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	No.	L (0.01mm increments)	P	V	S 0.5mm increments
7	4	—	—	ESVKB—H ($P^{0}_{-0.005}$) ESVKB—M ($P^{-0.01}_{-0.02}$)	—	4	40.00～225.00	3.20～ 3.99	0.80≦V≦(P—1.20)	1.0≦S≦(V×10) and S≦50
8						5		4.00～ 4.99		
9		10	6		ESVKJB—H ($P^{0}_{-0.005}$)	6		5.00～ 5.99		
10		11				7		6.00～ 6.99		
11		13	8			8	40.00～250.00	7.00～ 7.99	2.00≦V≦(P—1.80)	
14		14				9		8.00～ 8.99		
15		15				10		9.00～ 9.99		
16		17				11		10.00～10.99		
17						12		11.00～11.99		
18		19				13		12.00～12.99		
19						14		13.00～13.99		

When 30＜S≦50, guaranteed range of V dimension precision is 10mm from tip.

Order

Part Number	L	P	V	S
(Shaft diameter (D) selection type) ESVK—H6	150.00		V4.00	S30
(Shaft diameter (P) designation type) ESVKB—H6	140.00	P5.95	V3.95	S28

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	L	P	V	S	(KC・WKC･･･etc.)
ESVK—H6	100.52		V4.00	S30	KC 3.0

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting (D or P)/2≦KC＜H/2	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting (D or P)/2≦WKC＜H/2	
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting (D or P)/2≦RKC＜H/2	
DKC DKC $^{0}_{-0.02}$	DKC	Three flats cutting (D or P)/2≦DKC＜H/2	
SKC SKC $^{0}_{-0.02}$	SKC	Four flats cutting (D or P)/2≦SKC＜H/2	
AG° ±0.5 0° KGC KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting (D or P)/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° (D or P)/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation 0.005mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
T TC $^{0}_{-0.02}$	TC	TC=0.1mm increments (T—TC)≦Lmax.—L T/2≦TC＜T Dimensions L and (L—S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments Shaft diameter (D or P)≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments (D or P)+1≦HCC＜H—0.3	
CGX ±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ $\frac{(D\text{ or }P)-V}{2}-0.1$ Combination with RGX not available.	
RGX ±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ $\frac{(D\text{ or }P)-V}{2}-0.1$ Combination with CGX not available.	

■Characteristics

① The fitting section (S) can be long up to V×10.
②Precision wire cutting is used to make the dimension S longer.
③Softened layer in the bore made by wire cutting is removed by polishing. (Tolerances of the dimension V are values after polishing.)
④The ejector sleeves are of high precision (concentricity: 0.01・tolerances of the dimension V: $^{+0.01}_{0}$) in addition to having a low price.

SKH51 equivalent
Concentricity◎0.01
Wall thickness 0.6mm～

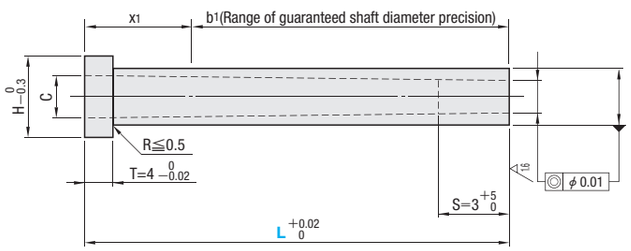
SHORT EJECTOR SLEEVES (BUSHINGS FOR EJECTOR PIN)

—RELIEF TAPERED TYPE—

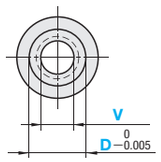
Non JIS material definition is listed on P.1351 - 1352

RoHS

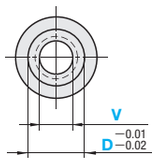
Part Number	T D	T V	Applicable center pin shaft diameter tolerance
EPBBH	0 / −0.005	+0.005 / 0	0 / −0.005
EPBB−H	0 / −0.005	+0.01 / 0	−0.01 / −0.02
EPBB−M	−0.01 / −0.02		



EPBBH・EPBB−H



EPBB−M



M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness
(Details P.1307)
Overall quenching (No annealing on head)

H	T	Cmax.	Part Number Type	Part Number D	0.01mm increments L	0.01mm increments V
5	4	2.1	EPBBH (D 0 −0.005) (V +0.005 0)	2.5	15.00 ～ 50.00	1.00 ～ 1.30
6		2.6		3		1.31 ～ 1.80
7		3.6		4		1.91 ～ 2.80
8		4.6	EPBB−H (D 0 −0.005) (V +0.01 0)	5		2.91 ～ 3.80
9		5.6		6		3.91 ～ 4.80
10		6.6	EPBB−M (D −0.01 −0.02) (V +0.01 0)	7		4.91 ～ 5.80
11		7.6		8		5.81 ～ 6.80

Cmax.≧C≧V+0.5

P Price Quotation

Order

Part Number	L	V
EPBB−H4	29.00	V2.00

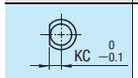
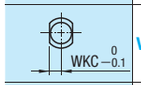
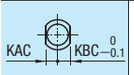
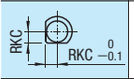
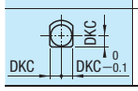
Days to Ship Quotation

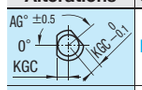
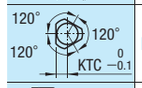
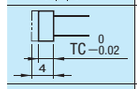
Alterations

Part Number	L	V	(KC・WKC…etc.)
EPBB−H4	29.00	V2.00	KC2.4

Quotation

Alteration details P.275

Alterations	Code	Spec.	1Code
	KC	KC=0.1mm increments D/2≦KC<H/2	
	WKC	WKC=0.1mm increments D/2≦WKC<H/2	Quotation
	KAC KBC	KAC, KBC=0.1mm increments D/2≦KAC<KBC<H/2	
	RKC	RKC=0.1mm increments D/2≦RKC<H/2	
	DKC	DKC=0.1mm increments D/2≦DKC<H/2	

Alterations	Code	Spec.	1Code
	KGC	KGC=0.1mm increments AG=1° increments D/2≦KGC<H/2, 0<AG<360	
	KTC	KTC=0.1mm increments D/2≦KTC<H/2	Quotation
	TC	TC=0.1mm increments 2.0≦TC<4,4−TC≦Lmax.−L Dimension L remains unchanged. Dimensions (L−S) become shorter by (4−TC).	
	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

SKH51 equivalent
Thin-wall
Concentricity◎0.005
Wall thickness 0.3mm～

PRECISION SMALL DIAMETER · THIN-WALL STEPPED EJECTOR SLEEVE

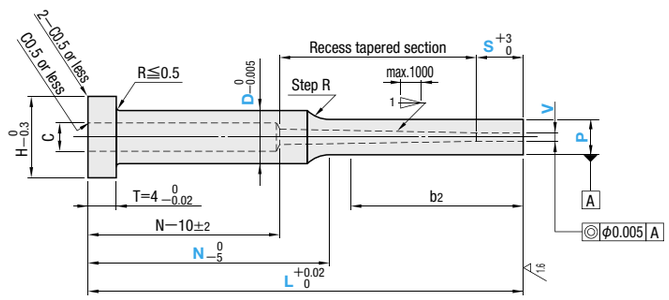
—TAPERED TYPE—

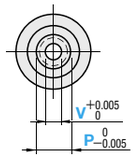
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	T P	T V	Applicable center pin shaft diameter tolerance
ESVFX	0 / −0.005	+0.005 / 0	0 / −0.005 (Details P.1309)

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)





Recessed hole (C) dimension varies with the shape of relief tapered section.
Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1307)
Overall quenching (No annealing on head)

4mm head H	4mm head T	Tapered section	Cmax.	Part Number Type	Part Number D	0.01mm increments L	0.01mm increments P	0.01mm increments V	1mm increments N	1mm increments S
6	4	Tapered 1/1000 or more	2.2	ESVFX	3	100.00～150.00	2.50～3.00	1.00～1.50	N≧L/2 (L−N≧30)	2≦S≦V×3
7			3.2		4		3.00～4.00	1.00≦V≦D−2		
8			4.2		5	100.00～200.00	D−1.5≦P≦D			
9			5.2		6					
10			6.2		7					
11			7.2		8					

Cmax.≧C≧V+0.5　　Working limits for V V≦P−0.6

Order

Part Number	L	P	V	N	S
ESVFX 3	100.00	P2.50	V1.00	N60	S2

Days to Ship: Quotation

■Characteristics

- Damage becomes unlikely in assembly of center pins due to tapered shape of recessed hole.
- Full length L can be set up to 200mm for wall thickness of 0.3mm and more.

Alterations

Part Number	L	P	V	N	S	(KC · WKC…etc.)
ESVFX 3	100.00	P2.50	V1.00	N60	S2	KC 2.5

Alteration details P.275

Alterations	Code	Spec.		1Code
KC 0 −0.02	KC	Single flat cutting D/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC 0 −0.02	WKC	Two flats cutting D/2≦WKC<H/2		
KAC KBC 0 −0.02	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.5mm increments possible	
RKC 0 −0.02	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC 0 −0.02	DKC	Three flats cutting D/2≦DKC<H/2		
SKC 0 −0.02	SKC	Four flats cutting D/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC 0 −0.02	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC 0 −0.02	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4,4−TC≦Lmax.−L Dimensions L,N and (L−S) remain unchanged.	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

Ejector Sleeves

High Speed Steel
SKH51 equivalent

SKH51 equivalent
Thin-wall
Concentricity◎0.005Wall thickness 0.3mm～

PRECISION SMALL DIAMETER · THIN-WALL STEPPED EJECTOR SLEEVES

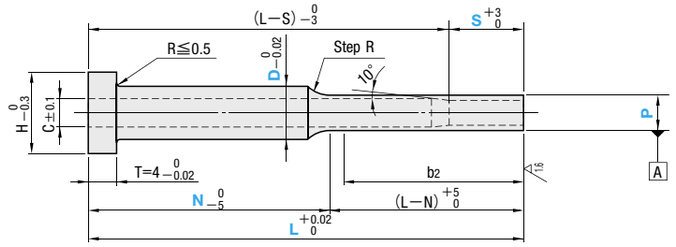
Non JIS material definition is listed on P.1351 - 1352

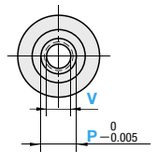
RoHS

Part Number		T P	T V	A Concentricity of inner diameter (V) against (outer diameter P)	Applicable center pin shaft diameter tolerance
D selection type	D designation type				
ESVF	ESVFB	$^{0}_{-0.005}$	$^{+0.005}_{0}$	◎ϕ0.005 A	$^{0}_{-0.005}$ (Details P.1309)

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b2) (Details P.1306)

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1307)
Overall quenching (No annealing on head)





C=V+(0.2～0.4)

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

■D selection type

H	Part Number Type	D	0.01mm increments L	P	V	N 1mm increments	S 0.5mm increments
5	ESVF	2.5	40.00～ 70.00	1.80～2.19	0.80～1.40	N≧L/2 and (L−N)≧10	1.0≦S≦(V×3)
				2.20～2.45	1.00～1.60		
6		3	40.00～ 85.00	1.80～2.39	0.80～1.60		
				2.40～2.95	1.10～2.10		
			85.01～125.00	2.40～2.95	1.10～2.10		
7		3.5	40.00～ 85.00	1.80～2.39	0.80～1.60		
				2.40～3.45	1.10～2.60		
			85.01～125.00	2.40～3.45	1.10～2.60		
		4	40.00～ 85.00	1.90～2.39	0.80～1.60		
				2.40～3.95	1.10～3.10		
			85.01～125.00	2.40～3.95	1.10～3.10		
8		4.5	40.00～125.00	2.65～4.45	1.10～3.60		
		5		2.65～4.95	1.20～4.10		
9		5.5		2.65～5.45	1.20～4.60		
		6	40.00～150.00	2.90～5.95	1.60～5.10		

Working limits for V D3～6 ··· V≦P−0.6(L≦85),V≦P−0.8(L>85)D2.5 ··· V≦P−0.6 Working limits for N D2.5 ··· Nmin.=45(60.01≦L≦70.00)

■D designation type

H	Part Number	D 0.1mm increments	0.01mm increments L	P	V	N 1mm increments	S 0.5mm increments
6	ESVFB	2.6～2.9	40.00～ 70.00	1.80～2.39	0.80～1.60	N≧L/2 and (L−N)≧10	1.0≦S≦(V×3)
				2.40～2.80	1.10～2.20		
6 (when D=3.0) 7 (when D=3.1～3.5)		*3.0～3.5	40.00～ 85.00	1.80～2.39	0.80～1.60		
				2.40～3.40	1.10～2.60		
			85.01～125.00	2.40～3.40	1.10～2.60		
7		3.6～4.0	40.00～ 85.00	1.90～2.39	0.80～1.60		
				2.40～3.90	1.10～3.10		
			85.01～125.00	2.40～3.90	1.10～3.10		
8		4.1～4.5	40.00～125.00	2.65～4.40	1.10～3.60		
		4.6～5.0		2.65～4.90	1.20～4.10		
9		5.1～5.5		2.65～5.40	1.20～4.60		
		5.6～6.0	40.00～150.00	2.90～5.90	1.60～5.10		

Working limits for V D3.1 6 ··· V≦P−0.6(L≦85), V≦P−0.8 (L>85) D2.6 3.0 ··· V≦P−0.6 Working limits for N D2.6 3.0 ··· Nmin.=45(60.01≦L≦70.00)
In the case where the wall thickness is 0.6 or more (V≦P−1.2), please refer to ESVBF(P.305) *When D=3.0, H=6

Order

Part Number	D	L	P	V	N	S
ESVF 4.5		121.52	P3.25	V2.45	N70	S7.0
ESVFB	4.3	121.52	P3.25	V2.45	N70	S7.0

Days to Ship Quotation

Price Quotation

Alterations

Part Number	D	L	P	V	N	S	(KC · WKC···etc.)
ESVF6		100.52	P3.55	V2.75	N65	S8.0	KC 3.5
ESVFB	6.0	100.52	P3.55	V2.75	N65	S8.0	KC 3.5

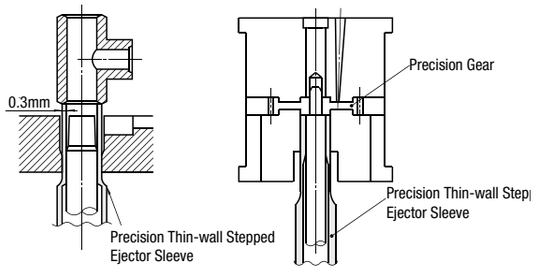
Alteration details P.275

Alterations	Code	Spec.		1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting D/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting D/2≦WKC<H/2		
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2		
RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
DKC $^{0}_{-0.02}$	DKC	Three flats cutting D/2≦DKC<H/2		
SKC $^{0}_{-0.02}$	SKC	Four flats cutting D/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ 4	TC	TC=0.1mm increments 2.0≦TC<4,4−TC≦Lmax.−L Dimensions L,N and (L−S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

Example

Please use for molded products such as precision gears, which have narrow protruding part.



■Precautions for use

Use a structure that protects the sliding movement of ejector pins, such as precision ejector guide pins (P.961～)& and bushings (P.968～).

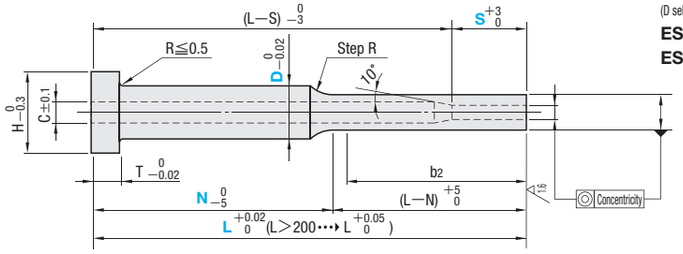
SKH51 equivalent
Wall thickness 0.6mm～

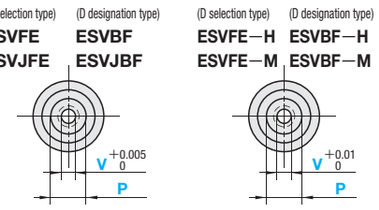
PRECISION STEPPED EJECTOR SLEEVES

Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number D selection type	Part Number D designation type	Head Thickness	T P	T V	Concentricity	Applicable center pin shaft diameter tolerance
ESVFE	ESVBF	4mm (T4)	$^{0}_{-0.005}$	$^{+0.005}_{0}$	◎ ϕ 0.005	$^{0}_{-0.005}$
ESVJFE	ESVJBF	6・8mm (JIS)				
ESVFE−H	ESVBF−H	4mm (T4)		$^{+0.01}_{0}$		※ Note that for sleeves with V dimension tolerance of $^{+0.01}_{0}$, combination with center pins that have shaft diameter tolerance $^{+0.005}_{0}$ is not recommended. $^{0}_{-0.005}$ The reason for this is the fitting sections S are longer than ones with tolerance.
ESVFE−M	ESVBF−M		$^{-0.01}_{-0.02}$		◎ ϕ 0.01	





C=V+(0.2～0.4)

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C).

M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness
(Details P.1307)
Overall quenching (No annealing on head)

■D selection type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L	P	V	N 1mm increments	S 0.5mm increments
7	4	—	—	ESVFE ($V^{+0.005}_{0}$)	—	4	40.00～225.00	3.20～ 3.90	0.80≦V≦(P−1.2)	N≧L/2 (L−N≧10)	ESVFE・ESVJFE 1.0≦S≦(V×3) and S≦25
8						5		3.20～ 4.90			
9		10	6		ESVJFE ($V^{+0.005}_{0}$)	6		3.20～ 5.90			
10		11				7	40.00～250.00	3.20～ 6.90	・L≦200 2.00≦V≦(P−1.2)		
11		13	8	ESVFE−H ($V^{+0.01}_{0}$)		8		3.20～ 7.90			
14		14				9		3.20～ 8.90			
15		15				10		4.85～ 9.90	・L>200 2.00≦V≦(P−1.6)		ESVFE−H・ESVFE−M 1.0≦S≦(V×5) and S≦25
16		17		ESVFE−M ($V^{+0.01}_{0}$)		11		5.35～10.90			
17		17				12		5.85～11.90			
18		19				13		6.35～12.90			

■D designation type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D 0.1mm increments	L	P	V	N 1mm increments	S 0.5mm increments
7	4	—	—	ESVBF ($V^{+0.005}_{0}$)	—	3.5～ 4.0	40.00～225.00	3.20≦P≦(D−0.1)	0.80≦V≦(P−1.2)	N≧L/2 (L−N≧10)	ESVBF・ESVJBF 1.0≦S≦(V×3) and S≦25
8						4.1～ 5.0					
9		10	6		ESVJBF ($V^{+0.005}_{0}$)	5.1～ 6.0					
10		11				6.1～ 7.0	40.00～250.00		・L≦200 2.00≦V≦(P−1.2)		
11		13	8	ESVBF−H ($V^{+0.01}_{0}$)		7.1～ 8.0					
14		14				8.1～ 9.0					
15		15				9.1～10.0		4.85≦P≦(D−0.1)			
16		17		ESVBF−M ($V^{+0.01}_{0}$)		10.1～11.0		5.35≦P≦(D−0.1)	・L>200 2.00≦V≦(P−1.6)		ESVBF−H・ESVBF−M 1.0≦S≦(V×5) and S≦25
17		17				11.1～12.0		5.85≦P≦(D−0.1)			
18		19				12.1～13.0		6.35≦P≦(D−0.1)			

Order

Part Number												
Type	D		L		P		V		N		S
(D selection type) ESVFE	5	—	140.00	—	P4.90	—	V3.70	—	N80	—	S11.0
Part Number	D	—	L	—	P	—	V	—	N	—	S
(D designation type) ESVBF	9.6	—	120.05	—	P8.55	—	V6.10	—	N70	—	S12.5

Days to Ship Quotation

Price Quotation

Alterations

Part Number	D	L	P	V	N	S	(KC・WKC…etc.)
ESVBF	9.6	120.05	P8.55	V6.10	N70	S12.5	KC 4.8

Alteration details P.275

Alterations	Code	Spec.		1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting D/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting D/2≦WKC<H/2		
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	(1)To align the key flat with the shaft diameter Unit of designation (D selection type) 0.5mm increments possible (D designation type) 0.05mm increments possible	
RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC $^{0}_{-0.02}$	DKC	Three flats cutting D/2≦DKC<H/2		
SKC $^{0}_{-0.02}$	SKC	Four flats cutting D/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L, N, and (L−S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with RGX not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with CGX not available.	

SKH51 equivalent
Thin-wall
Concentricity◎0.01
Wall thickness 0.3mm～

PRECISION SMALL DIAMETER・THIN-WALL STEPPED EJECTOR SLEEVE

—LONG S DIMENSION・SHAFT DIAMETER D SELECTION／SHAFT DIAMETER D DESIGNATION TYPE—

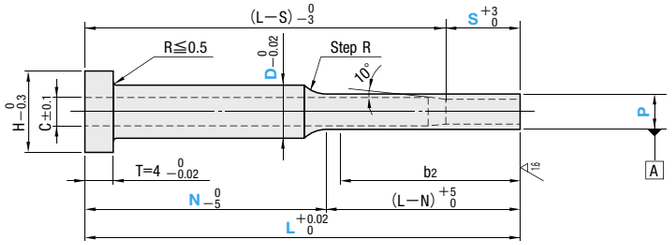
Non JIS material definition is listed on P.1351 - 1352

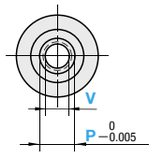
RoHS

Part Number		T P	T V	A Concentricity of inner diameter (V) against (outer diameter P)	Applicable center pin shaft diameter tolerance
D selection type	D designation type				
ESVKF—H	ESVKFB—H	$^{0}_{-0.005}$	$^{+0.01}_{0}$	◎ ϕ0.01 A	$^{-0.01}_{-0.02}$ ※ Note that for sleeves with V dimension tolerance of $^{+0.01}_{0}$, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this in the fitting sections S are longer. (Details P.1309)

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)
When L40～50, guaranteed range of V dimension precision is 10mm from tip.

M SKH51 equivalent
H 58～60HRC
Range of guaranteed base material hardness (Details P.1307)
Overall quenching (No annealing on head)





C=V+(0.2～0.4)

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

■Shaft Diameter D Selection Type

H	Part Number Type	D	0.01mm increments L	P	V	N 1mm increments	S 0.5mm increments
6	ESVKF—H (S Dimension Long Type)	3	40.00～ 85.00	1.80～2.39	0.80～1.60	N≧L/2 and (L—N)≧10	1.0≦S≦(V×10) and S≦30
				2.40～2.95	1.10～2.10		
			85.01～125.00	2.40～2.95	1.10～2.10		
7		3.5	40.00～ 85.00	1.80～2.39	0.80～1.60		
				2.40～3.45	1.10～2.60		
			85.01～125.00	2.40～3.45	1.10～2.60		
		4	40.00～ 85.00	1.90～2.39	0.80～1.60		
				2.40～3.95	1.10～3.10		
			85.01～125.00	2.40～3.95	1.10～3.10		
8		4.5	40.00～125.00	2.65～4.45	1.10～3.60		
		5		2.65～4.95	1.20～4.10		
9		5.5		2.65～5.45	1.20～4.60		
		6	40.00～150.00	2.90～5.95	1.60～5.10		

Working limits for V V≦P—0.6(L≦85),V≦P—0.8(L>85)

■Shaft Diameter D Designation Type

H	Part Number	D 0.1mm increments	0.01mm increments L	P	V	N 1mm increments	S 0.5mm increments
6	ESVKFB—H (S Dimension Long Type)	2.6～2.9	40.00～ 70.00	1.80～2.39	0.80～1.60	N≧L/2 and (L—N)≧10	1.0≦S≦(V×10) and S≦30
				2.40～2.80	1.10～2.20		
6 (when D=3.0) 7 (when D=3.1～3.5)		*3.0～3.5	40.00～ 85.00	1.80～2.39	0.80～1.60		
				2.40～3.40	1.10～2.60		
			85.01～125.00	2.40～3.40	1.10～2.60		
7		3.6～4.0	40.00～ 85.00	1.90～2.39	0.80～1.60		
				2.40～3.90	1.10～3.10		
			85.01～125.00	2.40～3.90	1.10～3.10		
8		4.1～4.5	40.00～125.00	2.65～4.40	1.10～3.60		
		4.6～5.0		2.65～4.90	1.20～4.10		
9		5.1～5.5		2.65～5.40	1.20～4.60		
		5.6～6.0	40.00～150.00	2.90～5.90	1.60～5.10		

Working limits for V D3.1 6 ⇢ V≦P—0.6(L≦85), V≦P—0.8 (L>85) D2.6 3.0 ⇢ V≦P—0.6 Working limits for N D2.6 3.0 ⇢ Nmin.=45 (60.01≦L≦70.00)
In the case where the dimensions do not apply, please also refer to ESVKBF—H(P.309). *When D=3.0, H=6

Order

Part Number	D	L	P	V	N	S
ESVKF—H4.5		121.52	P3.25	V2.45	N70	S24.0
ESVKFB—H	4.3	121.52	P3.25	V2.45	N70	S24.0

Days to Ship Quotation

Price Quotation

Alterations

Part Number	D	L	P	V	N	S	(KC・WKC…etc.)
ESVKF—H6		100.52	P3.55	V2.75	N65	S8.0	KC 3.5
ESVKFB—H	6.0	100.52	P3.55	V2.75	N65	S8.0	KC 3.5

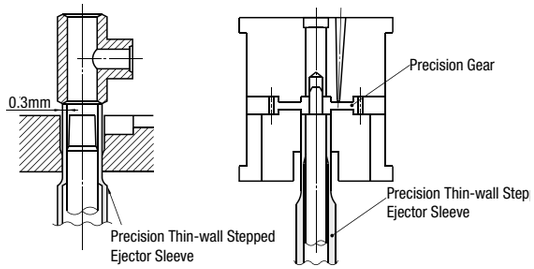
Alteration details P.275

Alterations	Code	Spec.		1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting D/2≦KC<H/2	About Designation Unit for Key Flat Cutting	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting D/2≦WKC<H/2		
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible	
RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2		
DKC $^{0}_{-0.02}$	DKC	Three flats cutting D/2≦DKC<H/2		
SKC $^{0}_{-0.02}$	SKC	Four flats cutting D/2≦SKC<H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	
AG° ±0.5 0° KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360		
120° 120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2		

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ 4	TC	TC=0.1mm increments 2.0≦TC<4,4—TC≦Lmax.—L Dimensions L,N and (L—S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H—0.3	

Example

Please use for molded products such as precision gears, which have narrow protruding part.



■Characteristics

About precision・thin-wall stepped ejector sleeves ESVKF—H・ESVKFB—H

① The fitting section (S) can be long up to V×10.
② Precision wire cutting is used to make the dimension S longer.
③ Softened layer in the bore made by wire cutting is removed by polishing. (Tolerances of the dimension V are values after polishing.)
④ Single wall thickness of high precision ejector sleeves (concentricity:0.01, tolerances of V dimension: $^{+0.01}_{0}$) can be designated from 0.3mm. (Pay attention to applicable size.)

■Precautions for use

Use a structure that protects the sliding movement of ejector pins, such as precision ejector guide pins (P.961～) and bushings (P.968～).

SKH51 equivalent
Concentricity◎0.01
Wall thickness 0.6mm～

PRECISION STEPPED EJECTOR SLEEVES

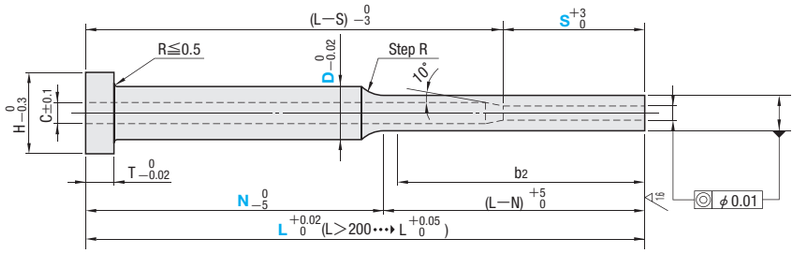
—S DIMENSION LONG TYPE—

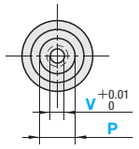
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number		Head Thickness	T P	T V	Applicable center pin shaft diameter tolerance
D selection type	D designation type				
ESVKFE—H	ESVKBF—H	4mm(T4)	$^{0}_{-0.005}$	$^{+0.01}_{0}$	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of $^{+0.01}_{0}$, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not available. The reason for this is fitting sections S are longer.
ESVKJFE—H	ESVKJBF—H	6・8mm(JIS)			
ESVKFE—M	ESVKBF—M	4mm(T4)	$^{-0.01}_{-0.02}$		

When 30＜S≦50, guaranteed range of V dimension precision is 10mm from tip.





C=V+(0.2～0.4)

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C).

M SKH51 equivalent
H 58～60HRC
※Range of guaranteed base material hardness
(Details P.1307)
Overall quenching (No annealing on head)

■D selection type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D	L	P	V	N 1mm increments	S 0.5mm increments
7	4	—	—	ESVKFE—H ($P^{0}_{-0.005}$)	—	3.5	40.00～125.00	3.20≦P≦(D—0.1)	0.80≦V≦(P—1.2)	N≧L/2 (L—N≧10)	1.0≦S≦(V×10) and S≦50
						4	・0.80≦V＜2.00 40.00～150.00 ・V≧2.00 40.00～175.00				
8						5					
9		10	6		ESVKJFE—H ($P^{0}_{-0.005}$)	6					
10		11				7	40.00～250.00		・L≦200 2.00≦V≦(P—1.2) ・L＞200 2.00≦V≦(P—1.6)		
11		13	8	ESVKFE—M ($P^{-0.01}_{-0.02}$)		8					
14		14				9					
15		15				10		4.85≦P≦(D—0.1)			
16		17				11		5.35≦P≦(D—0.1)			
17		17				12		5.85≦P≦(D—0.1)			
18		19				13		6.35≦P≦(D—0.1)			

When 30＜S≦50, guaranteed range of V dimension precision is 10mm from tip.

■D designation type

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	D 0.1mm increments	L	P	V	N 1mm increments	S 0.5mm increments
7	4	—	—	ESVKBF—H ($P^{0}_{-0.005}$)	—	3.5～ 4.0	40.00～225.00	3.20≦P≦(D—0.1)	0.80≦V≦(P—1.2)	N≧L/2 (L—N≧10)	1.0≦S≦(V×10) and S≦50
8						4.1～ 5.0					
9		10	6		ESVKJBF—H ($P^{0}_{-0.005}$)	5.1～ 6.0					
10		11				6.1～ 7.0	40.00～250.00		・L≦200 2.00≦V≦(P—1.2) ・L＞200 2.00≦V≦(P—1.6)		
11		13	8	ESVKBF—M ($P^{-0.01}_{-0.02}$)		7.1～ 8.0					
14		14				8.1～ 9.0					
15		15				9.1～10.0		4.85≦P≦(D—0.1)			
16		17				10.1～11.0		5.35≦P≦(D—0.1)			
17		17				11.1～12.0		5.85≦P≦(D—0.1)			
18		19				12.1～13.0		6.35≦P≦(D—0.1)			

Order

Part Number												
Type	D	—	L	—	P	—	V	—	N	—	S
(D selection type)ESVKFE—H	4	—	120.05	—	P3.80	—	V2.60	—	N75	—	S26
Part Number	—	D	—	L	—	P	—	V	—	N	—	S
(D designation type)ESVKBF—H	—	4.6	—	120.05	—	P3.80	—	V2.60	—	N75	—	S26

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	—	D	—	L	—	P	—	V	—	N	—	S	—	(KC・WKC…etc.)
ESVKBF—H	—	4.0	—	120.05	—	P3.80	—	V2.60	—	N70	—	S26	—	KC2.5

Alteration details P.275

Alterations	Code	Spec.		1Code
KC $^{0}_{-0.02}$	KC	Single flat cutting D/2≦KC＜H/2	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	Quotation
WKC $^{0}_{-0.02}$	WKC	Two flats cutting D/2≦WKC＜H/2		
KAC KBC $^{0}_{-0.02}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2		
RKC $^{0}_{-0.02}$	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2		
DKC $^{0}_{-0.02}$	DKC	Three flats cutting D/2≦DKC＜H/2		
SKC $^{0}_{-0.02}$	SKC	Four flats cutting D/2≦SKC＜H/2		
AG° ±0.5 0° KGC $^{0}_{-0.02}$	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360		
120° 120° KTC $^{0}_{-0.02}$	KTC	Three flats cutting at 120° D/2≦KTC＜H/2		

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$	TC	TC=0.1mm increments T/2≦TC＜T T—TC≦Lmax.—L Dimensions L, N, and (L—S) remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC＜H—0.3	
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ $\frac{P-V}{2}-0.1$ Available when L—N≧50 ⊗ Combination with RGX not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ $\frac{P-V}{2}-0.1$ Available when L—N≧50 ⊗ Combination with CGX not available.	

■Characteristics

① The fitting section (S) can be long up to V×10.
② Precision wire cutting is used to make the dimension S longer.
③ Softened layer in the bore made by wire cutting is removed by polishing. (Tolerances of the dimension V are values after polishing.)
④ The ejector sleeves are of high precision (concentricity: 0.01・tolerances of the dimension V: $^{+0.01}_{0}$) in addition to having a low price.

■Precautions for use

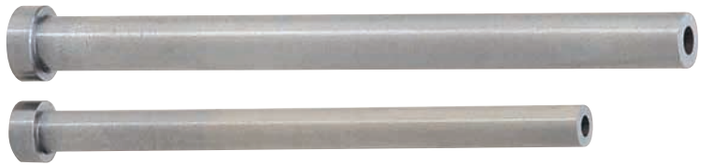
Use a construction that supports sliding and does not readily apply a load to the flange of the ejector pin, such as by using a precision ejector guide pin & bushing.

SKD61 equivalent+Nitrided
Concentricity◎0.03
4mm head

STRAIGHT EJECTOR SLEEVE

— STANDARD —

Non JIS material definition is listed on P.1351 - 1352

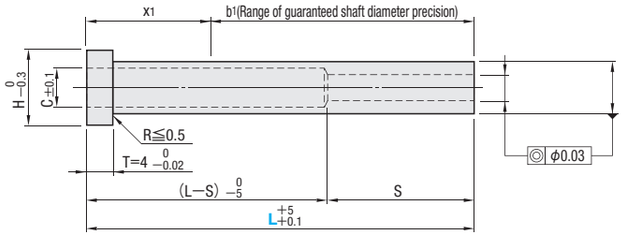


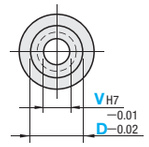
RoHS

Part Number	T V	Applicable center pin shaft diameter tolerance
ESNV	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.5≦V≦6.0	V≧6.5
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$





C=V+0.5

L	75	100	125	150	175	200	225	250	275	300
S	40	50 (V1.5 ···→ 40)		60 (V1.5 ···→ 40)	60	80			90	

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

H	Part Number Type	D	L										V Selection					
7	ESNV	4	75	100	125	150							1.5					
			75	100	125	150	175	200					2.0	2.5				
8		4.5	75	100	125	150							1.5					
			75	100	125	150	175	200					2.0	2.5				
		5	75	100	125	150	175	200					2.0	2.5	3.0			
9		5.5	75	100	125	150	175	200					2.0	2.5	3.0	3.5		
		6	75	100	125	150	175	200	225	250			2.5	3.0	3.5	4.0		
10		6.5	75	100	125	150	175	200	225	250			2.5	3.0	3.5	4.0		
		7	75	100	125	150	175	200	225	250			2.5	3.0	3.5	4.0	4.5	5.0
11		7.5	75	100	125	150	175	200	225	250			3.0	3.5	4.0	4.5	5.0	
		8	75	100	125	150	175	200	225	250			4.0	4.5	5.0	5.5	6.0	
14		9		100	125	150	175	200	225	250	275	300	6.0	6.5	7.0			
15		10		100	125	150	175	200	225	250	275	300	6.0	7.0	8.0			

Order

Part Number	—	L	—	V
ESNV8	—	100	—	4.0

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	—	L	—	V	—	(KC・WKC···etc.)
ESNV8	—	100	—	4.0	—	KC4.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC −0.1 0	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC −0.1 0	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1 0	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC −0.1 0	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC −0.1 0	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC −0.1 0	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC −0.1 0	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC −0.1 0	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

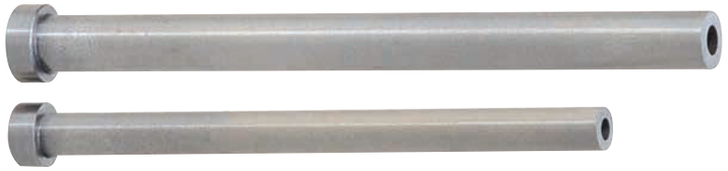
Alterations	Code	Spec.	1Code
TC −0.02 0 4	TC	TC=0.1mm increments 2.0≦TC<4 Dimensions L and (L−S) become shorter by (4−TC).	Quotation
H HC −0.3 0	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

SKD61 equivalent+Nitrided
Concentricity◎0.03
4mm head

STRAIGHT EJECTOR SLEEVE

— L DIMENSION DESIGNATION TYPE —

Non JIS material definition is listed on P.1351 - 1352

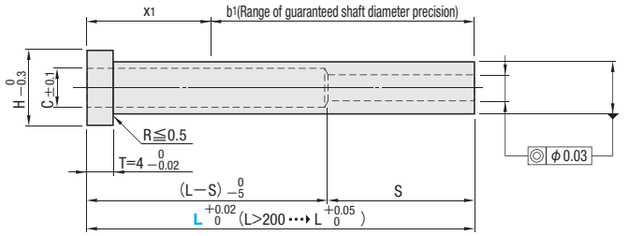


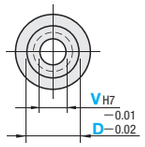
RoHS

Part Number	T V	Applicable center pin shaft diameter tolerance
ESNV—LC	H7	—0.01 —0.02 ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.5≦V≦6.0	V≧6.5
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$





C=V+0.5

L	50.00～75.00	75.01～100.00	100.01～125.00	125.01～150.00	150.01～175.00	175.01～200.00	200.01～225.00	225.01～250.00	250.01～275.00	275.01～300.00
(L—S)	35	50 (V1.5 ••• 60)	75 (V1.5 ••• 85)	90 (V1.5 ••• 110)	115	120	145	170	185	210

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Alterations

Part Number — L — V — (KC・WKC…etc.)
ESNV—LC8 — 123.65 — V4.0 — KC4.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
SKC $^{0}_{-0.1}$	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ 4	TC	TC=0.1mm increments (4—TC)≦Lmax.—L 2.0≦TC<4 Dimensions L and (L—S)remain unchanged.	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

H	Part Number Type	D	L 0.01mm increments	V Selection
7	ESNV—LC	4	50.00～150.00	1.5
			50.00～200.00	2.0
				2.5
8		4.5	50.00～150.00	1.5
			50.00～200.00	2.0
				2.5
		5	50.00～200.00	2.0
				2.5
				3.0
9		5.5	50.00～200.00	2.0
				2.5
				3.0
				3.5
		6	50.00～250.00	2.5
				3.0
				3.5
				4.0
10		6.5	50.00～250.00	2.5
				3.0
				3.5
				4.0
		7	50.00～250.00	2.5
				3.0
				3.5
				4.0
				4.5
				5.0
11		7.5	50.00～250.00	3.0
				3.5
				4.0
				4.5
				5.0
		8	50.00～250.00	4.0
				4.5
				5.0
				5.5
				6.0
14		9	80.00～300.00	6.0
				6.5
				7.0
15		10	80.00～300.00	6.0
				7.0
				8.0

Order

Part Number — L — V
ESNV—LC8 — 123.65 — V4.0

Days to Ship: Quotation

Price: Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.03
4mm head

STRAIGHT EJECTOR SLEEVE

—SHAFT DIAMETER SELECTION TYPE・SHAFT DIAMETER DESIGNATION TYPE—

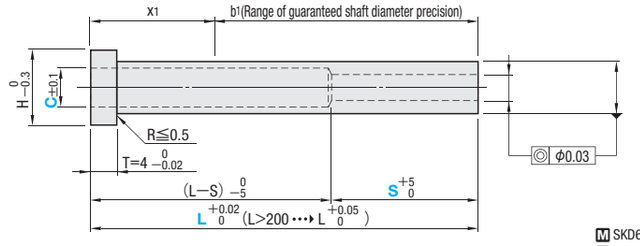
Non JIS material definition is listed on P.1351 - 1352

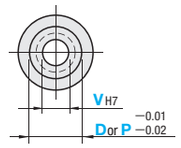
RoHS

Part Number		T D・P	T V	Applicable center pin shaft diameter tolerance
Shaft diameter selection type	Shaft diameter designation 0.01mm increments type			
ESNV—L	ESNVB	$^{-0.01}_{-0.02}$	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.1≦V≦6.0	V≧6.1
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$





C=designated dimension

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C) ≧ the center pin's shaft diameter (D) +1.0 (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
7	ESNV—L	4	40.00～200.00	1.5～2.5	C≧V+0.5	3.0	20～50 (D4, D4.5 (When V1.5～V1.9)) 20～40
8		4.5	40.00～250.00	1.5～2.5			
		5		2.0～3.0		3.5	
9		5.5		2.0～3.5		4.0	
		6	40.00～300.00	2.0～4.0		4.5	
10		6.5		2.0～4.5		5.0	
		7		2.0～5.0		5.5	
11		7.5		2.0～5.5		6.0	
		8		2.5～6.0		6.5	20～50
14		9		2.5～7.0		7.5	
15		10		2.5～8.0		8.5	

L	(L—S)min.
40.00～60.00	20
60.01～	30

L	(L—S)min.
40.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

■Shaft diameter (P) designation 0.01mm increments type

H	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
7	ESNVB	4	40.00～200.00	3.50～3.99	1.5～1.9	C≧V+0.5 and C≦P—1.5	2.5	20～50 (No.4 (When V1.5～V1.9)) 20～40
8		5	40.00～250.00	4.01～4.99	2.0～2.5		3.0	
9		5.5		5.01～5.49	2.0～3.4		4.0	
		6	40.00～300.00	5.51～5.99	2.0～3.9		4.5	
10		6.5		6.01～6.49	2.0～4.4		5.0	
		7		6.51～6.99	2.0～4.9		5.5	
11		7.5		7.01～7.49	2.0～5.4		6.0	
		8		7.51～7.99	2.5～5.9		6.5	20～50
15		10		8.01～9.99	2.5～7.9		8.5	

L	(L—S)min.
40.00～60.00	20
60.01～	30

L	(L—S)min.
40.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

V≦P—2.0

Alterations

Part Number	L	P	V	C	S	(KC・WKC…etc.)
ESNV—L8	200.05		V4.1	C4.6	S32	KC4.5
ESNVB8	150.00	P7.55	V4.0	C5.0	S32	KC3.775

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting (DorP)/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting (DorP)/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting (DorP)/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting (DorP)/2≦RKC<H/2	
DKC DKC DKC 0 −0.1	DKC	Three flats cutting (DorP)/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting (DorP)/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting (DorP)/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° (DorP)/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation 0.005mm increments possible

The tolerance is $^{0}_{-0.1}$ even when (D or P)/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.02 4	TC	TC=0.1mm increments (4—TC)≦Lmax.—L 2.0≦TC<4 Dimensions L and (L—S) remain unchanged.	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments (D or P)≦HC<H In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

Order

Part Number	L	P	V	C	S
(Shaft diameter(D)selection type) ESNV—L8	200.05		V4.1	C5.0	S32
(Shaft diameter (P) designation type) ESNVB8	200.05	P7.55	V4.1	C5.0	S32

Days to Ship: Quotation

Price: Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

SKD61 equivalent+Nitrided
Concentricity◎0.03
JIS head

STRAIGHT EJECTOR SLEEVE

— SHAFT DIAMETER SELECTION TYPE • SHAFT DIAMETER DESIGNATION TYPE —

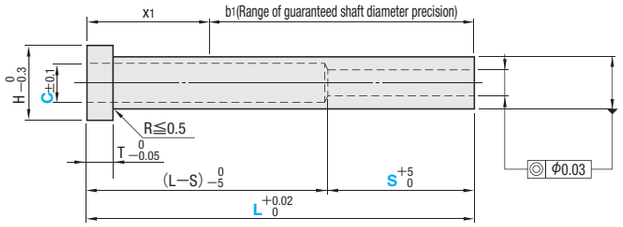
Non JIS material definition is listed on P.1351 - 1352

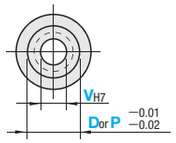
RoHS

Part Number		T D・P	T V	Applicable center pin shaft diameter tolerance
Shaft diameter selection type	Shaft diameter designation (0.01mm increments) type			
ESNVJ	ESJVB	−0.01 −0.02	H7	−0.01 −0.02 ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance 0 −0.005 is not recommended.The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.1≦V≦6.0	V≧6.1
+0.010 0	+0.012 0	+0.015 0





C=designated dimension

Nitriding may extend to the head as it is applied after dimension V and P machining.

To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C) ≧ the center pin's shaft diameter (D) +1.0 (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=35
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Order

Part Number	L	P	V	C	S
(Shaft diameter (D) selection type) ESNVJ8	200.05		V4.5	C5.0	S32
(Shaft diameter (P) designation type) ESJVB8	200.05	P7.55	V5.0	C5.5	S40

Days to Ship: Quotation

Alterations

Part Number	L	P	V	C	S	(KC・WKC…etc.)
ESNVJ8	200.05		V4.0	C5.0	S32	KC 4.5
ESJVB8	200.05	P7.55	V5.0	C5.5	S40	HC11.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting (DorP)/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting (DorP)/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting (DorP)/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting (DorP)/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting (DorP)/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting (DorP)/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting (DorP)/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° (DorP)/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation 0.005mm increments possible
The tolerance is 0 −0.1 even when (D or P)/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.05 T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L and (L−S) remain unchanged.	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments (DorP)≦HC<H In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

■Shaft diameter (D) selection type

H	T	Part Number Type	D	L 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
8	6	ESNVJ	4	40.00～200.00	1.5～2.5	C≧V+0.5	3.0	20～50 (D4, D4.5 (When V1.5～V1.9)) 20～40
			4.5	40.00～250.00				
9			5	40.00～300.00	2.0～3.0		3.5	
			5.5		2.0～3.5		4.0	
10			6		2.5～4.0		4.5	
11			6.5		2.5～4.5		5.0	
			7				5.0	
12			7.5		2.5～5.0		5.5	
13	8		8		2.5～5.5		6.0	20～50
14			9		2.5～6.5		7.0	
15			10		4.0～7.5		8.0	

L	(L−S)min.
40.00～60.00	20
60.01～	30

L	(L−S)min.
40.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

■Shaft diameter (P) designation 0.01mm increments type

H	T	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
8	6	ESJVB	4	40.00～200.00	3.50～3.99	1.5～1.9	C≧V+0.5 and C≦P−1.5	2.5	20～50 (No.4, No.4.5 (When V1.5～V1.9)) 20～40
			4.5	40.00～250.00	4.01～4.49	1.5～2.4		3.0	
9			5	40.00～300.00	4.51～4.99	2.0～2.9		3.5	
			5.5		5.01～5.49	2.0～3.4		4.0	
10			6		5.51～5.99	2.0～3.9		4.5	
11			6.5		6.01～6.49	2.0～4.4		5.0	
			7		6.51～6.99	2.0～4.9		5.5	
12			7.5		7.01～7.49	2.0～5.4		6.0	20～50
13	8		8		7.51～7.99	2.5～5.9		6.5	
15			10		8.01～9.99	2.5～7.9		8.5	

L	(L−S)min.
40.00～60.00	20
60.01～	30

L	(L−S)min.
40.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

V≦P−2.0

Price: Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm head

STRAIGHT EJECTOR SLEEVE

— STANDARD —

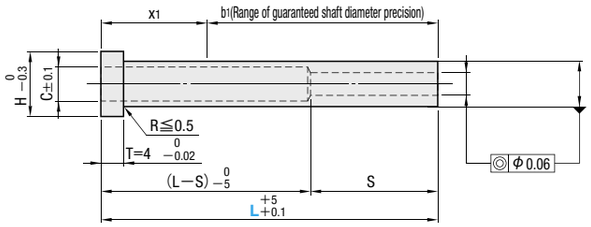
Non JIS material definition is listed on P.1351 - 1352

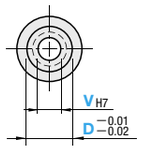
RoHS

Part Number	T V	Applicable center pin shaft diameter tolerance
ESN	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T V_{H7}

V≦3.0	3.5≦V≦6.0	6.5≦V≦10.0	V≧11.0
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$	$^{+0.018}_{0}$





C=V+0.5

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

L tolerance is set to $^{+5}_{+0.1}$.

L	75	100	125	150	175	200	250	300
S	40	50(V1.5 ··· 40)		60(V1.5 ··· 40)	60	80		90

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

Order

Part Number	—	L	—	V
ESN8	—	100	—	4.0

Note that when you order ESN, entry of an alphabetical character (V) is not required.

Days to Ship Quotation

Alterations

Part Number	—	L	—	V	—	(KC · WKC···etc.)
ESN8	—	200	—	4.0	—	KC4.5

Quotation

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC $^{0}_{-0.1}$	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$ 4	TC	TC=0.1mm increments 2.0≦TC<4 Dimensions L and (L−S) become shorter by (4−TC).	Quotation
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

H	Part Number Type	D	L 75	100	125	150	175	200	250	300	V Selection
7	ESN	4							—		1.5
									—		2.0
											2.5
8		4.5							—		1.5
									—		2.0
											2.5
		5							—		2.0
											2.5
											3.0
9		5.5							—		2.0
											2.5
											3.0
											3.5
		6								—	2.5
											3.0
											3.5
											4.0
10		6.5								—	2.5
											3.0
											3.5
											4.0
		7								—	2.5
											3.0
											3.5
											4.0
											4.5
											5.0
11		7.5								—	3.0
											3.5
											4.0
											4.5
											5.0
		8								—	4.0
											4.5
											5.0
											5.5
											6.0
14		9	—								6.0
											6.5
											7.0
15		10	—								6.0
											7.0
											8.0
17		12	—								8.0
											9.0
18		13	—								8.0
										—	9.0
											10.0
21		16	—								10.0
											11.0
											12.0

Quotation

Price Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

SKD61 equivalent+Nitrided
Concentricity◎0.06
JIS head

STRAIGHT EJECTOR SLEEVE

— STANDARD —

Non JIS material definition is listed on P.1351 - 1352

RoHS

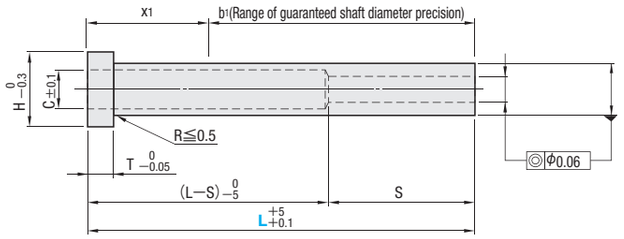
Part Number	T V	Applicable center pin shaft diameter tolerance
ESJ	H7	−0.01 −0.02 ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $-^{0}_{0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

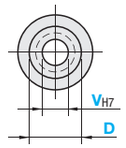
T D

D≦12	D≧15
−0.01 −0.02	−0.01 −0.03

T VH7

V≦3	3.5≦V≦6	6.5≦V≦10	V≧12
+0.010 0	+0.012 0	+0.015 0	+0.018 0





C=V+0.5

L	100	120	140	160	180	200	225	250	275	300	325	350	375	400	425	450	475	500
S	50(V1.5 ··· 40)			75			100			115			150					

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=35
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Alterations

Part Number — L — V — (KC · WKC···etc.)
ESJ8 — 200 — 4 — KC4.0

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $-^{0}_{0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.05 4	TC	TC=0.1mm increments T/2≦TC<T Dimensions L and (L−S) become shorter by (T−TC).	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

H	T	Part Number Type	D	L	V Selection
8	6	ESJ	4	100 120 140	1.5
				100 120 140 160 180 200	2 2.5
			4.5	100 120 140	1.5
				100 120 140 160 180 200	2 2.5
9			5	100 120 140 160 180 200 225	2 2.5 3
				250 275 300	3
			5.5	100 120 140 160 180 200 225	2 2.5 3
				250 275 300	3
10			6	100 120 140 160 180 200 225 250 275 300	2 2.5 3 3.5 4
				325 350 375 400 425 450	3 3.5
11			6.5	100 120 140 160 180 200 225 250 275 300	2 2.5 3 3.5 4
				325 350 375 400 425 450	3 3.5 4
			7	100 120 140 160 180 200 225 250 275 300	2 2.5 3 3.5 4 4.5
				325 350 375 400 425 450	3 3.5 4 4.5
12			7.5	100 120 140 160 180 200 225 250 275 300	3 3.5 4 4.5
				325 350 375	3.5 4 4.5
13	8		8	100 120 140 160 180 200 225 250 275 300	2 2.5 3 3.5 4 4.5 5 5.5
				325 350 375 400 425 450	3 3.5 4 4.5 5
				475 500	5
14			9	100 120 140 160 180 200 225 250 275 300	2 2.5 3 3.5 4 4.5 5 5.5
				325 350 375 400 425 450	3 3.5 4 4.5 5
				475 500	5 5.5 6
15			10	100 120 140 160 180 200 225 250 275 300 325 350 375 400 425 450	4 4.5 5 5.5 6 6.5 7
				475 500	5 5.5 6 6.5 7
17			12	100 120 140 160 180 200 225 250 275 300 325 350 375 400 425 450	4 4.5 5 5.5 6 6.5 7 8 8.5
				475 500	5 5.5 6 6.5 7 8
20			15	200 225 250 275 300 325 350 375 400 425 450 475 500	9 10
25			20	200 225 250 275 300 325 350 375 400 425 450 475 500	12 15

Order

Part Number — L — V
ESJ6.5 — 120 — 2.5

Note that when you order ESJ, entry of an alphabetical character (V) is not required.

Days to Ship: Quotation

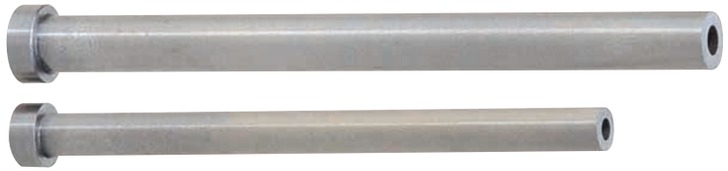
Price: Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm head

STRAIGHT EJECTOR SLEEVE

—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

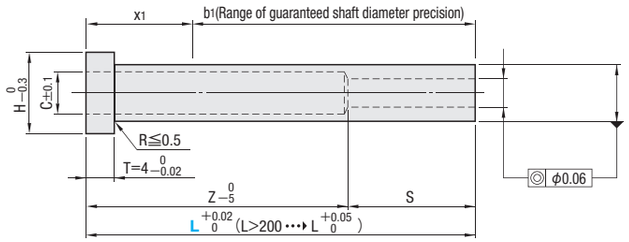


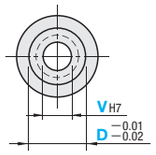
RoHS

Part Number	T V	Applicable center pin shaft diameter tolerance
ESN—LC	H7	$-^{0.01}_{0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $-^{0}_{0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.5≦V≦6.0	6.5≦V≦10.0	V≧11.0
$+^{0.010}_{0}$	$+^{0.012}_{0}$	$+^{0.015}_{0}$	$+^{0.018}_{0}$





C=V+0.5

S dimension depends on the designated L dimension.
S=L—Z

L	50.00～75.00	75.01～100.00	100.01～125.00	125.01～150.00	150.01～175.00	175.01～200.00	200.01～250.00	250.01～300.00
Z	35	50(V1.5 ••• 60)	75(V1.5 ••• 85)	90(V1.5 ••• 110)	115	120	170	210

Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Order: Part Number — L — V
ESN—LC8 — 123.65 — V4.0

Days to Ship: Quotation

Alterations: Part Number — L — V — (KC・WKC…etc.)
ESN—LC8 — 196.25 — V4.0 — KC4.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $-^{0}_{0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.02 4	TC	TC=0.1mm increments 2.0≦TC<4,4—TC≦Lmax.—L Dimension L remains unchanged. Dimension Z becomes shorter by (4—TC).	
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CGX ±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦$\frac{D-V}{2}$—0.1 Combination with RGX/CGZ/RGZ not available.	Quotation
RGX ±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦$\frac{D-V}{2}$—0.1 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦$\frac{D-V}{2}$—0.1 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦$\frac{D-V}{2}$—0.1 Combination with CGX/RGX/CGZ not available.	

H	Part Number Type	D	L 0.01mm increments	V Selection
7	ESN—LC	4	50.00～150.00	1.5
			50.00～200.00	2.0
				2.5
8		4.5	50.00～150.00	1.5
			50.00～200.00	2.0
				2.5
		5	50.00～200.00	2.0
				2.5
				3.0
9		5.5	50.00～200.00	2.0
				2.5
				3.0
				3.5
		6	50.00～250.00	2.5
				3.0
				3.5
				4.0
10		6.5	50.00～250.00	2.5
				3.0
				3.5
				4.0
		7	50.00～250.00	2.5
				3.0
				3.5
				4.0
				4.5
				5.0
11		7.5	50.00～250.00	3.0
				3.5
				4.0
				4.5
				5.0
		8	50.00～250.00	4.0
				4.5
				5.0
				5.5
				6.0
14		9	80.00～300.00	6.0
				6.5
				7.0
15		10	80.00～300.00	6.0
				7.0
				8.0
17		12	80.00～300.00	8.0
				9.0
18		13	80.00～300.00	8.0
				9.0
				10.0
21		16	80.00～300.00	10.0
				11.0
				12.0

For L dimension less than 50mm, please use Short Ejector Sleeves ECB and ECBB. (Only for D4・5・6・7・8・10) P.315

Price: Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

SKD61 equivalent+Nitrided
Concentricity◎0.06
JIS head

STRAIGHT EJECTOR SLEEVE

—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

RoHS

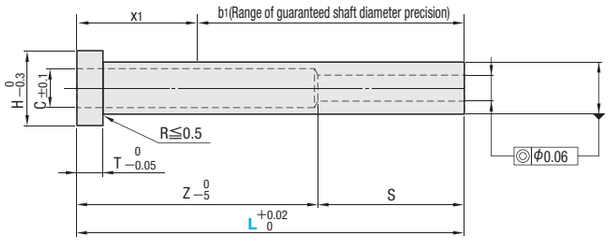
Part Number	T V	Applicable center pin shaft diameter tolerance
ESJL	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

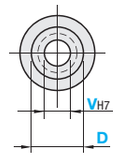
T D

D≦12	D≧15
$^{-0.01}_{-0.02}$	$^{-0.01}_{-0.03}$

T VH7

V≦3	3.5≦V≦6	6.5≦V≦10	V≧12
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$	$^{+0.018}_{0}$





C=V+0.5

S dimension depends on the designated L dimension.
S=L−Z

L	80.00～100.00	100.01～120.00	120.01～140.00	140.01～160.00	160.01～180.00	180.01～225.00	225.01～250.00	250.01～275.00	275.01～300.00	300.01～325.00	325.01～350.00	350.01～375.00	375.01～400.00	400.01～425.00	425.01～450.00	450.01～475.00	475.01～500.00
Z	50 (60)	70 (80)	90 (100)	85	105	125	150	175	185	210	235	225	250	275	300	325	350

Figures in parentheses are applicable for V1.5.

Note that the stepped center pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=35
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

H	T	Part Number Type	Part Number D	L 0.01mm increments	V Selection
8	6	ESJL	4	80.00～140.00	1.5 2 2.5
				140.01～200.00	2 2.5
			4.5	80.00～140.00	1.5 2 2.5
				140.01～200.00	2 2.5
9			5	80.00～225.00	2 2.5 3
				225.01～300.00	3
			5.5	80.00～225.00	2 2.5 3
				225.01～300.00	3
10			6	80.00～300.00	2 2.5 3 3.5 4
				300.01～450.00	3 3.5
11			6.5	80.00～300.00	2 2.5 3 3.5 4
				300.01～450.00	3 3.5 4
			7	80.00～300.00	2 2.5 3 3.5 4 4.5
				300.01～450.00	3 3.5 4 4.5
12			7.5	80.00～300.00	3 3.5 4 4.5
				300.01～375.00	3.5 4 4.5
13	8		8	80.00～300.00	2 2.5 3 3.5 4 4.5 5 5.5
				300.01～450.00	3 3.5 4 4.5 5
				450.01～500.00	5
14			9	80.00～300.00	2 2.5 3 3.5 4 4.5 5 5.5
				300.01～450.00	3 3.5 4 4.5 5
				450.01～500.00	5 5.5 6
15			10	80.00～450.00	4 4.5 5 5.5 6 6.5 7
				450.01～500.00	5 5.5 6 6.5 7
17			12	80.00～450.00	4 4.5 5 5.5 6 6.5 7 8 8.5
				450.01～500.00	5 5.5 6 6.5 7 8
20			15	180.01～500.00	9 10
25			20	180.01～500.00	12 15

Order

Part Number	L	V
ESJL6.5	115.50	V2.5

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	L	V	(KC・WKC…etc.)
ESJL8	200.05	V4	KC4.0

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.05 T	TC	TC=0.1mm increments T/2≦TC<T,(T−TC)≦Lmax.−L V Dimension L remains unchanged. Dimension Z becomes shorter by (T−TC).	
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦$\frac{D-V}{2}$−0.1 Available when L≦300 Combination with RGX/CGZ/RGZ not available.	Quotation
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦$\frac{D-V}{2}$−0.1 Available when L≦300 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦$\frac{D-V}{2}$−0.1 Available when L≦300 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦$\frac{D-V}{2}$−0.1 Available when L≦300 Combination with CGX/RGX/CGZ not available.	

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm head

STRAIGHT EJECTOR SLEEVE

—SHAFT DIAMETER SELECTION TYPE・SHAFT DIAMETER DESIGNATION TYPE—

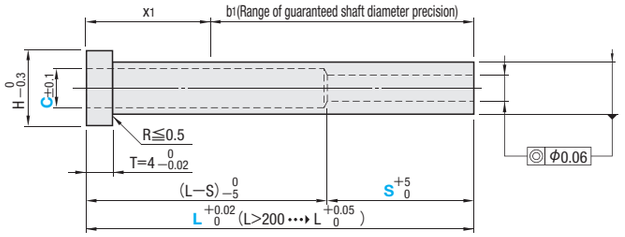
Non JIS material definition is listed on P.1351 - 1352

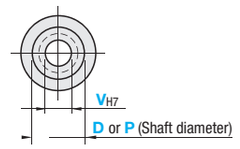
RoHS

Part Number		T D・P	T V	Applicable center pin shaft diameter tolerance
Shaft diameter selection type	Shaft diameter designation (0.01mm increments) type			
ESN—L	ESNB	-0.01 -0.02	H7	-0.01 -0.02 ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $-{}^{0}_{0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.1≦V≦6.0	6.1≦V≦10.0	V≧10.1
+0.010 0	+0.012 0	+0.015 0	+0.018 0





C=designated dimension

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

b1(Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=30

Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C)≧the center pin's shaft diameter(D)+1.0 (Details P.1310)

Alterations

Part Number	—	L	—	P	—	V	—	C	—	S	—	(KC・WKC…etc.)
ESN—L8	—	200.05			—	V4.1	—	C4.6	—	S32	—	KC4.5
ESNB 8	—	150.00	—	P7.55	—	V4.0	—	C5.0	—	S32	—	KC3.775

Alteration details P.275

Alterations	Code	Spec.	1Code
KC −0.1 0	KC	Single flat cutting (DorP)/2≦KC<H/2	Quotation
WKC −0.1 0	WKC	Two flats cutting (DorP)/2≦WKC<H/2	
KAC KBC −0.1 0	KAC KBC	Varied width parallel flats cutting (DorP)/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC −0.1 0	RKC	Two flats (right angled) cutting (DorP)/2≦RKC<H/2	
DKC DKC −0.1 0	DKC	Three flats cutting (DorP)/2≦DKC<H/2	
SKC SKC −0.1 0	SKC	Four flats cutting (DorP)/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC −0.1 0	KGC	Two flats (angled) cutting (DorP)/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC −0.1 0	KTC	Three flats cutting at 120 (DorP)/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation 0.005mm increments possible

The tolerance is $-{}^{0}_{0.1}$ even when (D or P)/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC −0.02 0 4	TC	TC=0.1mm increments (4−TC)≦Lmax.−L 2.0≦TC<4 Dimensions L and (L−S) remain unchanged.	Quotation
H HC −0.3 0	HC	HC=0.1mm increments (DorP)≦HC<H In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CW±0.1 C±0.1 W +5 0	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦Cmax.,CW≦P−1.5 10≦W≦L−S−10,W≦200	
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ (D(P)−V)/2 −0.1 Combination with RGX/CGZ/RGZ not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ (D(P)−V)/2 −0.1 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦ (D(P)−V)/2 −0.1 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦ (D(P)−V)/2 −0.1 Combination with CGX/RGX/CGZ not available.	

■ Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
7	ESN—L	4	40.00～200.00	1.5～ 2.5	C≧V+0.5	3.0	20～100 (D4～5.5 When V1.5～V1.9 20～40) L (L−S)min. 40.00～60.00 20 60.01～ 30
8		4.5	40.00～250.00	1.5～ 2.5			
				*2.6～ 3.0		3.5	
		5	*V dimension 40.00～150.00	1.5～ 3.0		3.5	
				*3.1～ 3.5		4.0	
9		5.5		1.5～ 3.5		4.0	
				*3.6～ 4.0		4.5	
		6	40.00～300.00	2.0～ 4.0		4.5	
				*4.1～ 4.5		5.0	
10		6.5		2.0～ 4.5		5.0	
		7		2.0～ 5.0		5.5	
11		7.5		2.0～ 5.5		6.0	
		8		2.5～ 6.0		6.5	
14		9	*V dimension 40.00～150.00	2.5～ 7.0		7.5	20～100 L (L−S)min. 40.00～60.00 20 60.01～70.00 30 70.01～80.00 40 80.01～ 50
15		10		2.5～ 8.0		8.5	
17		12		2.5～10.0		10.5	
18		13		2.5～11.0		11.5	
21		16		2.5～13.0		13.5	
25		20		3.0～16.0		16.5	

■ Shaft diameter (P) designation 0.01mm increments type

H	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
7	ESNB	4	40.00～200.00	3.50～ 3.99	1.5～ 1.9	C≧V+0.5 and C≦P−1.5	2.5	20～100 (No.4 When V1.5～V1.9 20～40) L (L−S)min. 40.00～60.00 20 60.01～ 30
8		5	40.00～250.00	4.01～ 4.99	2.0～ 2.5		3.0	
9		5.5		5.01～ 5.49	2.0～ 3.4		4.0	
		6	40.00 ～300.00	5.51～ 5.99	2.0～ 3.9		4.5	
10		6.5		6.01～ 6.49	2.0～ 4.4		5.0	
		7		6.51～ 6.99	2.0～ 4.9		5.5	
11		7.5		7.01～ 7.49	2.0～ 5.4		6.0	
		8		7.51～ 7.99	2.5～ 5.9		6.5	20～100 L (L−S)min. 40.00～60.00 20 60.01～70.00 30 70.01～80.00 40 80.01～ 50
14		9		8.01～ 8.99	2.5～ 6.9		7.5	
15		10		9.01～ 9.99	2.5～ 7.9		8.5	
18		13		10.01～12.99	2.5～10.9		11.5	
21		16		13.01～15.99	2.5～13.0		13.5	
25		20		16.01～19.99	3.0～16.0		16.5	

V≦P−2.0

Order

Part Number	—	L	—	P	—	V	—	C	—	S
(D selection type) ESN—L8	—	200.05			—	V4.1	—	C5.0	—	S32
(P designation type) ESNB8	—	200.05	—	P7.55	—	V4.1	—	C5.0	—	S32

Days to Ship: Quotation

Price: Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

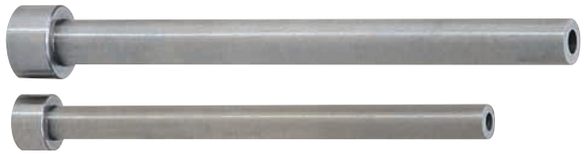
SKD61 equivalent+Nitrided
Concentricity◎0.06
JIS head

STRAIGHT EJECTOR SLEEVE

—SHAFT DIAMETER SELECTION TYPE・SHAFT DIAMETER DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

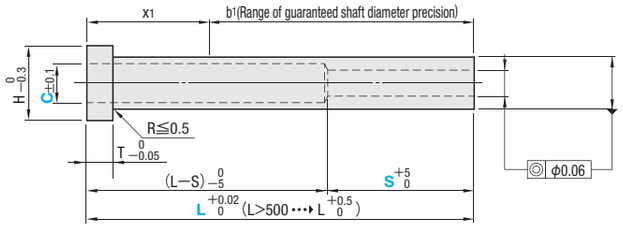
RoHS

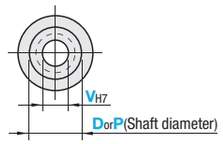


Part Number		D or P	T D・P	T V	Applicable center pin shaft diameter tolerance
Shaft diameter selection type	Shaft diameter designation (0.01mm increments) type				
ESNJ	ESJB	D or P≦12.00	−0.01 −0.02	H7	−0.01 −0.02 ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)
		D or P>12.00	−0.01 −0.03		

T VH7

V≦3.0	3.1≦V≦6.0	6.1≦V≦10.0	V≧10.1
+0.010 0	+0.012 0	+0.015 0	+0.018 0





C=designated dimension

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
b1 (Range of guaranteed shaft diameter precision) (Details P.1305)
x1 max.=35
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C)≧the center pin's shaft diameter(D)+1.0 (Details P.1310)

Order

Part Number	L	P	V	C	S
(D selection type) ESNJ8	200.05		V4.5	C5.0	S32
(P designation type) ESJB8	200.05	P7.55	V5.0	C5.5	S40

Days to Ship — Quotation

Alterations

Part Number — L — P — V — C — S — (KC・WKC…etc.)
ESNJ8 — 200.05 — V4.0 — C5.0 — S32 — KC4.5
ESJB8 — 200.05 — P7.55 — V5.0 — C5.5 — S40 — HC11.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting (DorP)/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting (DorP)/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting (DorP)/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting (DorP)/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting (DorP)/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting (DorP)/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting (DorP)/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° (DorP)/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation 0.005mm increments possible
The tolerance is $^{0}_{-0.1}$ even when (D or P)/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC 0 −0.05 T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L and (L−S) remain unchanged.	
H HC 0 −0.3	HC	HC=0.1mm increments (DorP)≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CW±0.1 C±0.1 W +5 0	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦C max. CW≦13.5 10≦W≦L−S−10,W≦200	Quotation
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ $\frac{D(P)-V}{2}-0.1$ Available when L≦300 Combination with RGX/CGZ/RGZ not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ $\frac{D(P)-V}{2}-0.1$ Available when L≦300 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦ $\frac{D(P)-V}{2}-0.1$ Available when L≦300 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦ $\frac{D(P)-V}{2}-0.1$ Available when L≦300 Combination with CGX/RGX/CGZ not available.	

■Shaft diameter (D) selection type

H	T	Part Number Type	D	L 0.01mm increments	L 0.1mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
8	6	ESNJ	4	40.00～200.00	—	1.5～ 2.5	C≧V+0.5 (When L>300 0.5mm increments)	3.0	20～100 (D4, D4.5 When V1.5～V1.9 20～40) L (L−S)min. 40.00～60.00 20 60.01～ 30
			4.5	40.00～250.00					
9			5	40.00～300.00		2.0～ 3.0		3.5	
			5.5			2.0～ 3.5		4.0	
10			6	40.00～500.00		2.0～ 4.0		4.5	
11			6.5			2.5～ 4.5		5.0	
			7					5.0	
12			7.5			2.5～ 5.0		5.5	
13	8		8	40.00～500.00		2.5～ 5.5		6.0	20～100 L (L−S)min. 40.00～60.00 20 60.01～70.00 30 70.01～80.00 40 80.01～ 50
14			9			2.5～ 6.5		7.0	
15			10			4.0～ 7.5		8.0	
17			12		500.1～800.0	4.0～ 8.5		9.0	
20			15			5.0～10.5		11.0	
21			16			5.0～11.5		12.0	
25			20	40.00～500.00		7.0～16.0		17.0	

■Shaft diameter (P) designation 0.01mm increments type

H	T	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments	V 0.1mm increments	C 0.1mm increments	Cmax.	S 1mm increments
8	6	ESJB	4	40.00～200.00	3.50～ 3.99	1.5～ 1.9	C≧V+0.5 and C≦P−1.5	2.5	20～100 (D4, D4.5 When V1.5～V1.9 20～40) L (L−S)min. 40.00～60.00 20 60.01～ 30
			4.5	40.00～250.00	4.01～ 4.49	1.5～ 2.4		3.0	
9			5	40.00～300.00	4.51～ 4.99	2.0～ 2.9		3.5	
			5.5		5.01～ 5.49	2.0～ 3.4		4.0	
10			6		5.51～ 5.99	2.0～ 3.9		4.5	
11			6.5		6.01～ 6.49	2.0～ 4.4		5.0	
			7		6.51～ 6.99	2.0～ 4.9		5.5	
12			7.5		7.01～ 7.49	2.0～ 5.4		6.0	
13	8		8		7.51～ 7.99	2.5～ 5.9		6.5	20～100 L (L−S)min. 40.00～60.00 20 60.01～70.00 30 70.01～80.00 40 80.01～ 50
14			9		8.01～ 8.99	2.5～ 6.9		7.5	
15			10		9.01～ 9.99	2.5～ 7.9		8.5	
17			12		10.01～11.99	2.5～ 9.9		10.5	
20			15		12.01～14.99	2.5～12.0		12.5	
21			16		15.01～15.99	3.0～13.0		13.5	
25			20		16.01～19.99	3.0～16.0		17.0	

V≦P−2.0

Price — Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm head

SHORT EJECTOR SLEEVE (BUSHING FOR EJECTOR PINS)

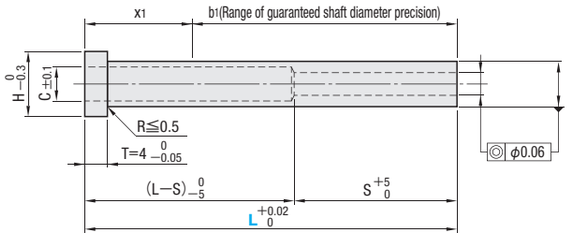
Non JIS material definition is listed on P.1351 - 1352

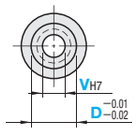
RoHS

Part Number	T V	Applicable center pin shaft diameter tolerance
ECB ECBB	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.1≦V≦6.0	V≧6.1
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$





C=V+0.5

S dimension depends on the designated L dimension.

L	S
15.00～30.00	S=L
30.01～50.00	S=L−20

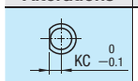
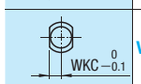
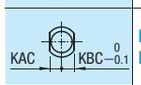
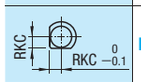
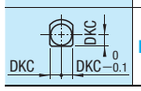
Range of guaranteed shaft diameter precision (Details P.1305)
x1 max.10
M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

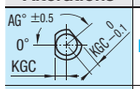
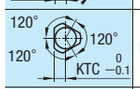
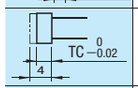
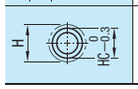
Alterations

Part Number	L	V	(KC・WKC…etc.)
ECB8	50.00	V4.0	KC4.5

Quotation

Alteration details P.275

Alterations	Code	Spec.	1Code
	KC	KC=0.1mm increments D/2≦KC<H/2	Quotation
	WKC	WKC=0.1mm increments D/2≦WKC<H/2	
	KAC KBC	KAC, KBC=0.1mm increments D/2≦KAC<KBC<H/2	
	RKC	RKC=0.1mm increments D/2≦RKC<H/2	
	DKC	DKC=0.1mm increments D/2≦DKC<H/2	

Alterations	Code	Spec.	1Code
	KGC	KGC=0.1mm increments AG=1° increments D/2≦KGC<H/2, 0<AG<360	
	KTC	KTC=0.1mm increments D/2≦KTC<H/2	Quotation
	TC	TC=0.1mm increments 2.0≦TC<4,4−TC≦Lmax.−L Dimension L remains unchanged. Dimensions (L−S) become shorter by (4−TC).	
	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

■V dimension selection type

H	C (V+0.5)	VH7		Part Number Type	D	L 0.01mm increments	V
7	2.0	1.5	$^{+0.010}_{0}$	ECB	4	15.00～50.00	1.5
	2.5	2.0					2.0
	3.0	2.5					2.5
8	2.5	2.0			5		2.0
	3.0	2.5					2.5
	3.5	3.0					3.0
9	3.5	3.0			6		3.0
	4.0	3.5	$^{+0.012}_{0}$				3.5
	4.5	4.0					4.0
10	3.5	3.0	$^{+0.010}_{0}$		7		3.0
	4.5	4.0	$^{+0.012}_{0}$				4.0
11	4.5	4.0			8		4.0
	5.5	5.0					5.0
	6.5	6.0					6.0
15	5.5	5.0			10		5.0
	6.5	6.0					6.0
	8.5	8.0	$^{+0.015}_{0}$				8.0

ECB is the standard to fit to center pins with shaft diameter tolerance $^{-0.01}_{-0.02}$. It is not available for center pins with shaft diameter tolerance $^{0}_{-0.005}$.
For sleeves with dimension L of 50.01 or more, use ESN−LC. (P.307)
Nitriding may extend to the head as it is applied after dimension V machining.

■V dimension designation type

H	VH7		Part Number Type	D	L 0.01mm increments	V 0.1mm increments
7	1.6～2.9	$^{+0.010}_{0}$	ECBB	4	15.00～50.00	1.6～1.9
						2.1～2.4
8				5		2.1～2.4
						2.6～2.9
9	3.1～5.9	$^{+0.012}_{0}$		6		3.1～3.4
						3.6～3.9
10				7		3.1～3.9
						4.1～5.0
11				8		4.1～4.9
						5.1～5.9
15				10		5.1～5.9
	6.1～7.9	$^{+0.015}_{0}$				6.1～7.9

ECBB is the standard to fit to center pins with shaft diameter tolerance $^{-0.01}_{-0.02}$. It is not available for center pins with shaft diameter tolerance $^{0}_{-0.005}$.
For sleeves with dimension L of 50.01 or more, use ESN−L. (P.311)
Nitriding may extend to the head as it is applied after dimension V machining.

Order

Part Number	L	V
ECB6	20.53	V3.0

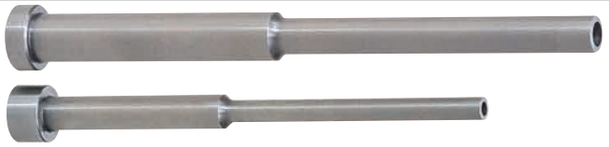
Days to Ship: Quotation

Price: Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.03
4mm Head・JIS

STEPPED EJECTOR SLEEVE

Non JIS material definition is listed on P.1351 - 1352



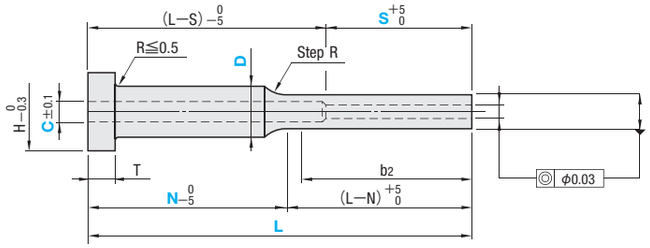
RoHS

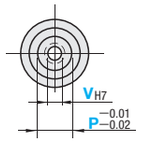
Part Number	Head Thickness (T)	T P	T D	T T	T V	T L L≦200	T L L>200	Applicable center pin shaft diameter tolerance
ESNVF	4mm (T4)	−0.01 −0.02	−0.01 −0.02	0 −0.02	H7	+0.02 0	+0.05 0	−0.01 −0.02
ESJVF	6・8mm (JIS)		−0.02 −0.04	0 −0.05				

※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.1≦V≦6.0	V≧6.1
+0.010 0	+0.012 0	+0.015 0





C=designated dimension

M SKD61 equivalent+Nitrided

H Surface : 900HV
Base material : 40±3HRC

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b2) (Details P.1306)

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C)≧the center pin's shaft diameter(D)+1.0 (Details P.1310)

Alterations

Part Number — L — V — P — C — N — S — (KC・WKC…etc.)
ESNVF6 — 150.00 — V2.5 — P5.50 — C3.1 — N80 — S30 — KC3.5
ESJVF6 — 150.00 — V3.0 — P5.50 — C4.0 — N80 — S30 — KC3.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L,N and (L−S) remain unchanged. TC tolerance is the same as T dimension tolerance.	Quotation
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

■4mm head

H	T	Part Number Type	Part Number D	L 0.01mm increments	V 0.1mm increments	P 0.01mm increments	C 0.1mm increments	Cmax.	1mm increments N	1mm increments S
7	4	ESNVF	4	50.00～200.00	1.5～2.0	3.00～3.95	C≧V+0.5 and C≦P−1.0	2.5	N≧L/3 and (L−N)≧10	20～50
8			4.5		2.0～2.5	3.50～4.45		3.0		
			5	50.00～250.00	2.0～3.0	3.50～4.95		3.5		
9			5.5		2.0～3.5	3.50～5.45		4.0		
			6	50.00～300.00	2.0～4.0	4.00～5.95		4.5		
10			6.5		2.0～4.5	4.00～6.45		5.0		
			7		2.0～5.0	4.00～6.95		5.5		
11			7.5		2.0～5.5	4.00～7.45		6.0		
			8		2.5～6.0	4.00～7.95		6.5		20～50
14			9		2.5～6.9	4.50～8.95		7.5		
15			10		2.5～7.9	4.50～9.95	C≧V+0.5 and C≦P−1.5	8.5		

L	(L−S)min.
50.00～60.00	20
60.01～	30

L	(L−S)min.
50.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

D	Limit value for P
4～ 8	P≧V+1.5
9～10	P≧V+2.0

■JIS head

H	T	Part Number Type	Part Number D	L 0.01mm increments	V 0.1mm increments	P 0.01mm increments	C 0.1mm increments	Cmax.	N 1mm increments	S 5mm increments
9	6	ESJVF	5	50.00～300.00	2.0～3.0	3.50～4.95	C≧V+0.5 and C≦P−1.0	3.5	N≧L/3 and (L−N)≧10	20～50
			5.5		2.0～3.5	3.50～5.45		4.0		
10			6		2.0～4.0	4.00～5.95		4.5		
11			6.5		2.0～4.5	4.00～6.45		5.0		
			7			4.00～6.95		5.0		
12			7.5		2.0～5.0	4.00～7.45		5.5		
13	8		8	70.00～300.00	2.5～5.5	5.00～7.95		6.0		20～50 (L−S)≧50
14			9		3.0～6.5	6.00～8.95		7.0		
15			10		3.5～7.5	6.00～9.95	C≧V+0.5 and C≦P−1.5	8.0		

L	(L−S)min.
50.00～60.00	20
60.01～	30

D	Limit value for P
5～ 8	P≧V+1.5
9～10	P≧V+2.0

Order
Part Number — L — V — P — C — N — S
ESNVF8 — 200.05 — V4.0 — P7.05 — C4.5 — N120 — S30
ESJVF10 — 200.05 — V4.5 — P7.55 — C6.0 — N120 — S30

Days to Ship: Quotation

Price: Quotation

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm Head・JIS

STEPPED EJECTOR SLEEVE

— STANDARD —

Non JIS material definition is listed on P.1351 - 1352

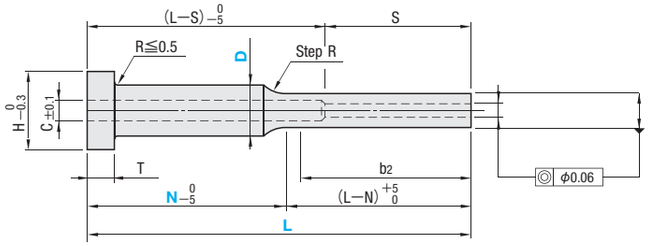
RoHS

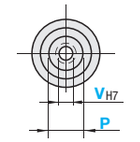
Part Number	Head Thickness (T)	T P	T D	T T	T V	T L	Applicable center pin shaft diameter tolerance
ESNFT	4mm (T4)	−0.01 −0.02	−0.01 −0.02	0 −0.02	H7	+5 +0.1	−0.01 −0.02
ESJFT	8mm (JIS)	・P≦12.00 −0.01 −0.02 ・P>12.00 −0.01 −0.03	−0.02 −0.04	0 −0.05			

※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.5≦V≦6.0	8.0≦V≦9.0	V≧11.0
+0.010 0	+0.012 0	+0.015 0	+0.018 0





C=V+0.5

L	125	150	175	200	225	250	275	300
S	50 (V1.5 ⋯→ 40)		60	80	100			

Note that the stepped center pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)

■4mm head

H	T	Part Number Type	D	L	V	P	N
7	4	ESNFT	4	125	1.5	3.0 3.5	50 60
					2.0	3.5	
				150	1.5	3.0 3.5	60 80
					2.0	3.5	
8			5	125	2.0	3.5 4.0	50 60
					2.5	4.0	
				150	2.0	3.5 4.0	60 80
					2.5	4.0	
9			6	150	2.0	4.0	60 80
				175 200	2.5	4.0	60 80
					3.5	5.0	
				225 250	2.0	4.0	80 100
					2.5	4.5 5.0	
					3.0	4.5 5.0	
11			8	150	3.5	5.0 5.5	60 80
					4.5	6.0	
				175 200	2.5	4.0	80 100
					4.0	5.5 6.5	
				225 250	3.5	6.5	80 100

■8mm Head (JIS)

H	T	P	Part Number Type	D	L	V	N
13	8	V+2.0	ESJFT	8	125	3.0 3.5 4.0 4.5	50 60
					150		60 80 100
					175		80 100 120
					200		80 100 120
					225		100 120
					250		100 120 150
17		V+2.5		12	150	5.0 5.5	60 80 100
					175		80 100 120
					200		80 100 120
					225		100 120 150
					250		100 120 150
					275		120 150
					300		120 150
20		V+4.0		15	200	6.0 8.0 9.0	80 100 120
					225		100 120
					250		100 120 150
					275		120 150
					300		120 150
25				20	200	11.0 12.0 15.0	80 100 120
					225		100 120
					250		100 120 150
					275		120 150
					300		120 150

Alterations

Part Number	L	V	P	N	(KC・WKC…etc.)
ESNFT6	200	V2.5	P4.0	N60	KC3.0
ESJFT8	200	V3.0		N80	KC4.0

Alteration details P.275

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
SKC SKC 0 −0.1	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
TC T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L, N and (L−S) remain unchanged. TC tolerance is the same as T dimension tolerance.	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.5mm increments
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
CW±0.1 C±0.1 W +0 −0.5	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦C max. ESJFT CW≦13.5 10≦W≦L−S−10 W≦N−20, W≦200	

Order

Part Number	L	V	P	N
ESNFT6	200	V2.5	P4.0	N60
ESJFT8	200	V3.0		N80

Days to Ship: Quotation

Price: Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

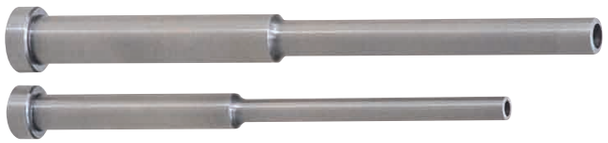
SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm Head・JIS

STEPPED EJECTOR SLEEVE

— L DIMENSION DESIGNATION TYPE —

Non JIS material definition is listed on P.1351 - 1352

RoHS

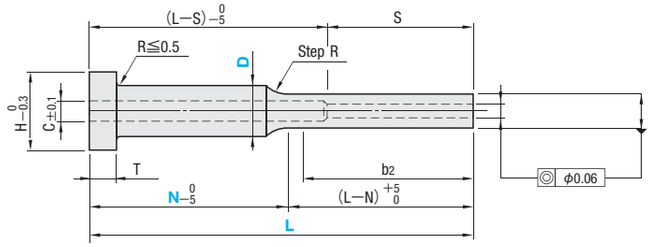


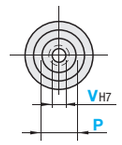
Part Number	Head Thickness (T)	T P	T D	T T	T V	T L L≦200	T L L>200	Applicable center pin shaft diameter tolerance
ESNF—LC	4mm (T4)	−0.01 −0.02	−0.01 −0.02	0 −0.02	H7	+0.02 0	+0.05 0	−0.01 −0.02
ESJF—LC	8mm (JIS)	• P≦12.00 −0.01 −0.02 • P>12.00 −0.01 −0.03	−0.02 −0.04	0 −0.05				

※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T VH7

V≦3.0	3.5≦V≦6.0	8.0≦V≦9.0	V≧11.0
+0.010 0	+0.012 0	+0.015 0	+0.018 0





C=V+0.5

L	L100.00 ~125.00	L125.01 ~150.00	L150.01 ~175.00	L175.01 ~200.00	L200.01 ~225.00	L225.01 ~250.00	L250.01 ~275.00	L275.01 ~300.00
(L−S)	75 (V1.5 ···▸ 85)	100 (V1.5 ···▸ 110)	115	120	125	150	175	200

Note that the stepped center pin's shaft diameter (D) is too large to fit in the recess (C). (Details P.1310)

M SKD61 equivalent+Nitrided

H Surface : 900HV
Base material : 40±3HRC

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)

Alterations

Part Number — L — V — P — N — (KC・WKC…etc.)
ESNF—LC6 — 200.00 — V2.5 — P4.0 — N60 — KC3.0
ESJF—LC8 — 200.00 — V3.0 — N80 — WKC4.0

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
SKC $^{0}_{-0.1}$	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
T TC	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L, N and (L−S) remain unchanged. TC tolerance is the same as T dimension tolerance.	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.5mm increments
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CW±0.1 C±0.1 W $^{+5}_{0}$	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦C max. ESJF—LC CW≦13.5 10≦W≦L−S−10 W≦N−20, W≦200	Quotation
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with RGX/CGZ/RGZ not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦ $\frac{P-V}{2}$ −0.1 Available when L−N≧50 Combination with CGX/RGX/CGZ not available.	

■4mm head

H	T	Part Number Type	D	L 0.01mm increments	V	P	N
7	4	ESNF—LC	4	100.00~125.00	1.5	3.0 3.5	50 60
					2.0	3.5	
				125.01~150.00	1.5	3.0 3.5	60 80
					2.0	3.5	
8			5	100.00~125.00	2.0	3.5 4.0	50 60
					2.5	4.0	
				125.01~150.00	2.0	3.5 4.0	60 80
					2.5	4.0	
9			6	100.00~150.00	2.0	4.0	60 80
				150.01~200.00	2.5	4.0	60 80
					3.5	5.0	
				200.01~250.00	2.0	4.0	80 100
					2.5	4.5 5.0	
					3.0	4.5 5.0	
11			8	100.00~150.00	3.5	5.0 5.5	60 80
					4.5	6.0	
				150.01~200.00	2.5	4.0	80 100
					4.0	5.5 6.5	
				200.01~250.00	3.5	6.5	80 100

■8mm Head (JIS)

H	T	P	Part Number Type	D	L 0.01mm increments	V	N
13	8	V+2.0	ESJF—LC	8	100.00~125.00	3.0 3.5 4.0 4.5	50 60
					125.01~150.00		60 80 100
					150.01~175.00		80 100 120
					175.01~200.00		80 100 120
					200.01~225.00		100 120
					225.01~250.00		100 120 150
17		V+2.5		12	125.00~150.00	5.0 5.5	60 80 100
					150.01~175.00		80 100 120
					175.01~200.00		80 100 120
					200.01~225.00		100 120 150
					225.01~250.00		100 120 150
					250.01~275.00		120 150
					275.01~300.00		120 150
20		V+4.0		15	175.00~200.00	6.0 8.0 9.0	80 100 120
					200.01~225.00		100 120
					225.01~250.00		100 120 150
					250.01~275.00		120 150
					275.01~300.00		120 150
25				20	175.00~200.00	11.0 12.0 15.0	80 100 120
					200.01~225.00		100 120
					225.01~250.00		100 120 150
					250.01~275.00		120 150
					275.01~300.00		120 150

Order

Part Number — L — V — P — N
ESNF—LC6 — 152.00 — V2.5 — P4.0 — N60
ESJF—LC8 — 200.00 — V3.0 — N80

Days to Ship: Quotation

Price: Quotation

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

SKD61 equivalent+Nitrided
Concentricity◎0.06
4mm head

STEPPED EJECTOR SLEEVE

—L · V dimension designation type—

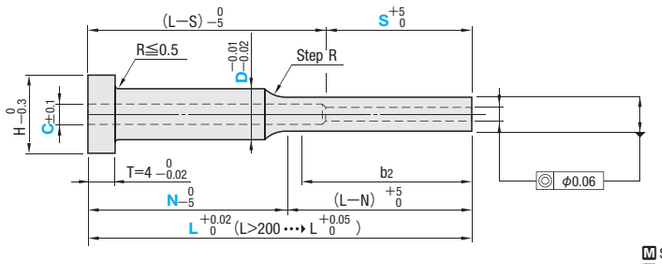
Non JIS material definition is listed on P.1351 - 1352

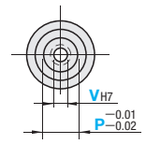
RoHS

Part Number	T P	T V	Applicable center pin shaft diameter tolerance
ESNF	$^{-0.01}_{-0.02}$	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)

T V_{H7}

V≦3.0	3.1≦V≦6.0	6.1≦V≦10.0	V≧10.1
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$	$^{+0.018}_{0}$





C=designated dimension

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b2) (Details P.1306)

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C)≧the center pin's shaft diameter(D)+1.0 (Details P.1310)

H	Part Number Type	Part Number D	L 0.01mm increments	V 0.1mm increments	P 0.01mm increments	C 0.1mm increments	Cmax.	1mm increments N	1mm increments S
7	ESNF	4	50.00～200.00	1.5～ 2.0	3.00～ 3.95	C≧V+0.5 and C≦P−1.0	2.5	N≧L/3 and (L−N)≧10	20～100
8		4.5		2.0～ 2.5	3.50～ 4.45		3.0		
		5	50.00～250.00	2.0～ 3.0	3.50～ 4.95		3.5		
9		5.5		2.0～ 3.5	3.50～ 5.45		4.0		
		6	50.00～300.00	2.0～ 4.0	4.00～ 5.95		4.5		
10		6.5		2.0～ 4.5	4.00～ 6.45		5.0		
		7		2.0～ 5.0	4.00～ 6.95		5.5		
11		7.5		2.0～ 5.5	4.00～ 7.45		6.0		
		8		2.5～ 6.0	4.00～ 7.95		6.5		20～100
14		9		2.5～ 6.9	4.50～ 8.95		7.5		
15		10		2.5～ 7.9	4.50～ 9.95	C≧V+0.5 and C≦P−1.5	8.5		
18		13		2.5～10.9	5.00～12.95		11.5		
21		16		2.5～13.0	7.00～15.95		14.5		

L	(L−S)min.
50.00～60.00	20
60.01～	30

L	(L−S)min.
50.00～60.00	20
60.01～70.00	30
70.01～80.00	40
80.01～	50

D	Limit value for P
4～ 8	P≧V+1.5
9～16	P≧V+2.0

Order

Part Number	L	V	P	C	N	S
ESNF8	200.05	V4.0	P7.05	C4.5	N120	S85

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	L	V	P	C	N	S	(KC · WKC···etc.)
ESNF6	150.00	V2.5	P5.50	C3.1	N80	S85	KC3.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
SKC $^{0}_{-0.1}$	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.02}$	TC	TC=0.1mm increments 2.0≦TC<4.0,4−TC≦Lmax.−L Dimensions L, N and (L−S) remain unchanged.	
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CW±0.1 C±0.1 W $^{+5}_{0}$	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦C max. 10≦W≦L−S−10 W≦N−20, W≦200	Quotation
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦(P−V)/2−0.1 Available when L−N≧50 Combination with RGX/CGZ/RGZ not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦(P−V)/2−0.1 Available when L−N≧50 Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦(P−V)/2−0.1 Available when L−N≧50 Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦(P−V)/2−0.1 Available when L−N≧50 Combination with CGX/RGX/CGZ not available.	

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

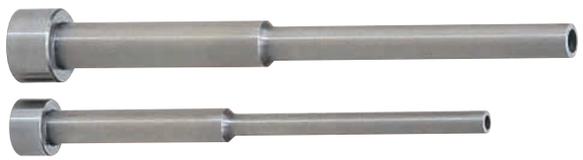
SKD61 equivalent+Nitrided
Concentricity◎0.06
JIS head

STEPPED EJECTOR SLEEVE

—L · V dimension designation type—

Non JIS material definition is listed on P.1351 - 1352

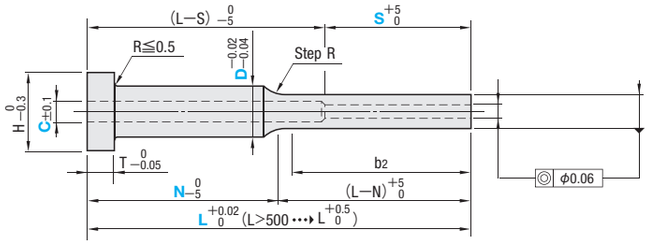
RoHS

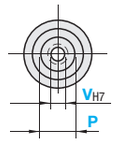


Part Number	P	T P	T V	Applicable center pin shaft diameter tolerance
ESJF	P≦12.00	$^{-0.01}_{-0.02}$	H7	$^{-0.01}_{-0.02}$ ※Note that for sleeves with V dimension tolerance of H7, combination with center pins that have shaft diameter tolerance $^{0}_{-0.005}$ is not recommended. The reason for this is the fitting sections S are longer. (Details P.1309)
	P>12.00	$^{-0.01}_{-0.03}$		

T V_{H7}

V≦3.0	3.1≦V≦6.0	6.1≦V≦10.0	V≧10.1
$^{+0.010}_{0}$	$^{+0.012}_{0}$	$^{+0.015}_{0}$	$^{+0.018}_{0}$





C=designated dimension

M SKD61 equivalent+Nitrided
H Surface : 900HV
Base material : 40±3HRC
Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
Step R (Details P.1306)
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)

Nitriding may extend to the head as it is applied after dimension V and P machining.
To insert a stepped center pin, the following condition must be met:
the sleeve's recess diameter (C)≧the center pin's shaft diameter(D)+1.0 (Details P.1310)

H	T	Part Number Type	D	L 0.01mm increments	L 0.1mm increments	V 0.1mm increments	P 0.01mm increments	C 0.1mm increments	Cmax.	N 1mm increments	S 5mm increments
9	6	ESJF	5	50.00~300.00	—	2.0~ 3.0	3.50~ 4.95	C≧V+0.5 and C≦P−1.0	3.5	N≧L/3	20~100
			5.5			2.0~ 3.5	3.50~ 5.45		4.0		
10			6	50.00~500.00		2.0~ 4.0	4.00~ 5.95		4.5		
11			6.5			2.0~ 4.5	4.00~ 6.45		5.0		
			7				4.00~ 6.95		5.0		
12			7.5			2.0~ 5.0	4.00~ 7.45	(When L>300 0.5mm increments)	5.5		
13	8		8	70.00~500.00		2.5~ 5.5	5.00~ 7.95		6.0		20~100 (L−S)≧50
14			9			3.0~ 6.5	6.00~ 8.95		7.0		
15			10		500.1~600.0	3.5~ 7.5	6.00~ 9.95	C≧V+0.5 and C≦P−1.5	8.0	(When L>600 L/3≦N≦2/3L)	
17			12	70.00~500.00	500.1~800.0	4.0~ 8.5	7.50~11.95		9.0		
20			15			5.0~10.5	10.00~14.95		11.0		
21			16	100.00~500.00		5.0~11.5	12.00~15.95	(When L>300 0.5mm increments)	12.0		
25			20			7.0~16.0	14.50~19.95		17.0		

L \ D	5・5.5	6~7	7.5・8	9~20
L≦300	P≧V+1.5	P≧V+1.5	P≧V+1.5	P≧V+2
L>300 and (L−N−10)≦S	—	P≧V+3	P≧V+4	P≧V+4.5
L>300 and (L−N−10)>S	—	P≧(V+3) and (P−C)/2 ≧0.75	P≧(V+4) and (P−C)/2≧0.75	P≧(V+4.5) and (P−C)/2≧0.75

Limit value of P and V

	Part Number	L	V	P	C	N	S
Order	ESJF12	200.05	V4.5	P7.55	C6.0	N120	S85

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	L	V	P	C	N	S	(KC・WKC…etc.)
ESJF6	150.00	V3.0	P5.50	C4.0	N80	S85	KC3.5

Alteration details P.275

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
SKC $^{0}_{-0.1}$	SKC	Four flats cutting D/2≦SKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit and Tolerance for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
The tolerance is $^{0}_{-0.1}$ even when D/2 is designated to fit to the shaft diameter.

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
TC $^{0}_{-0.05}$ T	TC	TC=0.1mm increments T/2≦TC<T, T−TC≦Lmax.−L Dimensions L, N and (L−S) remain unchanged.	
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
CW±0.1 C±0.1 W $^{+5}_{0}$	CW	Two-step recessing (Makes recess C into two-steps and widens it) CW=0.1mm increments W=5mm increments C+0.5≦CW≦C max. CW≦13.5 10≦W≦L−S−10 W≦N−20, W≦200	Quotation
CGX±0.05 45° 0.1 V L	CGX	CGX=0.1mm increments 0.2≦CGX≦1.5 and CGX≦ (P−V)/2 −0.1 L−N≧50, Available when L≦300 ⊗ Combination with RGX/CGZ/RGZ not available.	
RGX±0.1 0.1 V L	RGX	RGX=0.1mm increments 0.3≦RGX≦1.5 and RGX≦ (P−V)/2 −0.1 L−N≧50, Available when L≦300 ⊗ Combination with CGX/CGZ/RGZ not available.	
CGZ±0.05 0.1 V L 45°	CGZ	CGZ=0.1mm increments 0.2≦CGZ≦1.0 and CGZ≦ (P−V)/2 −0.1 L−N≧50, Available when L≦300 ⊗ Combination with CGX/RGX/RGZ not available.	
RGZ±0.1 0.1 V L	RGZ	RGZ=0.1mm increments 0.5≦RGZ≦1.0 and RGZ≦ (P−V)/2 −0.1 L−N≧50, Available when L≦300 ⊗ Combination with CGX/RGX/CGZ not available.	

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

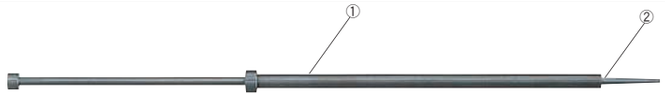
High Speed Steel
SKH51 equivalent

STRAIGHT EJECTOR SLEEVE & ONE-STEP CENTER PIN SETS

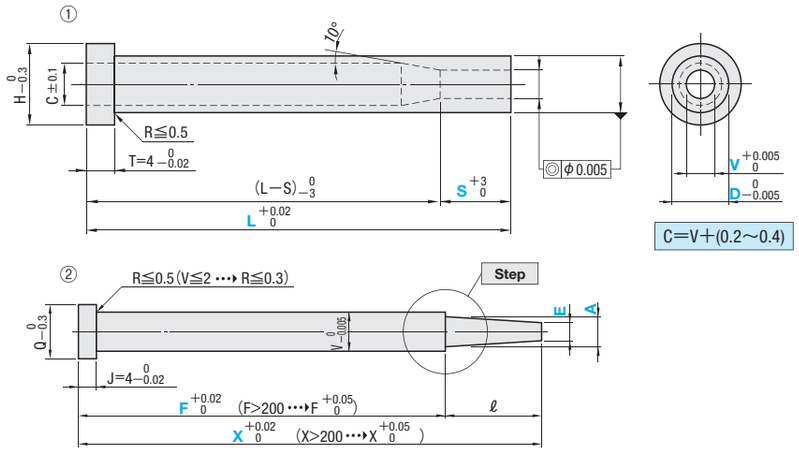
—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

RoHS



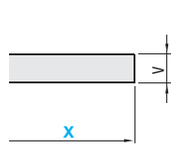
Part Number	Ejector Sleeve Head Thickness (T)	Center Pin Head Thickness (J)	T Head Thickness (T・J)
ESV—S—□	4mm	4mm	$^{0}_{-0.02}$



Head diameter of center pin	
V	Q
1	3
1.5	
2	4
2.5	5
3	6
3.5	7
4	
4.5	8
5	
5.5	9
6	
6.5	10
7	
8	11
9	14
10	15
12	17

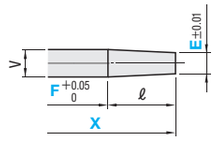
①② M SKH51 equivalent
H 58～60HRC
Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)

Step S (Not processed)



Alteration CX	Designate in 0.3≦CX≦0.5, CX<V/2
Alteration RX	Designate in 0.3≦RX≦0.5～1.0, RX<V/2
Alteration SR	SR=V/2

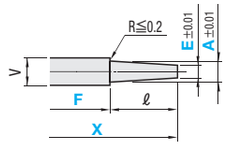
Step A



ℓ≧0.5+α

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

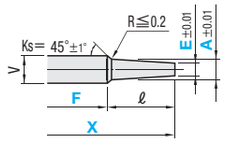
Step B



ℓ≧0.7+α

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

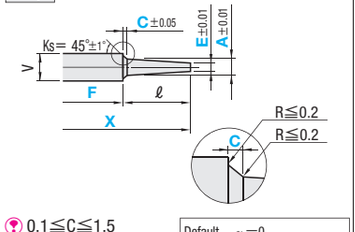
Step C



ℓ≧ $\frac{V-A}{2}$ +0.5+α
When AC code is used
ℓ≧ $\frac{V-A}{2\tan AC}$ +0.5+α

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

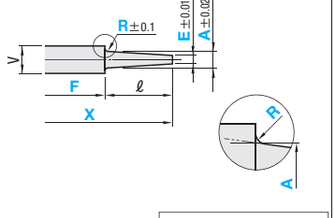
Step D



0.1≦C≦1.5
C< $\frac{V-A}{2}$
ℓ≧C+0.5+α

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

Step E



0.3≦R≦ $\frac{V-A}{2}$
ℓ≧R+0.5+α

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

H	Part Number Type	Step	D	L 0.01mm increments	V 0.5mm increments	V 1mm increments	S 0.5mm increments	0.01mm increments X	F	A	Emin.	0.1mm increments C・R	ℓmax.
7	ESV—S—	S A B C D E	4	50.00～120.00	1*～2.5	—	1.0≦S≦(V×3) and S≦25	L+20≦X≦L+100 and X≦Xmax.	F≧50.00	V>A≧E		Step D only 0.1≦C≦1.5 and C< $\frac{V-A}{2}$	
8			5	50.00～150.00	1*～3.5								
9			6		2～4.5								
10			7		3～5.5								
11			8	50.00～200.00	4～6								
14			9		5～7								
15			10		6～7	8							
16			11		—	7～9						Step E only R≧0.3 and R< $\frac{V-A}{2}$	
17			12			7～10							
18			13										
19			14			7～10・12							

V	Xmax.
1	150.00
1.5	200.00
2～	250.00

No need to designate F when Step S is selected.

No need to designate A when Step A is selected.

No need to designate A・E when Step S is selected.

V	Emin.
1	0.50
1.5	
2	0.70
2.5	
3	1.00
3.5	
4	1.50
4.5	
5	2.00
5.5	
6	
6.5	
7	
8	
9	
10	
12	

V	ℓmax.
1	15
1.5	20
2	25
2.5	30
3	35
3.5	40
4	45
4.5	50
5	
5.5	
6	
6.5	
7	
8	
9	
10	
12	

1* ･･･▸ Step E is V≧1.5 Refer to the drawing for ℓ min. (normally, α=0)

Order

Part Number	L	V	S	X	F	A	E	C・R
ESV—S—D6	145.50	V3.0	S8	X220.00	F200.00	A2.50	E1.50	C0.4

Days to Ship Quotation

Price Quotation

Alterations

Part Number	L	V	S	X	F	A	E	C・R	(KC・WKC･･･etc.)
ESV—S—D6	145.50	V3.0	S8	X220.00	F200.00	A2.50	E1.50	C0.4	HC10—WC1.75

Alteration details P.275

Alterations	Code	Spec.	1Code
KC WC −0.1 0	KC WC	KC・WC=0.1mm increments KC=D/2 ･･･ 0.05mm increments possible WC=V/2 ･･･ 0.05mm increments possible D/2≦KC<H/2, V/2≦WC<Q/2	Quotation
WKC WWC −0.1 0	WKC WWC	WKC・WWC=0.1mm increments WKC=D/2 ･･･▸ 0.05mm increments possible WWC=V/2 ･･･▸ 0.05mm increments possible D/2≦WKC<H/2, V/2≦WWC<Q/2	
H・Q HC QC −0.03 0	HC QC	HC・QC=0.1mm increments D≦HC<H, V≦QC<Q In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
TC・JC T・J	TC JC	TC・JC=0.1mm increments (Dimensions L・X and F remain unchanged.) T/2≦TC<T, T−TC≦Lmax.−L J/2≦JC<J, J−JC≦Xmax.−X	

① Alterations for Ejector Sleeves : KC, WKC, HC, TC
② Center pin alteration : WC, WWC, QC, JC, CX, RX, SR, AC, RR

Alterations	Code	Spec.	1Code
CX ±0.1	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E (orV)/2 E (orV) is a dimension prior to CX machining. α=CX	Quotation
RX ±0.1	RX	RX=0.1mm increments V≦4.5, 0.3≦RX≦0.5, RX<E (orV)/2 V>4.5, 0.3≦RX≦1.0 E (orV) is a dimension prior to RX machining. α=RX	
SR	SR	Finishes the tip in spherical shape (SR). α=E (orV)/2 X is $^{+0.05}_{0}$ E (orV) is a dimension prior to SR machining.	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step D/0 ⊗ Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<V	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B, C, D V−A≧1.0 When Step D, C≧0.5	

CX, RX, SR are available when V≧2

Ejector Sleeves

High Speed Steel
SKH51 equivalent

Dies Steel
SKD61 equivalent
+
Nitrided

STRAIGHT EJECTOR SLEEVE & ONE-STEP CENTER PIN SETS

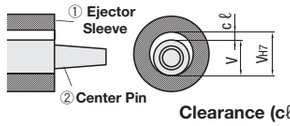
—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

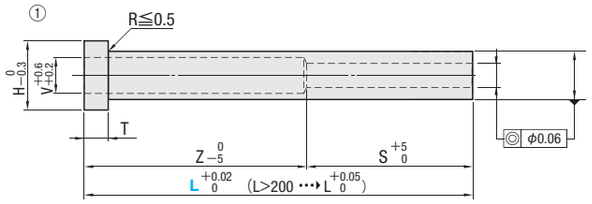
RoHS

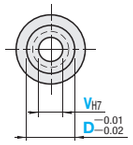
Part Number	Head Thickness (T・J)	T Head Thickness (T・J)	
		L≦300	L>300
ESNS—□	4mm (T4)	0 −0.02	0 −0.05
ESJS—□	4・6・8mm (JIS)	0 −0.05	

Clearance (cℓ) between the ejector sleeve's internal diameter (V_{H7}) and the center pin's shaft diameter (V).



Clearance (cℓ)<0.03





T V_{H7}dimension tolerance

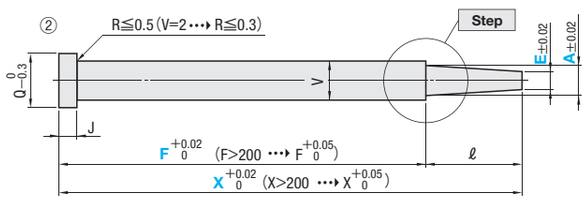
V	
1.5～3.0	+0.010 0
3.5～6.0	+0.012 0
6.5～8.5	+0.015 0

S dimension depends on the designated L dimension.
S=L—Z

L	80.00～100.00	100.01～120.00	120.01～140.00	140.01～160.00	160.01～180.00	180.01～225.00	225.01～250.00	250.01～275.00	275.01～300.00	300.01～325.00	325.01～350.00	350.01～375.00	375.01～400.00
Z	50	70	90	85	105	125	150	175	185	210	235	225	250

Head diameter/thickness of center pin

V	4mm head Q	4mm head J	JIS head Q	JIS head J
1.5	3	4	3	4
2.0	4		4	
2.5	5		5	
3.0	6		6	
3.5	7		7	
4.0			8	6
4.5	8			
5.0			9	
5.5	9			
6.0			10	
6.5	10		11	
8.0	11		13	8
8.5	13		14	



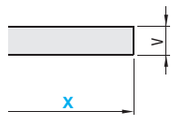
Default α = 0
When CX code is used α = CX
When RX code is used α = RX
When SR code is used α = E/2

① M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40±3HRC

② M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40～45HRC

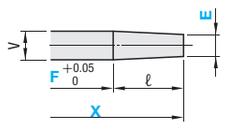
Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)
No nitriding on the tip (ℓ) of center pin.

Step S (Not processed)



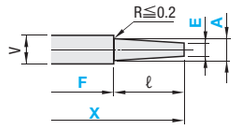
Alteration CX Designate in 0.3 ≦ CX ≦ 0.5, CX < V/2
Alteration RX Designate in 0.3 ≦ RX ≦ 0.5 ～ 1.0, RX < V/2
Alteration SR SR = V/2

Step A



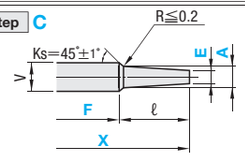
ℓ≧0.5+α

Step B



ℓ≧0.7+α

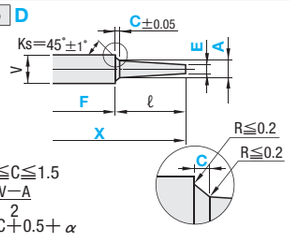
Step C



ℓ≧ (V−A)/2 +0.5+α

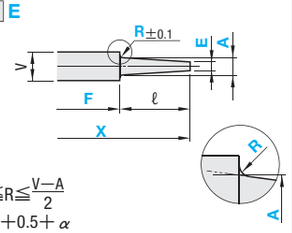
When AC code is used
ℓ≧ (V−A)/(2tanAC) +0.5+α

Step D



0.1≦C≦1.5
C< (V−A)/2
ℓ≧C+0.5+α

Step E



0.3≦R≦ (V−A)/2
ℓ≧R+0.5+α

Ejector Sleeve 4mm head H	T	JIS head H	T	Part Number Type	Step	D	L 0.01mm increments	V	X	F	A	Emin.	0.1mm increments C・R	ℓ max.
7	4	8	6	ESNS— (4mm head) / ESJS— (JIS Head)	S A B C D E	4	80.00～160.00	1.5 2.0 2.5	L+100≧X X≧L+20	F≧50.00 No need to designate F when Step S is selected.	V>A≧E No need to designate A・E when Step S is selected. No need to designate A when Step A is selected.	0.70	Step D only 0.1≦C≦1.5 and C< (V−A)/2	V×10 (V≧5.0 •••→ ℓ max.=50)
							160.01～200.00	2.0						
8						4.5	80.00～160.00	1.5 2.0 2.5				1.00		
							160.01～200.00	2.0						
		9				5	80.00～225.00	2.0 2.5 3.0						
							225.01～275.00	3.0						
9						5.5	80.00～225.00	2.0 2.5 3.0						
							225.01～275.00	3.0						
		10				6	80.00～300.00	2.0 2.5 3.0 3.5 4.0						
							300.01～400.00	3.0 3.5						
10		11				6.5	80.00～300.00	2.0 2.5 3.0 3.5 4.0						
							300.01～400.00	3.0 3.5 4.0						
						7	80.00～300.00	2.0 2.5 3.0 3.5 4.0 4.5				1.50	Step E only R≧0.3 and R≦ (V−A)/2	
							300.01～400.00	3.0 3.5 4.0 4.5						
11		12				7.5	80.00～300.00	3.0 3.5 4.0 4.5						
							300.01～325.00	4.0 4.5						
		13	8			8	80.00～275.00	2.0 2.5 3.0 3.5 4.0 4.5 5.0						
							275.01～400.00	3.0 3.5 4.0 4.5 5.0				2.00		
15		15				10	80.00～400.00	4.0 4.5 5.0 5.5 6.0 6.5						
17		17				12	80.00～400.00	4.0 4.5 5.0 5.5 6.0 6.5 8.0 8.5						

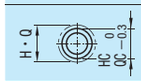
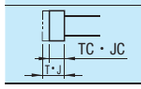
Order
Part Number — L — V — X — F — A — E — C(R)
ESNS—D8 — 300.00 — V5.0 — X390.00 — F350.00 — A2.50 — E2.00 — C1.0

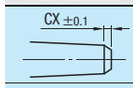
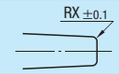
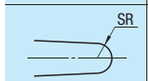
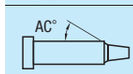
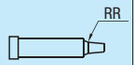
Quotation

Price
Quotation

Alterations
Part Number — L — V — X — F — A — E — C(R) — (KC・WKC…etc.)
ESNS—E10 — 310.00 — V4.5 — X400.00 — F300.00 — A3.20 — E2.40 — R0.3 — HC13—WC6

Alteration details P.275

Alterations	Code	Spec.	1Code
	KC WC	KC・WC=0.1mm increments KC=D/2 ••• 0.05mm increments possible WC=V/2 ••• 0.05mm increments possible D/2≦KC<H/2, V/2≦WC<Q/2	Quotation
	WKC WWC	WKC・WWC=0.1mm increments WKC=D/2 ••• 0.05mm increments possible WWC=V/2 ••• 0.05mm increments possible D/2≦WKC<H/2, V/2≦WWC<Q/2	
	HC QC	HC・QC=0.1mm increments D≦HC<H, V≦QC<Q In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	TC JC	TC・JC=0.1mm increments (Dimensions L・X and F remain unchanged.) T/2≦TC<T, T—TC≦Lmax.—L J/2≦JC<J, J—JC≦Xmax.—X	

Alterations	Code	Spec.	1Code
	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E (orV)/2 E (orV) is a dimension prior to CX machining. α=CX	
	RX	RX=0.1mm increments V≦4.5, 0.3≦RX≦0.5, RX<E (orV)/2 V>4.5, 0.3≦RX≦1.0 E (orV) is a dimension prior to RX machining. α=RX	Quotation
	SR	Finishes the tip in spherical shape (SR). α=E (orV)/2 X is +0.05 0 E (orV) is a dimension prior to SR machining.	
	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Step Available for C/D ⊗ Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<V	
	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B, C, D V—A≧1.0 When Step D, C≧0.5	

① Alterations for Ejector Sleeves : KC, WKC, HC, TC
② Center pin alteration : WC, WWC, QC, JC, CX, RX, SR, AC, RR

Dies Steel
SKD61 equivalent
+
Nitrided

STRAIGHT EJECTOR SLEEVE & ONE-STEP CENTER PIN SETS

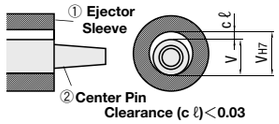
—HOLE (SHAFT) DIAMETER・L DIMENSION DESIGNATION TYPE—

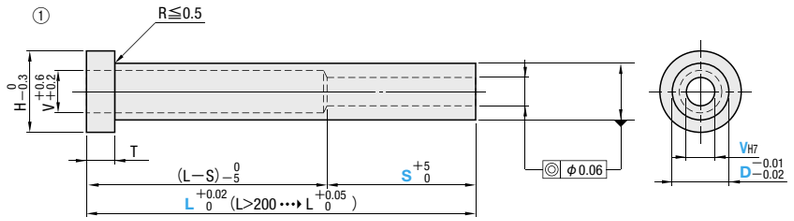
Non JIS material definition is listed on P.1351 - 1352

RoHS

Part Number	Head Thickness (T・J)	T Head Thickness (T・J)
ESNP—□	4mm (T4)	0 −0.02
ESJP—□	4・6・8mm (JIS)	0 −0.05

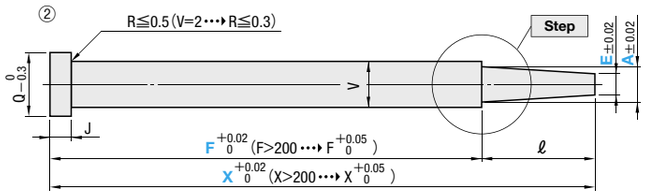
Clearance (cℓ) between the ejector sleeve's internal diameter (VH7) and the center pin's shaft diameter (V).





T VH7dimension

V	tolerance
2.0～3.0	+0.010 0
3.1～6.0	+0.012 0
6.1～8.0	+0.015 0



Head diameter/thickness of center pin				
V	4mm head		JIS head	
	Q	J	Q	J
2.0	4	4	4	4
2.1～2.5	5		5	
2.6～3.0	6		6	
3.1～3.5	7		7	
3.6～3.9			8	6
4.0				
4.1～4.5	8			
4.6～4.9			9	
5.0				
5.1～5.5	9			
5.6～5.9			10	
6.0				
6.1～6.4	10		11	
6.5				
6.6～7.0				
7.1～7.5	11		13	8
7.6～7.9				
8.0				

Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

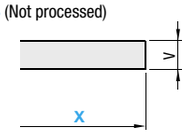
① M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40±3HRC

② M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40～45HRC

Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

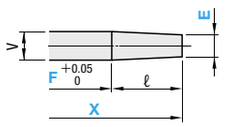
No nitriding on the tip (ℓ) of center pin.

Step S (Not processed)



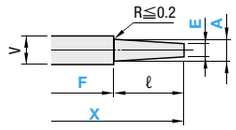
Alterations CX 0.3Designate in 0.3≦CX≦0.5, CX<V/2
Alterations RX 0.3Designate in 0.3 ≦ RX ≦ 0.5 ～ 1.0, RX < V/2
Alterations SR SR=V/2

Step A



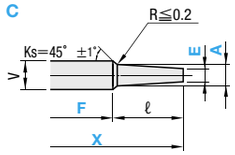
ℓ≧0.5+α

Step B



ℓ≧0.7+α

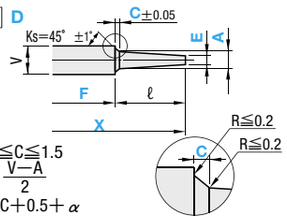
Step C



ℓ≧ (V−A)/2 +0.5+α

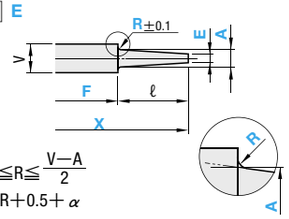
When AC code is used
ℓ≧ (V−A)/(2tanAC) +0.5+α

Step D



0.1≦C≦1.5
C< (V−A)/2
ℓ≧C+0.5+α

Step E



0.3≦R≦ (V−A)/2
ℓ≧R+0.5+α

Ejector Sleeve 4mm head H	T	JIS head H	T	Part Number Type	Step	D	L 0.01mm increments	V 0.1mm increments	S 1mm increments	0.01mm increments X	F	A	Emin.	0.1mm increments C・R	ℓ max.
7	4	8	6	ESNP— (4mm head)	S	4	50.00～200.00	2.0～2.5	20～100	L+100≧X and X≧L+20	F≧50.00	V>A≧E	0.70	Step D only 0.1≦C≦1.5 and C< (V−A)/2	V×10 (V≧5.0 ··· ℓ max.=50)
						4.5									
8		9			A	5	50.00～250.00	2.0～3.0					1.00		
9					B	5.5		2.0～3.5							
		10			C	6	80.00～300.00	2.5～4.0				No need to designate A・E when Step S is selected.			
10		11			D	6.5		2.5～4.0							
						7		2.5～4.5					1.50		
11		12		ESJP— (JIS Head)	E	7.5		2.5～4.5			No need to designate F when Step S is selected.			Step E only R≧0.3 and R≦ (V−A)/2	
		13	8			8		2.5～5.5	30～100			No need to designate A when Step A is selected.			
15		15				10		4.0～7.0					2.00		
17		17				12		4.0～8.0							

L	(L−S) min.
50.00～60.00	20
60.01～	30

L	(L−S) min.
80.00	40
80.01～	50

Order

Part Number	L	V	S	X	F	A	E	C(R)
ESNP—E10	250.00	V6.5	S80	X350.00	F300.00	A4.20	E3.20	R0.5

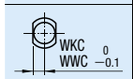
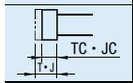
Days to Ship: Quotation

Price: Quotation

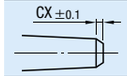
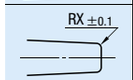
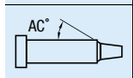
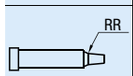
Alterations

Part Number	L	V	S	X	F	A	E	C(R)	(KC・WKC···etc.)
ESNP—A6	150.00	V2.5	S80	X210.05	F200.00		E1.60		TC3

Alteration details P.275

Alterations	Code	Spec.	1Code
	KC WC	KC・WC=0.1mm increments KC=D/2 ··· 0.05mm increments possible WC=V/2 ··· 0.05mm increments possible D/2≦KC<H/2, V/2≦WC<Q/2	Quotation
	WKC WWC	WKC・WWC=0.1mm increments WKC=D/2 ··· 0.05mm increments possible WWC=V/2 ··· 0.05mm increments possible D/2≦WKC<H/2, V/2≦WWC<Q/2	
	HC QC	HC・QC=0.1mm increments D≦HC<H, V≦QC<Q In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	TC JC	TC・JC=0.1mm increments (Dimensions L・X and F remain unchanged.) T/2≦TC<T, T−TC≦Lmax.−L J/2≦JC<J, J−JC≦Xmax.−X	

① Alterations for Ejector Sleeves : KC, WKC, HC, TC
② Center pin alteration : WC, WWC, QC, JC, CX, RX, SR, AC, RR

Alterations	Code	Spec.	1Code
	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E (orV)/2 E (orV) is a dimension prior to CX machining. α=CX	
	RX	RX=0.1mm increments V≦4.5, 0.3≦RX≦0.5, RX<E (orV)/2 V>4.5, 0.3≦RX≦1.0 E (orV) is a dimension prior to RX machining. α=RX	Quotation
	SR	Finishes the tip in spherical shape (SR). α==E (orV)/2 X is +0.05 0 E (orV) is a dimension prior to SR machining.	
	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Step Available for C/D ⊗ Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<V	
	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B, C, D V−A≧1.0 Step When Step D, C≧0.5	

Ejector Sleeves

Dies Steel SKD61 equivalent + Nitrided

Dies Steel
SKD61 equivalent
+
Nitrided

STEPPED EJECTOR SLEEVE & ONE-STEP CENTER PIN SETS

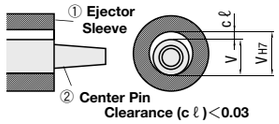
—L DIMENSION DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

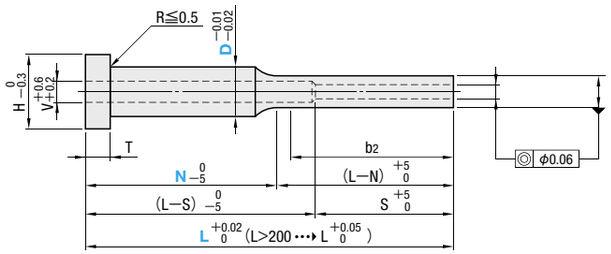
RoHS

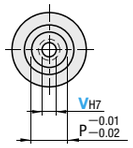
Part Number	Head Thickness (T·J)	T Head Thickness (T・J)
ESNM—□	4mm (T4)	0 −0.02
ESJM—□	4・6・8mm (JIS)	0 −0.05

Clearance (cℓ) between the ejector sleeve's internal diameter (V_{H7}) and the center pin's shaft diameter (V).



① Ejector Sleeve





T V_{H7}dimension

V	tolerance
2.0～3.0	+0.010 0
3.1～5.5	+0.012 0

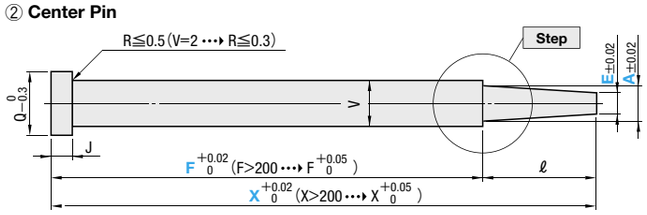
S dimension depends on the designated L dimension.

L	100.00～125.00	125.01～150.00	150.01～175.00	175.01～200.00	200.01～225.00	225.01～250.00	250.01～275.00	275.01～300.00
(L−S)	75	100	115	120	125	150	175	200

Head diameter/thickness of center pin

V	4mm head Q	4mm head J	JIS head Q	JIS head J
2.0	4	4	4	4
2.5	5		5	
3.0	6		6	
3.5	7		7	
4.0			8	6
4.5	8			
5.0				
5.5	9		9	

② Center Pin



Default α=0
When CX code is used α=CX
When RX code is used α=RX
When SR code is used α=E/2

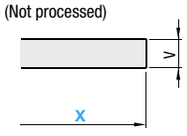
① M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40±3HRC

② M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40～45HRC

No nitriding on the tip (ℓ) of center pin.
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)

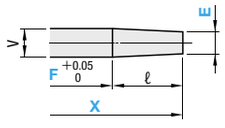
Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Step S (Not processed)



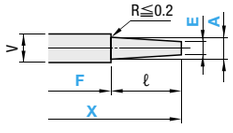
Alterations CX	0.3Designate in 0.3≦CX≦0.5, CX<V/2
Alterations RX	0.3Designate in 0.3 ≦ RX ≦ 0.5 ～ 1.0, RX < V/2
Alterations SR	SR=V/2

Step A



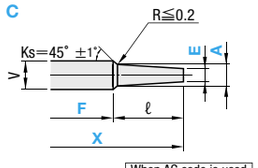
ℓ≧0.5+α

Step B



ℓ≧0.7+α

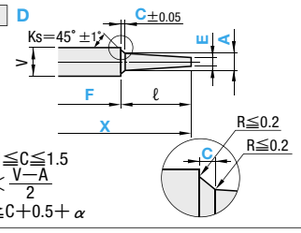
Step C



$\ell \geqq \frac{V-A}{2}+0.5+\alpha$

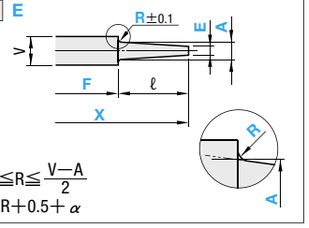
When AC code is used
$\ell \geqq \frac{V-A}{2\tan AC}+0.5+\alpha$

Step D



0.1≦C≦1.5
$C<\frac{V-A}{2}$
ℓ≧C+0.5+α

Step E



$0.3 \leqq R \leqq \frac{V-A}{2}$
ℓ≧R+0.5+α

Ejector Sleeve 4mm head H	T	JIS head H	T	P	Part Number Type		Step	D	L 0.01mm increments	V	N	0.01mm increments X	F	A	Emin.	0.1mm increments C・R	ℓmax.
7	4	—	—	V+1.5	ESNM—(4mm head)	—	S A B C D E	4	100.00～125.00	2.0	50 60	L+100≧X and X≧L+20	F≧100.00	V>A≧E	0.70	Step D only 0.1≦C≦1.5 and $C<\frac{V-A}{2}$ Step E only R≧0.3 and $R\leqq\frac{V-A}{2}$	V×10 (V≧5.0 ··· ℓmax.=50)
									125.01～150.00		60 80						
8								5	100.00～125.00	2.0 2.5	50 60				1.00		
									125.01～150.00		60 80						
9								6	100.00～150.00	2.0	60 80			No need to designate A・E when Step S is selected.			
									150.01～200.00	2.5 3.5	60 80						
									200.01～250.00	2.0 2.5 3.0	80 100						
11		13				ESJM—(JIS Head)		8	100.00～150.00	3.5 4.0	60 80		No need to designate F when Step S is selected.				
									150.01～200.00		80 100						
									200.01～250.00	3.5 4.0 4.5	80 100 (120) (150)						
—	—	17	8	V+2.0	—			12	125.00～150.00	5.0 5.5	60 80 100			No need to designate A when Step A is selected.	2.00		
									150.01～200.00		80 100 120						
									200.01～225.00		100 120						
									225.01～250.00		100 120 150						
									250.01～300.00		120 150						

N (120) and (150) are applicable for ESJM—alone.

Order

Part Number	L	V	N	X	F	A	E	C(R)
ESNM—B6	200.00	V2.5	N80	X300.00	F280.00	A2.00	E1.60	

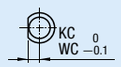
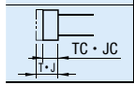
Days to Ship Quotation

Price Quotation

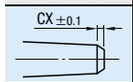
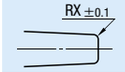
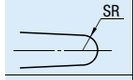
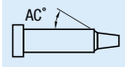
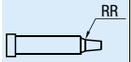
Alterations

Part Number	L	V	N	X	F	A	E	C(R)	(KC・WKC···etc.)
ESNM—B6	200.00	V2.5	N80	X300.00	F280.00	A2.00	E1.60		KC3.0

Alteration details P.275

Alterations	Code	Spec.	1Code
	KC WC	KC・WC=0.1mm increments KC=D/2 ··· 0.05mm increments possible WC=V/2 ··· 0.05mm increments possible D/2≦KC<H/2, V/2≦WC<Q/2	
	WKC WWC	WKC・WWC=0.1mm increments WKC=D/2 ··· 0.05mm increments possible WWC=V/2 ··· 0.05mm increments possible D/2≦WKC<H/2, V/2≦WWC<Q/2	Quotation
	HC QC	HC・QC=0.1mm increments D≦HC<H, V≦QC<Q In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	TC JC	TC・JC=0.1mm increments (Dimensions L・X and F remain unchanged.) T/2≦TC<T, T−TC≦Lmax.−L J/2≦JC<J, J−JC≦Xmax.−X	

① Alterations for Ejector Sleeves : KC, WKC, HC, TC
② Center pin alteration : WC, WWC, QC, JC, CX, RX, SR, AC, RR

Alterations	Code	Spec.	1Code
	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E (orV)/2 E (orV) is a dimension prior to CX machining. α=CX	
	RX	RX=0.1mm increments V≦4.5, 0.3≦RX≦0.5, RX<E (orV)/2 V>4.5, 0.3≦RX≦1.0 E (orV) is a dimension prior to RX machining. α=RX	Quotation
	SR	Finishes the tip in spherical shape (SR). α=E (orV)/2 X is +0.05 0 E (orV) is a dimension prior to SR machining.	
	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Step Available for C/D ⊗ Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<V	
	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B, C, D V−A≧1.0 Step When Step D, C≧0.5	

Dies Steel
SKD61 equivalent
+
Nitrided

STEPPED EJECTOR SLEEVE & ONE-STEP CENTER PIN SETS

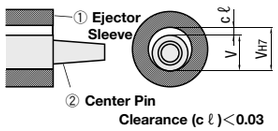
—L・V DIMENSION DESIGNATION TYPE—

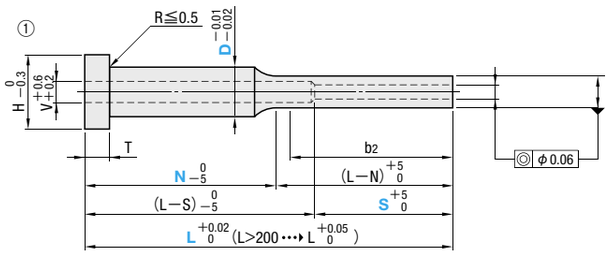
Non JIS material definition is listed on P.1351 - 1352

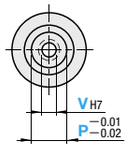
RoHS

Part Number	Head Thickness (T・J)	T Head Thickness (T・J)
ESND—□	4mm (T4)	0 −0.02
ESJD—□	4・6・8mm (JIS)	0 −0.05

Clearance (cℓ) between the ejector sleeve's internal diameter (V_{H7}) and the center pin's shaft diameter (V).





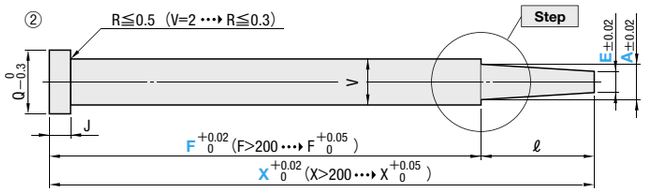


T V_{H7} dimension tolerance

V	
2.0〜3.0	+0.010 0
3.1〜6.0	+0.012 0
6.1〜8.0	+0.015 0

Head diameter/thickness of center pin

V	4mm head Q	4mm head J	JIS head Q	JIS head J
2.0	4	4	4	4
2.1〜2.5	5		5	
2.6〜3.0	6		6	
3.1〜3.5	7		7	
3.6〜3.9			8	6
4.0				
4.1〜4.5	8			
4.6〜4.9			9	
5.0				
5.1〜5.5	9			
5.6〜5.9			10	
6.0				
6.1〜6.4	10		11	
6.5				
6.6〜7.0				
7.1〜7.5	11		13	8
7.6〜7.9				
8.0				



Default $\alpha=0$
When CX code is used $\alpha=CX$
When RX code is used $\alpha=RX$
When SR code is used $\alpha=E/2$

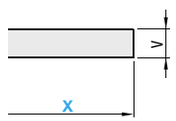
① M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40±3HRC

② M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40〜45HRC

Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

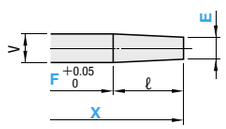
No nitriding on the tip (ℓ) of center pin.
Range of guaranteed tip-diameter precision (b_2) (Details P.1306)

Step S (Not processed)



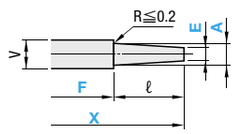
Alterations CX	Designate in 0.3≦CX≦0.5, CX<V/2
Alterations RX	Designate in 0.3≦RX≦0.5〜1.0, RX<V/2
Alterations SR	SR=V/2

Step A



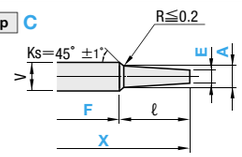
ℓ≧0.5+α

Step B



ℓ≧0.7+α

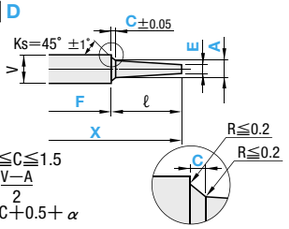
Step C



When AC code is used

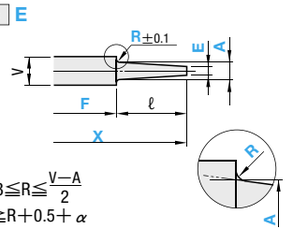
$\ell \geqq \frac{V-A}{2}+0.5+\alpha$ $\ell \geqq \frac{V-A}{2\tan AC}+0.5+\alpha$

Step D



0.1≦C≦1.5
$C<\frac{V-A}{2}$
ℓ≧C+0.5+α

Step E



$0.3 \leqq R \leqq \frac{V-A}{2}$
ℓ≧R+0.5+α

Ejector Sleeve 4mm head H	T	JIS head H	T	Part Number Type	Step	D	L 0.01mm increments	V 0.1mm increments	P 0.01mm increments	N 1mm increments	S 1mm increments	0.01mm increments X	F	A	Emin.	0.1mm increments C・R	ℓ max.
8	4	9	6	ESND— (4mm head) ESJD— (JIS head)	S A B C D E	5	50.00 〜 250.00	2.0〜3.0	3.50〜 4.95	N≧ L/3 and L−N≧10	20〜100 (L−S) min. 50.00〜 60.00: 20; 60.01〜300.00: 30	L+100≧X and X≧L+20	F≧50.00 No need to designate F when Step S is selected.	V>A≧E No need to designate A・E when Step S is selected. No need to designate A when Step A is selected.	1.00	Step D only 0.1≦C≦1.5 and C<(V−A)/2	V×10 (V≧5.0 •••→ ℓ max.=50)
9		10				5.5		2.0〜3.5	3.50〜 5.45								
						6	80.00 〜 300.00	2.5〜4.0	4.00〜 5.95								
10		11				6.5		2.5〜4.0	4.00〜 6.45								
						7		2.5〜4.5	4.00〜 6.95						1.50	Step E only R≧0.3 and R≦(V−A)/2	
11		12				7.5		2.5〜4.5	4.00〜 7.45		30〜100 L−S≧20						
		13	8			8		2.5〜5.5	5.00〜 7.95						2.00		
15		15				10		4.0〜7.0	6.00〜 9.95								
17		17				12		4.0〜8.0	7.50〜11.95								

D	Limit value for P
5〜 8	P≧V+1.5
10〜12	P≧V+2

Order

Part Number — L — V — P — N — S — X — F — A — E — C(R)
ESND—B6 — 300.00 — V2.5 — P4.10 — N140 — S100 — X400.00 — F370.00 — A2.10 — E1.60

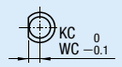
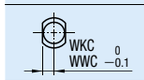
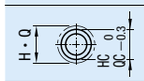
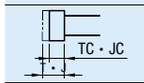
Days to Ship Quotation

Price Quotation

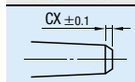
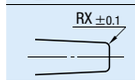
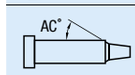
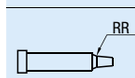
Alterations

Part Number — L — V — P — N — S — X — F — A — E — C(R) — (KC・WKC…etc.)
ESJD—C8 — 250.03 — V3.6 — P6.05 — N150 — S100 — X325.00 — F300.00 — A2.80 — E2.01 — KC5.5

Alteration details P.275

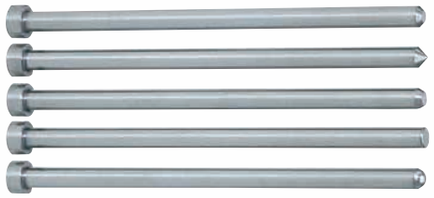
Alterations	Code	Spec.	1Code
	KC WC	KC・WC=0.1mm increments KC=D/2 ••• 0.05mm increments possible WC=V/2 ••• 0.05mm increments possible D/2≦KC<H/2, V/2≦WC<Q/2	Quotation
	WKC WWC	WKC・WWC=0.1mm increments WKC=D/2 ••• 0.05mm increments possible WWC=V/2 ••• 0.05mm increments possible D/2≦WKC<H/2, V/2≦WWC<Q/2	
	HC QC	HC・QC=0.1mm increments D≦HC<H, V≦QC<Q In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	TC JC	TC・JC=0.1mm increments (Dimensions L・X and F remain unchanged.) T/2≦TC<T, T−TC≦Lmax.−L J/2≦JC<J, J−JC≦Xmax.−X	

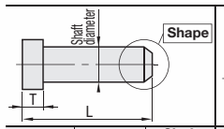
① Alterations for Ejector Sleeves : KC, WKC, HC, TC
② Center pin alteration : WC, WWC, QC, JC, CX, RX, SR, AC, RR

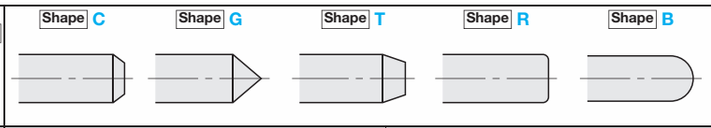
Alterations	Code	Spec.	1Code
	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E (orV)/2 E (orV) is a dimension prior to CX machining. α=CX	Quotation
	RX	RX=0.1mm increments V≦4.5, 0.3≦RX≦0.5, RX<E (orV)/2 V>4.5, 0.3≦RX≦1.0 E (orV) is a dimension prior to RX machining. α=RX	
	SR	Finishes the tip in spherical shape (SR). α=E (orV)/2 X is +0.05 0 E (orV) is a dimension prior to SR machining.	
	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Step Available for C/D ⊗ Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<V	
	RR	Changes R (normally 0.2 or less) to R0.3〜0.5. (for Strength improvement) Designation method RR Available for Step B, C, D V−A≧1.0 When Step D, C≧0.5	

STRAIGHT CENTER PINS

STRAIGHT CENTER PINS WITH TIP PROCESS







M	Head thickness (T)	Shaft diameter Tolerance	Shaft Diameter (D) Selection Type		Shaft diameter(P) 0.01mm increments		Center pin shaft diameter tolerance	Applicable ejector sleeve hole (V) tolerance
SKH51 equivalent	4mm (T4)	0 −0.005	CPH−5L□	P.339	CPHG−5L□	P.341	0 −0.005	+0.005 0
		−0.01 −0.02	CPHE−5L□	P.339	CPHGE−5L□	P.341	−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)	0 −0.005	CPHJ−5L□	P.339	CPHJG−5L□	P.341	0 −0.005	+0.005 0
		−0.01 −0.02	CPHJE−5L□	P.339	CPHJGE−5L□	P.341	−0.01 −0.02	+0.01 0 or H7
SKD61 equivalent + Nitriding	4mm (T4)	*Reference tolerance −0.01 −0.02	CPN−5L□	P.343	CPNG−5L□ (Shaft diameter 0.1mm increments)	P.345	−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)		CPJ−5L□	P.343	CPJG−5L□ (Shaft diameter 0.1mm increments)	P.345		
SKD61 equivalent + Nitriding With cooling hole	4mm (T4)	*Reference tolerance −0.01 −0.02	RDCPN−5L□	P.347	—		−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)		RDCPJ−5L□	P.347	—			

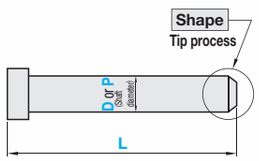
*The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.

■ SELECTION METHOD FOR STRAIGHT CENTER PINS WITH TIP PROCESSED

■Codes for Straight Center Pins with Tip Processed Specifications

Shaft Diameter (D) Selection Type	CP□(E)−5L□ **RDCP□ −5L□
SHAFT DIAMETER (P) DESIGNATION TYPE	CP□G(E)−5L□

**A part number of straight center pin that starts by RD is in the type of straight center pin with cooling hole.



Material・tolerance codes

M	Head thickness (T)	Shaft diameter Tolerance	Material and tolerance codes
SKH51 equivalent	4mm (T4)	0 −0.005	H
		−0.01 −0.02	HE
	6・8mm (JIS)	0 −0.005	HJ
		−0.01 −0.02	HJE
SKD61 equivalent + Nitriding	4mm (T4)	*Reference tolerance −0.01 −0.02	N
	6・8mm (JIS)		J

Tip process code

Shape	Tip process code
	C (C chamfered)
	G (Cone)
	T (Tapered)
	R (R chamfered)
	B (Spherical)

■Material characteristics of center pins

M		High speed steel SKH51(M2)(1.3343)	Dies Steel SKD61 (H13)(1.2344) +Nitriding
H	HRC	58～60	Surface 900HV～ Base material 40～45
Machining characteristics	Abrasion resistance	5	4
	Ability to be mirror-finished	4	3
	Toughness	3	4
	Corrosion resistance	3	3
Physical characteristics	Watt density [g/cm³]	8.2	7.75
	Modulus of longitudinal elasticity [kgf/mm²]	22300	21000
	Coefficient of thermal expansion [×10⁶/℃]	10.1	10.8
	Thermal conductivity coefficient [cal/cm・sec・℃]	0.051	0.061
Mechanical characteristics	Tensile strength [kgf/mm²]	235	135
	Charpy impact values [kgf・m/cm²]	2	4

Machining characteristics: 1 (Poor) — 3 (Good) — 5 (Excellent)

Conversion expression
1kgf/mm²=9.81N/mm²
1cal/cm・sec・℃=418.6W/M.K
1kgf・m/cm²=9.81J/cm²

Use these data for reference only as they are dependent on specific heat treatment and usage conditions.

ALTERATION GUIDE FOR STRAIGHT CENTER PINS

Non JIS material definition is listed on P.1351 - 1352

Items	Applicable Products	Alterations	Code	Specifications	1Code
Key flat cutting	Straight Center Pins	Precision key flat cutting (VKC −0.02 0)	VKC	Precision single flat cutting; High speed steel SKH51 equivalent only; Range of designation (DorP)/2≦VKC<H/2	
		Precision key flat cutting (VWC −0.02 0)	VWC	Precision two flats cutting; High speed steel SKH51 equivalent only; Range of designation (DorP)/2≦VWC<H/2	
		Key flat cutting (KC −0.1 0)	KC	Single flat cutting; Range of designation (DorP)/2≦KC<H/2	
		Key flat cutting (WKC −0.1 0)	WKC	Two flats cutting; Range of designation (DorP)/2≦WKC<H/2	
		Key flat cutting (KAC, KBC −0.1 0)	KAC KBC	Varied width parallel flats cutting; Range of designation (DorP)/2≦KAC; KAC<KBC<H/2	
		Key flat cutting (RKC −0.1 0)	RKC	Two flats (right angled) cutting; Range of designation (DorP)/2≦RKC<H/2	
		Key flat cutting (DKC −0.1 0)	DKC	Three flats cutting; Range of designation (DorP)/2≦DKC<H/2	
		Key flat cutting (angled) (AG°±0.5, 0°, KGC −0.1 0)	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation (DorP)/2≦KGC<H/2; AG=1° increments 0°<AG<360°	
		Key flat cutting (angled) (120°, 120°, 120°, KTC −0.1 0)	KTC	Three flats cutting at 120°; Range of designation (DorP)/2≦KTC<H/2	
Head alteration	Straight Center Pins	Head diameter change (H, HC −0.3 0)	HC	Reduces the head diameter. Range of designation DorP≦HC<H; Available when DorP≧1.5; In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft. Unit of designation 0.1mm increments; Designation method HC6.5	
		Head diameter change (precision) (H, HCC −0.02 0)	HCC	Reduces the head diameter. (Precision) Range of designation DorP+0.5≦HCC<H−0.3; Available when DorP≧1.5. Unit of designation 0.1mm increments; Designation method HCC6.1	
		Head thickness change (TC, T)	TC	Reduces the head thickness. Dimension L remains unchanged. Range of designation T/2≦TC<T; T−TC≦Lmax.−L; Available when DorP≧1.5. Unit of designation 0.1mm increments; Designation method TC3.5	
		Dowel hole boring (d +0.1 0, ℓ, H, T)	NC	Adds a dowel hole. Available when head type≧4. Designation method NC. T/d/ℓ: 4/2/3, 6/3/5, 8/3/5. Combination with other than NHC・NHN not available	
		Dowel hole+Spring pin (d, ℓ1, H, T)	NCW	Adds a dowel hole+ and drives a spring pin. Available when head type≧4. Designation method NCW. T/d/ℓ1: 4/2/5, 6/3/5, 8/3/5. Combination with other than NHC・NHN not available	
		Numbering (A13, 3)	NHC	Combination with key flat cutting not available. Electrolytic marking of ID code on the head(in 5 point, Round Gothic type). Available characters: Numerals: 0～9; Alphabets: A～Z. Range of designation: 1 character when 2≦H<4.9; 1 or 2 characters when 5≦H<6.9(Only the first character may be an alphabet.); Up to 3 characters when 7≦H(Only the first character may be an alphabet.). Designation method: NHC−6, NHC−23, NHC−A90; Available when head diameter H≧2	
		Numbering (1, 2, 3; A1, A2, A3)	NHN	Automatic sequential numbering on the head. Adds a sequential number on the head of each ejector pin when two or more pieces of identical size are ordered. Available characters: Same as NHC (see above). Range of designation: Same as NHC (see above). Designation method: When 3 pieces are ordered with NHN−1. A sequential number starting from 1 is added on the head of each piece. When 10 pieces are ordered with NHN−A15. A sequential number starting from A15・・・(through A24) is added on the head of each piece. Available when head diameter H≧2. Only available when two or more pieces of identical size are ordered.	

To make a flat at the shaft diameter position for straight/One-step/Two-step/Taperless and stepped types

Unit of designation
・Straight type
Shaft diameter selection type (D/2)……0.05mm increments possible
Shaft diameter designation (0.01mm increments) type(P/2)……0.005mm increments possible
Shaft diameter designation (0.1mm increments) type(P/2)……0.05mm increments possible

Designation method
・VKC2.82 (When P5.64)
・VWC3.375 (When P6.75)
・KC2.61 (When P5.22)
・WKC3.085 (When P6.17)
・RKC2.74 (When P5.48)
・DKC3 (When D6)
・KGC1.5−AG125 (When D3)
・KTC3.085 (When P6.17)

To designate an arbitrary flat size

Unit of designation 0.1mm increments

Designation method
・VKC1.4
・VWC2.3
・KC1.4
・WKC2.3
・KAC1.4−KBC1.6
・RKC1.4
・DKC1.75
・KGC1.4−AG85
・KTC2.3

Quotation

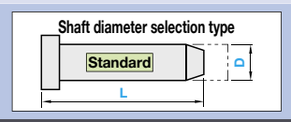
Straight Center Pins

High Speed Steel
SKH51 equivalent
$D^{0}_{-0.005}$ / $D^{-0.01}_{-0.02}$

STRAIGHT CENTER PINS WITH TIP PROCESS

—SHAFT DIAMETER (D) SELECTION TYPE—

Shaft diameter selection type



Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T / D	Head thickness (T)	Applicable ejector sleeve hole tolerance
CPH —5L	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Detail P.1309
CPHJ —5L		6・8mm (JIS)	
CPHE —5L	$^{-0.01}_{-0.02}$	4mm (T4)	$^{+0.01}_{0}$ or H7 Detail P.1309
CPHJE—5L		6・8mm (JIS)	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	Shape	D	L 0.01mm increments
3	4	—	—	CPH —5L CPHE—5L	—	C G T R B	1	50.00～200.00
4							1.5	
5							2	50.00～250.00
6							2.5	
7							3	50.00～300.00
8		8	6		CPHJ —5L CPHJE—5L		3.5	
9		9					4	
		10					4.5	
10		11					5	50.00～350.00
11		13	8				5.5	
14		14					6	
15		15					6.5	
17		17					7	
							8	
							9	
							10	
							12	

Shape (Tip size)

- Shape C — C…0.1mm increments
- Shape G — K…1° increments
- Shape T — S…0.1mm increments, K…1° increments
- Shape R — R…0.1mm increments
- Shape B — Default R (SR)$=\frac{D}{2}$ (R…0.1mm increments possible)

Refer to the working limits shown in the drawing.

Alterations

Part Number	L	Tip size(C・S・K・R)	(KC・WKC…etc.)
CPH —5LB6	100.00	R4.0	HC7.0
CPHJ—5LT5	100.00	S2.0—K30	HC7.0

Alteration details P.338

Alterations	Code	Spec.	1Code
VKC $^{0}_{-0.02}$	VKC	Precision single flat cutting D/2≦VKC<H/2	Quotation
VWC $^{0}_{-0.02}$	VWC	Precision two flats cutting D/2≦VWC<H/2	
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

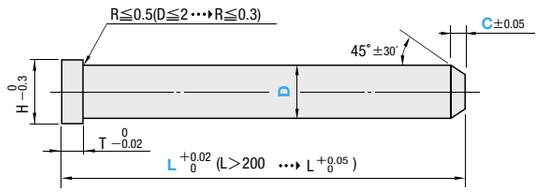
About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Price Quotation

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC $^{0}_{-0.02}$ T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L (Dimension L remains unchanged.)	
H ℓ d $^{+0.1}_{0}$ T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available T / d / ℓ: 4 / 2 / 3; 6 / 3 / 5; 8	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available T / d / ℓ1: 4 / 2 / 5; 6 / 3 / 5; 8	
217	NHC	Numbering on the head How to order P.338 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.338 Available when H≧2	

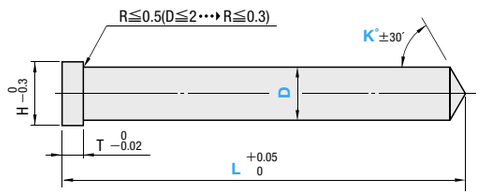
Shape (Tip shape)

Shape C (C chamfered)



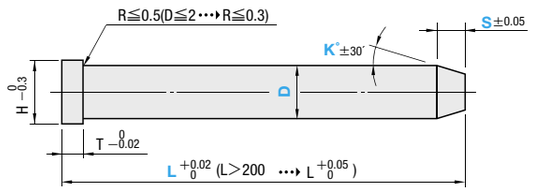
C…0.1mm increments
$0.1 \leqq C \leqq \frac{D-0.2}{2}$

Shape G (Cone)



K…1° increments
45≦K<90

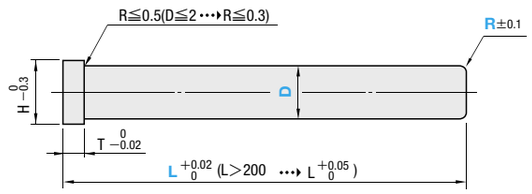
Shape T (Tapered)



S…0.1mm increments
(L−S)≧45
and
0.1≦S≦D×2
and
$\frac{D}{2}$−StanK≧0.1

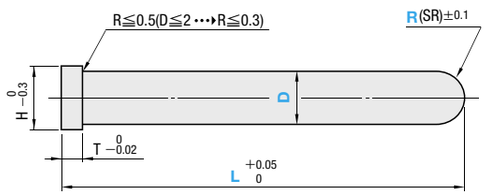
K…1° increments
1≦K≦45

Shape R (R chamfered)



R…0.1mm increments
$0.2 \leqq R \leqq \frac{D-0.2}{2}$

Shape B (Spherical)



・Default R (SR)$=\frac{D}{2}$

*SR may be designated within
$\frac{D}{2}$<R≦2×D
R…0.1mm increments possible

Order

Part Number	L	Tip size(C・S・K・R)
CPH —5LC5	100.00	C1.0
CPHJ—5LT5	100.00	S2.0—K30

Days to Ship Quotation

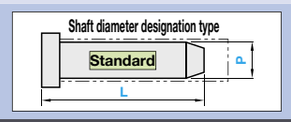
Straight Center Pins

High Speed Steel
SKH51 equivalent

High Speed Steel
SKH51 equivalent
$P^{0}_{-0.005}$ / $P^{-0.01}_{-0.02}$

STRAIGHT CENTER PINS WITH TIP PROCESS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TYPE—



Non JIS material definition is listed on P.1351 - 1352

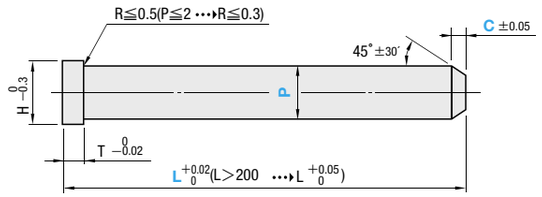
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T / P	Head thickness (T)	Applicable ejector sleeve hole tolerance
CPHG —5L	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Detail P.1309
CPHJG—5L		6・8mm (JIS)	
CPHGE —5L	$^{-0.01}_{-0.02}$	4mm (T4)	$^{+0.01}_{0}$ or H7 Detail P.1309
CPHJGE—5L		6・8mm (JIS)	

Shape (Tip shape)

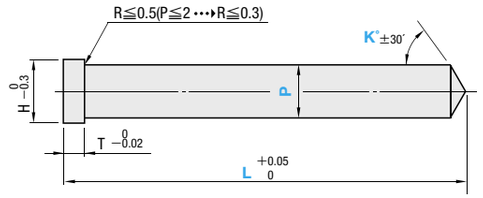
Shape C (C chamfered)



C···0.1mm increments

$0.1 \leqq C \leqq \frac{P-0.2}{2}$

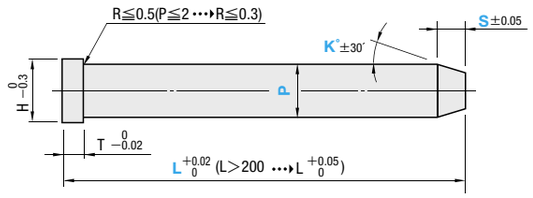
Shape G (Cone)



K···1° increments

45≦K<90

Shape T (Tapered)



S···0.1mm increments

(L−S)≧45

and

0.1≦S≦P×2

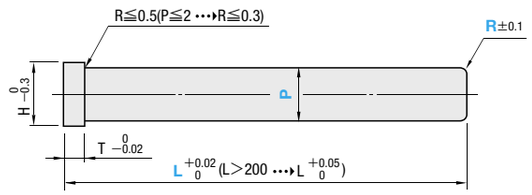
and

$\frac{P}{2}$−StanK≧0.1

K···1° increments

1≦K≦45

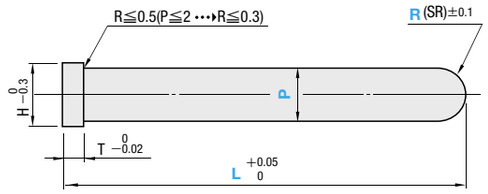
Shape R (R chamfered)



R···0.1mm increments

$0.2 \leqq R \leqq \frac{P-0.2}{2}$

Shape B (Spherical)



・Default R (SR)=$\frac{P}{2}$

* SR may be designated within
$\frac{P}{2}$<R≦2×P
R··· 0.1mm increments possible

Order

Part Number	L	P	Tip size(C・S・K・R)
CPHG —5LC5	100.00	P4.85	C1.0
CPHJG—5LT5	100.00	P4.85	S2.0—K30

Days to Ship — Quotation

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type: 4mm head	Part Number Type: JIS head	Shape	No.	0.01mm increments L	0.01mm increments P
3	4	—	—	CPHG—5L CPHGE—5L	—	C G T R B	1	50.00～150.00	0.80～ 0.99
								150.01～200.00	0.90～ 0.99
							1.5	50.00～250.00	1.00～ 1.49
4							2		1.50～ 1.99
5							2.5		2.00～ 2.49
6							3	50.00～300.00	2.50～ 2.99
7							3.5		3.00～ 3.49
		8	6		CPHJG—5L CPHJGE—5L		4		3.50～ 3.99
8							4.5		4.00～ 4.49
		9					5	50.00～350.00	4.50～ 4.99
9							5.5		5.00～ 5.49
		10					6		5.50～ 5.99
10		11					6.5		6.00～ 6.49
							7		6.50～ 6.99
11		13	8				8		7.00～ 7.99
15		15					10		8.00～ 9.99
17		17					12		10.00～11.99

Shape (Tip size)

- Shape C — C···0.1mm increments
- Shape G — K···1° increments
- Shape T — S···0.1mm increments, K···1° increments
- Shape R — R···0.1mm increments
- Shape B — Default R (SR)=$\frac{P}{2}$ (R···0.1mm increments possible)

Refer to the working limits shown in the drawing.

Alterations

Part Number	L	P	Tip size(C・S・K・R)	(KC・WKC···etc.)
CPHG —5LC5	100.00	P4.85	C1.0	HC7.0
CPHJG—5LT5	100.00	P4.85	S2.0—K30	HC7.0

Alteration details P.338

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P≦HC<H,P≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3,P≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T,P≧1.5 T−TC≦Lmax.−L (Dimension L remains unchanged.)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN not available (T 4: d 2, ℓ 3; T 6, 8: d 3, ℓ 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN not available (T 4: d 2; T 6, 8: d 3; ℓ1 5)	
217	NHC	Numbering on the head How to order P.338 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.338 Available when H≧2	

Price — Quotation

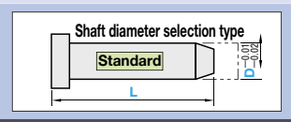
Straight Center Pins

High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent+Nitrided
D $^{-0.01}_{-0.02}$

STRAIGHT CENTER PINS WITH TIP PROCESS

—SHAFT DIAMETER (D) SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKD61 equivalent+Nitrided
H Surface 900HV～
Base material 40～45HRC

Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed shaft diameter precision (Details P.1308)
No nitriding on the tip.

Type	T D	Head thickness(T)	T Head Thickness(T)	Applicable ejector sleeve hole tolerance
CPN—5L	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$ (L>300 $^{0}_{-0.05}$ ···T)	$^{+0.01}_{0}$ or H7 Detail P.1309
CPJ—5L	D>12 or L>500 $^{-0.01}_{-0.03}$ ··· D	6・8mm (JIS)	$^{0}_{-0.05}$	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Shape	D	L 0.01mm increments CPN—5L	L 0.01mm increments (L>500→0.1mm increments) CPJ—5L
3	4	—	—	CPN—5L	—	C G T R B	1.5	50.00～250.00	—
4							2	50.00～400.00	
5							2.5		
6							3	50.00～400.00	
7							3.5		
		8	6		CPJ—5L		4		50.00～500.00
8							4.5		
		9					5	50.00～500.00	
9							5.5		
		10					6	50.00～500.00	50.00～600.00
10		11					6.5		
							7		
11		13	8				8		
15		15					10		
17		17					12	50.00～500.00	
—	—	20		—			15	—	50.00～700.00
		21					16		

Shape (Tip size)

Shape C C···0.1mm increments

Shape G K···1° increments

Shape T S···0.1mm increments
K···1° increments

Shape R R···0.1mm increments

Shape B Default R (SR)=$\frac{D}{2}$
(R···0.1mm increments possible)

Refer to the working limits shown in the drawing.

Alterations

Part Number	L	Tip size(C・S・K・R)	(KC・WKC···etc.)
CPN—5LC5	100.00	C1.0	HC7.0
CPJ—5LT5	100.00	S2.0—K30	HC7.0

Alteration details P.338

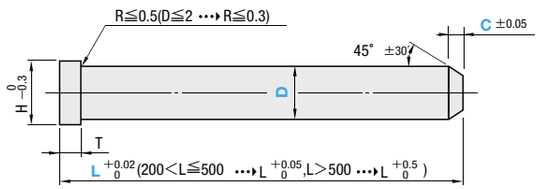
Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
TC $^{0}_{-0.05}$ T	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L (Dimension L remains unchanged.)	
H ℓ d $^{+0.1}_{0}$ T	NC	Dowel hole boring Combination with other than NHC・NHN not available (T 4/6/8, d 2/3, ℓ 3/5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN not available (T 4/6/8, d 2/3, ℓ1 5)	
217	NHC	Numbering on the head How to order P.338 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.338 Available when H≧2	

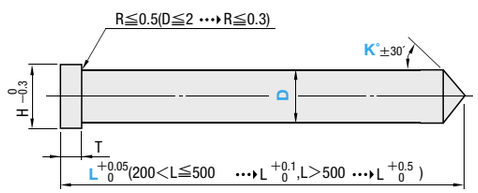
Price Quotation

Shape C
(C chamfered)



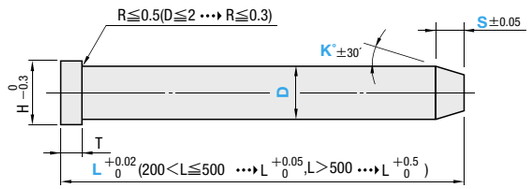
C···0.1mm increments
$0.1 \leqq C \leqq \frac{D-0.2}{2}$

Shape G
(Cone)



K···1° increments
45≦K<90

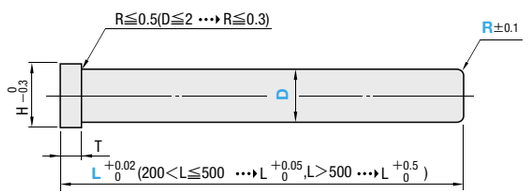
Shape T
(Tapered)



S···0.1mm increments
(L−S)≧45
and
0.1≦S≦D×2
and
$\frac{D}{2}$−StanK≧0.1

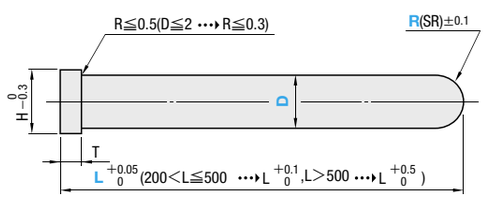
K···1° increments
1≦K≦45

Shape R
(R chamfered)



R···0.1mm increments
$0.2 \leqq R \leqq \frac{D-0.2}{2}$

Shape B
(Spherical)



・Default R (SR)=$\frac{D}{2}$

* SR may be designated within
$\frac{D}{2}$<R≦2×D
R··· 0.1mm increments possible

Order

Part Number	L	Tip size(C・S・K・R)
CPN—5LC5	100.00	C1.0
CPJ—5LT5	100.00	S2.0—K30

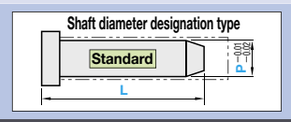
Days to Ship Quotation

Straight Center Pins
Dies Steel SKD61 equivalent + Nitriding

Dies Steel
SKD61 equivalent+Nitrided
P $^{-0.01}_{-0.02}$

STRAIGHT CENTER PINS WITH TIP PROCESS

—SHAFT DIAMETER (P) DESIGNATION (0.1mm INCREMENTS) TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKD61 equivalent+Nitrided
H Surface 900HV～ Base material 40～45HRC

Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed shaft diameter precision (Details P.1308)
No nitriding on the tip.

Type	T P	Head thickness (T)	T Head thickness (T)	Applicable ejector sleeve hole tolerance
CPNG—5L	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$ ($L>300$ ⋯ $T^{0}_{-0.05}$)	$^{+0.01}_{0}$ or H7 Detail P.1309
CPJG—5L	P>12 ⋯ $P^{-0.01}_{-0.03}$	6・8mm (JIS)	$^{0}_{-0.05}$	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Shape	No.	L 0.01mm increments	P 0.1mm increments
4	4	—	—	CPNG—5L	—	C G T R B	2	50.00～400.00	1.5～ 1.9
5							2.5		2.0～ 2.4
6							3	50.00～400.00	2.5～ 2.9
7							3.5		3.0～ 3.4
		8	6		CPJG—5L		4		3.5～ 3.9
8							4.5		4.0～ 4.4
		9					5	50.00～500.00	4.5～ 4.9
9							5.5		5.0～ 5.4
		10					6		5.5～ 5.9
10		11					6.5		6.0～ 6.4
							7		6.5～ 6.9
11		13	8				8		7.0～ 7.9
15		15					10		8.0～ 9.9
17		17					12		10.0～11.9
—	—	20		—			15		12.0～14.9
		21					16		15.0～15.9

Shape (Tip size)

Shape C — C⋯0.1mm increments
Shape G — K⋯1° increments
Shape T — S⋯0.1mm increments, K⋯1° increments
Shape R — R⋯0.1mm increments
Shape B — Default R (SR)$=\frac{P}{2}$ (R⋯0.1mm increments possible)

Refer to the working limits shown in the drawing.

Alterations

Part Number	L	P	Tip size(C・S・K・R)	(KC・WKC⋯etc.)
CPNG—5LC5	100.00	P4.9	C1.0	HC7.0
CPJG—5LT5	100.00	P4.9	S2.0—K30	HC7.0

Alteration details P.338

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5, 0°, KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120°, 120°, KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

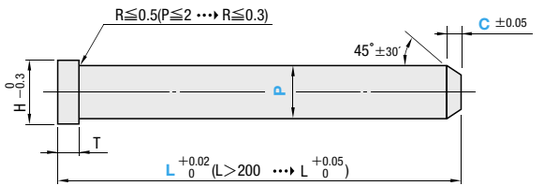
About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H, HC $^{0}_{-0.3}$	HC	HC=0.1mm increments P≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H, HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
TC $^{0}_{-0.05}$, T	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L (Dimension L remains unchanged.)	Quotation
H, d $^{+0.1}_{0}$, ℓ, T	NC	Dowel hole boring Combination with other than NHC・NHN not available (T/d/ℓ: 4/2/3, 6/3/5, 8/3/5)	
H, ℓ1, d, T	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN not available (T/d/ℓ1: 4/2/5, 6/3/5, 8/3/5)	
217	NHC	Numbering on the head How to order P.338 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.338 Available when H≧2	

Price Quotation

Shape (Tip shape)

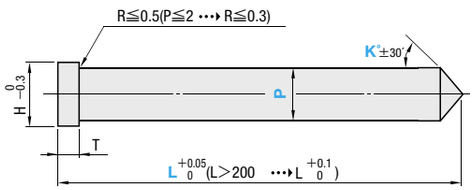
Shape C (C chamfered)



C⋯0.1mm increments

$0.1 \leqq C \leqq \frac{P-0.2}{2}$

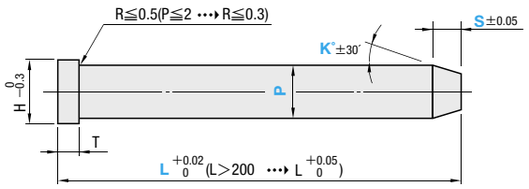
Shape G (Cone)



K⋯1° increments

45≦K<90

Shape T (Tapered)



S⋯0.1mm increments

(L−S)≧45

and

0.1≦S≦P×2

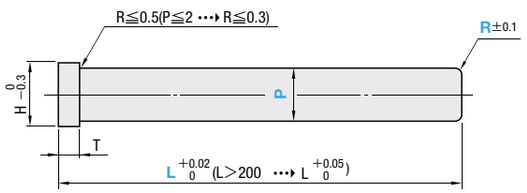
and

$\frac{P}{2}$−StanK≧0.1

K⋯1° increments

1≦K≦45

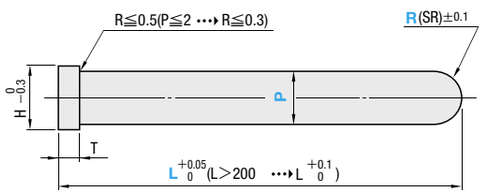
Shape R (R chamfered)



R⋯0.1mm increments

$0.2 \leqq R \leqq \frac{P-0.2}{2}$

Shape B (Spherical)



・Default R (SR)$=\frac{P}{2}$

* SR may be designated within $\frac{P}{2}$<R≦2×P
R⋯ 0.1mm increments possible

Order

Part Number	L	P	Tip size(C・S・K・R)
CPNG—5LC5	100.00	P4.9	C1.0
CPJG—5LT5	100.00	P4.9	S2.0—K30

Days to Ship Quotation

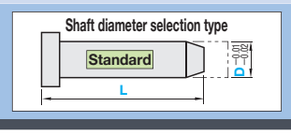
Straight Center Pins

Dies Steel SKD61 equivalent + Nitriding

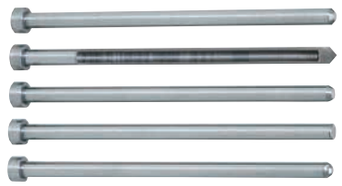
Dies Steel
SKD61 equivalent+Nitrided
D $^{-0.01}_{-0.02}$

TIP PROCESSED STRAIGHT CENTER PINS WITH COOLING HOLE

—SHAFT DIAMETER (D) SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352



RoHS

M SKD61 equivalent+Nitrided
H Surface 900HV~
Base material 40±3HRC

Range of guaranteed shaft diameter precision (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed shaft diameter precision (Details P.1308)
No nitriding on the tip.
No nitriding to the cooling hole.

Type	D	Head thickness (T)	Head Thickness (T)	Applicable ejector sleeve hole tolerance
RDCPN−5L	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$	$^{+0.01}_{0}$ or H7 Detail P.1309
RDCPJ−5L	D>12 $^{-0.01}_{-0.03}$	6・8mm (JIS)	$^{0}_{-0.05}$	

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Shape	D	L 0.01mm increments
9	4	10	6	RDCPN−5L	RDCPJ−5L	C G T R B	6	70.00~150.00
10		11					7	70.00~200.00
11		13	8				8	70.00~250.00
15		15					10	
17		17					12	
—	—	20		—			15	
		21					16	

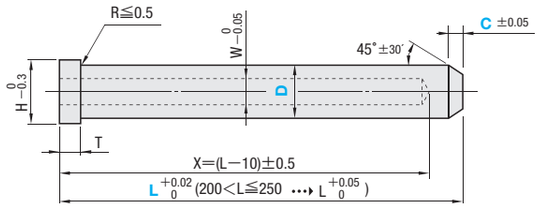
Shape (Tip size)

Shape C C…0.1mm increments
Shape G K…1° increments
Shape T S…0.1mm increments
K…1° increments
* When S≧10, X=L−S
Shape R R…0.1mm increments
Shape B Default R (SR)=$\frac{D}{2}$
(R…0.1mm increments possible)
Refer to the working limits shown in the drawing.

W	X
3	L−10
4	
5	
6	
8	
12	

Shape (Tip shape)

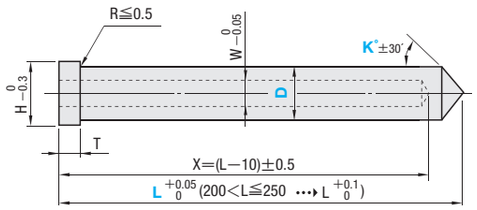
Shape C (C chamfered)



C…0.1mm increments

$0.1 \leqq C \leqq \frac{D-0.2}{2}$

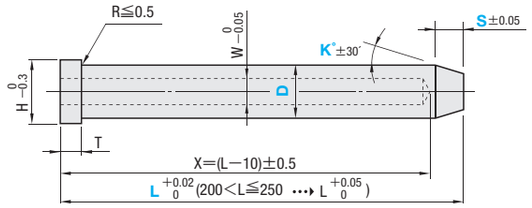
Shape G (Cone)



K…1° increments

45≦K<90

Shape T (Tapered)



S…0.1mm increments

(L−S)≧45

and

$0.1 \leqq S \leqq D \times 2$

and

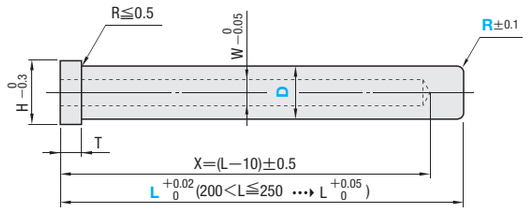
$\frac{D}{2}$−StanK≧0.1

K…1° increments

1≦K≦45

* When S≧10, X=L−S

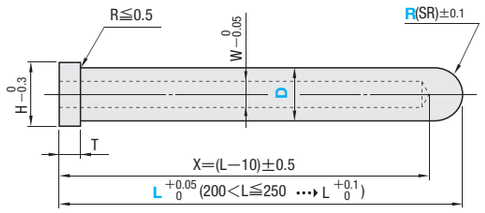
Shape R (R chamfered)



R…0.1mm increments

$0.2 \leqq R \leqq \frac{D-0.2}{2}$

Shape B (Spherical)



・Default R (SR)=$\frac{D}{2}$

* SR may be designated within
$\frac{D}{2}$<R≦2×D
R… 0.1mm increments possible

Order

Part Number	L	Tip size(C・S・K・R)
RDCPN−5LR8	240.00	R0.2
RDCPJ−5LT15	100.00	S5.0−K30

Days to Ship — Quotation

Alterations

Part Number	L	Tip size(C・S・K・R)	(KC・WKC…etc.)
RDCPN−5LR8	240.00	R0.2	HC4.0
RDCPJ−5LT15	100.00	S5.0−K30	HC7.5

Alteration details P.338

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

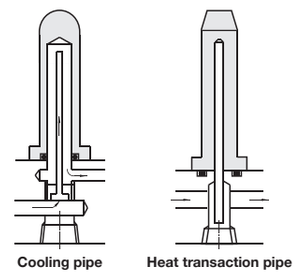
Flat cutting 0.1mm increments

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
H h W t T	ZPC	O-ring groove machining (ORP refer to P.1137) Designation method: Code ZPC, O-ring (ORP) 3; H−h≧2, T≧4, No.≧W; Combination with others not available.	

No.	h	t
3	6	1.4
4	7	
5	8	
6	9	
7	10	
8	11	
9	12	
10	13	
11	15	1.8
12	16	
14	18	

Price — Quotation

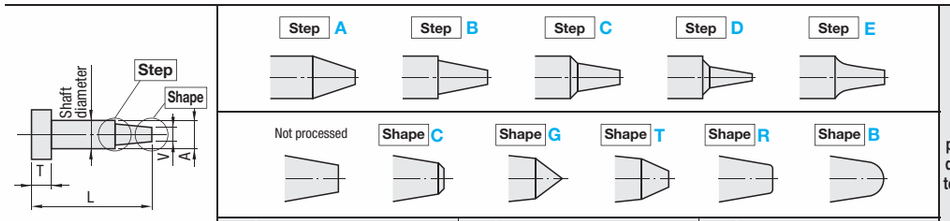
Example



Please use cooling pipes or heat exchange pipes so as to increase cooling efficiency for the tip section of center pins.

STEPPED CENTER PINS

One-Step Center Pins



M	Head Thickness (T)	Shaft diameter tolerance	Tip (A, V) tolerance ±0.02 (Reference value): Shaft diameter (D) selection type		Shaft diameter (P) 0.01mm increments		Tip (A, V) tolerance ±0.01 (Reference value): Shaft diameter (D) selection type		Shaft diameter (P) 0.01mm increments		Tip (A, V) tolerance ±0.005 (Reference value): Shaft diameter (D) selection type		Shaft diameter (P) 0.01mm increments		Center pin shaft diameter tolerance	Applicable ejector sleeve hole (V) tolerance
SKH51 equivalent	4mm (T4)	0 −0.005	—		—		CPH−5□	P. 353	CPHG−5□	P. 357	CPV−5□	P. 353	CPVG−5□	P. 357	0 −0.005	+0.005 0
		−0.01 −0.02	CPXE−5□	P. 355	CPXGE−5□	P. 359	CPHE−5□	P. 355	CPHGE−5□	P. 359	CPVE−5□	P. 355	CPVGE−5□	P. 359	−0.01 −0.02	+0.01 0 or H7
	4・6・8mm (JIS)	0 −0.005	—		—		CPHJ−5□	P. 353	CPHJG−5□	P. 357	CPVJ−5□	P. 353	CPVJG−5□	P. 357	0 −0.005	+0.005 0
		−0.01 −0.02	CPXJE−5□	P. 355	CPXJGE−5□	P. 359	CPHJE−5□	P. 355	CPHJGE−5□	P. 359	CPVJE−5□	P. 355	CPVJGE−5□	P. 359	−0.01 −0.02	+0.01 0 or H7
SKD61 equivalent + Nitrided	4mm (T4)	* Reference tolerance −0.01 −0.02	CPN−5□	P. 361	** CPNG−5□	P. 363	CPNK−5□	P. 361	** CPNKG−5□	P. 363	—		—		−0.01 −0.02	+0.01 0 or H7
	4・6・8mm (JIS)		CPJ−5□	P. 361	** CPJG−5□	P. 363	CPJK−5□	P. 361	** CPJKG−5□	P. 363	—		—			
SKD61 equivalent + Nitrided with cooling hole	4mm (T4)	* Reference tolerance −0.01 −0.02	RDCPN−5□	P. 365	—		—		—		—		—		−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)		RDCPJ−5□	P. 365	—		—		—		—		—			
SKD61 equivalent	4mm (T4)	0 −0.005	—		—		CPP−5□	P. 367	CPPG−5□	P. 369	—		—		0 −0.005	+0.005 0
		−0.01 −0.02	CPD−5□	P. 367	CPDG−5□	P. 369	CPDK−5□	P. 367	CPDKG−5□	P. 369	—		—		−0.01 −0.02	+0.01 0 or H7

The tolerance range varies depending on the selected shape. For details, refer to the catalog page of each product.
* The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.
** For SKD61 equivalent+Nitrided, the shaft diameter is designated by 0.1 mm increments.

■ SELECTION METHOD FOR ONE-STEP CENTER PINS

■Code for One-step Center Pins Specification

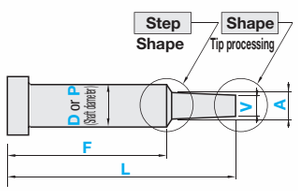
Shaft diameter (D) selection type	CP□(E) −5□□ ***RDCP□(E) −5□□
Shaft diameter (P) designation type	CP□G(E)−5□□

***A part-number of one-step center pin that starts by RD is in the type one step center pin with cooling hole.

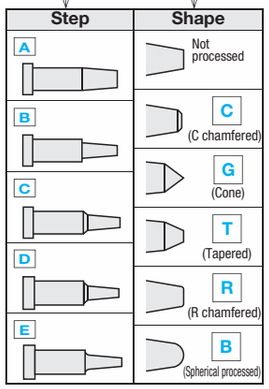
Material and tolerance codes

Shape code

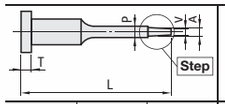
Tip process code

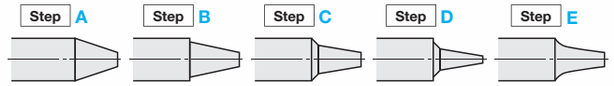


M	Head Thickness (T)	Shaft diameter tolerance	Tip (A・V) tolerance ±0.02	±0.01	±0.005
SKH51 equivalent	4mm (T4)	0 −0.005	—	H	V
		−0.01 −0.02	XE	HE	VE
	4・6・8mm (JIS)	0 −0.005	—	HJ	VJ
		−0.01 −0.02	XJE	HJE	VJE
SKD61 equivalent + Nitrided	4mm (T4)	*Reference tolerance −0.01 −0.02	N	NK	—
	4・6・8mm (JIS)		J	JK	—
SKD61 equivalent	4mm (T4)	0 −0.005	—	P	—
		−0.01 −0.02	D	DK	—



Stepped One-step Center Pins





M	Head Thickness (T)	Tip diameter (P) tolerance	Tip (A, V) tolerance ±0.02 (Reference value)		Tip (A, V) tolerance ±0.01 (Reference value)		Tip (A, V) tolerance ±0.005 (Reference value)		Tip diameter (P) tolerance	Applicable ejector sleeve hole (V) tolerance
SKH51 equivalent	4mm (T4)	0 −0.005	—		CPHB−5□	P.373	CPVB−5□	P.373	0 −0.005	+0.005 0
	4・6・8mm (JIS)		—		CPHBJ−5□	P.373	CPVBJ−5□	P.373	0 −0.005	+0.005 0
SKD61 equivalent + Nitrided	4mm (T4)	* Reference tolerance −0.01 −0.02	CPNB−5□	P.375	—		—		−0.01 −0.02	+0.01 0 or H7
	4・6・8mm (JIS)		CPJB−5□	P.375	—		—			

The tolerance range varies depending on the selected shape. For details, refer to the catalog page of each product.
* The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.

Two-step Center Pins・Stepped Two-step Center Pins

	Two-step	Stepped Two-step		Two-step	Stepped Two-step
Material	SKH51 equivalent	SKH51 equivalent	Head Thickness	4mm	4mm
Part Number	C□H5□・C□HE5□	C□HB5□	Tip tolerance	±0.01	±0.01
Page	P.371	P.377	Delivery	3 Ⓐ	3 Ⓐ

Center Pins with Cooling Hole

Material	SKD61 equivalent+Nitrided	Head Thickness	4mm(T4) 6・8mm(JIS)
Part Number	RDCPN−5□ RDCPJ−5□	Tip tolerance	±0.02
Page	P.365	Delivery	5

■Material characteristics of center pins

M		High Speed Steel SKH51 (M2) (1.3343)	Dies Steel SKD61 (H13) (1.2344) + Nitrided	Dies Steel SKD61 (H13) (1.2344)
H HRC		58～60	Surface : 900HV～ Base Material : 40～45	50～55
Machining characteristics	Wear resistance	5	4	4
	Ability to be mirror-finished	4	3	4
	Toughness	3	4	5
	Corrosion resistance	3	3	3
Physical characteristics	Density [g/cm³]	8.2	7.75	7.75
	Modulus of longitudinal elasticity [kgf/mm²]	22300	21000	21000
	Coefficient of thermal expansion [×10⁶/℃]	10.1	10.8	10.8
	Thermal conductivity [cal/cm・sec・℃]	0.051	0.061	0.061
Mechanical characteristics	Tensile strength [kgf/mm²]	235	135	135
	Charpy impact value [kgf・m/cm²]	2	4	6

Machining characteristics: 1 (Poor) — 3 (Good) — 5 (Excellent)

Conversion formula
1kgf/mm²=9.81N/mm²
1cal/cm・sec・℃=418.6W/M.K
1kgf・m/cm²=9.81J/cm²

Use these data for reference only as they are dependent on specific heat treatment and usage conditions.

ALTERATION GUIDE FOR STEPPED CENTER PINS

■Alteration Guide for Stepped Center Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Key flat cutting	One-step・Two-step Center Pins Stepped One-step・Two-step Center Pins	Key flat cutting (precision) VKC 0 −0.02	VKC	Single flat cutting (precision) High speed steel SKH51 equivalent only Range of designation (DorP)/2≦VKC＜H/2	Quotation
		Key flat cutting (precision) VWC 0 −0.02	VWC	Two flats cutting (precision) High speed steel SKH51 equivalent only Range of designation (DorP)/2≦VWC＜H/2	
		Key flat cutting KC 0 −0.1	KC	Single flat cutting Range of designation (DorP)/2≦KC＜H/2	
		Key flat cutting WKC 0 −0.1	WKC	Two flats cutting Range of designation (DorP)/2≦WKC＜H/2	
		Key flat cutting KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting Range of designation (DorP)/2≦KAC KAC＜KBC＜H/2	
		Key flat cutting RKC 0 −0.1	RKC	Two flats (right angled) cutting Range of designation (DorP)/2≦RKC＜H/2	
		Key flat cutting DKC 0 −0.1	DKC	Three flats cutting Range of designation (DorP)/2≦DKC＜H/2	
		Key flat cutting (angled) AG° ±0.5 0° KGC 0 −0.1	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation (DorP)/2≦KGC＜H/2 AG=1° increments 0°＜AG＜360°	
		Key flat cutting (angled) 120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° Range of designation (DorP)/2≦KTC＜H/2	
Tip processing	Two-step Center Pins Stepped One-step・Two-step Center Pins	CX±0.1	CX	Performs C chamfering on the tip. Range of designation 0.3≦CX≦0.5 α=CX V (E) is a dimension prior to CX machining Available when DorP≧2 CX＜V/2 or E/2 Unit of designation 0.1mm increments Designation method CX0.5	
		RX±0.1	RX	Performs R chamfering on the tip. Range of designation (DorP)≦4.5 0.3≦RX≦0.5 α=RX (DorP)＞4.5 0.3≦RX≦1.0 V (E) is a dimension prior to RX machining Available when DorP≧2 RX＜V/2 or E/2 Unit of designation RX=0.1mm increments Designation method RX0.5	
		SR	SR	Finishes the top in spherical shape (SR). α=V/2 V (E) is a dimension prior to SR machining. Available when DorP≧2 Designation method SR	

To make a flat at the shaft diameter position for both shaft diameter (One-step・Two-step) shaft diameter (stepped type)

Unit of designation
・One-step・Two-step
Shaft diameter selection type (D/2)……0.05mm increments possible
(0.01mm increments) type (P/2)……0.005mm increments possible
(0.1mm increments) type (P/2)……0.05mm increments possible
・Stepped Type (D/2)……0.05mm increments possible

Designation method
・VKC2.82 (When P5.64)
・VWC3.375 (When P6.75)
・KC2.61 (When P5.22)
・WKC3.085 (When P6.17)
・RKC2.74 (When P5.48)
・DKC3 (When D6)
・KGC1.5—AG125 (When D3)
・KTC3.085 (When P6.17)

To designate an arbitrary flat size

Unit of designation : 0.1mm increments

Designation method
・VKC1.4
・VWC2.3
・KC1.4
・WKC2.3
・KAC1.4—KBC1.6
・RKC1.4
・DKC1.75
・KGC1.4—AG85
・KTC2.3

Note that designating H/2—0.15 or more for key flat cutting alteration will create hardly any flat on the head.
Tip process (CX/RX/SR) of one-step center pin is integrated into tip shape (shape C R B).

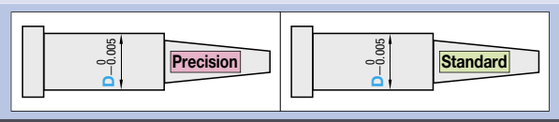
■Alteration Guide for Stepped Center Pins

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Step alteration	One-step・Two-step Center Pins Stepped One-step・Two-step Center Pins Step C Step D	AC°	AC	Changes the standard angle (Ks=45°) within 30°≦AC≦60° range. Range of designation 30°≦AC≦60° Step Working limits for Shape D A+2(C×tanAC°)＜(DorP) (except for two-step) Available when C≦1.0 Unit of designation 1° increments Designation method AC40 Combination with RR not available	Quotation
	Two-step Center Pins Stepped Two-step Center Pins Step C Step D	AGC°	AGC	Changes the standard angle (Ks=45°) within 30°≦AGC≦60° range. Range of designation 30°≦AGC≦60° Step Working limits for Shape D J+2 (G×tanAGC°)＜V Unit of designation 1° increments Designation method AGC60 Combination with RR not available	
	One-step・Two-step Center Pins Stepped One-step・Two-step Center Pins Step B Step C Step D	RR 5B 5C 5D	RR	Changes R (normally 0.2 or less) to R0.3～0.5 (Strength has been improved) Designation method RR Available for Step B・C・D D (P)—A≧1.0 Step D, C≧0.5	
Head alteration	One-step・Two-step Center Pins Stepped One-step・Two-step Center Pins	Head diameter change H HC 0 −0.3	HC	Reduces the head diameter. Range of designation DorP≦HC＜H Available when DorP≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft. Unit of designation 0.1mm increments Designation method HC6.5	
		Head diameter change (precision) H HCC 0 −0.02	HCC	Reduces the head diameter. (precision) Range of designation DorP+0.5≦HCC＜H—0.3 Available when DorP≧1.5 Unit of designation 0.1mm increments Designation method HCC6.1	
		Head thickness change TC T	TC	Reduces the head thickness. Dimensions L,Y,F and N remain unchanged. Range of designation T/2≦TC＜T T—TC≦Lmax.—L Available when DorP≧1.5 Unit of designation 0.1mm increments Designation method TC3.5	
		Dowel hole boring d +0.1 0 H ℓ T	NC	Adds a dowel hole. Available when head diameter (H)≧4 Designation method NC Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. T d ℓ 4 2 3 6 8 3 5	
	Stepped One-step・Two-step Center Pins	Dowel hole+Spring pin d ℓ1 H T	NCW	Adds a dowel hole and drives a spring pin. Available when head diameter (H)≧4 Designation method NCW Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. T d ℓ1 4 2 5 6 8 3	
		Numbering A 1 3 3	NHC	Numbering on the head Electrolytic marking of ID code on the head(in 5 point, Round Gothic type). Available characters Numerals: 0～9; Alphabets: A～Z Range of designation 1 character when 2≦H＜4.9 1 or 2 characters when 5≦H＜6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) Designation method NHC—6 NHC—23 NHC—A90 Available when head diameter H≧2	
		Numbering 1 2 3 A1 A2 A3	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each ejector pin when two or more pieces of an identical size are ordered. Available characters Same as NHC (see above) Range of designation Same as NHC (see above) Designation method When 3 pieces are ordered with NHN—1, a sequential number starting from 1 is added on the head of each piece. When 10 pieces are ordered with NHN—A15, a sequential number starting from A15 (through A24) is added on the head of each piece. Available when head diameter (H)≧2 Only available when two or more pieces of an identical size are ordered.	

High Speed Steel
SKH51 equivalent
$D^{0}_{-0.005}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) SELECTION TIP (A・V) TOLERANCE : ±0.005／±0.01 TYPE—



Non JIS material definition is listed on P.1351 - 1352

Refer to shaft diameter designation type P.357 when shaft diameter is designated.

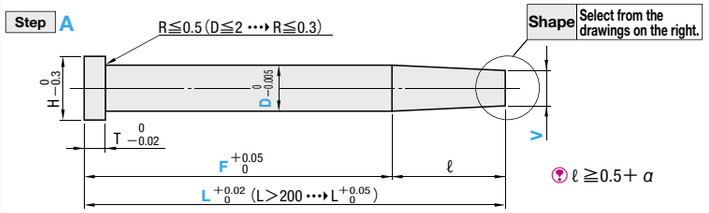
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T / D	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPH —5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Please note that the usage of center pins of shaft diameter tolerance $^{0}_{-0.005}$ and ejector sleeves of V dimension tolerance $^{+0.01}_{0}$ and H7 is inappropriate since the fit length is too long. Details P.1309
CPV —5			
CPHJ—5		4・6・8mm(JIS)	
CPVJ—5			

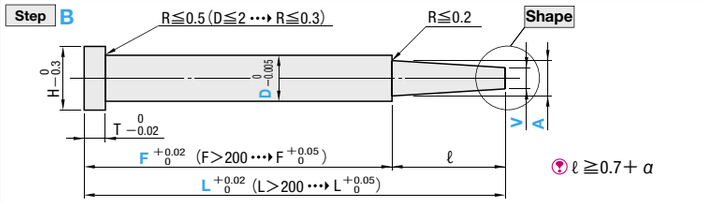
Step (Step type) Select from A～E in the drawings below

Step A



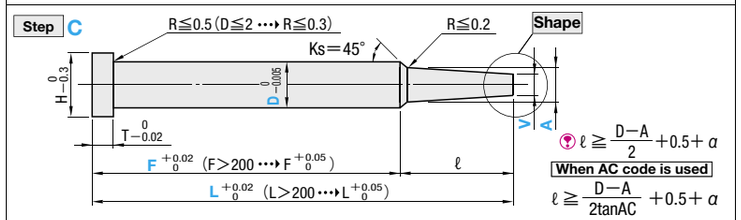
ℓ ≧0.5+ α

Step B



ℓ ≧0.7+ α

Step C

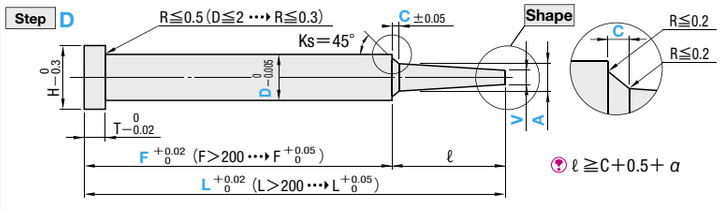


ℓ ≧ $\frac{D-A}{2}$ +0.5+ α

When AC code is used

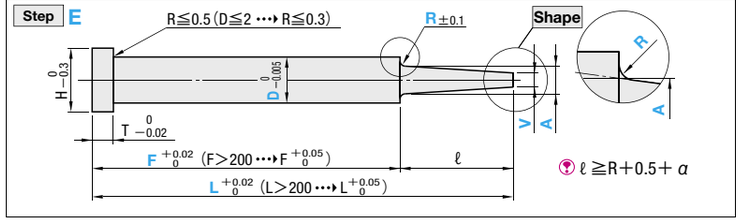
ℓ ≧ $\frac{D-A}{2\tan AC}$ +0.5+ α

Step D



ℓ ≧C+0.5+ α

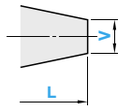
Step E



ℓ ≧R+0.5+ α

Shape (Tip shape : V is dimension before tip processing.)

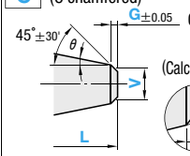
(Not processed)



Designation of the shape is unnecessary when tip processing is not required.

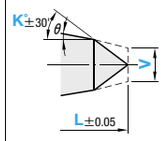
α =0

C (C chamfered)



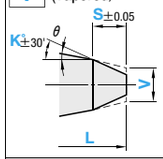
0.5≦G<V/2
0.1mm increments
α =G θ <45°
(Calculation of θ P.1315)

G (Cone)



20<K≦60
1° increments
α = $\frac{V}{2\tan K}$ θ <K
(Calculation of θ P.1315)

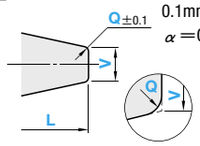
T (Tapered)



0.1≦S< $\frac{V}{2\tan K}$
0.1mm increments

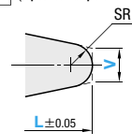
20<K≦45
1° increments
α =S θ <K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q<V/2
0.1mm increments
α =Q

B (Spherical processed)



α =V/2

Group	Type 4mm head	Type JIS head	Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPH—5□	CPHJ—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°	±0.02	±0.01
Precision	CPV—5□	CPVJ—5□	±0.005	±0.005	±0.005	±30'	±0.005	±30'		±0.005

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	0.01mm increments L	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	4	3	4	CPH—5 CPV—5	CPHJ—5 CPVJ—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1	70.00～200.00	F≧50.00	D>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C< $\frac{D-A}{2}$ Step E only R≧0.3 and R≦ $\frac{D-A}{2}$	15
								1.5						20
4		4						2	70.00～250.00			0.70		25
5		5						2.5						30
6		6						3	70.00～300.00			1.00		35
7		7						3.5						40
		8	6					4						45
8								4.5						50
		9						5	70.00～350.00			1.50		
9								5.5						
		10						6						
10		11						6.5				2.00		
								7						
11		13	8					8						
14		14						9						
15		15						10						
17		17						12						

Step E is D≧1.5 Refer to the drawing for ℓ min. (normally, α =0)

Order

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)
CPH—5EC 6	350.00	F330.00	A5.00	V4.50	R0.5	G2.0

Days to Ship Quotation

Alterations

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC…etc.)
CPH—5EC 6	350.00	F330.00	A5.00	V4.50	R0.5	G2.0	KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L (Dimensions L and F remain unchanged.)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T 4: d 2, ℓ 3; T 6, 8: d 3, ℓ 5)	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T 4: d 2, ℓ1 5; T 6, 8: d 3, ℓ1 5)	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	

Price Quotation

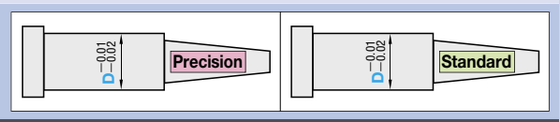
Stepped Center Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
$D^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) SELECTION TIP (A・V) TOLERANCE±0.005／±0.01／±0.02 TYPE—



Refer to shaft diameter designation type P.359 when shaft diameter is designated.

Non JIS material definition is listed on P.1351 - 1352

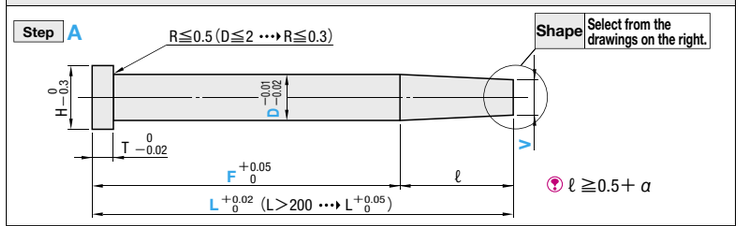
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T / D	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPXE—5	-0.01 -0.02	4mm (T4)	$+0.01$ 0 or H7 Details P.1309
CPHE—5			
CPVE—5			
CPXJE—5		4・6・8mm(JIS)	
CPHJE—5			
CPVJE—5			

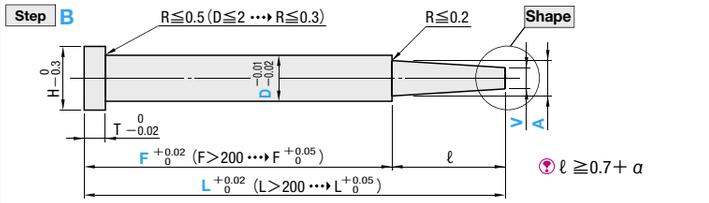
Step (Step type) Select from A～E in the drawings below

Step A



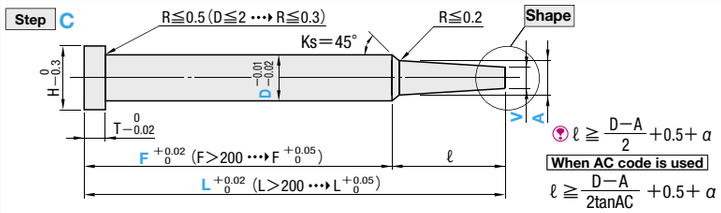
ℓ ≧0.5+ α

Step B



ℓ ≧0.7+ α

Step C

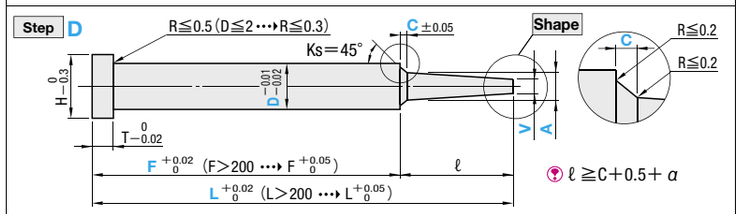


ℓ ≧ (D−A)/2 +0.5+ α

When AC code is used

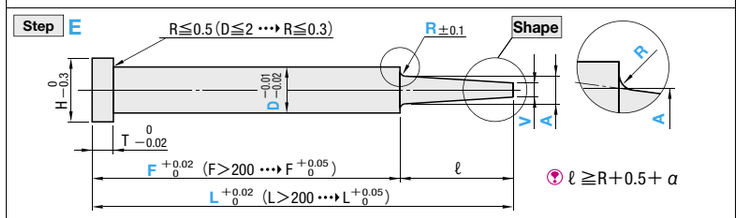
ℓ ≧ (D−A)/(2tanAC) +0.5+ α

Step D



ℓ ≧C+0.5+ α

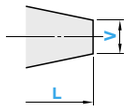
Step E



ℓ ≧R+0.5+ α

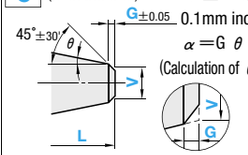
Shape (Tip shape : V is dimension before tip processing.)

(Not processed) Designation of the shape is unnecessary when tip processing is not required.



α =0

C (C chamfered) 0.5≦G<V/2

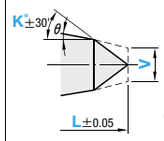


G ±0.05 — 0.1mm increments

α =G θ <45°

(Calculation of θ P.1315)

G (Cone)



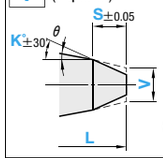
20<K≦60

1° increments

α = V/(2tanK) θ <K

(Calculation of θ P.1315)

T (Tapered) 0.1≦S< V/2tanK



S ±0.05 — 0.1mm increments

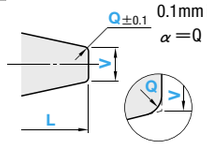
20<K≦45

1° increments

α =S θ <K

(Calculation of θ P.1315)

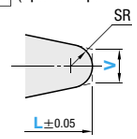
R (R chamfered) 0.2≦Q<V/2



Q ±0.1 — 0.1mm increments

α =Q

B (Spherical processed)



SR

α =V/2

L ±0.05

Group	Type 4mm head	Type JIS head	Step (Step type A・V・Ks) T Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPXE—5□	CPXJE—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPHE—5□	CPHJE—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01
Precision	CPVE—5□	CPVJE—5□	±0.005	±0.005	±0.005	±30'	±0.005	±30'		±0.005

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	0.01mm increments L	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	4	3	4	CPXE—5 CPHE—5 CPVE—5	CPXJE—5 CPHJE—5 CPVJE—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1	70.00～200.00	F≧50.00	D>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C<(D−A)/2 Step E only R≧0.3 and R≦(D−A)/2	15
								1.5						20
4		4						2	70.00～250.00			0.70		25
5		5						2.5						30
6		6						3	70.00～300.00			1.00		35
7		7						3.5						40
		8	6					4						45
8								4.5						50
		9						5	70.00～350.00			1.50		
9								5.5						
		10						6						
10		11						6.5				2.00		
								7						
11		13	8					8						
14		14						9						
15		15						10						
17		17						12						

Step E is D≧1.5 Refer to the drawing for ℓ min. (normally, α =0)

Order Part Number — L — F — A — V — C(R) — Tip size (K・S・G・Q)

CPHE—5EG 6 — 350.00 — F330.00 — A5.00 — V4.50 — R0.5 — K4.5

Days to Ship Quotation

Alterations Part Number — L — F — A — V — C(R) — Tip size (K・S・G・Q) — (KC・WKC…etc.)

CPHE—5EG 6 — 350.00 — F330.00 — A5.00 — V4.50 — R0.5 — K45 — KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC 0 −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L (Dimensions L and F remain unchanged)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T/d/ℓ: 4/2/3; 6/8/3/5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T/d/ℓ1: 4/2/5; 6/8/3/5)	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	

Price Quotation

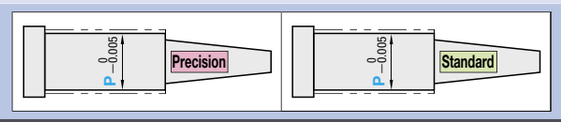
Stepped Center Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
$P^{0}_{-0.005}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V) TOLERANCE : ±0.005／±0.01 TYPE—



For shaft diameter selection type, refer to P.353.

Non JIS material definition is listed on P.1351 - 1352

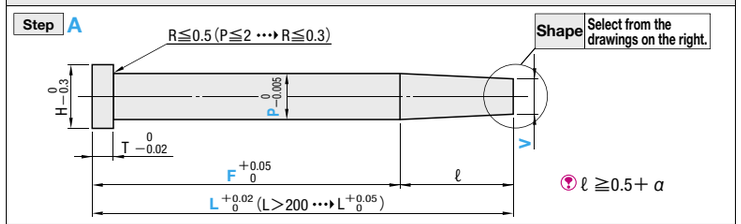
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T / P	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPHG —5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Please note that the usage of center pins of shaft diameter tolerance $^{0}_{-0.005}$ and ejector sleeves of V dimension tolerance $^{+0.01}_{0}$ and H7 is inappropriate since the fit length is too long. Details P.1309
CPVG —5			
CPHJG—5		4・6・8mm(JIS)	
CPVJG—5			

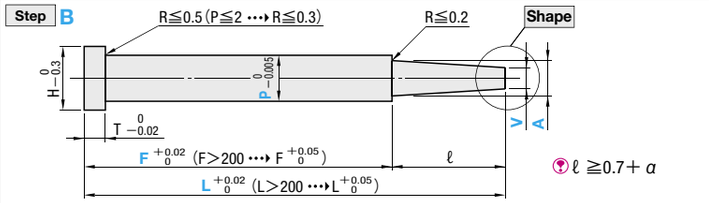
Step (Step type) Select from A～E in the drawings below

Step A



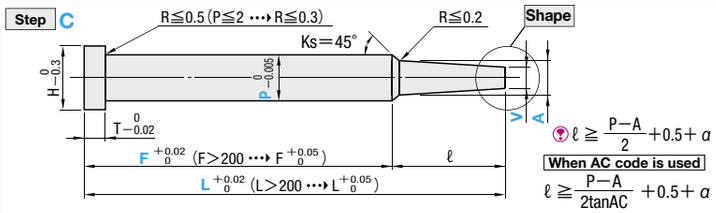
ℓ ≧0.5+ α

Step B



ℓ ≧0.7+ α

Step C

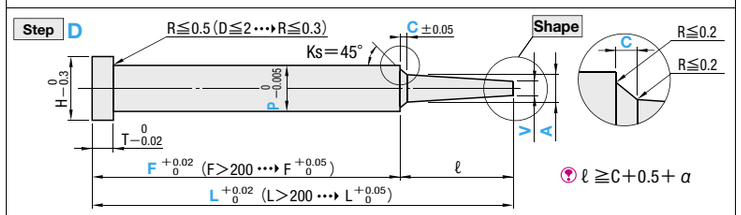


ℓ ≧ (P−A)/2 +0.5+ α

When AC code is used

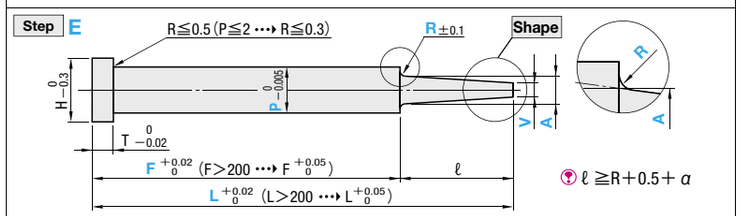
ℓ ≧ (P−A)/(2tanAC) +0.5+ α

Step D



ℓ ≧C+0.5+ α

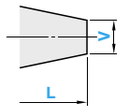
Step E



ℓ ≧R+0.5+ α

Shape (Tip shape : V is dimension before tip processing.)

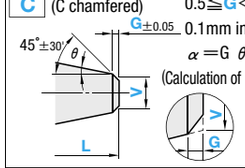
(Not processed)



Designation of the shape is unnecessary when tip processing is not required.

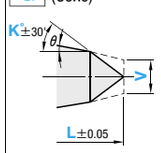
α =0

C (C chamfered)



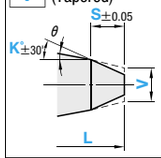
0.5≦G<V/2
0.1mm increments
α =G θ <45°
(Calculation of θ P.1315)

G (Cone)



20<K≦60
1° increments
α = V/(2tanK) θ <K
(Calculation of θ P.1315)

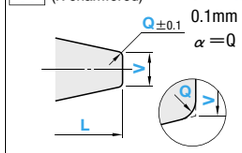
T (Tapered)



0.1≦S< V/(2tanK)
0.1mm increments

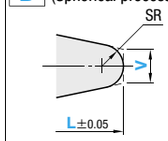
20<K≦45
1° increments
α =S θ <K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q<V/2
0.1mm increments
α =Q

B (Spherical processed)



α =V/2

Group	Type 4mm head	Type JIS head	Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPHG—5□	CPHJG—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°	±0.02	±0.01
Precision	CPVG—5□	CPVJG—5□	±0.005	±0.005	±0.005	±30'	±0.005	±30'		±0.005

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	No.	0.01mm increments L	P	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	4	3	4	CPHG—5 CPVG—5	CPHJG—5 CPVJG—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1	70.00～150.00	0.80～ 0.89	F≧50.00	P>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C<(P−A)/2	15
									70.00～200.00	0.90～ 0.99					
								1.5	70.00～250.00	1.00～ 1.49					20
4		4						2	70.00～300.00	1.50～ 1.99			0.70		25
5		5						2.5		2.00～ 2.49					30
6		6						3	70.00～300.00	2.50～ 2.99			1.00		35
7		7						3.5		3.00～ 3.49					40
		8	6					4		3.50～ 3.99					45
8								4.5		4.00～ 4.49			1.50	Step E only R≧0.3 and R≦(P−A)/2	50
		9						5	70.00～350.00	4.50～ 4.99					
9								5.5		5.00～ 5.49			2.00		
		10						6		5.50～ 5.99					
10		11						6.5		6.00～ 6.49					
								7		6.50～ 6.99					
11		13	8					8		7.00～ 7.99					
15		15						10		8.00～ 9.99					
17		17						12		10.00～11.99					

Shape C・G・T・R・B is No.1.5 (P≧1.00)～ Step E is No.1.5 (P≧1.10)～ Refer to the drawing for ℓ min. (normally, α =0)

Order

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)
CPHG—5EB 6	350.00	P5.95	F330.00	A5.00	V4.50	R0.5	

Days to Ship Quotation

Alterations

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC…etc.)
CPHG—5E 6	350.00	P5.95	F330.00	A5.00	V4.50	R0.5		KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two flats cutting (precision) P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P≦HC<H, P≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 T−TC≦Lmax.−L (Dimensions L and F remain unchanged.)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T / d / ℓ: 4 / 2 / 3; 6, 8 / 3 / 5)	Quotation
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T / d / ℓ1: 4 / 2 / 5; 6, 8 / 3)	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<P	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

Price Quotation

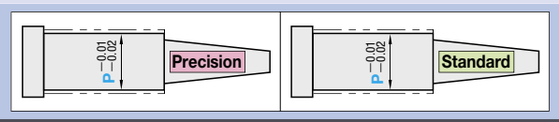
Stepped Center Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent
$P^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V) TOLERANCE : ±0.005／±0.01／±0.02 TYPE—



For shaft diameter selection type, refer to P.355.

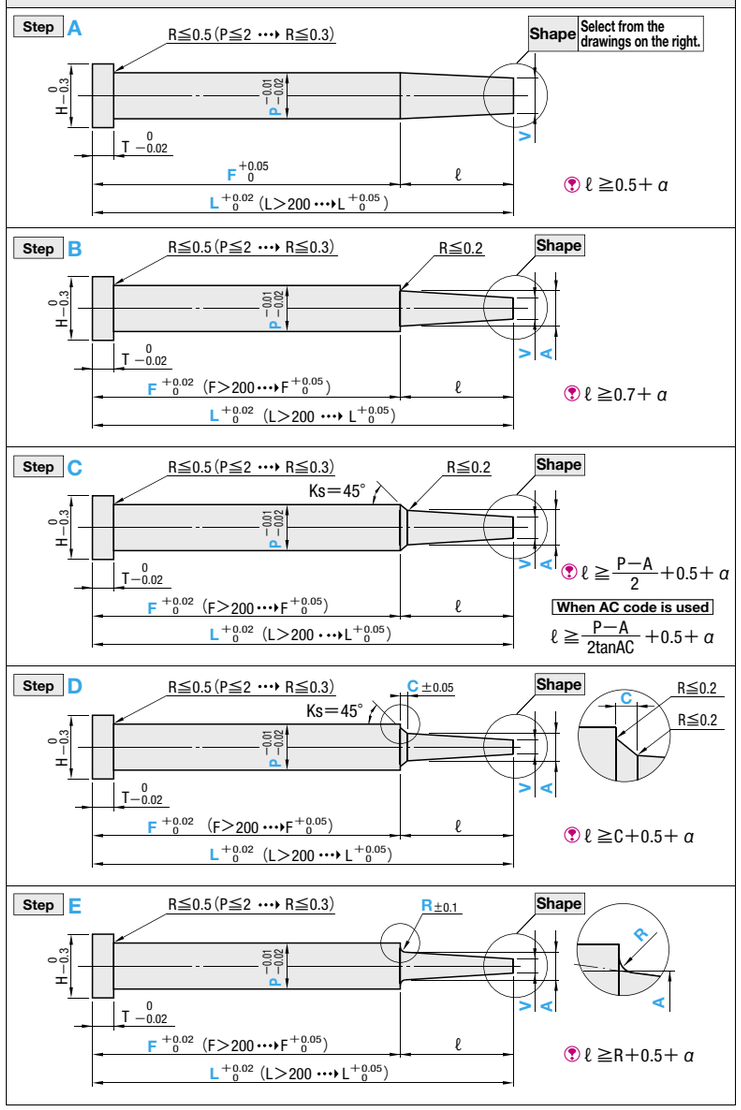
Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

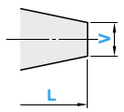
Type	T P	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPXGE—5	−0.01 −0.02	4mm (T4)	+0.01 0 or H7
CPHGE—5			
CPVGE—5			
CPXJGE—5		4・6・8mm(JIS)	Details P.1309
CPHJGE—5			
CPVJGE—5			

Step (Step type) Select from A～E in the drawings below



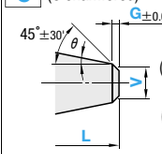
Shape (Tip shape : V is dimension before tip processing.)

(Not processed) Designation of the shape is unnecessary when tip processing is not required.



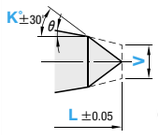
α=0

C (C chamfered) 0.5≦G<V/2



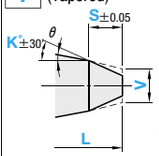
G ±0.05 0.1mm increments
α=G θ<45°
(Calculation of θ P.1315)

G (Cone)



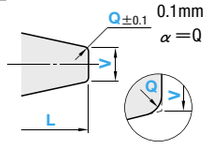
20<K≦60
1° increments
α = V/2tanK θ<K
(Calculation of θ P.1315)

T (Tapered) 0.1≦S< V/2tanK



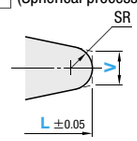
0.1mm increments
20<K≦45
1° increments
α=S θ<K
(Calculation of θ P.1315)

R (R chamfered) 0.2≦Q<V/2



0.1mm increments
α=Q

B (Spherical processed)



α=V/2

Group	Type 4mm head	Type JIS head	Step (Step type A・V・Ks) T Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPXGE—5□	CPXJGE—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPHGE—5□	CPHJGE—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01
Precision	CPVGE—5□	CPVJGE—5□	±0.005	±0.005	±0.005	±30'	±0.005	±30'		±0.005

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	No.	0.01mm increments L	P	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	4	3	4	CPXGE—5	CPXJGE—5	A	C	1	70.00～150.00	0.80～ 0.99	F≧50.00	P>A≧V	0.50	Step D only	15
									150.01～200.00	0.90～ 0.99		No need to designate A when Step A is selected.			
4		4		CPHGE—5	CPHJGE—5	B	G	1.5	70.00～250.00	1.00～ 1.49					20
5		5		CPVGE—5	CPVJGE—5	C	T	2		1.50～ 1.99			0.70	0.1≦C≦1.5 and C<(P−A)/2	25
6		6				D	R	2.5		2.00～ 2.49					30
7		7	6			E	B	3	70.00～300.00	2.50～ 2.99			1.00		35
8		8						3.5		3.00～ 3.49					40
								4		3.50～ 3.99					45
9		9						4.5		4.00～ 4.49			1.50	Step E only R≧0.3 and R≦(P−A)/2	50
		10						5	70.00～350.00	4.50～ 4.99					
10		11						5.5		5.00～ 5.49			2.00		
11		13	8					6		5.50～ 5.99					
15		15						6.5		6.00～ 6.49					
17		17						7		6.50～ 6.99					
								8		7.00～ 7.99					
								10		8.00～ 9.99					
								12		10.00～11.99					

Shape C・G・T・R・B is No.1.5 (P≧1.0)～ Step E is No.1.5 (P≧1.10)～ Refer to the drawing for ℓ min. (normally, α=0)

Order Part Number — L — P — F — A — V — C(R) — Tip size (K・S・G・Q)
CPHGE—5ET 6 — 350.00 — P5.95 — F330.00 — A5.00 — V4.50 — R0.5 — K35 — S1.0

Days to Ship Quotation

Alterations Part Number — L — P — F — A — V — C(R) — Tip size (K・S・G・Q) — (KC・WKC⋯etc.)
CPHGE—5ET 6 — 350.00 — P5.95 — F330.00 — A5.00 — V4.50 — R0.5 — K35—S1.0 — KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) P/2≦VKC<H/2	Quotation
VWC 0 −0.02	VWC	Two flats cutting (precision) P/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting P/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	HC=0.1mm increments P≦HC<H, P≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC d 0 −0.02	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC 0 −0.02 T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 T−TC≦Lmax.−L (Dimensions L and F remain unchanged)	
H ℓ d +0.1 0 T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T 4: d 2, ℓ 3; T 6, 8: d 3, ℓ 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available. (T 4: d 2, ℓ1 5; T 6, 8: d 3, ℓ1 5)	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<P	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

Price Quotation

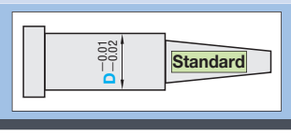
Stepped Center Pins

High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent+Nitrided
$D^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) SELECTION TIP (A・V) TOLERANCE : ±0.01／±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

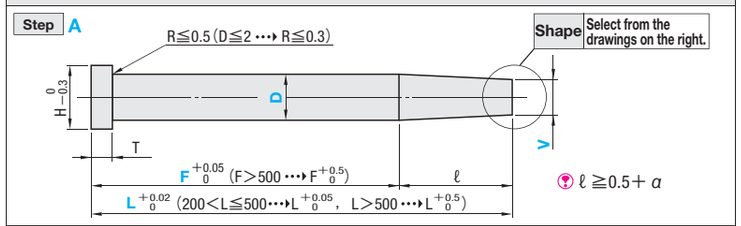
M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40~45HRC

Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip (ℓ).

Type	T D	Head Thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPN—5	−0.01 −0.02 D 12 or L>500 ··· D −0.01 −0.03	4mm (T4)	0 −0.02 (L>300 ···T −0.05)	+0.01 0 or H7 Details P.1309
CPNK—5				
CPJ—5		4・6・8mm(JIS)	0 −0.05	
CPJK—5				

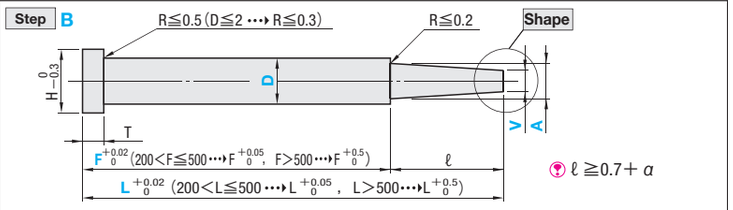
Step (Step type) Select from A~E in the drawings below

Step A



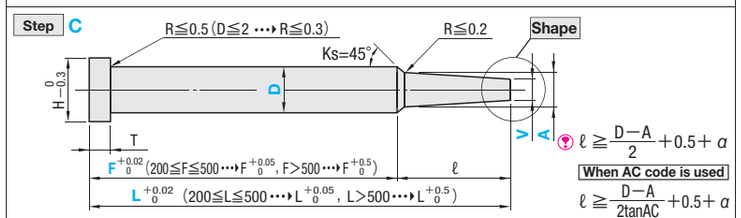
ℓ ≧0.5+α

Step B



ℓ ≧0.7+α

Step C

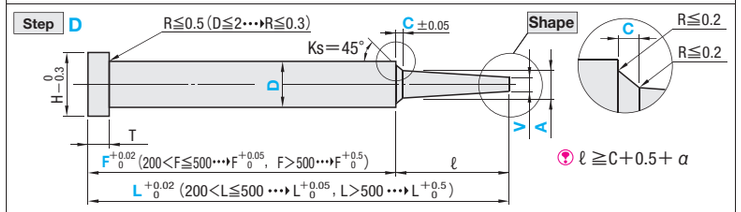


ℓ ≧ (D−A)/2 +0.5+α

When AC code is used

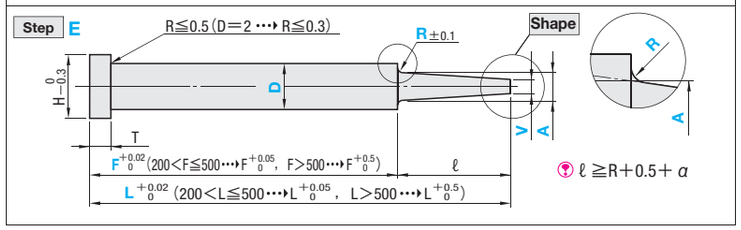
ℓ ≧ (D−A)/(2tanAC) +0.5+α

Step D



ℓ ≧C+0.5+α

Step E

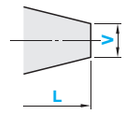


ℓ ≧R+0.5+α

Shape (Tip shape : V is dimension before tip processing.)

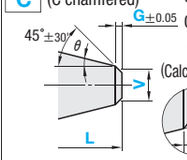
(Not processed)

Designation of the shape is unnecessary when tip processing is not required.



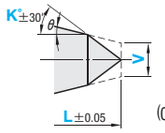
α=0

C (C chamfered)



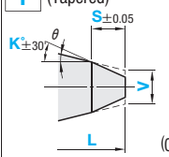
0.5≦G<V/2
0.1mm increments
α=G θ<45°
(Calculation of θ P.1315)

G (Cone)



20<K≦60
1° increments
α = V/(2tanK) θ<K
(Calculation of θ P.1315)

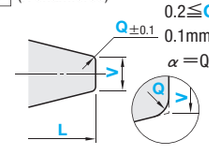
T (Tapered)



0.1≦S< V/(2tanK)
0.1mm increments

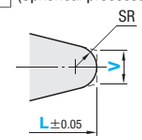
20<K≦45
1° increments
α=S θ<K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q<V/2
0.1mm increments
α=Q

B (Spherical processed)



α=V/2

Group	Type 4mm head	Type JIS head	Step (Step type A・V・Ks) T Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPN—5□	CPJ—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPNK—5□	CPJK—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	L 0.01mm increments (L>500 ··· 0.1mm increments)	0.01mm increments F	0.01mm increments A	0.01mm increments Vmin.	0.1mm increments C・R	ℓ max.
3	4	3	4	CPN—5 CPNK—5	CPJ—5 CPJK—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1.5	70.00~200.00	F≧50.00	D>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C<(D−A)/2 Step E only R≧0.3 and R≦(D−A)/2	20
4		4						2	70.00~400.00			0.70		25
5		5						2.5						30
6		6						3	70.00~400.00 (500.00)			1.00		35
7		7						3.5						40
		8	6					4	70.00~400.00 (700.00)					45
8								4.5				1.50		50
		9						5						
9								5.5	70.00~500.00					
		10						6	70.00~500.00 (700.00)					
10		11						6.5				2.00		
								7	70.00~500.00 (800.00)					
11		13	8					8						
14		14						9						
15		15						10						
17		17						12						
—	—	20		—				15						
		21						16				2.50		

Step E is D≧2 L dimension designation in ( ) is only available for CPJ—5, CPJK—5. Refer to the drawing for ℓ min. (normally, α=0)

Order

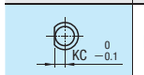
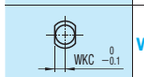
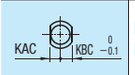
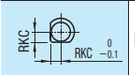
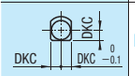
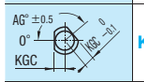
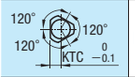
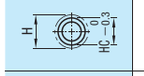
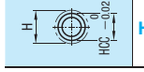
Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)
CPJ—5ER 6	350.00	F330.00	A5.00	V4.00	R0.5	Q1.5

Days to Ship Quotation

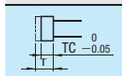
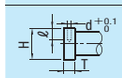
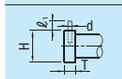
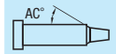
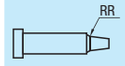
Alterations

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC···etc.)
CPJ—5ER 6	350.00	F330.00	A5.00	V4.00	R0.5	Q1.5	KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
	KC	Single flat cutting D/2≦KC<H/2	Quotation
	WKC	Two flats cutting D/2≦WKC<H/2	
	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
	DKC	Three flats cutting D/2≦DKC<H/2	
	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

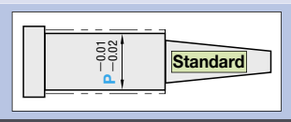
Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L (Dimensions L and F remain unchanged.)	Quotation
	NC	Dowel hole boring Combination with other than NHC・NHN・AC・RR not available. (T/d/ℓ: 4/2/3, 6/3/5, 8/3/5)	
	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN・AC・RR not available. (T/d/ℓ1: 4/2/5, 6/3/5, 8/3/5)	
	NHC	Numbering on the head How to order P.352 Available when H≧2	
	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<D	
	RR	Changes R (normally 0.2 or less) to R0.3~0.5. (for strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	

Price Quotation

Dies Steel
SKD61 equivalent+Nitrided
P $^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.1mm INCREMENTS) TIP (A・V) TOLERANCE ±0.01／±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

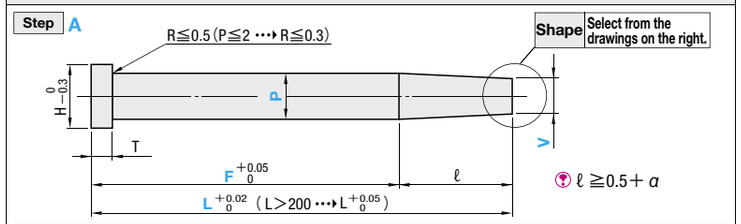
RoHS

M SKD61 equivalent+Nitrided — Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
H Surface 900HV～ Base material 40～45HRC — Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip(ℓ).

Type	T P	Head Thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPNG—5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$ (L>300 ···T$^{0}_{-0.05}$)	$^{+0.01}_{0}$ or H7
CPNKG—5				
CPJG—5	P 12 ··· P$^{-0.01}_{-0.03}$	4・6・8mm(JIS)	$^{0}_{-0.05}$	Details P.1309
CPJKG—5				

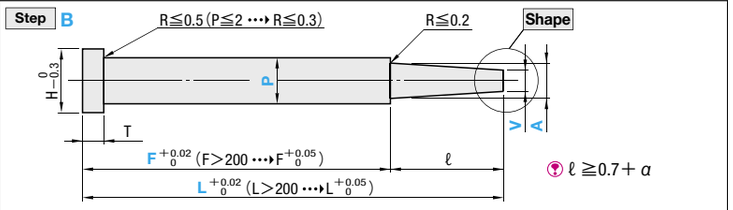
Step (Step type) Select from A～E in the drawings below

Step A



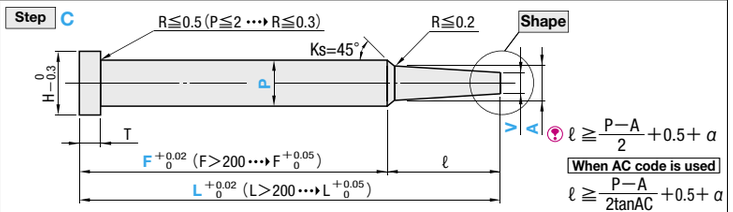
ℓ ≧0.5+α

Step B



ℓ ≧0.7+α

Step C

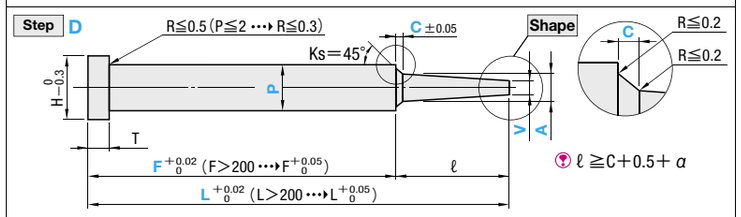


ℓ ≧ $\frac{P-A}{2}$ +0.5+α

When AC code is used

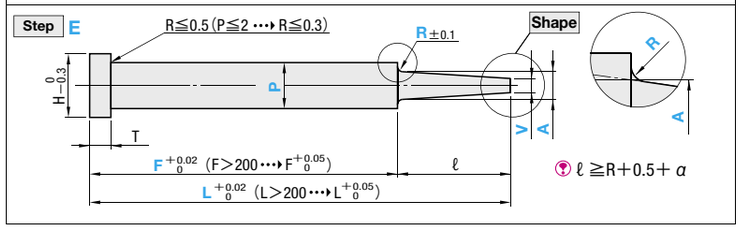
ℓ ≧ $\frac{P-A}{2\tan AC}$ +0.5+α

Step D



ℓ ≧C+0.5+α

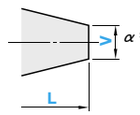
Step E



ℓ ≧R+0.5+α

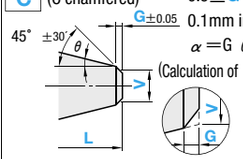
Shape (Tip shape : V is dimension before tip processing.)

(Not processed) Designation of the shape is unnecessary when tip processing is not required.



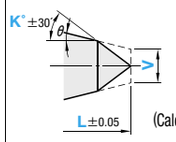
α=0

C (C chamfered) 0.5≦G<V/2 0.1mm increments



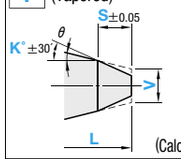
α=G θ<45°
(Calculation of θ P.1315)

G (Cone)



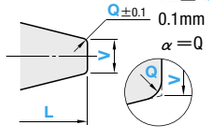
20<K≦60
1° increments
α= $\frac{V}{2\tan K}$ θ<K
(Calculation of θ P.1315)

T (Tapered)



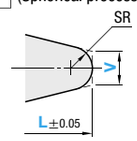
0.1≦S< $\frac{V}{2\tan K}$
0.1mm increments
20<K≦45
1° increments
α=S θ<K
(Calculation of θ P.1315)

R (R chamfered) 0.2≦Q<V/2 0.1mm increments



α=Q

B (Spherical processed)



α=V/2

Group	Type 4mm head	Type JIS head	Step (Step type A・V・Ks) T Step A V	Step B A・V	Step C A・V	Step C Ks	Step D A・V	Step D Ks	Step E A	Step E V
Standard	CPNG—5□	CPJG—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPNKG—5□	CPJKG—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	No.	L 0.01mm increments	P 0.1mm increments	0.01mm increments F	0.01mm increments A	Vmin.	0.1mm increments C・R	ℓ max.
4	4	4	4	CPNG—5 CPNKG—5	CPJG—5 CPJKG—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	2	70.00～400.00	1.5～ 1.9	F≧50.00	P>A≧V No need to designate A when Step A is selected.	0.70	Step D only 0.1≦C≦1.5 and C=$\frac{P-A}{2}$ Step E only R≧0.3 and R≦$\frac{P-A}{2}$	25
5		5						2.5		2.0～ 2.4					30
6		6						3	70.00～400.00	2.5～ 2.9			1.00		35
7		7						3.5		3.0～ 3.4					40
		8	6					4		3.5～ 3.9					45
8								4.5		4.0～ 4.4			1.50		50
		9						5	70.00～500.00	4.5～ 4.9					
9								5.5		5.0～ 5.4					
		10						6		5.5～ 5.9			2.00		
10		11						6.5		6.0～ 6.4					
								7		6.5～ 6.9					
11		13	8					8		7.0～ 7.9					
15		15						10		8.0～ 9.9					
17		17						12		10.0～11.9					
—	—	20		—				15		12.0～14.9					
		21						16		15.0～15.9			2.50		

Refer to the drawing for ℓ min. (normally, α=0) Step E is P≧2.0

Order

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)
CPJG—5EG 6	350.00	P5.9	F330.00	A4.80	V4.00	R0.5	K30

Days to Ship Quotation

Alterations

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC···etc.)
CPJG—5EG 6	350.00	P5.9	F330.00	A4.80	V4.00	R0.5	K30	KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC $^{0}_{-0.1}$	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5 0° KGC KG $^{0}_{-0.1}$	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° P/2≦KTC<H/2	
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments P≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments P+1≦HCC<H—0.3	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

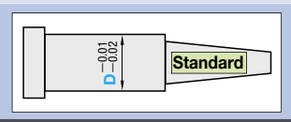
Alterations	Code	Spec.	1Code
TC $^{0}_{-0.05}$	TC	TC=0.1mm increments T/2≦TC<T T—TC≦Lmax.—L (Dimensions L and F remain unchanged.)	
H d $^{+0.1}_{0}$	NC	Dowel hole boring Combination with other than NHC・NHN・AC・RR not available. (T / d / ℓ: 4 / 2 / 3; 6, 8 / 3 / 5)	
H d ℓ₁	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN・AC・RR not available. (T / d / ℓ₁: 4 / 2 / 5; 6, 8 / 3 / 5)	Quotation
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D P—A≧1.0 When Step D, C≧0.5	

Price Quotation

Dies Steel
SKD61 equivalent+Nitrided
D$^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS WITH COOLING HOLE

—SHAFT DIAMETER (D) SELECTION TIP (A・V) TOLERANCE : ±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

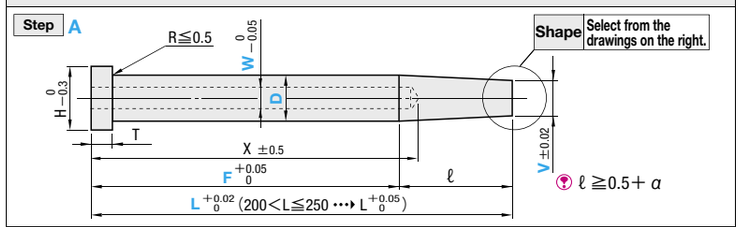
M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40±3HRC

Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip(h). No nitriding to the cooling hole.

Type	T D	Head Thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
RDCPN−5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$	$^{+0.01}_{0}$ or H7
RDCPJ−5	D 12 $^{-0.01}_{-0.03}$	6・8mm(JIS)	$^{0}_{-0.05}$	Details P.1309

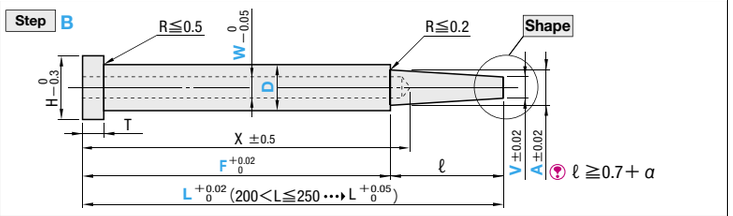
Step (Step type) Select from A～E in the drawings below

Step A



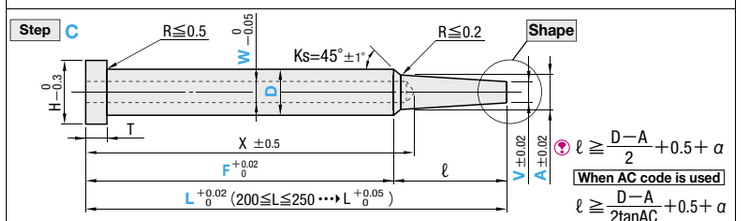
ℓ ≧0.5+α

Step B



ℓ ≧0.7+α

Step C

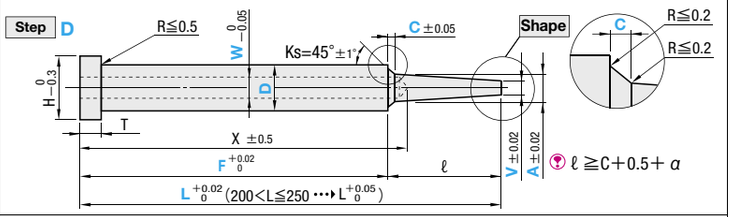


ℓ ≧ $\frac{D-A}{2}$ +0.5+α

When AC code is used

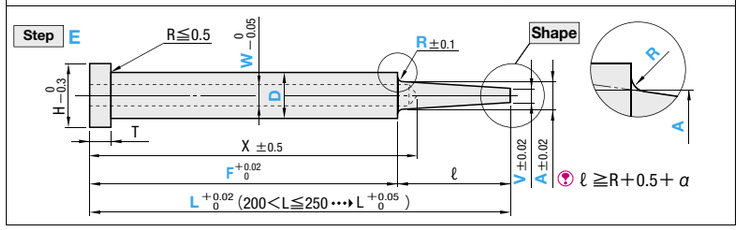
ℓ ≧ $\frac{D-A}{2\tan AC}$ +0.5+α

Step D



ℓ ≧C+0.5+α

Step E

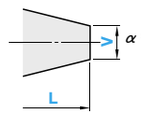


ℓ ≧R+0.5+α

Shape (Tip shape : V is dimension before tip processing.)

(Not processed)

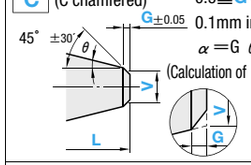
Designation of the shape is unnecessary when tip processing is not required.



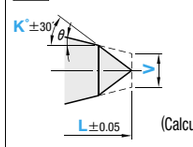
α=0

C (C chamfered)

0.5≦G<V/2
0.1mm increments
α=G θ<45°
(Calculation of θ P.1315)

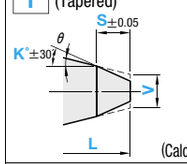


G (Cone)



20<K≦60
1° increments
α = $\frac{V}{2\tan K}$ θ<K
(Calculation of θ P.1315)

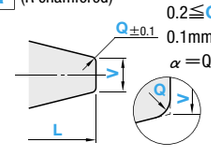
T (Tapered)



0.1≦S< $\frac{V}{2\tan K}$
0.1mm increments

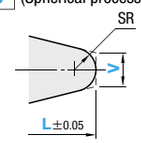
20<K≦45
1° increments
α=S θ<K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q<V/2
0.1mm increments
α=Q

B (Spherical processed)



α=V/2

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	L 0.01mm increments	0.01mm increments F	0.01mm increments A	Vmin.	0.1mm increments C・R	0.5mm increments W	ℓ max.	X
9	4	10	6	RDCPN−5	RDCPJ−5	A	Designation is unnecessary when tip processing is not required. C	6	70.00～150.00	F≧50.00	D>A≧V No need to designate A when Step A is selected.	5.00	Step D only 0.1≦C≦1.5 and C< $\frac{D-A}{2}$ Step E only R≧0.3 and R≦ $\frac{D-A}{2}$	3.0	50	*Refer to under
10		11						7				6.00		3.0		
11		13	8					8	70.00～200.00			7.00		4.0		L−10
15		15				B	G	10	70.00～250.00			8.00		5≦W≦V−3		
17		17				C	T	12				9.00				
—	—	20		—		D	R	15						6≦W≦V−3		
		21				E	B	16								

Refer to the drawing for ℓ min. (normally, α=0) X dimension of *D=6 : When ℓ≧10, X=F. ℓ<10, X=L−10.

Order

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)	W
RDCPN−5ER10	175.00	F150.00	A9.00	V8.50	R0.5	Q0.3	W5.5

Days to Ship Quotation

Alterations

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)	W	(KC・WKC…etc.)
RDCPN−5ER10	175.00	F150.00	A9.00	V8.50	R0.5	Q0.3	W5.5	KC5.0

Alteration details P.351

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

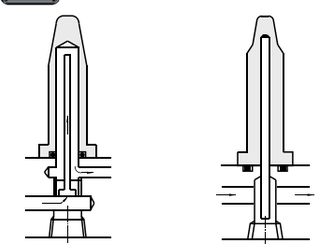
Key Flat Cutting Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A+2(C×tanAC°)<D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	
H h w t T	ZPC	O-ring groove machining (ORP refer to P.1137) Designation method Code ZPC O-ring (ORP) 3 H−h≧2 T≧4 No.≧W Combination with other than AC・RR not available.	Quotation

No.	h	t
3	6	1.4
4	7	
5	8	
6	9	
7	10	
8	11	
9	12	
10	13	
11	15	1.8
12	16	
14	18	

Price Quotation

Example



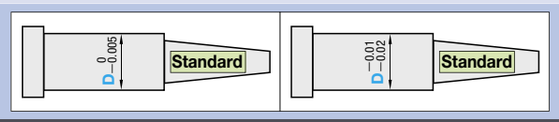
Cooling pipe Heat exchange pipe

Please use cooling pipes or heat exchange pipes so as to increase cooling efficiency for the tip section of center pins.

Dies Steel
SKD61 equivalent
$D^{0}_{-0.005}$ / $^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) SELECTION TIP (A・V) TOLERANCE : ±0.01／±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

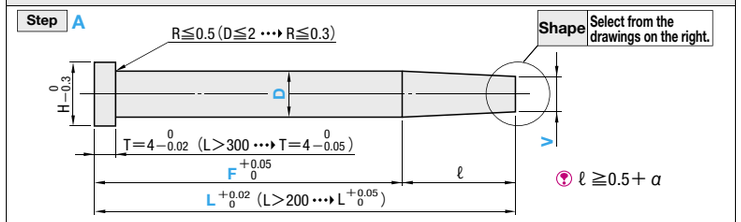
RoHS

M SKD61 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 50～55HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T D	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPP—5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Details P.1309
CPD—5	$^{-0.01}_{-0.02}$		$^{+0.01}_{0}$ or H7 Details P.1309
CPDK—5			

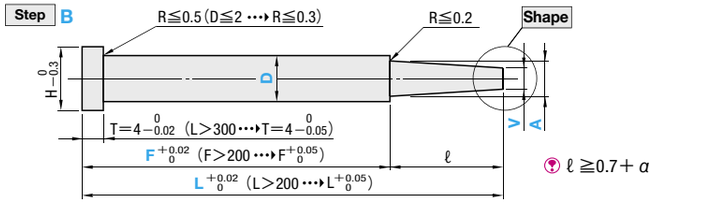
Step (Step type) Select from A～E in the drawings below

Step A



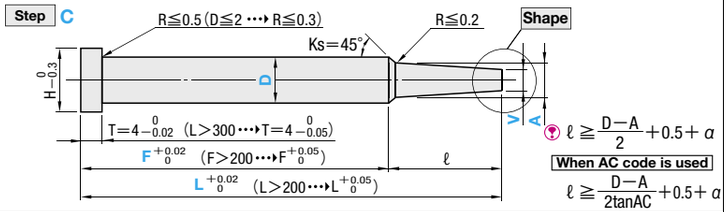
ℓ ≧0.5＋α

Step B



ℓ ≧0.7＋α

Step C

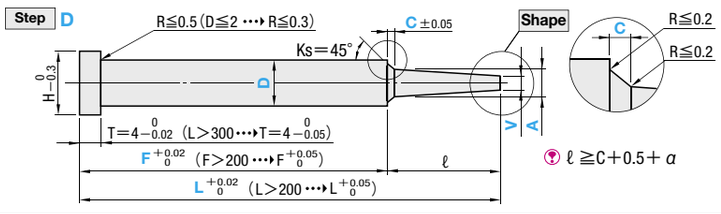


ℓ ≧ (D−A)/2 ＋0.5＋α

When AC code is used

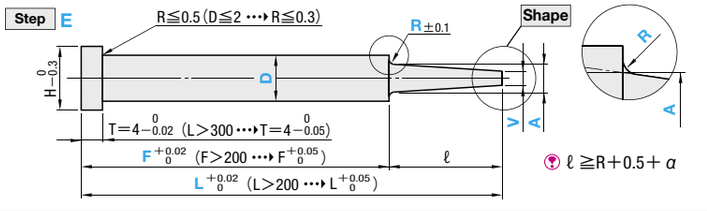
ℓ ≧ (D−A)/(2tanAC) ＋0.5＋α

Step D



ℓ ≧C＋0.5＋α

Step E

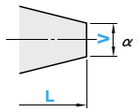


ℓ ≧R＋0.5＋α

Shape (Tip shape : V is dimension before tip processing.)

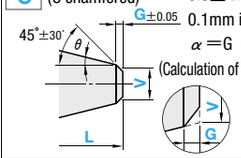
(Not processed)

Designation of the shape is unnecessary when tip processing is not required.



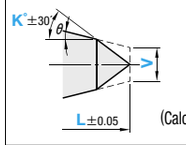
α＝0

C (C chamfered)



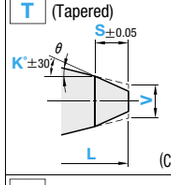
0.5≦G＜V/2
0.1mm increments
α＝G θ＜45°
(Calculation of θ P.1315)

G (Cone)



20＜K≦60
1° increments
α＝V/(2tanK) θ＜K
(Calculation of θ P.1315)

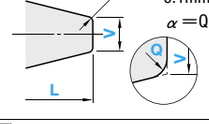
T (Tapered)



0.1≦S＜V/(2tanK)
0.1mm increments

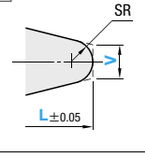
20＜K≦45
1° increments
α＝S θ＜K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q＜V/2
0.1mm increments
α＝Q

B (Spherical processed)



α＝V/2

Group	Type 4mm head	Step (Step type A・V・Ks) T							
		Step A	Step B	Step C		Step D		Step E	
		V	A・V	A・V	Ks	A・V	Ks	A	V
Standard	CPP—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°	±0.02	±0.01
	CPD—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPDK—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01

H	Part Number Type	Step	Shape	D	0.01mm increments L	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	CPP—5 CPD—5 CPDK—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1.5	70.00～200.00	F≧50.00	D>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C<(D−A)/2 Step E only R≧0.3 and R≦(D−A)/2	20
4				2	70.00～250.00			0.70		25
5				2.5						30
6				3	70.00～300.00			1.00		35
7				3.5						40
				4						45
8				4.5				1.50		50
9				5	70.00～500.00			2.00		
				5.5						
10				6						
				6.5						
11				7						
15				8						
17				10						
				12						

Refer to the drawing for ℓ min. (normally, α＝0)

Order

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)
CPP—5EB6	350.00	F330.00	A5.00	V4.50	R0.5	

Days to Ship Quotation

Alterations

Part Number	L	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC⋯etc.)
CPP—5EB6	350.00	F330.00	A5.00	V4.00	R0.5		KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting D/2≦KC＜H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting D/2≦RKC＜H/2	
DKC 0 −0.1	DKC	Three flats cutting D/2≦DKC＜H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting D/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° D/2≦KTC＜H/2	
H 0 −0.3 HC	HC	HC=0.1mm increments D≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H 0 −0.02 HCC	HCC	HCC=0.1mm increments D+1≦HCC＜H−0.3	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

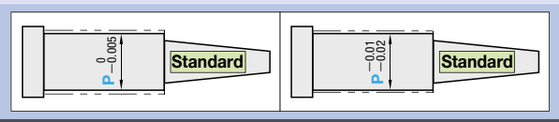
Alterations	Code	Spec.	1Code
TC 4	TC	TC=0.1mm increments 2.0≦TC＜4 4−TC≦Lmax.−L (Dimensions L and F remain unchanged.)	Quotation
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available.	
H 5 2 4	NCW	Dowel hole boring＋Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available.	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available When Step D, C≦1.0, A＋2(C×tanAC°)＜D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	

Price Quotation

Dies Steel
SKD61 equivalent
$P^{0}_{-0.005}$ / $^{-0.01}_{-0.02}$

ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V) TOLERANCE : ±0.01／±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

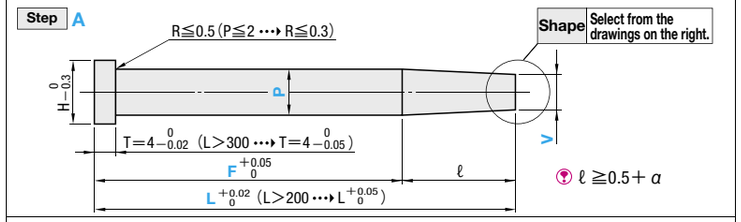
RoHS

M SKD61 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 50～55HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T P	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPPG—5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Details P.1309
CPDG—5	$^{-0.01}_{-0.02}$		$^{+0.01}_{0}$ or H7 Details P.1309
CPDKG—5			

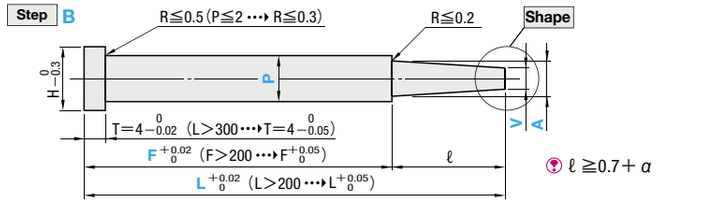
Step (Step type) Select from A～E in the drawings below

Step A



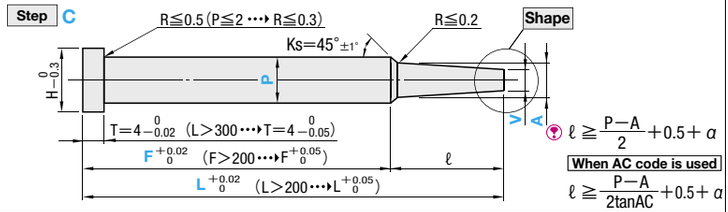
ℓ ≧0.5＋α

Step B



ℓ ≧0.7＋α

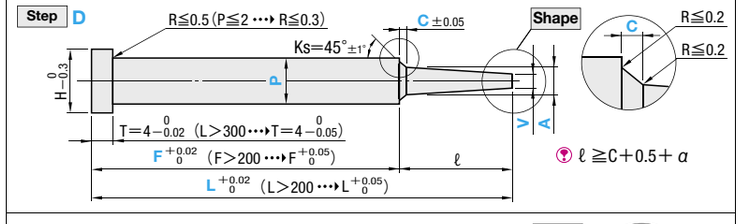
Step C



ℓ ≧ (P−A)/2 ＋0.5＋α

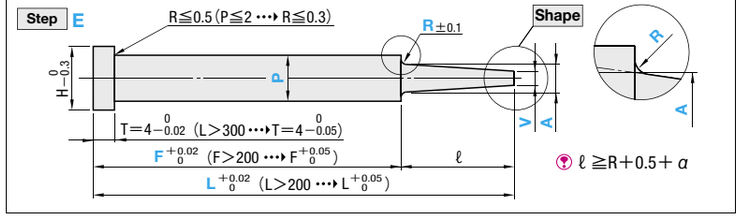
When AC code is used
ℓ ≧ (P−A)/(2tanAC) ＋0.5＋α

Step D



ℓ ≧C＋0.5＋α

Step E

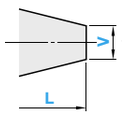


ℓ ≧R＋0.5＋α

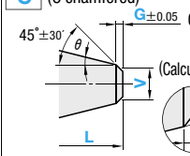
Shape (Tip shape : V is dimension before tip processing.)

(Not processed)

Designation of the shape is unnecessary when tip processing is not required.

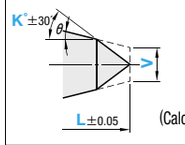


C (C chamfered)



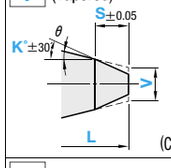
0.5≦G＜V/2
0.1mm increments
α＝G θ＜45°
(Calculation of θ P.1315)

G (Cone)



20＜K≦60
1° increments
α＝V/(2tanK) θ＜K
(Calculation of θ P.1315)

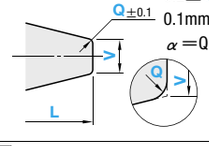
T (Tapered)



0.1≦S＜V/(2tanK)
0.1mm increments

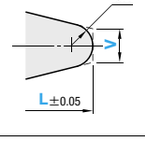
20＜K≦45
1° increments
α＝S θ＜K
(Calculation of θ P.1315)

R (R chamfered)



0.2≦Q＜V/2
0.1mm increments
α＝Q

B (Spherical processed)



α＝V/2

Group	Type 4mm head	Step (Step type A・V・Ks) T							
		Step A	Step B	Step C		Step D		Step E	
		V	A・V	A・V	Ks	A・V	Ks	A	V
Standard	CPPG—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°	±0.02	±0.01
	CPDG—5□	±0.02	±0.02	±0.02	±1°	±0.02	±1°	±0.02	±0.02
	CPDKG—5□	±0.01	±0.01	±0.01	±1°	±0.01	±1°		±0.01

H	Part Number Type	Step	Shape	No.	0.01mm increments L	P	F	A	Vmin.	0.1mm increments C・R	ℓ max.
3	CPPG—5 CPDG—5 CPDKG—5	A B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1.5	70.00～200.00	1.00～ 1.49	F≧50.00	P>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C＜(P−A)/2 Step E only R≧0.3 and R≦(P−A)/2	20
4				2		1.50～ 1.99			0.70		25
5				2.5	70.00～250.00	2.00～ 2.49					30
6				3	70.00～300.00	2.50～ 2.99			1.00		35
7				3.5		3.00～ 3.49					40
				4		3.50～ 3.99					45
8				4.5		4.00～ 4.49			1.50		50
				5	70.00～350.00	4.50～ 4.99			2.00		
9				5.5		5.00～ 5.49					
				6		5.00～ 5.99					
10				6.5		5.00～ 6.49					
				7		6.00～ 6.99					
11				8		6.00～ 7.99					
15				10		8.00～ 9.99					
17				12		10.00～11.99					

Refer to the drawing for ℓ min. (normally, α＝0) When P $^{-0.01}_{-0.02}$, Step E is No.1.5 (P≧1.10)～

Order

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)
CPPG—5ER6	350.00	P5.95	F330.00	A4.95	V4.50	R0.5	Q1.5

Days to Ship Quotation

Alterations

Part Number	L	P	F	A	V	C(R)	Tip size (K・S・G・Q)	(KC・WKC…etc.)
CPPG—5ER6	350.00	P5.95	F330.00	A4.95	V4.50	R0.5	Q1.5	KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
KC 0 −0.1	KC	Single flat cutting P/2≦KC＜H/2	Quotation
WKC 0 −0.1	WKC	Two flats cutting P/2≦WKC＜H/2	
KAC KBC 0 −0.1	KAC KBC	Varied width parallel flats cutting P/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC 0 −0.1	RKC	Two flats (right angled) cutting P/2≦RKC＜H/2	
DKC 0 −0.1	DKC	Three flats cutting P/2≦DKC＜H/2	
AG° ±0.5 0° KGC 0 −0.1	KGC	Two flats (angled) cutting P/2≦KGC＜H/2 AG=1° increments 0＜AG＜360	
120° 120° KTC 0 −0.1	KTC	Three flats cutting at 120° P/2≦KTC＜H/2	
H 0 −0.03 HC	HC	HC=0.1mm increments P≦HC＜H When P, $^{-0.01}_{-0.02}$ P≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H 0 −0.02 HCC	HCC	HCC=0.1mm increments P＋1≦HCC＜H−0.3, P≧1.5	

(Key Flat Cutting — About Designation Unit for Key Flat Cutting: (1)To align the key flat with the shaft diameter; Unit of designation 0.005mm increments possible; (2)To designate arbitrary key flat dimensions; Unit of designation 0.1mm)

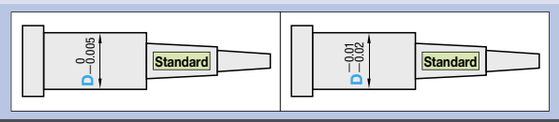
Alterations	Code	Spec.	1Code
TC 4	TC	TC=0.1mm increments 2.0≦TC＜4 4−TC≦Lmax.−L, P≧1.5 (Dimensions L and F remain unchanged.)	Quotation
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・AC・RR not available.	
H 5 2 4	NCW	Dowel hole boring＋Spring pin driving Available when H≧4 Combination with other than NHC・NHN・AC・RR not available.	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0, A＋2(C×tanAC°)＜D	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

Price Quotation

High Speed Steel
SKH51 equivalent

TWO-STEP CENTER PINS

—SHAFT DIAMETER (D) SELECTION TIP (A・V・J・E) TOLERANCE : ±0.01 TYPE—



Non JIS material definition is listed on P.1351 - 1352

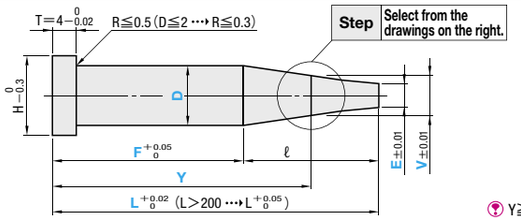
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness Details P.1307)

Type	T D	Head Thickness (T)	Applicable ejector sleeve hole tolerance
C□H5	0 −0.005	4mm (T4)	+0.005 0 Details P.1309
C□HE5	−0.01 −0.02		+0.01 0 or H7 Details P.1309

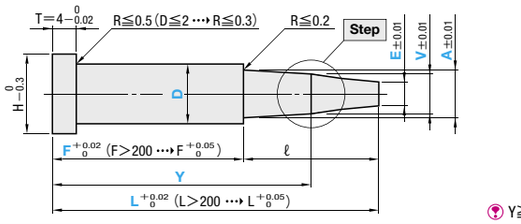
Type Step shape (in ◯) is selected from the drawings on the right.

CAH5 / CAHE5



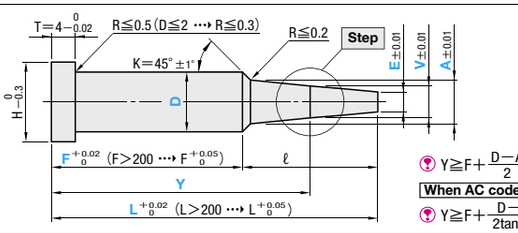
Y≧F+0.5

CBH5 / CBHE5



Y≧F+0.7

CCH5 / CCHE5

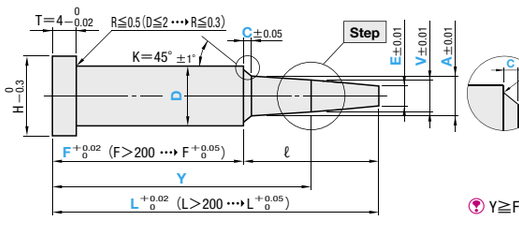


Y≧F+ (D−A)/2 +0.5

When AC code is used

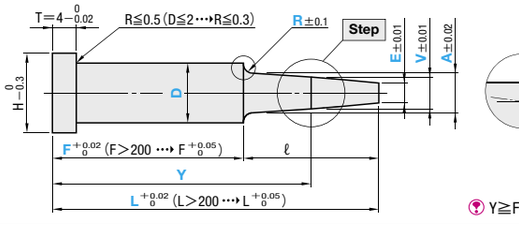
Y≧F+ (D−A)/(2tanAC) +0.5

CDH5 / CDHE5



Y≧F+C+0.5

CEH5 / CEHE5

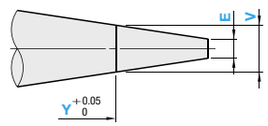


Y≧F+R+0.5

Step

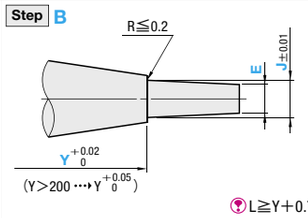
Step A

(Designation of V=E possible)



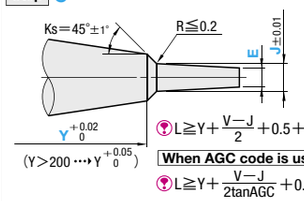
L≧Y+0.5+α

Step B



L≧Y+0.7+α

Step C

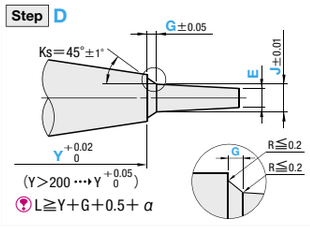


L≧Y+ (V−J)/2 +0.5+α

When AGC code is used

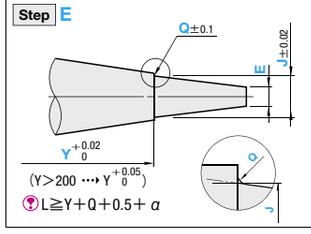
L≧Y+ (V−J)/(2tanAGC) +0.5+α

Step D



L≧Y+G+0.5+α

Step E



L≧Y+Q+0.5+α

Order

Part Number	L	F	Y	A	V	J	E	C・G・R・Q
CCH5B 5	100.00	F50.00	Y52.00	A4.50	V4.20	J3.80	E2.80	

Days to Ship — Quotation

H	Part Number Type	Step	D	L (0.01mm increments)	F	Y	A	V	J	Emin.	C・R (0.1mm increments)	G・Q (0.1mm increments)	ℓ max.
3	CAH5 CBH5 CCH5 CDH5 CEH5	A B C D E	1	70.00～200.00	F≧50.00	Refer to the working limits shown in the drawing. Default α=0; When CX code is used α=CX; When RX code is used α=RX; When SR code is used α=E/2	D>A and A≧V (No need to designate A when Type CAH5 CAHE5 is selected.)	A≧V and V>J (Designation of V=E possible when Step A is selected.)	V>J and J≧E (No need to designate J when Step A is selected.)	0.50	For Type CDH5 CDHE5: 0.1≦C≦1.5 and C−(D−A)/2	Step D only: 0.1≦G≦0.5 and G<(V−J)/2	15
4			1.5	70.00 ～ 250.00						0.70			20
5			2										25
6			2.5										30
7			3	70.00 ～ 300.00						1.00			35
8			3.5										40
9			4							1.50	For Type CEH5 CEHE5: R≧0.3 and R≦(D−A)/2	Step E only: Q≧0.3 and Q≦(V−J)/2	45
10			4.5										50
11	CAHE5 CBHE5 CCHE5 CDHE5 CEHE5		5	70.00 ～ 350.00						2.00			
14			5.5										
15			6										
17			6.5							2.50			
			7										
			8										
			9										
			10										
			12										

D≧1.5 for Type CEH5・CEHE5

Alterations

Part Number	L	F	Y	A	V	J	E	C・G・R・Q	(KC・WKC⋯etc.)
CCH5B 5	100.00	F50.00	Y52.00	A4.50	V4.20	J3.80	E2.80		WKC2.5

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC 0 −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	
VWC 0 −0.02	VWC	Two flats cutting (precision) D/2≦VWC<H/2	
KC 0 −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC 0 −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC	DKC	Three flats cutting D/2≦DKC<H/2	
AG°±0.5 0° KGC	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
H HC	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter — Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions — Unit of designation 0.1mm

Quotation

Price — Quotation

Alterations	Code	Spec.	1Code
TC 4	TC	TC=0.1mm increments 2.0≦TC<4, D≧1.5 4−TC≦Lmax.−L (Dimensions L, Y, and F remain unchanged)	
H 3 4	NC	Dowel hole boring Available when H≧4 Combination with other than CX・RX・SR・AC・AGC・NHC・NHN・RR not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than CX・RX・SR・AC・AGC・NHC・NHN・RR not available.	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
CX ±0.1	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E/2 Available when D≧2 E is a dimension prior to CX machining. ※α=CX	
RX ±0.1	RX	RX=0.1mm increments D≦4.5 0.3≦RX≦0.5, RX<E/2 D>4.5 0.3≦RX≦1.0 Available when D≧2 E is a dimension prior to RX machining. ※α=RX	
SR	SR	Finishes the tip in spherical shape (SR). Available when D≧2 L is +0.05 0 ※α=E/2 E is a dimension prior to SR machining.	
AC°	AC	Changes the standard angle (K=45°). AC=1° increments 30≦AC≦60 Available for Type CCH5・CCHE5・CDH5・CDHE5 When CDH5・CDHE5, C≦1.0, A+2(CXtanAC°)<D	
AGC°	AGC	Changes the standard angle (Ks=45°). AGC=1° increments 30≦AGC≦60 Available for Step C・D Combination with RR not available. When Step D, J+2(GXtanACG°)<V	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B・C・D D−A≧1.0 When Step D, C≧0.5	

Quotation

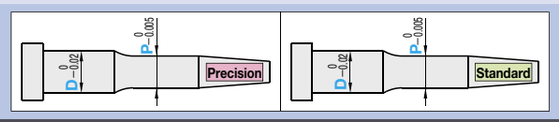
Stepped Center Pins

High Speed Steel SKH51 equivalent

High Speed Steel
SKH51 equivalent

PRECISION STEPPED ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V) TOLERANCE±0.005／±0.01 TYPE—



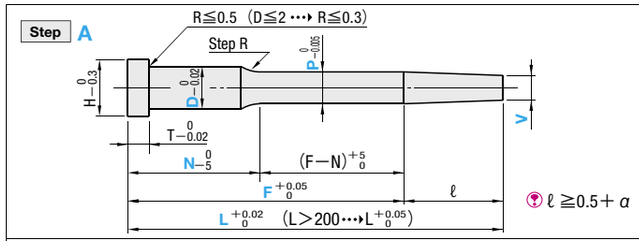
Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (D) (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T P	Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPHB—5	0 −0.005	4mm (T4)	+0.005 0
CPVB—5			
CPHBJ—5		4・6・8mm (JIS)	
CPVBJ—5			Details P.1309

Step A

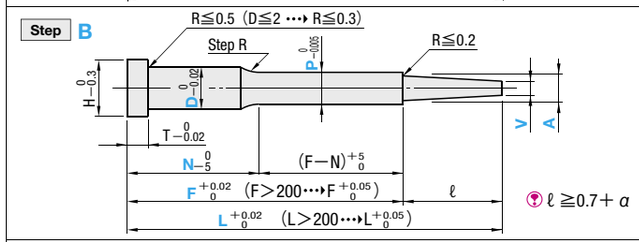


ℓ ≧0.5+ α

Type	T P	T V
CPHB—5A	0 −0.005	±0.01
CPHBJ—5A		
CPVB—5A		±0.005
CPVBJ—5A		

Default α =0 When CX, RX or SR code is used Alteration reference

Step B

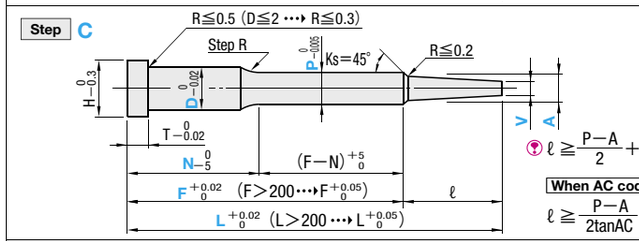


ℓ ≧0.7+ α

Type	T P	T A・V
CPHB—5B	0 −0.005	±0.01
CPHBJ—5B		
CPVB—5B		±0.005
CPVBJ—5B		

Default α =0 When CX, RX or SR code is used Alteration reference

Step C



ℓ ≧ (P−A)/2 +0.5+ α

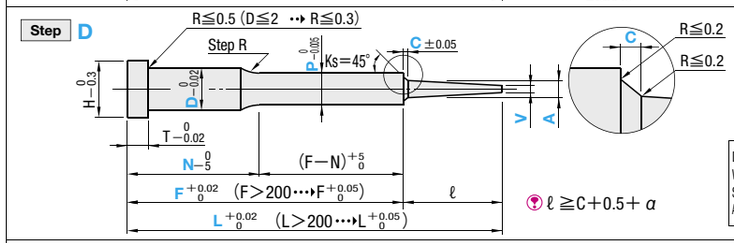
When AC code is used

ℓ ≧ (P−A)/(2tanAC) +0.5+ α

Type	T P	T A・V	T Ks
CPHB—5C	0 −0.005	±0.01	±1°
CPHBJ—5C			
CPVB—5C		±0.005	±30°
CPVBJ—5C			

Default α =0 When CX, RX or SR code is used Alteration reference

Step D

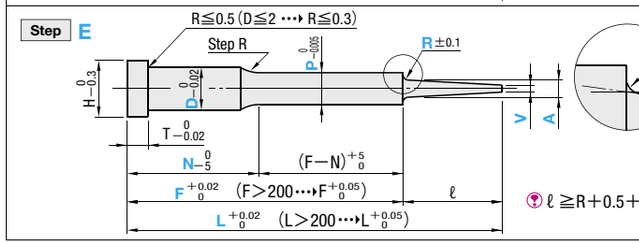


ℓ ≧C+0.5+ α

Type	T P	T A・V	T Ks
CPHB—5D	0 −0.005	±0.01	±1°
CPHBJ—5D			
CPVB—5D		±0.005	±30°
CPVBJ—5D			

Default α =0 When CX, RX or SR code is used Alteration reference

Step E



ℓ ≧R+0.5+ α

Type	T P	T A	T V
CPHB—5E	0 −0.005	±0.02	±0.01
CPHBJ—5E			
CPVB—5E			±0.005
CPVBJ—5E			

Default α =0 When CX, RX or SR code is used Alteration reference

Order

Part Number	L	P	F	A	V	C(R)
CPHB—5E 6	350.00	P5.55	F330.00	A5.00	V4.50	R0.5

Days to Ship — Quotation

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	D	L (0.01mm increments)	P	F	A	Vmin.	C・R (0.1mm increments)	N	ℓ max.
3	4	3	4	CPHB—5 CPVB—5	CPHBJ—5 CPVBJ—5	A B C D E	1	70.00～150.00	0.80～ 0.89	F≧55.00	P>A≧V No need to designate A when Step A is selected.	0.50	Step D only 0.1≦C≦1.5 and C<(P−A)/2 Step E only R≧0.3 and R≦(P−A)/2	N≧25.0 and 30≦(F−N)≦200	15
								70.00～200.00	0.90～ 0.99						
							1.5	70.00～250.00	1.00～ 1.49			0.70			20
4		4					2		1.50～ 1.99						25
5		5					2.5		1.50～ 2.49						30
6		6					3	70.00～300.00	2.00～ 2.99			1.00			35
7		7					3.5		2.50～ 3.49						40
		8	6				4		3.00～ 3.99						45
8							4.5		3.50～ 4.49			1.50			50
		9					5		4.00～ 4.99						
9							5.5		5.00～ 5.49						
		10					6		5.00～ 5.99						
10		11					6.5		5.00～ 6.49						
							7	70.00～350.00	6.00～ 6.99			2.00			
11		13	8				8		6.00～ 7.99						
14		14					9		8.00～ 8.99						
15		15					10		8.00～ 9.99						
17		17					12		10.00～11.99						

Step E is D≧1.5(P≧1.10)～ Refer to the drawing for ℓ min. (normally, α =0)

Alterations

Part Number	L	P	F	A	V	C(R)	(KC・WKC⋯etc.)
CPHB—5E 6	350.00	P5.55	F330.00	A5.00	V4.50	R0.5	KC3.0

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC −0.02 0	VKC	Single flat cutting (precision) D/2≦VKC<H/2	
VWC −0.02 0	VWC	Two flats cutting (precision) D/2≦VWC<H/2	
KC −0.1 0	KC	Single flat cutting D/2≦KC<H/2	
WKC −0.1 0	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1 0	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1 0	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC −0.1 0	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC −0.1 0	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC −0.1 0	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
HC −0.3 0	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Quotation

Alterations	Code	Spec.	1Code
HCC −0.02 0	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
TC −0.02 0	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T−TC≦Lmax.−L (Dimensions L, F and N remain unchanged.)	
NC	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. (T 4: d 2: ℓ 3; T 6, 8: d 3: ℓ 5)	
NCW	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. (T 4: d 2: ℓ1 3; T 6, 8: d 3: ℓ1 5)	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
CX ±0.1	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<V/2 Available when P≧2 V is a dimension prior to CX machining. ※α =CX	
RX ±0.1	RX	RX=0.1mm increments P≦4.5 0.3≦RX≦0.5, RX<V/2 P>4.5 0.3≦RX≦1.0 Available when P≧2 V is a dimension prior to RX machining. ※α =RX	
SR	SR	Finishes the tip in spherical shape (SR). Available when P≧2 L is +8 0.05 ※α =V/2 V is a dimension prior to SR machining.	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, C≦1.0 A+2(C×tanAC°)<P.	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

Quotation

Price — Quotation

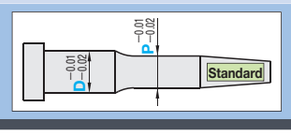
Stepped Center Pins

High Speed Steel SKH51 equivalent

Dies Steel
SKD61 equivalent
+
Nitrided

STEPPED ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V) TOLERANCE : ±0.02 TYPE—



Non JIS material definition is listed on P.1351 - 1352

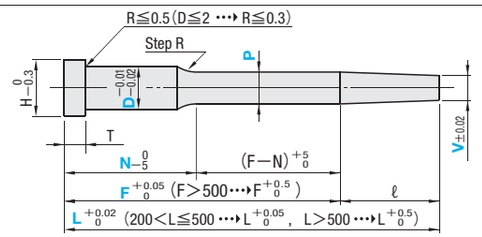
RoHS

M SKD61 equivalent+Nitrided
H Surface 900HV
Base material 40～45HRC
No nitriding on the tip (ℓ).
Nitriding may extend to the head as it is applied after dimension P machining.

Range of guaranteed shaft diameter precision (D) (Details P.1305)
Range of guaranteed base material hardness (Details P.1307)
Range of guaranteed surface hardness for nitriding (Details P.1308)

Type	T P	Head Thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPNB—5	-0.01 -0.02	4mm (T4)	0 -0.02 (L>300 ⋯ $T_{-0.05}^{0}$)	$+0.01$ 0 or H7
CPJB—5	P 12 or L>500 ⋯ $P_{-0.03}^{-0.01}$	4・6・8mm (JIS)	0 -0.05	Details P.1309

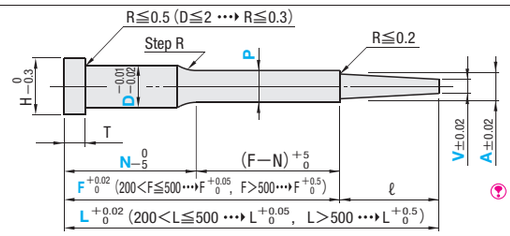
Step A



ℓ ≧0.5+α

Default
α=0
※ When CX code is used
α=CX
※ When RX code is used
α=RX
※ When SR code is used
α=V/2

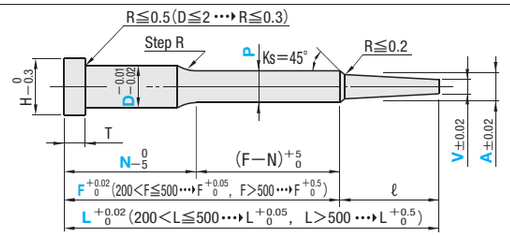
Step B



ℓ ≧0.7+α

Default
α=0
※ When CX code is used
α=CX
※ When RX code is used
α=RX
※ When SR code is used
α=V/2

Step C



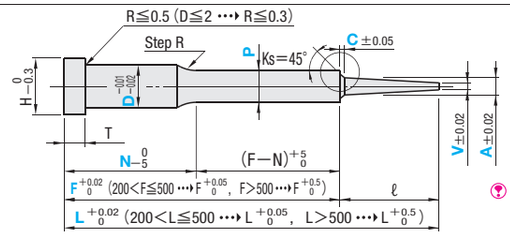
ℓ ≧ (P−A)/2 +0.5+α

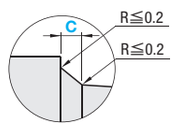
When AC code is used

ℓ ≧ (P−A)/(2tanAC) +0.5+α

Default
α=0
※ When CX code is used
α=CX
※ When RX code is used
α=RX
※ When SR code is used
α=V/2

Step D

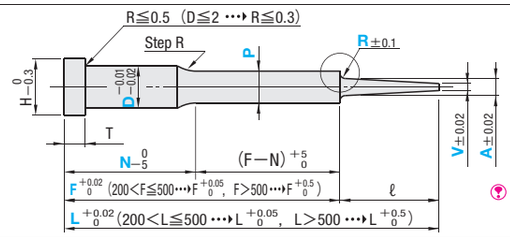


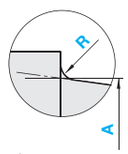


ℓ ≧C+0.5+α

Default
α=0
※ When CX code is used
α=CX
※ When RX code is used
α=RX
※ When SR code is used
α=V/2

Step E





ℓ ≧R+0.5+α

Default
α=0
※ When CX code is used
α=CX
※ When RX code is used
α=RX
※ When SR code is used
α=V/2

Order

Part Number	L	P	F	A	V	C(R)	N
CPJB—5D 10	160.72	P9.20	F140.00	A6.20	V5.20	C0.5	N60.0

Days to Ship

Quotation

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	D	L (0.01mm increments (L>500 ⋯ 0.1mm increments))	P (0.01mm increments)	F	A	Vmin.	C・R (0.1mm increments)	N (0.1mm increments)	ℓ max.
4	4	4	4	CPNB—5	CPJB—5	A	2	70.00 ～ 400.00	1.50～ 1.99	F≧50.00	P>A≧V	0.70	Step D only 0.1≦C≦1.5 and C<(P−A)/2 Step E only R≧0.3 and R≦(P−A)/2	N≧L/3 and F−N≧30	25
5		5					2.5		1.50～ 2.49						30
6		6					3	70.00 ～ 400.00 (500.00)	2.00～ 2.99			1.00			35
7		7					3.5		2.50～ 3.49						40
		8	6				4		3.00～ 3.99						45
8							4.5		3.50～ 4.49			1.50			50
		9				B	5	70.00 ～ 500.00	4.00～ 4.99						
9							5.5		5.00～ 5.49		No need to designate A when Step A is selected.				
		10				C	6	70.00 ～ 500.00 (600.0)	5.00～ 5.99						
10		11					6.5		5.00～ 6.49						
						D	7		6.00～ 6.99			2.00			
11		13	8				8		6.00～ 7.99						
14		14					9		8.00～ 8.99						
15		15					10		8.00～ 9.99						
17		17					12	70.00 ～ 500.00 (700.0)	10.00～11.99						
—	—	20		—			15		12.00～14.99						
		21					16		15.00～15.99			2.50			

L dimension in ( ) is available only for CPJB—5. Refer to the drawing for ℓ min. (normally, α=0)

Alterations

Part Number	L	P	F	A	V	C(R)	N	(KC・WKC⋯etc.)
CPJB—5D 10	160.72	P9.20	F140.00	A6.20	V5.20	C0.5	N60.0	KC5.0

Alteration details P.351

Alterations	Code	Spec.	1Code
KC −0.1	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 KGC	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° KTC −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
HC −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
HCC −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

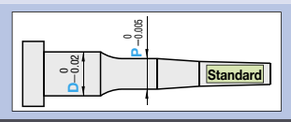
Price Quotation

Alterations	Code	Spec.	1Code
TC −0.05	TC	TC=0.1mm increments T/2≦TC<T T−TC≦Lmax.−L (Dimensions L,F and N remain unchanged.)	Quotation
d +0.1 0	NC	Dowel hole boring Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. (T/d/ℓ: 4/2/3, 6/3/5, 8/3/5)	
d	NCW	Dowel hole boring+Spring pin driving Combination with other than NHC・NHN・CX・RX・SR・AC・RR not available. (T/d/ℓ: 4/2/5, 6/3/5, 8/3/5)	
217	NHC	Numbering on the head How to order P.352	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352	
CX ±0.1	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<V/2 Available when P≧2 V is a dimension prior to CX machining. ※ α=CX	
RX ±0.1	RX	RX=0.1mm increments P≦4.5 0.3≦RX≦0.5, RX<V/2 P>4.5 0.3≦RX≦1.0 V is a dimension prior to RX machining. ※ α=RX	
SR	SR	Finishes the tip in spherical shape (SR). P≧2 ※ α=V/2 L +0.05 0 (L≦500) V is a dimension prior to SR machining.	
AC°	AC	Changes the standard angle (Ks=45°). AC=1° increments 30≦AC≦60 Available for Step C・D Combination with RR not available. When Step D, A+2(C×tanAC°)<P	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

High Speed Steel
SKH51 equivalent

STEPPED TWO-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A・V・J・E) TOLERANCE : ±0.01 TYPE—



Non JIS material definition is listed on P.1351 - 1352

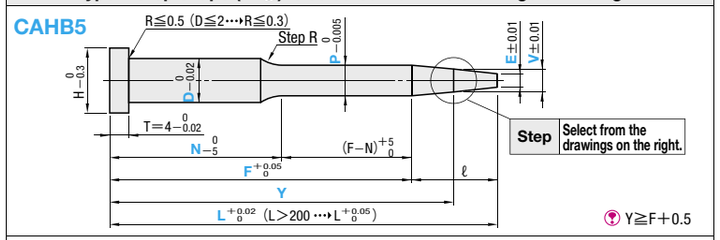
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (D) (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T P	Head Thickness (T)	Applicable ejector sleeve hole tolerance
C□HB5	0 −0.005	4mm (T4)	+0.005 0 Details P.1309

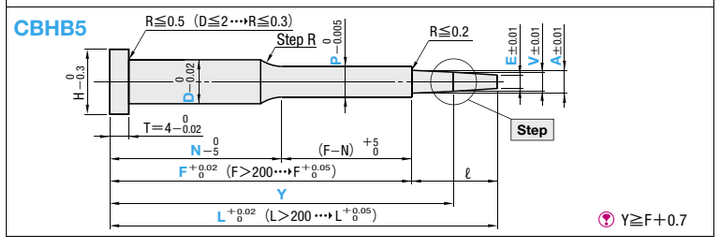
Type Step shape (in ◯) is selected from the drawings on the right.

CAHB5



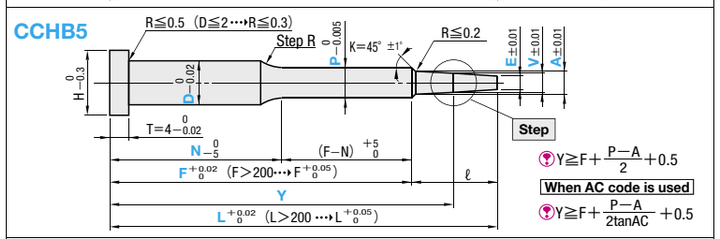
Y≧F+0.5

CBHB5



Y≧F+0.7

CCHB5

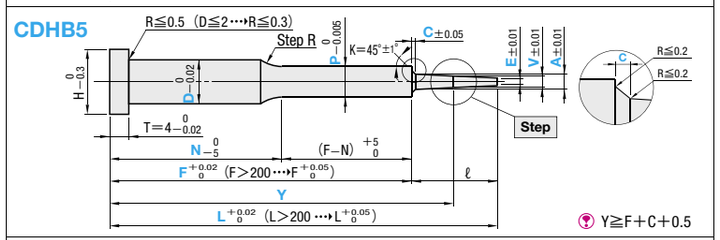


Y≧F+ (P−A)/2 +0.5

When AC code is used

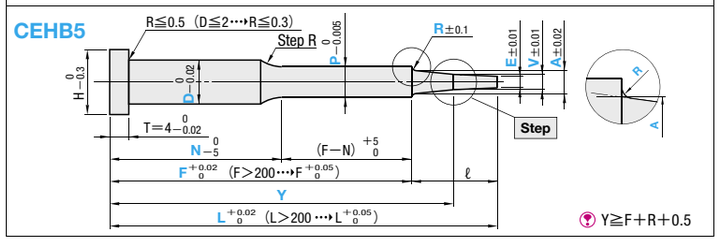
Y≧F+ (P−A)/(2tanAC) +0.5

CDHB5



Y≧F+C+0.5

CEHB5

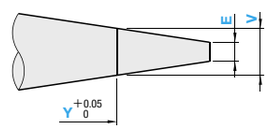


Y≧F+R+0.5

Step

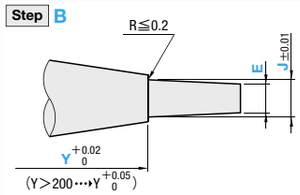
Step A

(V=E designation possible)



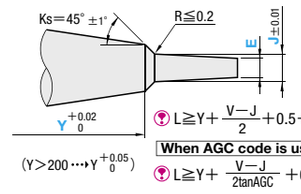
L≧Y+0.5+α

Step B



L≧Y+0.7+α

Step C

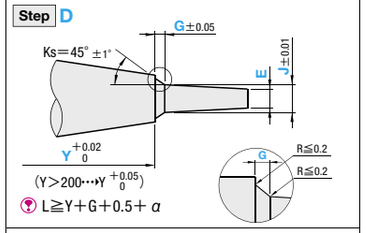


L≧Y+ (V−J)/2 +0.5+α

When AGC code is used

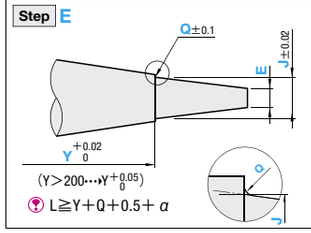
L≧Y+ (V−J)/(2tanAGC) +0.5+α

Step D



L≧Y+G+0.5+α

Step E



L≧Y+Q+0.5+α

Order

Part Number	L	P	F	Y	A	V	J	E	C・G・R・Q	N
CCHB5B 5	150.00	P4.80	F100.00	Y120.00	A4.50	V4.20	J3.80	E2.80		N30.0

Days to Ship — Quotation

H	Part Number Type	Step	D	L	P	F	Y	A	V	J	Emin.	C・R	G・Q	N	ℓ max.
				0.01mm increments								0.1mm increments			
3	CAHB5 / CBHB5 / CCHB5 / CDHB5 / CEHB5	A / B / C / D / E	1.5	70.00～200.00	1.00～ 1.49	F≧55.00	Refer to the working limits shown in the drawing. Default α=0. When CX code is used α=CX. When RX code is used α=RX. When SR code is used α=E/2	P>A and A≧V (No need to designate A when Type CAHB5 is selected.)	A≧V and V>J (Designation of V=E possible when Step A is selected.)	V>J and J≧E (No need to designate J when Step A is selected.)	0.50	when Type CDHB5 0.1≦C≦1.5 and C< (P−A)/2 when Type CEHB5 R≧0.3 and R≦ (P−A)/2	Step D only 0.1≦G≦0.5 and G< (V−J)/2 Step E only Q≧0.3 and Q≦ (V−J)/2	N≧25.0 and (F−N)≧30 and (F−N)≦200	20
4			2	70.00～250.00	1.50～ 1.99						0.70				25
5			2.5		1.50～ 2.49										30
6			3	100.00～300.00	2.00～ 2.99						1.00				35
7			3.5		2.50～ 3.49										40
			4		3.00～ 3.99										45
8			4.5		3.50～ 4.49						1.50				50
			5	100.00～350.00	4.00～ 4.99										
9			5.5		5.00～ 5.49										
			6		5.50～ 5.99										
10			6.5		6.00～ 6.49						2.00				
			7		6.50～ 6.99										
11			8		7.00～ 7.99										
14			9		8.00～ 8.99										
15			10		9.00～ 9.99										
17			12		10.00～11.99						2.50				

Type CEHB5 is D≧1.5(P≧1.10)～

Alterations

Part Number	L	P	F	Y	A	V	J	E	C・G・R・Q	N	(KC・WKC···etc.)
CCHB5B 5	150.00	P4.80	F100.00	Y120.00	A4.50	V4.20	J3.80	E2.80		N30.0	WKC2.5

Alteration details P.351

Alterations	Code	Spec.	1Code
VKC −0.02	VKC	Single flat cutting (precision) D/2≦VKC<H/2	
VWC −0.02	VWC	Two flats cutting (precision) D/2≦VWC<H/2	
KC −0.1	KC	Single flat cutting D/2≦KC<H/2	
WKC −0.1	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.1	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.1	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC DKC −0.1	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC −0.1	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
H HC −0.3	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC −0.02	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter — Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions — Unit of designation 0.1mm

Quotation

Alterations	Code	Spec.	1Code
TC 4	TC	TC=0.1mm increments 2.0≦TC<4 4−TC≦Lmax.−L (Dimensions L,Y,F and N remain unchanged.)	
H 3 2 +0.1 0 4	NC	Dowel hole boring Available when H≧4 Combination with other than CX・RX・SR・AC・AGC・NHC・NHN・RR not available.	
H 5 2 4	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than CX・RX・SR・AC・AGC・NHC・NHN・RR not available.	
217	NHC	Numbering on the head How to order P.352 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.352 Available when H≧2	
CX ±0.1	CX	CX=0.1mm increments 0.3≦CX≦0.5, CX<E/2 Available when P≧2 E is a dimension prior to CX machining. ※α=CX	
RX ±0.1	RX	RX=0.1mm increments P≦4.5 0.3≦RX≦0.5, RX<E/2 P 4.5 0.3≦RX≦1.0 Available when P≧2 E is a dimension prior to RX machining. ※α=RX	
SR	SR	Finishes the tip in spherical shape (SR). Available when P≧2 L is +0.05 0 ※α=E/2 E is a dimension prior to SR machining.	
AC°	AC	Changes the standard angle (K=45°). AC=1° increments 30≦AC≦60 Available for Type CCHB5・CDHB5 When CDHB5, C≦1.0, A+2(C×tanAC°)<P	
AGC°	AGC	Changes the standard angle (Ks=45°). AGC=1° increments 30≦AGC≦60 Combination with RR not available Available for Step C・D When Step D, J+2 (G×tanAGC)° <V	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5. (for Strength improvement) Designation method RR Available for Step B・C・D P−A≧1.0 When Step D, C≧0.5	

Quotation

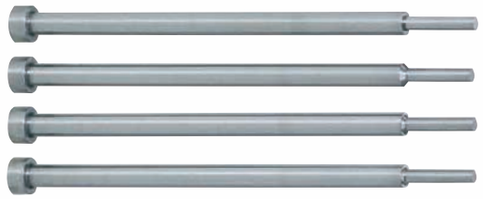
Price — Quotation

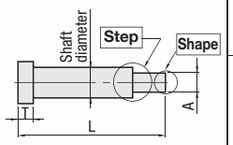
Stepped Center Pins

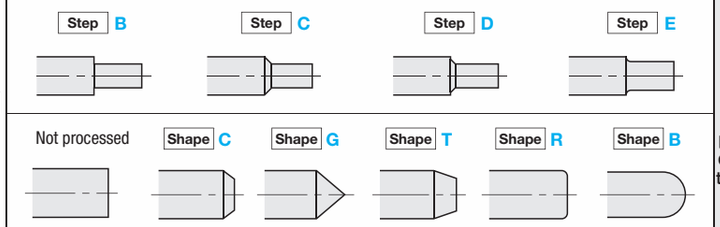
High Speed Steel SKH51 equivalent

TAPERLESS CENTER PINS

TAPERLESS ONE-STEP CENTER PINS







M	Head thickness (T)	Shaft diameter Tolerance	***Tip (A) tolerance $^{0}_{-0.01}$				Tip (A) tolerance $^{0}_{-0.005}$				Center pin shaft diameter tolerance	Applicable ejector sleeve hole (V) tolerance
			Shaft Diameter (D) Selection Type		Shaft diameter (P) 0.01mm increments		Shaft Diameter (D) Selection Type		Shaft diameter (P) 0.01mm increments			
SKH51 equivalent	4mm (T4)	0 −0.005	CPHS−5□	P.383	CPHSG−5□	P.385	CPVS−5□	P.383	CPVSG−5□	P.385	0 −0.005	+0.005 0
		−0.01 −0.02	CPHSE−5□	P.383	CPHSGE−5□	P.385	CPVSE−5□	P.383	CPVSGE−5□	P.385	−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)	0 −0.005	CPHSJ−5□	P.383	CPHSJG−5□	P.385	CPVSJ−5□	P.383	CPVSJG−5□	P.385	0 −0.005	+0.005 0
		−0.01 −0.02	CPHSJE−5□	P.383	CPHSJGE−5□	P.385	CPVSJE−5□	P.383	CPVSJGE−5□	P.385	−0.01 −0.02	+0.01 0 or H7
SKD61 equivalent + Nitriding	4mm (T4)	*Reference tolerance −0.01 −0.02	CPNS−5□	P.387	**CPNSG−5□	P.389	—		—		−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)		CPJS−5□	P.387	**CPJSG−5□	P.389	—		—			
SKD61 equivalent + Nitriding With cooling hole	4mm (T4)	*Reference tolerance −0.01 −0.02	RDCPNS−5□	P.391	—		—		—		−0.01 −0.02	+0.01 0 or H7
	6・8mm (JIS)		RDCPJS−5□	P.391	—		—		—			

*The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.
**For Dies Steel SKD61 equivalent + Nitriding, the shaft diameter is designated by 0.1 mm increments. ***For Dies Steel SKD61 equivalent + Nitriding, tip (A) tolerance is $-^{0}_{0.02}$.

TAPERLESS ONE-STEP CENTER PINS WITH COOLING HOLE

Material	SKD61 equivalent+Nitrided	Head thickness	4mm(T4) 6・8mm(JIS)
Part Number	RDCPNS−5□ RDCPJS−5□	Tip	$-^{0}_{0.02}$
Page	P.391	Delivery Time	5

Shape	M	Part Number	Page	
Stepped One-step Center Pins	SKH51 equivalent	CPHB−5□ CPHBJ−5□ CPVB−5□ CPVBJ−5□	Listed in stepped center pin index	P.373
	SKD61 equivalent + Nitriding	CPNB−5□ CPJB−5□		P.375
	SKD61 equivalent	CPDB−5□		Internet
Two-step Center Pins・Stepped Two-step Center Pins	SKH51 equivalent	C□H5□ C□HE5□		P.371
		C□HB5□		P.377

■ Selection Method for Taperless One-step Center Pins

Code for Taperless One-step Center Pins Specification

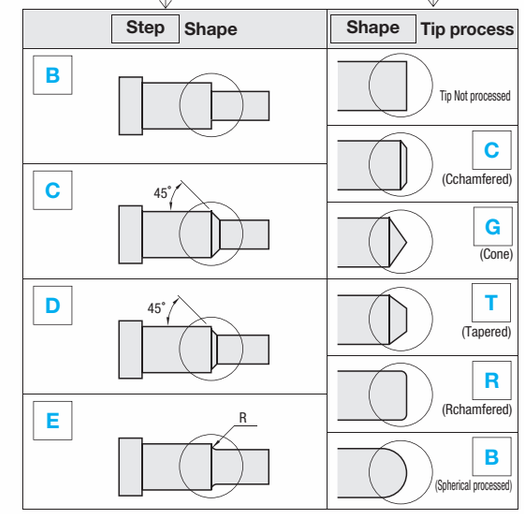
Shaft Diameter (D) Selection Type	CP□−5□□ ****RDCP□−5□□
Shaft diameter (P) designation type	CP□G(E)−5□□

****A part-number of taperless center pin that starts by RD is in the type of taperless center pin with cooling hole.

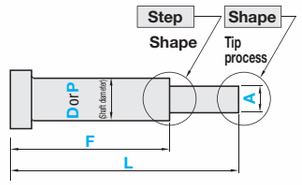
Material・tolerance codes

M	Head thickness (T)	Shaft diameter Tolerance	Tip (A) tolerance ***$^{0}_{-0.01}$	Tip (A) tolerance $^{0}_{-0.005}$
SKH51 equivalent	4mm (T4)	0 −0.005	HS	VS
		−0.01 −0.02	HSE	VSE
	6・8mm (JIS)	0 −0.005	HSJ	VSJ
		−0.01 −0.02	HSJE	VJE
SKD61 equivalent + Nitriding	4mm (T4)	*Reference tolerance −0.01 −0.02	**NS	—
	6・8mm (JIS)		**JS	—

Shape code



Tip process code



*The tolerance values for shaft diameter are representative ones. The tolerance range varies depending on the shaft size and/or length. For details, refer to the Catalog page of each product.
**For Dies Steel SKD61 equivalent + Nitriding, the shaft diameter is designated by 0.1 mm increments.
***For Dies Steel SKD61 equivalent + Nitriding, tip (A) tolerance is $-^{0}_{0.02}$.

■Material characteristics of center pins

M		High Speed Steel SKH51 (M2) (1.3343)	Dies Steel SKD61 (H13) (1.2344) + Nitriding
H	HRC	58～60	Surface base:900HV～ Material :40～45
Machining characteristics	Abrasion resistance	5	4
	Ability to be mirror-finished	4	3
	Toughness	3	4
	Corrosion resistance	3	3
Physical characteristics	Watt density [g/cm³]	8.2	7.75
	Modulus of longitudinal elasticity [kgf/mm²]	22300	21000
	Coefficient of thermal expansion [×10⁶/℃]	10.1	10.8
	Thermal conductivity coefficient [cal/cm・sec・℃]	0.051	0.061
Mechanical characteristics	Tensile strength [kgf/mm²]	235	135
	Charpy impact values [kgf・m/cm²]	2	4

Machining characteristics: 1 (Poor) — 3 (Good) — 5 (Excellent)

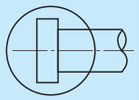
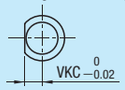
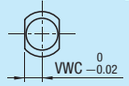
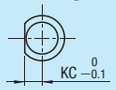
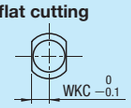
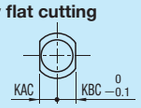
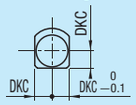
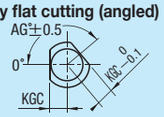
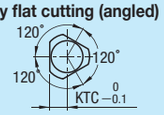
Conversion expression
1kgf/mm²=9.81N/mm²
1cal/cm・sec・℃=418.6W/M.K
1kgf・m/cm²=9.81J/cm²

Use these data for reference only as they are dependent on specific heat treatment and usage conditions.

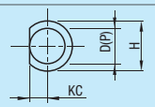
ALTERATION GUIDE FOR TAPERLESS CENTER PINS

Non JIS material definition is listed on P.1351 - 1352

■Alteration Guide for Taperless Center Pins

Items	Applicable Products	Alterations	Code	Specifications	1Code
 Key flat cutting	Taperless Center Pins	**Precision key flat cutting** 	VKC	Precision single flat cutting High Speed Steel SKH51 equivalent only Range of designation (DorP)/2≦VKC＜H/2	
		Precision key flat cutting 	VWC	Precision two flats cutting High Speed Steel SKH51 equivalent only Range of designation (DorP)/2≦VWC＜H/2	
		Key flat cutting 	KC	Single flat cutting Range of designation (DorP)/2≦KC＜H/2	
		Key flat cutting 	WKC	Two flats cutting Range of designation (DorP)/2≦WKC＜H/2	
		Key flat cutting 	KAC KBC	Varied width parallel flats cutting Range of designation (DorP)/2≦KAC KAC＜KBC＜H/2	
		Key flat cutting	RKC	Two flats (right angled) cutting Range of designation (DorP)/2≦RKC＜H/2	
		Key flat cutting 	DKC	Three flats cutting Range of designation (DorP)/2≦DKC＜H/2	
		Key flat cutting (angled) 	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation (DorP)/2≦KGC＜H/2 AG=1° increments 0°＜AG＜360°	
		Key flat cutting (angled) 	KTC	Three flats cutting at 120° Range of designation (DorP)/2≦KTC＜H/2	

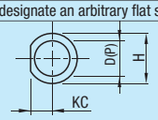
To make a flat at the shaft diameter position for
Straight・One-step・Two-step・Taperless and stepped types



Unit of designation
・Taperless
Shaft diameter selection type (D/2)……0.05mm increments possible
Shaft diameter designation (0.01mm increments) type (P/2)
……0.005mm increments possible
Shaft diameter designation (0.1mm increments) type (P/2)
……0.05mm increments possible
・Stepped Type (D/2)……0.05mm increments possible

Designation method
- VKC2.82 (When P5.64)
- VWC3.375 (When P6.75)
- KC2.61 (When P5.22)
- WKC3.085 (When P6.17)
- RKC2.74 (When P5.48)
- DKC3 (When D6)
- KGC1.5—AG125 (When D3)
- KTC3.085 (When P6.17)

To designate an arbitrary flat size



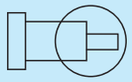
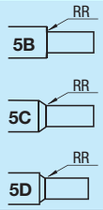
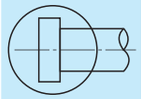
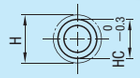
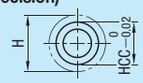
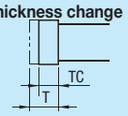
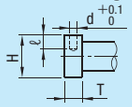
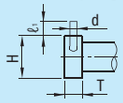
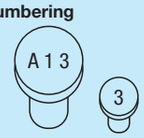
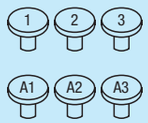
Unit of designation 0.1mm increments

Designation method
- VKC1.4
- VWC2.3
- KC1.4
- WKC2.3
- KAC1.4—KBC1.6
- RKC1.4
- DKC1.75
- KGC1.4—AG85
- KTC2.3

Quotation

Note that designating H/2—0.15 or more for Key flat cutting alteration will create hardly any flat on the head.

■Alteration Guide for Taperless Center Pins

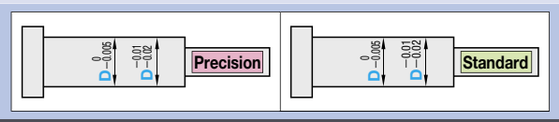
Items	Applicable Products	Alterations	Code	Specifications	1Code
 Step alteration	Taperless Center Pins Step B Step C Step D		RR	Changes R (normally 0.2 or less) to R0.3～0.5 (Improves strength) Designation method RR Available for Step B・C・D D(P)—A≧1.0 when Step D, C≧0.5	
 Head alteration	Taperless Center Pins	**Head diameter change** 	HC	Reduces the head diameter. Range of designation DorP≦HC＜H Available when DorP≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft. Unit of designation 0.1mm increments Designation method HC6.5	
		Head diameter change (precision) 	HCC	Reduces the head diameter. (Precision) Range of designation DorP＋0.5≦HCC＜H—0.3 Available when DorP≧1.5 Unit of designation 0.1mm increments Designation method HCC6.1	
		Head thickness change 	TC	Reduces the head thickness. Dimensions L,Y,F and N remain unchanged. Range of designation T/2≦TC＜T T—TC≦Lmax.—L Available when DorP≧1.5 Unit of designation 0.1mm increments Designation method TC3.5	
		Dowel hole boring 	NC	Adds a dowel hole. Available when head diameter ≧4 Designation method NC Combination with other than NHC・NHN・RR not available. T: 4, 6, 8; d: 2, 3; ℓ: 3, 5	
		Dowel hole＋Spring pin 	NCW	Adds a dowel hole＋ and drives a spring pin. Available when head diameter≧4 Designation method NCW Combination with other than NHC・NHN・RR not available. T: 4, 6, 8; d: 2, 3; ℓ₁: 5	
		Numbering 	NHC	Numbering on the head Electrolytic marking of ID code on the head(in 5 point, Round Gothic type) Available characters Numerals: 0～9; Alphabets: A～Z Range of designation 1 character when 2≦H＜4.9 1 or 2 characters when 5≦H＜6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) Designation method NHC—6, NHC—23, NHC—A90 Available when head diameter H≧2	
		Numbering 	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each ejector pin when two or more pieces of identical size are ordered. Available characters Same as NHC (see above) Range of designation Same as NHC (see above) Designation method When 3 pieces are ordered with NHN—1, a sequential number starting from 1 is added on the head of each piece. When 10 pieces pins are ordered with NHN—A15, a sequential number starting from A15 (through A24) is added on the head of each piece. Available when head diameter H≧2 Only available when two or more pieces of identical size are ordered.	

Quotation

High Speed Steel
SKH51 equivalent
D $^{0}_{-0.005}$ / $^{-0.01}_{-0.02}$

TAPERLESS ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) FIXED TIP (A) TOLERANCE $^{0}_{-0.005}$ / $^{0}_{-0.01}$ TYPE—



Non JIS material definition is listed on P.1351 - 1352

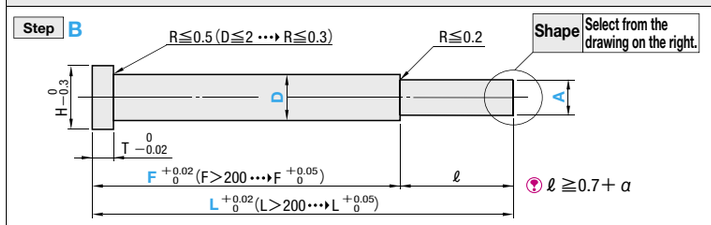
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision (Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness (Details P.1307)

Type	T D	Head thickness (T)	Applicable ejector sleeve hole tolerance
CPHS—5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Details P.1309
CPVS—5			
CPHSJ—5		6・8mm (JIS)	
CPVSJ—5			
CPHSE—5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{+0.01}_{0}$ or H7 Details P.1309
CPVSE—5			
CPHSJE—5		6・8mm (JIS)	
CPVSJE—5			

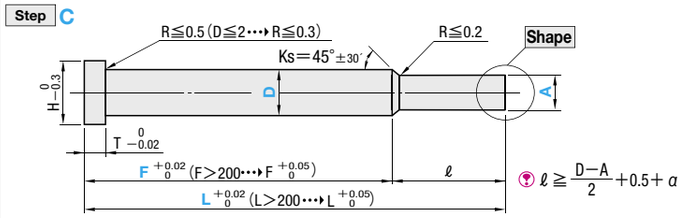
Step (Step type) Select from B～E in the drawing below.

Step B



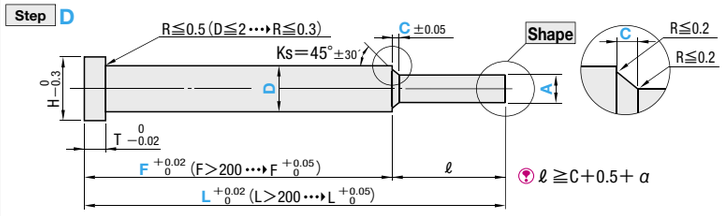
ℓ ≧0.7+α

Step C



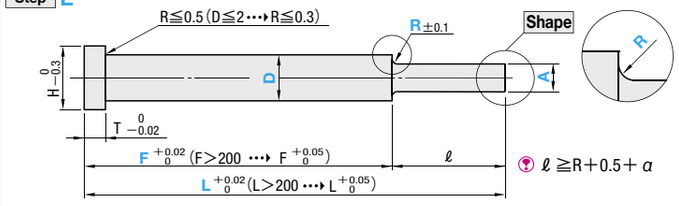
ℓ ≧ $\frac{D-A}{2}$+0.5+α

Step D



ℓ ≧C+0.5+α

Step E



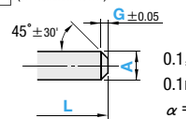
ℓ ≧R+0.5+α

Shape (Tip shape)

(Not processed)

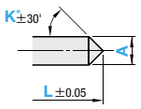
Designation of the shape is unnecessary when tip processing is not required.
α=0

C (C chamfered)



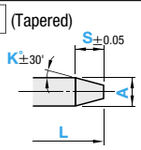
0.1≦G<A/2
0.1mm increments
α=G

G (Cone)



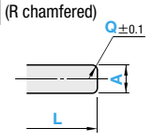
0<K≦60
1° increments
α = $\frac{A}{2\tan K}$

T (Tapered)



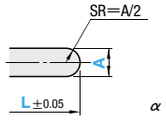
0.1≦S< $\frac{A}{2\tan K}$
0.1mm increments
0<K≦45
1° increments
α=S

R (R chamfered)



0.2≦Q<A/2
0.1mm increments
α=Q

B (Spherical processed)



α=A/2

Group	Type 4mm head	Type JIS head	Shape (Tip shapeA) T Step B	Step C	Step D	Step E
Standard	CPHS—5□	CPHSJ—5□	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$
Precision	CPVS—5□	CPVSJ—5□	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$
Standard	CPHSE—5□	CPHSJE—5□	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$
Precision	CPVSE—5□	CPVSJE—5□	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	0.01mm increments L	F	A	Amin.	0.1mm increments C・R	ℓmax.
3	4	—	—	CPHS—5 CPVS—5 Tolerance D $^{0}_{-0.005}$	—	B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1	70.00～200.00	F≧50.00	When tolerance D $^{0}_{-0.005}$ D−0.01>A≧Amin. When tolerance D $^{-0.01}_{-0.02}$ D−0.02>A≧Amin.	0.50	Step D only 0.1≦C≦1.5 and C< $\frac{D-A}{2}$ Step E only R≧0.3 and R≦ $\frac{D-A}{2}$	ℓ≦12×A and ℓ≦35
								1.5						
4								2	70.00～250.00			0.70		
5								2.5						
6								3	70.00～300.00			1.00		
7								3.5						
		8	6		CPHSJ—5 CPVSJ—5 Tolerance D $^{0}_{-0.005}$			4						
8								4.5				1.50		
		9		CPHSE—5 CPVSE—5 Tolerance D $^{-0.01}_{-0.02}$				5	70.00～350.00					
9								5.5						
		10						6						
10		11						6.5				2.00		
					CPHSJE—5 CPVSJE—5 Tolerance D $^{-0.01}_{-0.02}$			7						
11		13	8					8						
14		14						9						
15		15						10						
17		17						12						

Step E is D≧1.5 Refer to the drawing for ℓmin.(normally, α=0)

Order: Part Number — L — F — A — C(R) — Tip size (K・S・G・Q)
CPHS—5EG6 — 350.00 — F330.00 — A5.00 — R0.5 — K30

Days to Ship: Quotation

Alterations: Part Number — L — F — A — C(R) — Tip size (K・S・G・Q) — (KC・WKC…etc.)
CPHS—5EG6 — 350.00 — F330.00 — A5.00 — R0.5 — K30 — KC3.0

Alteration details P.381

Alterations	Code	Spec.	1Code
VKC $^{0}_{-0.02}$	VKC	Precision single flat cutting D/2≦VKC<H/2	
VWC $^{0}_{-0.02}$	VWC	Precision two flats cutting D/2≦VWC<H/2	
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	Quotation
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

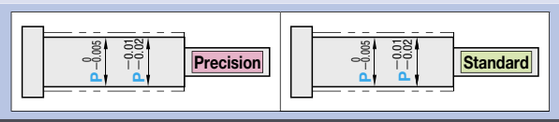
Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H, D≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3, D≧1.5	
T TC $^{0}_{-0.02}$	TC	TC=0.1mm increments T/2≦TC<T, D≧1.5 T TC≦Lmax. L (Dimensions L and F remain unchanged.)	Quotation
H ℓ d $^{+0.1}_{0}$ T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ: 4 2 3; 6 8 3 5)	
H ℓ1 ℓ d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ1: 4 2; 6 8 3 5)	
217	NHC	Numbering on the head How to order P.382 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.382 Available when H≧2	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5 (Improves strength) Designation method RR Available for Step B・C・D D−A≧1.0 Step When D, C≧0.5	

Price: Quotation

High Speed Steel
SKH51 equivalent
P $^{0}_{-0.005}$ / $^{-0.01}_{-0.02}$

TAPERLESS ONE-STEP CENTER PINS

— SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TIP (A) TOLERANCE $^{0}_{-0.005}$ / $^{0}_{-0.01}$ TYPE—



Non JIS material definition is listed on P.1351 - 1352

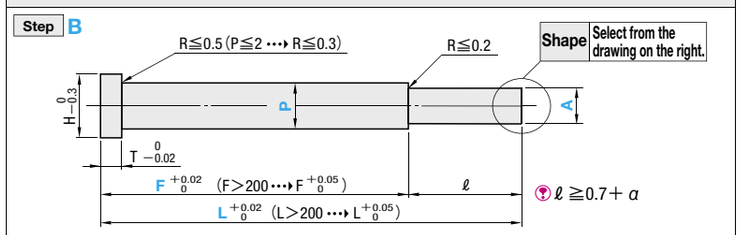
RoHS

M SKH51 equivalent — Range of guaranteed shaft diameter precision(Details P.1305)
H 58～60HRC — Range of guaranteed base material hardness(Details P.1307)

Type	T P	Head thickness (T)	Applicable ejector sleeve hole tolerance
CPHSG−5	$^{0}_{-0.005}$	4mm (T4)	$^{+0.005}_{0}$ Details P.1309
CPVSG−5			
CPHSJG−5		6・8mm (JIS)	
CPVSJG−5			
CPHSGE−5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{+0.01}_{0}$ or H7 Details P.1309
CPVSGE−5			
CPHSJGE−5		6・8mm (JIS)	
CPVSJGE−5			

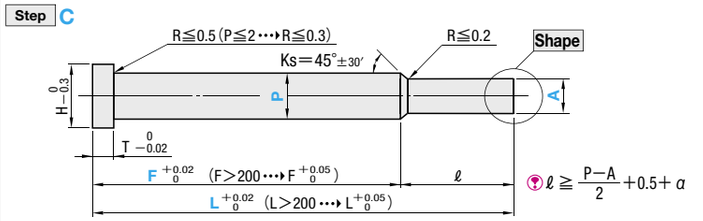
Step (Step type) Select from B～E in the drawing below.

Step B



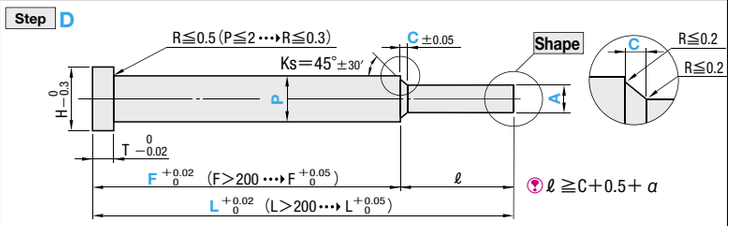
ℓ ≧0.7+ α

Step C



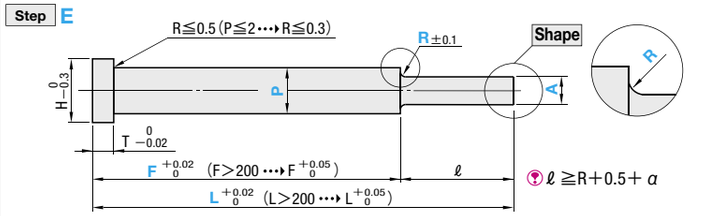
ℓ ≧ $\frac{P-A}{2}$ +0.5+ α

Step D



ℓ ≧C+0.5+ α

Step E



ℓ ≧R+0.5+ α

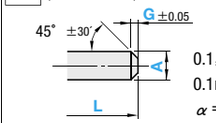
Shape (Tip shape)

(Not processed)

Designation of the shape is unnecessary when tip processing is not required.

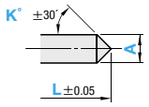
α =0

C (C chamfered)



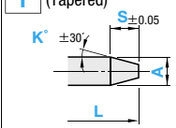
0.1≦G<A/2
0.1mm increments
α =G

G (Cone)



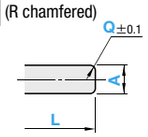
0<K≦60
1° increments
α = $\frac{A}{2\tan K}$

T (Tapered)



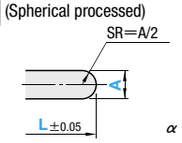
0.1≦S< $\frac{A}{2\tan K}$
0.1mm increments
0<K≦45
1° increments
α =S

R (R chamfered)



0.2≦Q<A/2
0.1mm increments
α =Q

B (Spherical processed)



α =A/2

Group	Type 4mm head	Type JIS head	Shape (Tip shapeA) T Step B	Step C	Step D	Step E
Standard	CPHSG−5□	CPHSJG−5□	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$
Precision	CPVSG−5□	CPVSJG−5□	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$
Standard	CPHSGE−5□	CPHSJGE−5□	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$	A $^{0}_{-0.01}$
Precision	CPVSGE−5□	CPVSJGE−5□	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$	A $^{0}_{-0.005}$

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	No.	0.01mm increments L	P	F	A	Amin.	0.1mm increments C・R	ℓmax.
3	4	—	—	CPHSG−5 CPVSG−5 Tolerance P $^{0}_{-0.005}$	—	B C D E	Designation is unnecessary when tip processing is not required.	1	70.00～150.00	0.80～ 0.99	F≧50.00	When tolerance P $^{0}_{-0.005}$ P−0.01>A≧Amin.	0.50	Step D only 0.1≦C≦1.5 and C< $\frac{P-A}{2}$	ℓ≦12×A and ℓ≦35
									150.01～200.00	0.90～ 0.99					
								1.5	70.00～250.00	1.00～ 1.49					
4								2		1.50～ 1.99			0.70		
5								2.5		2.00～ 2.49					
6								3	70.00～300.00	2.50～ 2.99			1.00		
7								3.5		3.00～ 3.49					
		8	6		CPHSJG−5 CPVSJG−5 Tolerance P $^{0}_{-0.005}$			4		3.50～ 3.99					
8								4.5		4.00～ 4.49			1.50		
		9		CPHSGE−5 CPVSGE−5 Tolerance P $^{-0.01}_{-0.02}$				5	70.00～350.00	4.50～ 4.99		When tolerance P $^{-0.01}_{-0.02}$		Step E only R≧0.3 and R≦ $\frac{P-A}{2}$	
9								5.5		5.00～ 5.49					
		10						6		5.50～ 5.99					
10		11						6.5		6.00～ 6.49			2.00		
								7		6.50～ 6.99					
11		13	8					8		7.00～ 7.99					
15		15						10		8.00～ 9.99					
17		17						12		10.00～11.99					

Shape C・G・T・R・B is No.1.5(P≧1.00)～ Step E is No.1.5(P≧1.10)～ Refer to the drawing for ℓmin.(normally, α =0)

Order — Part Number — L — P — F — A — C(R) — Tip size (K・S・G・Q)
CPHSG−5E6 — 350.00 — P5.95 — F330.00 — A4.95 — R0.5

Days to Ship — Quotation

Alterations — Part Number — L — p — F — A — C(R) — Tip size (K・S・G・Q) — (KC・WKC…etc.)
CPHSG−5E6 — 350.00 — P5.95 — F330.00 — A4.95 — R0.5 — KC3.0

Alteration details P.381

Alterations	Code	Spec.	1Code
VKC $^{0}_{-0.02}$	VKC	Precision single flat cutting P/2≦VKC<H/2	Quotation
VWC $^{0}_{-0.02}$	VWC	Precision two flats cutting P/2≦VWC<H/2	
KC $^{0}_{-0.1}$	KC	Single flat cutting P/2≦KC<H/2	
WKC $^{0}_{-0.1}$	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC DKC $^{0}_{-0.1}$	DKC	Three flats cutting P/2≦DKC<H/2	
AG° ±0.5 0° KGC KG $^{0}_{-0.1}$	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments P≦HC<H, P≧1.5 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3, P≧1.5	
TC $^{0}_{-0.02}$ T	TC	TC=0.1mm increments T/2≦TC<T, P≧1.5 T TC≦Lmax. L (Dimensions L and F remain unchanged.)	
H ℓ d $^{+0.1}_{0}$ T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ: 4 2 3; 6 8 3 5)	
H ℓ1 d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ1: 4 2 5; 6 8 3)	
217	NHC	Numbering on the head How to order P.382 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.382 Available when H≧2	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5 (Improves strength) Designation method RR Available for Step B・C・D P−A≧1.0 Step When D, C≧0.5	

Price — Quotation

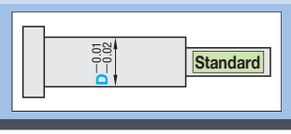
High Speed Steel SKH51 equivalent

Taperless Center Pins

Dies Steel
SKD61 equivalent+Nitrided
D$^{-0.01}_{-0.02}$

TAPERLESS ONE-STEP CENTER PINS

—SHAFT DIAMETER (D) FIXED TIP (A) TOLERANCE$^{0}_{-0.02}$ TYPE—



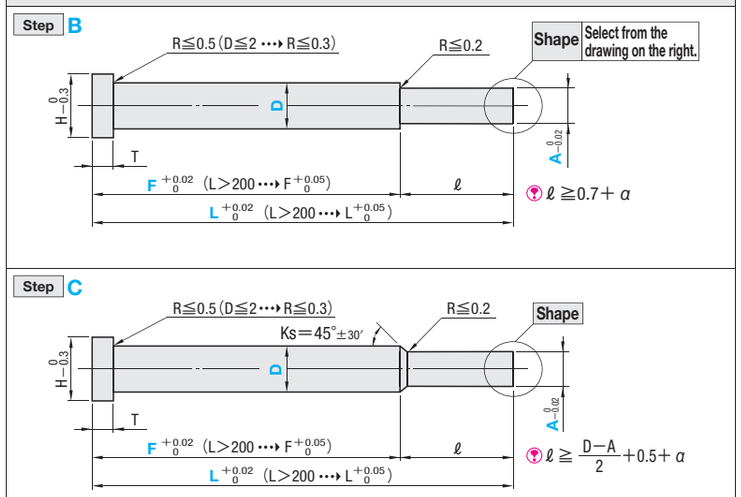
Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKD61 equivalent+Nitrided — Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
H Surface 900HV～ Base material 40～45HRC — Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip (ℓ).

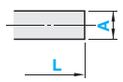
Type	T D	Head thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPNS—5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$ (L>300 ···T $^{0}_{-0.05}$)	$^{+0.01}_{0}$ or H7
CPJS—5	D>12 ··· D $^{-0.01}_{-0.03}$	6・8mm (JIS)	$^{0}_{-0.05}$	Details P.1309

Step (Step type) Select from B～E in the drawing below.

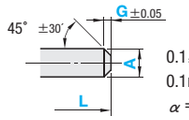


Shape (Tip shape)

(Not processed) Designation of the shape is unnecessary when tip processing is not required. α=0

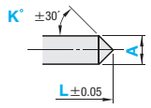


C (C chamfered)



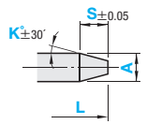
0.1≦G<A/2
0.1mm increments
α=G

G (Cone)



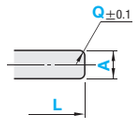
0<K≦60
1° increments
$\alpha = \frac{A}{2\tan K}$

T (Tapered)



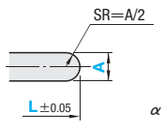
$0.1 \leqq S < \frac{A}{2\tan K}$
0.1mm increments
0<K≦45
1° increments
α=S

R (R chamfered)



0.2≦Q<A/2
0.1mm increments
α=Q

B (Spherical processed)



α=A/2

Order

Part Number	L	F	A	C(R)	Tip size (K・S・G・Q)
CPNS—5EG6	350.00	F330.00	A5.00	R0.5	K30

Days to Ship **Quotation**

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	0.01mm increments L	0.01mm increments F	0.01mm increments A	0.01mm increments Amin.	0.1mm ncrements C・R	ℓmax.
3	4	—	—	CPNS—5	CPJS—5	B C D E	Designation is unnecessary when tip processing is not required. C G T R B	1.5	70.00～200.00	F≧50.00	D−0.02>A≧Amin.	0.50	Step D only 0.1≦C≦1.5 and C<(D−A)/2 Step E only R≧0.3 and R≦(D−A)/2	ℓ≦12×A and ℓ≦35
4								2	70.00～400.00 (500.00)			0.70		
5								2.5						
6								3				1.00		
7								3.5						
		8	6					4						
8								4.5				1.50		
		9						5	70.00～500.00			2.00		
9								5.5						
		10						6						
10		11						6.5						
								7						
11		13	8					8						
14		14						9						
15		15						10						
17		17						12						
—	—	21		—				16				2.50		

Refer to the drawing for ℓmin.(normally, α=0) L dimension in ( ) is available for CPJS—5 only. Step E is D≧2

Alterations

Part Number	L	F	A	C(R)	Tip size (K・S・G・Q)	(KC・WKC···etc.)
CPNS—5EG6	350.00	F330.00	A5.00	R0.5	G2.0	KC3.0

Alteration details P.381

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

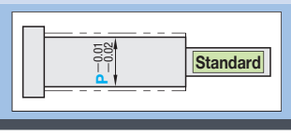
Price **Quotation**

Alterations	Code	Spec.	1Code
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC $^{0}_{-0.2}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	
TC $^{0}_{-0.02}$ T	TC	TC=0.1mm increments T/2≦TC<T T TC≦Lmax. L (Dimensions L and F remain unchanged.)	
H ℓ d $^{+0.1}_{0}$ T	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ: 4 2 3; 6 3 5; 8 3 5)	
H ℓ₁ d T	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・RR not available. (T d ℓ₁: 4 2 5; 6 3 5; 8 3 5)	
217	NHC	Numbering on the head How to order P.382 Available when H≧2	
1 2 3	NHN	Automatic sequential numbering on the head How to order P.382 Available when H≧2	
RR	RR	Changes R (normally 0.2 or less) to R0.3～0.5 (Improves strength) Designation method RR Available for Step B・C・D D−A≧1.0 Step When D, C≧0.5	

Dies Steel
SKD61 equivalent+Nitrided
P $^{-0.01}_{-0.02}$

TAPERLESS ONE-STEP CENTER PINS

—SHAFT DIAMETER (P) DESIGNATION (0.1mm INCREMENTS) TIP (A) TOLERANCE$^{0}_{-0.02}$ TYPE—



Non JIS material definition is listed on P.1351 - 1352

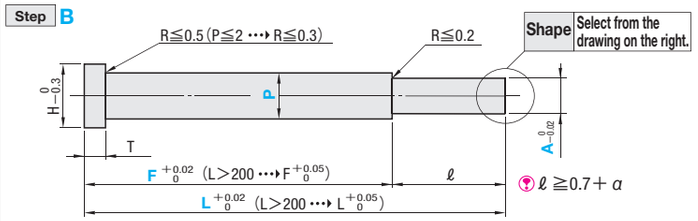
RoHS

M SKD61 equivalent+Nitrided — Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
H Surface 900HV, Base material 40~45HRC — Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip (ℓ).

Type	T P	Head thickness (T)	T Head Thickness (T)	Applicable ejector sleeve hole tolerance
CPNSG—5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$ (L>300 ···T $^{0}_{-0.05}$)	$^{+0.01}_{0}$ or H7
CPJSG—5	P>12 ··· P $^{-0.01}_{-0.03}$	6・8mm (JIS)	$^{0}_{-0.05}$	Details P.1309

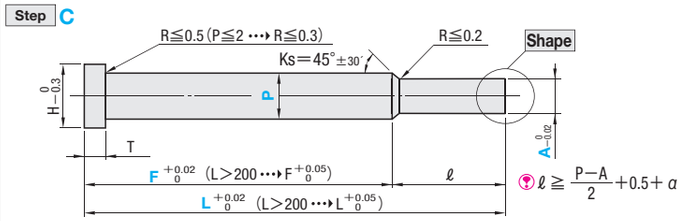
Step (Step type) Select from B~E in the drawing below.

Step B



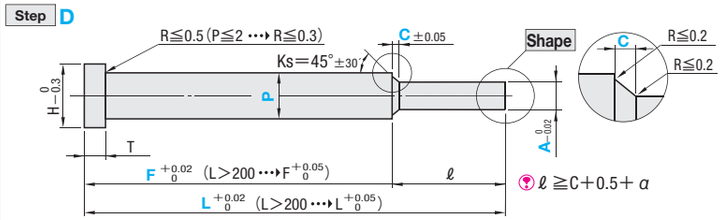
ℓ ≧0.7+α

Step C



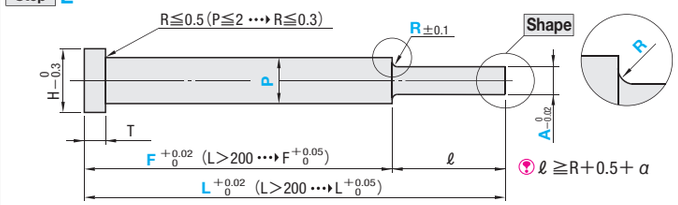
ℓ ≧ $\frac{P-A}{2}$+0.5+α

Step D



ℓ ≧C+0.5+α

Step E



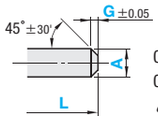
ℓ ≧R+0.5+α

Shape (Tip shape)

(Not processed) Designation of the shape is unnecessary when tip processing is not required.

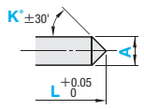
α=0

C (C chamfered)



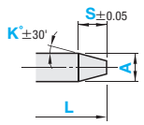
0.1≦G<A/2
0.1mm increments
α=G

G (Cone)



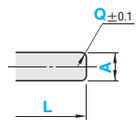
0<K≦60
1° increments
α= $\frac{A}{2\tan K}$

T (Tapered)



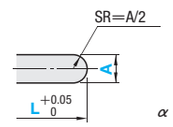
0.1≦S< $\frac{A}{2\tan K}$
0.1mm increments
0<K≦45
1° increments
α=S

R (R chamfered)



0.2≦Q<A/2
0.1mm increments
α=Q

B (Spherical processed)



α=A/2

Order

Part Number	L	P	F	A	C(R)	Tip size (K・S・G・Q)
CPNSG—5ER6	350.00	P5.9	F330.00	A4.95	R0.5	Q1.5

Days to Ship **Quotation**

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	No.	0.01mm increments L	0.01mm increments P	0.01mm increments F	0.01mm increments A	0.01mm increments Amin.	0.01mm increments C・R	ℓmax.
4	4	—	—	CPNSG—5	—	B C D E	Designation is unnecessary when tip processing is not required. C G T R B	2	70.00~400.00 (500.00)	1.5~ 1.9	F≧50.00	P−0.02>A≧Amin.	0.70	Step D only 0.1≦C≦1.5 and C< $\frac{P-A}{2}$	ℓ≦12×A and ℓ≦35
5								2.5		2.0~ 2.4					
6								3		2.5~ 2.9			1.00		
7		8	6		CPJSG—5			3.5		3.0~ 3.4					
								4		3.5~ 3.9					
8								4.5		4.0~ 4.4			1.50		
		9						5	70.00~500.00	4.5~ 4.9					
9								5.5		5.0~ 5.4			2.00	Step E only R≧0.3 and R≦ $\frac{P-A}{2}$	
		10						6		5.5~ 5.9					
10		11						6.5		6.0~ 6.4					
								7		6.5~ 6.9					
11		13	8					8		7.0~ 7.9					
15		15						10		8.0~ 9.9					
17		17						12		10.0~11.9					
—	—	20		—				15		12.0~14.9					
		21						16		15.0~15.9			2.50		

Refer to the drawing for ℓmin.(normally, α=0) L dimension in ( ) is CPJSG—5 only. Step E is P≧2

Alterations

Part Number	L	P	F	A	C(R)	Tip size (K・S・G・Q)	(KC・WKC···etc.)
CPNSG—5ER6	350.00	P5.9	F330.00	A4.95	R0.5	Q1.0	KC3.0

Alteration details P.381

Alterations	Code	Spec.	1Code
KC	KC	Single flat cutting P/2≦KC<H/2	Quotation
WKC	WKC	Two flats cutting P/2≦WKC<H/2	
KAC KBC	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC	RKC	Two flats (right angled) cutting P/2≦RKC<H/2	
DKC	DKC	Three flats cutting P/2≦DKC<H/2	
KGC	KGC	Two flats (angled) cutting P/2≦KGC<H/2 AG=1° increments 0<AG<360	
KTC	KTC	Three flats cutting at 120° P/2≦KTC<H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter — Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions — Unit of designation 0.1mm

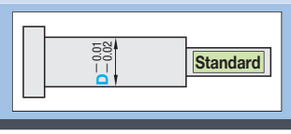
Alterations	Code	Spec.	1Code
	HC	HC=0.1mm increments P≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	HCC=0.1mm increments P+1≦HCC<H−0.3	
	TC	TC=0.1mm increments T/2≦TC<T T TC≦Lmax. L (Dimensions L and F remain unchanged.)	
	NC	Dowel hole boring Available when H≧4 Combination with other than NHC・NHN・RR not available. (T 4 d 2 ℓ 3; T 6 8 d 3 ℓ 5)	
	NCW	Dowel hole boring+Spring pin driving Available when H≧4 Combination with other than NHC・NHN・RR not available. (T 4 d 2; T 6 8 d 3 ℓ1 5)	
	NHC	Numbering on the head How to order P.382 Available when H≧2	
	NHN	Automatic sequential numbering on the head How to order P.382 Available when H≧2	
	RR	Changes R (normally 0.2 or less) to R0.3~0.5 (Improves strength) Designation method RR Available for Step B・C・D P−A≧1.0 Step When D, C≧0.5	

Price **Quotation**

Dies Steel
SKD61 equivalent+Nitrided
D$^{-0.01}_{-0.02}$

TAPERLESS ONE-STEP CENTER PINS WITH COOLING HOLE

—SHAFT DIAMETER (D) FIXED TIP (A) TOLERANCE$^{0}_{-0.02}$ TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

M SKD61 equivalent+Nitrided
H Surface 900HV~ Base material 40±3HRC

Range of guaranteed shaft diameter precision (Details P.1305) Range of guaranteed surface hardness for nitriding (Details P.1308)
Range of guaranteed base material hardness (Details P.1307) No nitriding on the tip (ℓ). No nitriding to the cooling hole.

Type	D	Head thickness (T)	Head Thickness (T)	Applicable ejector sleeve hole tolerance
RDCPNS−5	$^{-0.01}_{-0.02}$	4mm (T4)	$^{0}_{-0.02}$	$^{+0.01}_{0}$ or H7
RDCPJS−5	D>12 ··· D$^{-0.01}_{-0.03}$	6・8mm (JIS)	$^{0}_{-0.05}$	Details P.1309

4mm head H	4mm head T	JIS head H	JIS head T	Part Number Type 4mm head	Part Number Type JIS head	Step	Shape	D	L	F	A	Amin.	C・R	W	ℓmax.	X
9	4	10	6	RDCPNS−5	RDCPJS−5	B C D E	Designation is unnecessary when tip processing is not required. C G T R B	6	70.00~150.00	F≧50.00	D−0.02>A≧Amin.	5.00	Step D only 0.1≦C≦1.5 and C<(D−A)/2	3.0	ℓ≦12XA and ℓ≦35	*Refer to under L−10
10		11						7				6.00		3.0		
11		13	8					8	70.00~200.00			7.00		4.0		
15		15						10	70.00~250.00			8.00	Step E only R≧0.3 and R≦(D−A)/2	5≦W≦A−3		
17		17						12				9.00		6≦W≦A−3		
—	—	21		—				16								

Refer to the drawing for ℓmin. (normally, α=0) X dimension of *D=6: When ℓ≧10, X=F. When ℓ<10, X=L−10.

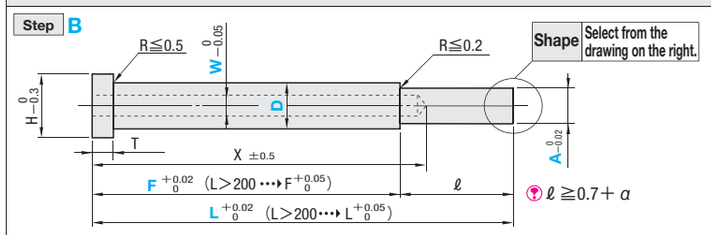
Alterations

Part Number	L	F	A	C(R)	W	Tip size (K・S・G・Q)	(KC・WKC…etc.)
RDCPJS−5DT16	220.00	F185.00	A14.00	C0.3	W10.0	K30−S0.1	KC8.0

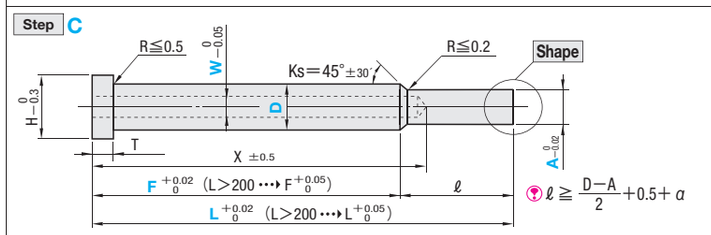
Alteration details P.381

Step (Step type) Select from B~E in the drawing below.

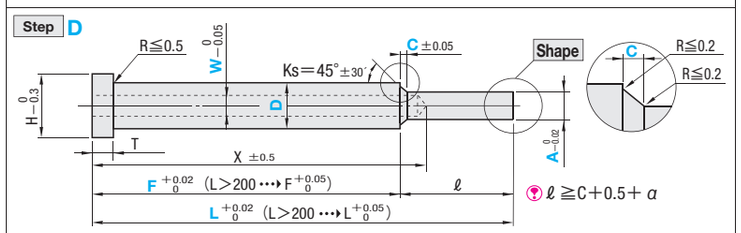
Step B



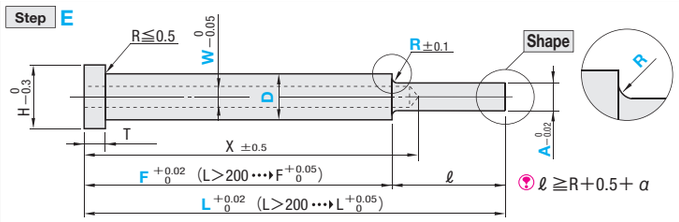
Step C



Step D



Step E

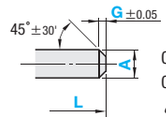


Shape (Tip shape)

(Not processed)

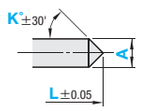
Designation of the shape is unnecessary when tip processing is not required.
α=0

C (C chamfered)



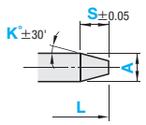
0.1≦G<A/2
0.1mm increments
α=G

G (Cone)



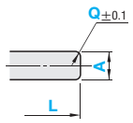
0<K≦60
1° increments
α=A/(2tanK)

T (Tapered)



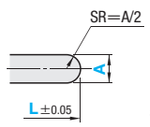
0.1≦S<A/(2tanK)
0.1mm increments
0<K≦45
1° increments
α=S

R (R chamfered)



0.2≦Q<A/2
0.1mm increments
α=Q

B (Spherical processed)



α=A/2

Alterations	Code	Spec.	1Code
KC $^{0}_{-0.1}$	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC $^{0}_{-0.1}$	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC $^{0}_{-0.1}$	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC $^{0}_{-0.1}$	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC $^{0}_{-0.1}$	DKC	Three flats cutting D/2≦DKC<H/2	
AG° ±0.5 0° KGC $^{0}_{-0.1}$	KGC	Two flats (angled) cutting D/2≦KGC<H/2 AG=1° increments 0<AG<360	
120° 120° 120° KTC $^{0}_{-0.1}$	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
H HC $^{0}_{-0.3}$	HC	HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC $^{0}_{-0.02}$	HCC	HCC=0.1mm increments D+1≦HCC<H−0.3	

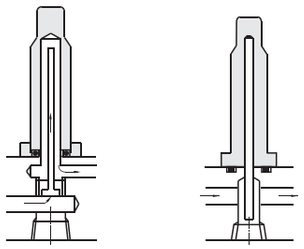
Key flat cutting 0.1mm increments

Alterations	Code	Spec.	1Code
RR	RR	Changes R (normally 0.2 or less) to R0.3~0.5 (Improves strength) Designation method RR Available for Step B・C・D D−A≧1.0 Step When D, C≧0.5	
H h W t T	ZPC	O-ring groove machining (ORP refer to P.1137) Designation method: Code O-ring(ORP) ZPC 3 H−h≧2 T≧4 No.≧W Combination with other than RR not available.	Quotation

No.	h	t
3	6	1.4
4	7	
5	8	
6	9	
7	10	
8	11	
9	12	
10	13	
11	15	1.8
12	16	
14	18	

Price Quotation

Example



Please use cooling pipes or heat exchange pipes so as to increase cooling efficiency for the tip section of center pins.

Order

Part Number	L	F	A	C(R)	Tip size (K・S・G・Q)	W
RDCPNS−5EG8	140.00	F110.00	A6.50	R0.5	K30	W4.0

Days to Ship Quotation

STRAIGHT CORE PINS

STRAIGHT CORE PINS

Type	Group	Head Thickness (T)	T: Shaft diameter (D or P)	T: Length (L)	M: SKH51 equivalent	M: SKD61 equivalent	M: NAK80	M: DH2F	M: STAVAX ESR® (Prehardened steel)	M: STAVAX ESR® (Hardening steel)	M: PROVA400 (Prehardened steel)	M: PROVA400 (Hardening steel)	M: SUS440C	M: MAS1C	Page
L dimension designation	Extra Precision	4mm (T4)	0 / −0.003	+0.01 / 0	CPM−L	—	—	—	—	—	—	—	—	—	P.397
	Precision	4mm (T4)	0 / −0.005	+0.01 / 0	CPV−L	CPZ−L	—	—	—	—	—	—	—	—	P.397
	Standard	4mm (T4)	0 / −0.005	+0.02 / 0	CPH−L	CPP−L	CPK−L	CPG−L	CPE−L	CPEH−L	CPR−L	CPRH−L	CPW−L	CPY−L	SKD61 equivalent・SKD61 equivalent P.397 (STAVAX・PROVA400) P.405 (others) P.403
		4mm (T4)	−0.01 / −0.02		CPX−L	CPD−L	CPN−L	CPF−L	CPT−L	CPTH−L	CPQ−L	CPQH−L	—	CPA−L	
		6・8mm (JIS)	−0.01 / −0.02		—	CPDJ−L	—	—	—	—	—	—	—	—	P.425
L・P dimension designation	Extra Precision	4mm (T4)	0 / −0.003	+0.01 / 0	CPMB−L	—	—	—	—	—	—	—	—	—	P.399
	Precision	4mm (T4)	0 / −0.005	+0.01 / 0	CPVB−L	CPZB−L	—	—	—	—	—	—	—	—	P.399
	Standard	4mm (T4)	0 / −0.005	+0.02 / 0	CPHB−L	CPPB−L	CPKB−L	CPGB−L	CPEB−L	CPEHB−L	CPRB−L	CPRHB−L	CPWB−L	CPYB−L	SKD61 equivalent・SKD61 equivalent P.399 (STAVAX・PROVA400) P.405 (others) P.403
		4mm (T4)	−0.01 / −0.02		CPXB−L	CPDB−L	CPNB−L	CPFB−L	CPTB−L	CPTHB−L	CPQB−L	CPQHB−L	—	CPAB−L	
		6・8mm (JIS)	−0.01 / −0.02		—	CPDJB−L	—	—	—	—	—	—	—	—	P.425
P designation・L dimension selection	—	4mm (T4)	0 / −0.005	+5 / +0.1	CPH−G	CPP−G	—	—	—	—	—	—	—	—	P.401
		4mm (T4)	−0.01 / −0.02		CPX−G	CPD−G	—	—	—	—	—	—	—	—	P.401
Tip process・L dimension designation	Extra Precision	4mm (T4)	0 / −0.003	0 * / −0.01	CPML□	—	—	—	—	—	—	—	—	—	P.423
	Precision	4mm (T4)	0 / −0.005	0 * / −0.01	CPVL□	CPZL□	—	—	—	—	—	—	—	—	P.421
	Standard	4mm (T4)	0 / −0.005	0 * / −0.02	CPHL□	CPPL□	CPKL□	CPGL□	—	—	—	—	CPWL□	CPYL□	P.415
		4mm (T4)	−0.01 / −0.02		CPXL□	CPDL□	CPNL□	CPFL□	—	—	—	—	—	CPAL□	
		6・8mm (JIS)	−0.01 / −0.02		—	CPDJL□	—	—	—	—	—	—	—	—	P.427
Tip process・P・L dimension designation	Extra Precision	4mm (T4)	0 / −0.003	0 * / −0.01	CPMBL□	—	—	—	—	—	—	—	—	—	P.423
	Precision	4mm (T4)	0 / −0.005	0 * / −0.01	CPVBL□	CPZBL□	—	—	—	—	—	—	—	—	P.421
	Standard	4mm (T4)	0 / −0.005	0 * / −0.02	CPHBL□	CPPBL□	CPKBL□	CPGBL□	—	—	—	—	CPWBL□	CPYBL□	P.417
		4mm (T4)	−0.01 / −0.02		CPXBL□	CPDBL□	CPNBL□	CPFBL□	—	—	—	—	—	CPABL□	
		6・8mm (JIS)	−0.01 / −0.02		—	CPDJBL□	—	—	—	—	—	—	—	—	P.427
Free designation type	Standard	—	0 / −0.005	0 * / −0.02	F−CPH□	F−CPD□	F−CPN□	F−CPF□	—	—	—	—	—	—	P.429
			−0.01 / −0.02		F−CPHE□	F−CPDE□	F−CPNE□	F−CPFE□	—	—	—	—	—	—	P.429
Tip process・L dimension designation	Standard	4mm (T4)	0 / −0.005	+0.05 * / 0	CPH□□ CPHB□□	CPP□□ CPPB□□	—	—	—	—	—	—	—	—	P.419
		4mm (T4)	−0.01 / −0.02		CPX□□ CPXB□□	CPD□□ CPDB□□	—	—	—	—	—	—	—	—	P.419
Core Pin Blanks	—	4mm (T4)	0 / −0.005	+5 / +0.1	CPH	—	—	—	—	—	—	—	—	—	P.437
		4mm (T4)	−0.01 / −0.02		—	CPD	—	—	—	—	—	—	—	—	P.437

*Tolerance of L dimension varies depending on the shape.

Use these data for reference only as they are dependent on specific heat treatment and usage conditions.

Stainless Steel STAVAX ESR® is registered trademarks of UDDEHOLM TOOL CO. PROVA400 is equivalent to SUS420J2 upgrading steel from Fujikoshi. CO.

Material Characteristics of Straight Core Pins

M		SKH51(M2)(1.3343) High speed tool steel	SKD61 (H13)(1.2344) Thermal die steel	NAK80 Precipitation type Prehardened steel	DH2F SKD61 type Prehardened steel	STAVAX ESR® Prehardened steel	STAVAX ESR® Hardening steel	PROVA400 Prehardened steel	PROVA400 Hardening steel	SUS440C Martensite type Stainless steel	MAS1C Maraging steel
H	HRC	58～60	48～52	37～43	38～42	29～35	50～54	29～35	50～54	56～60	50～54
Machining characteristics	Wear resistance	5	3.5	2	3	3	4	3	4	4	3.5
	Ability to be mirror-finished	4	4	5	3	5	5	5	5	4	5
	Toughness	3	5	1	4	5	5	5	5	3	5
	Corrosion resistance	3	3	3	3	5	5	5	5	5	3
Physical characteristics	Density [g/cm³]	8.2	7.75	7.8	7.75	7.8	7.8	7.8	7.8	7.78	8.02
	Modulus of longitudinal elasticity [kgf/mm²]	22300	21000	20500	21000	21900	20400	21900	21900	20400	18600
	Coefficient of thermal expansion [×10⁻⁶/℃]	10.1	10.8	12.5	10.8	11.0	11.0	10.9	10.9	10.2	10.1
	Thermal conductivity [cal/cm・sec・℃]	0.051	0.061	0.1	0.061	0.055	0.055	0.058	0.058	0.058	—
Mechanical characteristics	Tensile strength [kgf/mm²]	235	135	128	135	115	196	115	200	200	215
	Charpy impact value [kgf・m/cm²]	2	6	2.2	4	—	—	—	—	1.5	5

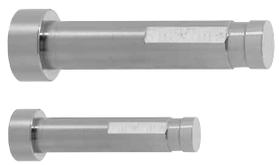
Machining characteristics Poor 1 ←→ 5 Excellent Conversion formula 1kgf/mm²=9.81N/mm² 1cal/cm・sec・℃=418.6W/M.K 1kgf・m/cm²=9.81J/cm²

Following material will be discontinued when stocked materials are finished. PROVA400(Prehardened steel), PROVA400(Hardening steel), and MAS1C

GAS RELEASE STRAIGHT CORE PINS

・Cutting facets

・With gas vent



Type	Group	T: Shaft diameter (D or P)	T: Length (L)	M: SKH51 equivalent	M: SKD61 equivalent	M: NAK80	M: DH2F	Page
L dimension designation	Precision	0 / −0.005	+0.01 / 0	GW□−CPV−L	—	—	—	P.407
	Standard	0 / −0.005	+0.02 / 0	GW□−CPH−L	—	—	—	
		−0.01 / −0.02		GW□−CPX−L	—	—	—	
L・P dimension designation	Precision	0 / −0.005	+0.01 / 0	GW□−CPVB−L	—	—	—	P.407
	Standard	0 / −0.005	+0.02 / 0	GW□−CPHB−L	—	—	—	
		−0.01 / −0.02		GW□−CPXB−L	—	—	—	
L dimension designation	Extra Precision	0 / −0.003	+0.01 / 0	GV−CPM−L	—	—	—	P.413
	Precision	0 / −0.005	+0.01 / 0	GV−CPV−L	GV−CPZ−L	—	—	P.411
	Standard	0 / −0.005	+0.02 / 0	GV−CPH−L	GV−CPP−L	GV−CPK−L	GV−CPG−L	P.409
		−0.01 / −0.02		GV−CPX−L	GV−CPD−L	GV−CPN−L	GV−CPF−L	
L・P dimension designation	Extra Precision	0 / −0.003	+0.01 / 0	GV−CPMB−L	—	—	—	P.413
	Precision	0 / −0.005	+0.01 / 0	GV−CPVB−L	GV−CPZB−L	—	—	P.411
	Standard	0 / −0.005	+0.02 / 0	GV−CPHB−L	GV−CPPB−L	GV−CPKB−L	GV−CPGB−L	P.409
		−0.01 / −0.02		GV−CPXB−L	GV−CPDB−L	GV−CPNB−L	GV−CPFB−L	

STRAIGHT CORE PINS WITH ENGRAVING

Type	T: Shaft diameter (D or P)	T: Length (L)	M SKH51 equivalent: Concave character	Page	Concave character (Sequential No.)	Page	Convex character	Page
L dimension designation	0 / −0.005	+0.02 / 0	CPH□M	P.431	CPH1MR	P.433	CPH□T	P.435
	−0.01 / −0.02		CPX□M		CPX1MR		CPX□T	
L・P dimension designation	0 / −0.005		CPHB□M		CPHB1MR		CPHB□T	
	−0.01 / −0.02		CPXB□M		CPXB1MR		CPXB□T	

■ Selection Method for Straight Core Pins with Tip Process

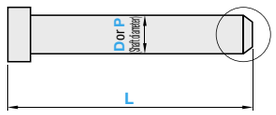
Codes for Core Pins with Tip Process

Shaft diameter (D) selection type	CP□ L□ / CPD JL□ (JIS Head Standard −0.01/−0.02 SKD61 equivalent only)
Shaft diameter (P) designation type	CP□ BL□ / CPD JBL□ (JIS Head Standard −0.01/−0.02 SKD61 equivalent only)

Material・tolerance codes

Group		Extra Precision	Precision	Standard	
T	Shaft diameter (D or P)	0 / −0.003	0 / −0.005	0 / −0.005	−0.01 / −0.02
	Length (L)*	+0.01 / 0	+0.01 / 0	+0.02 / 0	
M	SKH51 equivalent	M	V	H	X
	SKD61 equivalent	—	Z	P	D
	NAK80	—	—	K	N
	DH2F	—	—	G	F
	SUS440C	—	—	W	—
	MAS1C	—	—	Y	A

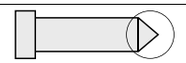
*The tolerance values for L dimension are representative ones. The tolerance range varies depending on the shape selected. For details, refer to the Catalog page for each product.



Tip process code

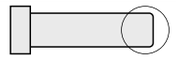
Shape Tip process code P.415～P.430

C (C chamfered)



G (Cone)

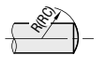
T (Tapered)



R (R chamfered)

B (Spherical processed)

*The tip shape becomes as shown in the diagram on the right, through R designation for Extra precision/precision and alteration (RC) for standard.



ALTERATION GUIDE FOR STRAIGHT CORE PINS

Non JIS material definition is listed on P.1351 - 1352

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Head alteration	Common	**Key flat cutting**	KC	Single flat cutting Range of designation: (D or P)/2≦KC＜H/2 D or P≧0.6	Quotation
		Key flat cutting	WKC	Two parallel flats cutting Range of designation: (D or P)/2≦WKC＜H/2 D or P≧0.6	
		Key flat cutting	KAC KBC	Varied width parallel flats cutting Range of designation: (D or P)/2≦KAC KAC＜KBC＜H/2 D or P≧0.6	
		Key flat cutting	RKC	Right angled two falts cutting Range of designation: (D or P)/2≦RKC＜H/2 D or P≧0.6	
		Key flat cutting	DKC	Three flats cutting Range of designation: (D or P)/2≦DKC＜H/2 D or P≧0.6	
		Key flat cutting	SKC	Four flats cutting Range of designation: (D or P)/2≦SKC＜H/2 D or P≧0.6	
		Key flat cutting (angled)	KGC	Adds a flat at the reference plane (0°), and another at the designated angle from there. Range of designation: (D or P)/2≦KGC＜H/2 D or P≧0.6 AG=1° increments 0＜AG＜360	
		Key flat cutting (angled)	KTC	Three flats cutting at 120° Range of designation: (D or P)/2≦KTC＜H/2, D or P≧0.6	
	Straight Core Pins with engraving Refer to page P.431	**Key flat cutting (angled)**	AKC	Changes the flat position (standard: 0°) clockwise in 1° increments. Range of designation: 0＜AKC＜360 Unit of designation: 1° increments Designation method: θ =45° ···· AKC45 ◆ No need to designate AKC0	
		Key flat cutting (angled)	AWC	Adds two flats at the standard (0°) position, or at the designated angle (clockwise in 1° increments from the standard position). Range of designation: 0≦AWC＜360 Unit of designation: 1° increments Designation method: θ =0° ···· AWC0, θ =60° ···· AWC60	
Allover length alteration	Extra Precision Core Pins	**L dimension tolerance alteration**	LKC	L dimension tolerance $^{+0.01}_{0}$ can be changed to $^{+0.005}_{0}$. Unit of designation: L designation in 0.005mm increments possible ◆ Available when 1.5≦(D or P)≦5 Designation method: LKC Straight Core Pins with Tip Process ··· ◆ Available when Shape C・T・R	

When the key flat size is (shaft diameter/2)

Unit of designation
Shaft diameter selection type (D/2)
·····0.05mm increments possible
Shaft diameter designation (0.01mm increments) type (P/2)
·····0.005mm increments possible
Shaft diameter designation (0.005mm increments) type (P/2)
·····0.0025mm increments possible
Shaft diameter designation (0.001mm increments) type (P/2)
·····0.0005mm increments possible

Designation method
- KC2.61 (When P5.22)
- WKC3.0875 (When P6.175)
- RKC2.7415 (When P5.483)
- DKC3 (When D6)
- SKC2.5 (When D5)
- KGC1.5—AG125 (When D3)
- KTC3.085 (When P6.17)

To designate an arbitrary flat size

Unit of designation: 0.1mm increments

Designation method
- KC1.4
- WKC2.3
- KAC1.4—KBC1.6
- RKC1.4
- DKC1.75
- SKC5.8
- KGC1.4—G85
- KTC2.3

◆ Note that designating H/2—0.15 or more for key flat cutting alteration will create hardly any flat on the head.

Items	Applicable Products	Alterations	Codes	Specifications	1Code
Head alteration	Common	**Head diameter change**	HC	Reduces the head diameter. Range of designation: D or P≦HC＜H, D or P≧0.3 Unit of designation: 0.1mm increments Designation method: HC6.5 ◆ In relation to the head diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
		Head diameter change (precision)	HCC	Reduces the head diameter. (precision) Range of designation: (D or P)+0.5≦HCC＜H—0.3 D or P≧0.6 Unit of designation: 0.1mm increments Designation method: HCC6.1 ◆ D or P≧0.6	
		Head thickness change	TC	Reduces the head thickness. Range of designation: Right table Unit of designation: 0.1mm increments Designation method: TC3.5 ◆ Dimensions L and F remain unchanged.	
		Relief under the head	TRN	Adds a relief under the head, making plate chamfering unnecessary. D or P≧0.6 Designation method: TRN ◆ D or P≧0.6	
		Numbering on the head	NHC	Numbering on the head Electrolytic marking of ID code on the head(in 5 point, Round Gothic type). Available characters: Numerals: 0～9; Alphabets: A～Z Range of designation: 1 character when 2≦H≦4.9 1 or 2 characters when 5≦H≦6.9 (Only the first character may be an alphabet.) Up to 3 characters when 7≦H (Only the first character may be an alphabet.) ◆ Number-marking may not be possible depending on the specified characters when the space indicated in the table below cannot be retained. Unit: mm Designation method: NHC—6, NHC—23, NHC—A90 ⊗ Combination with SKC not available. ◆ Available when head diameter H≧2 ⊗ NHC is not available when numbering space in head exceeds the maximum of 1.8 long x 1.8 wide x characters.	Quotation
		Numbering on the head	NHN	Automatic sequential numbering on the head Adds a sequential number on the head of each core pin when two or more pieces of identical size are ordered. Available characters: Same as NHC (see above) Range of designation: Same as NHC (see above) Designation method: When 3 pieces are ordered with NHN-1, a sequential number starting from 1 is added on the head of each piece. When 10 pieces are ordered with NHN-A15: A sequential number starting from A15 (through A24) is added on the head of each piece. ◆ Only available when two or more pieces of an identical size are ordered. ◆ Available when head diameter H≧2 ⊗ Combination with SKC not available. ⊗ NHC is not available when numbering space in head exceeds the maximum of 1.8 long x 1.8 wide x characters.	
Tip shape alteration	Core Pins with tip process Shape C	**C chamfering alteration**	CKC	The tip C chamfering tolerance ±0.05 can be changed to ±0.02. Range of designation: 0.1＜CKC≦{(D or P)—0.2}/2, L—CKC≧9.5 Unit of designation: 0.05mm increments Designation method: CKC0.95 ◆ Available for Standard type	
	Core Pins with tip process Shape R	**R chamfering alteration**	RTC	The tip R chamfering tolerance ±0.1 can be changed to ±0.05. Range of designation: 0.2＜RTC≦{(D or P)—0.2}/2, L—RTC≧10 Unit of designation: 0.1mm increments Designation method: RTC0.6 ◆ Available for Standard type	
	Core Pins with tip process Shape B	**SR extension**	RC	Allows designation of the radius of spherical shape processing (SR) at a value larger than a half of the shaft diameter. Range of designation: (D or P)/2＜4 ····· (D or P)/2≦RC≦1.5×(D or P) (D or P)/2≧4 ····· (D or P)/2≦RC≦3 ×(D or P) and RC≦32 Unit of designation: 0.1mm increments Designation method: RC0.6 ◆ Available for Standard type	
Shaft alteration	Common	**Gas vent machining**	GVC	Gas vent machining ◆ Available when D or P≧2 Range of designation: 2+ℓ≦GS≦10, GS+2≦GB≦30 Unit of designation: 1mm increments Designation method: GVC—GS3—GB20 ◆ L—GB≧10 ℓ varies depending on the shape. Refer to the catalog page of each product.	

Head diameter change

D or P	TC
less than 0.8	2.0≦TC＜4.0
0.8 or more	1.5≦TC＜4.0 (head thickness JIS T/2≦TC＜T)

	Character Height	Character Width
1 character	2.3	2.7
2 characters	2.3	5.0
3 characters	2.3	7.3

D or P	t
2.00～ 4.99	0.1
5.00～ 9.99	0.2
10.00～20.00	0.3

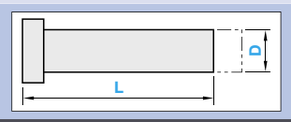
◆ When you change the engraving depth of straight core pins with engraving, refer to **EC** code on P.434.

Dies Steel
SKD61 equivalent

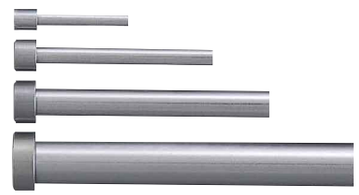
High Speed Steel
SKH51 equivalent

STRAIGHT CORE PINS

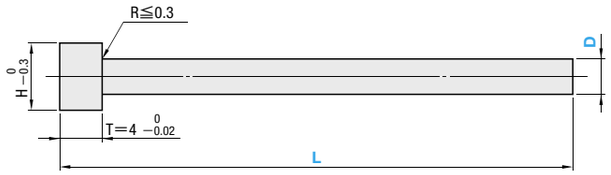
—SHAFT DIAMETER (D) SELECTION • L DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352



RoHS



Type	M	H	Group	T D	T L
CPD—L	SKD61 equivalent	48～52HRC	Standard	−0.01 −0.02	+0.02 0
CPX—L	SKH51 equivalent	58～60HRC			
CPP—L	SKD61 equivalent	48～52HRC		0 −0.005	
CPH—L	SKH51 equivalent	58～60HRC			
CPZ—L	SKD61 equivalent	48～52HRC	Precision	0 −0.005	+0.01 0
CPV—L	SKH51 equivalent	58～60HRC			
CPM—L	SKH51 equivalent	58～60HRC	Extra Precision	0 −0.003	+0.01 0

■ Standard Precision Type

H	Part Number Type	D	L 0.01mm increments
2	CPX—L CPH—L CPV—L	0.3	7.00～ 60.00
		0.4	
		0.5	
3	CPD—L CPX—L CPP—L CPH—L CPZ—L CPV—L	0.6	7.00～100.00
		0.7	
		0.8	
		0.9	
		1	
		1.1	
		1.2	
		1.3	
		1.4	
		1.5	
4		1.6	
		1.7	
		1.8	
		1.9	
		2	
5		2.5	
6		3	
7		3.5	7.00～120.00
		4	
		4.5	
8		5	7.00～120.00
9		5.5	CPH—L, CPV—L only 7.00～150.00
		6	
10		6.5	8.00～120.00
		7	
11		8	
15		10	CPH—L, CPV—L only 8.00～150.00
18		13	
21		16	
25		20	

■ Extra Precision Type

H	Part Number Type	D	L 0.01mm increments
2	CPM—L	0.5	7.00～ 60.00
3		0.6	7.00～100.00
		0.7	
		0.8	
		0.9	
		1	
		1.1	
		1.2	
		1.3	
		1.4	
		1.5	
4		1.6	
		1.7	
		1.8	
		1.9	
		2	
5		2.5	
6		3	
7		3.5	
		4	
8		4.5	
		5	
9		5.5	
		6	
10		6.5	8.00～100.00
		7	
11		8	
15		10	
18		13	

Order

Part Number	—	L
CPD—L1.6	—	72.35

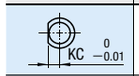
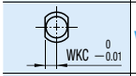
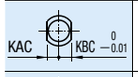
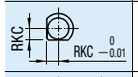
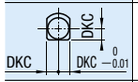
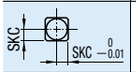
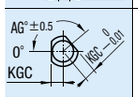
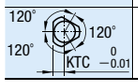
Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	—	L	—	(KC・WKC…etc.)
CPD—L1.6	—	72.35	—	HC3.0
CPM—L3	—	8.00	—	TC2.0

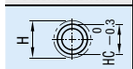
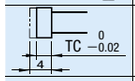
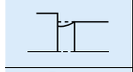
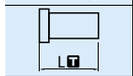
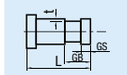
Alteration details P.395

Alterations	Code	Spec.	1Code
	KC	Single flat cutting D/2≦KC<H/2 D≧0.6	Quotation
	WKC	Two flats cutting D/2≦WKC<H/2 D≧0.6	
	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only D≧0.6 KAC<KBC<H/2	
	RKC	Two flats (right angled) cutting D/2≦RKC<H/2 D≧0.6	
	DKC	Three flats cutting D/2≦DKC<H/2 D≧0.6	
	SKC	Four flats cutting D/2≦SKC<H/2 D≧0.6	
	KGC	Two flats (angled) cutting D/2≦KGC<H/2 D≧0.6 0<AG<360 AG=1° increments	
	KTC	Three flats cutting at 120° D/2≦KTC<H/2 D≧0.6	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
	HC	Head diameter change D≧0.3 HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	HCC	Head diameter change (precision) HCC=0.1mm increments D+0.5≦HCC<H−0.3, D≧0.6	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4−TC≦Lmax.−L D: 0.3≦D<0.8 TC: 2.0≦TC<4.0; 0.8≦D≦20 TC: 1.5≦TC<4.0	Quotation
	TRN	Relief under the head (No need for plate chamfering) D≧0.6	
	NHC	Numbering on the head How to order P.396 Available when H≧2 Combination with SKC not available.	
	LKC	L dimension tolerance alteration L +0.01…,+0.005 0 (L designation in 0.005mm increments possible) Available when 1.5≦D≦5 Available when CPM—L	
	GVC	Gas vent machining GS・GB=1mm increments 2≦GS≦10 GS+2≦GB≦30 Available when D≧2 L−GB≧10 How to order P.396	

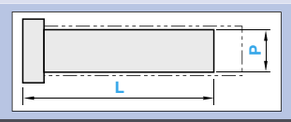
Similar products with GVC alteration "Gas release core pins" P.407～410

Dies Steel
SKD61 equivalent

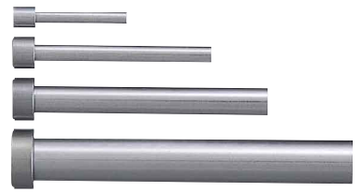
High Speed Steel
SKH51 equivalent

STRAIGHT CORE PINS

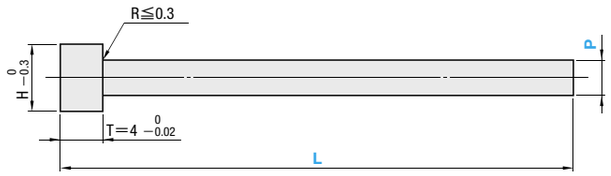
—SHAFT DIAMETER (P) DESIGNATION • L DIMENSION DESIGNATION TYPE—



Non JIS material definition is listed on P.1351 - 1352



RoHS



Type	M	H	Group	T P	T L
CPDB—L	SKD61 equivalent	48～52HRC	Standard	−0.01 −0.02	+0.02 0
CPXB—L	SKH51 equivalent	58～60HRC			
CPPB—L	SKD61 equivalent	48～52HRC		0 −0.005	
CPHB—L	SKH51 equivalent	58～60HRC			
CPZB—L	SKD61 equivalent	48～52HRC	Precision	0 −0.005	+0.01 0
CPVB—L	SKH51 equivalent	58～60HRC			
CPMB—L	SKH51 equivalent	58～60HRC	Extra Precision	0 −0.003	+0.01 0

■ Standard Precision Type

H	Part Number Type	Part Number No.	L 0.01mm increments	P Standard 0.01mm increments	P Precision 0.005mm increments
2	CPXB—L CPHB—L CPVB—L	0.5	7.00～ 60.00	0.30～ 0.49	0.300～ 0.495
3		0.6	7.00～100.00	0.50～ 0.59	0.500～ 0.595
		1		0.60～ 0.99	0.600～ 0.995
		1.5		1.00～ 1.49	1.000～ 1.495
4		2		1.50～ 1.99	1.500～ 1.995
5		2.5		2.00～ 2.49	2.000～ 2.495
6		3		2.50～ 2.99	2.500～ 2.995
7	CPDB—L CPXB—L CPPB—L CPHB—L CPZB—L CPVB—L	3.5	7.00～120.00	3.00～ 3.49	3.000～ 3.495
		4		3.50～ 3.99	3.500～ 3.995
8		4.5		4.00～ 4.49	4.000～ 4.495
		5	7.00～120.00	4.50～ 4.99	4.500～ 4.995
9		5.5	CPHB—L CPVB—L only 7.00～150.00	5.00～ 5.49	5.000～ 5.495
		6		5.50～ 5.99	5.500～ 5.995
10		6.5	8.00～120.00	6.00～ 6.49	6.000～ 6.495
		7		6.50～ 6.99	6.500～ 6.995
11		8		7.00～ 7.99	7.000～ 7.995
15		10	CPHB—L CPVB—L only 8.00～150.00	8.00～ 9.99	8.000～ 9.995
18		13		10.00～12.99	10.000～12.995
21		16		13.00～15.99	13.000～15.995
25		20		16.00～19.99	16.000～19.995

■ Extra Precision Type

H	Part Number Type	Part Number No.	L 0.01mm increments	P 0.001mm increments
2	CPMB—L	0.5	7.00～ 60.00	0.300～ 0.499
3		0.6	7.00～100.00	0.500～ 0.599
		1		0.600～ 0.999
		1.5		1.000～ 1.499
4		2		1.500～ 1.999
5		2.5		2.000～ 2.499
6		3		2.500～ 2.999
7		3.5		3.000～ 3.499
		4		3.500～ 3.999
8		4.5		4.000～ 4.499
		5		4.500～ 4.999
9		5.5		5.000～ 5.499
		6		5.500～ 5.999
10		6.5	8.00～100.00	6.000～ 6.499
		7		6.500～ 6.999
11		8		7.000～ 7.999
15		10		8.000～ 9.999
18		13		10.000～12.999

Order

Part Number	—	L	—	P
CPPB—L3	—	35.72	—	P2.77

Days to Ship **Quotation**

Price **Quotation**

Alterations

Part Number	—	L	—	P	—	(KC・WKC…etc.)
CPPB—L3	—	35.72	—	P2.70	—	KC1.5
CPMB—L3	—	8.00	—	P2.990	—	TC3.0

Alteration details P.395

Alterations	Code	Spec.	1Code
KC 0 −0.01	KC	Single flat cutting P/2≦KC<H/2 P≧0.6	Quotation
WKC 0 −0.01	WKC	Two flats cutting P/2≦WKC<H/2 P≧0.6	
KAC KBC 0 −0.01	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only P≧0.6 KAC<KBC<H/2	
SKC SKC 0 −0.01	RKC	Two flats (right angled) cutting P/2≦RKC<H/2 P≧0.6	
DKC DKC 0 −0.01	DKC	Three flats cutting P/2≦DKC<H/2 P≧0.6	
SKC SKC 0 −0.01	SKC	Four flats cutting P/2≦SKC<H/2 P≧0.6	
AG° ±0.5 0° KGC 0 −0.01	KGC	Two flats (angled) cutting P/2≦KGC<H/2 P≧0.6 0<AG<360 AG=1° increments	
120° 120° KTC 0 −0.01	KTC	Three flats cutting at 120° P/2≦KTC<H/2, P≧0.6	

About Designation Unit for Key Flat Cutting

(1)To align the key flat with the shaft diameter
Unit of designation
0.005mm increments possible
Precision
0.0025mm increments possible
Extra precision type
0.0005mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	Head diameter change P≦HC<H HC=0.1mm increments P≧0.3 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC 0 −0.02	HCC	Head diameter change (precision) HCC=0.1mm increments P+0.5≦HCC<H−0.3, P≧0.6	
TC 0 −0.02 4	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4−TC≦Lmax.−L P: 0.30≦P<0.80 / 0.80≦P≦19.995; TC: 2.0≦TC<4.0 / 1.5≦TC<4.0	
	TRN	Relief under the head (No need for plate chamfering) Available when P≧0.6	
A15 8	NHC	Numbering on the head How to order P.396 Available when H≧2 Combination with SKC not available.	
L T	LKC	L dimension tolerance alteration L +0.01 0 ..., +0.005 0 (L designation in 0.005mm increments possible) Available when 1.5≦P≦5 Available when CPMB—L	
GS GB L	GVC	Gas vent machining GS・GB=1mm increments Available when P≧2 2≦GS≦10 GS+2≦GB≦30 L−GB≧10 How to order P.396	

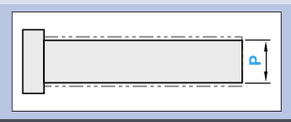
Similar products with GVC alteration "Gas release core pins" P.407～410

Dies Steel
SKD61 equivalent

High Speed Steel
SKH51 equivalent

STRAIGHT CORE PINS

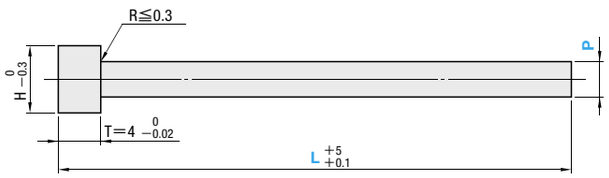
—SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) • L DIMENSION SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

Type	M	H	T P
CPD—G	SKD61 equivalent	48～52HRC	−0.01 −0.02
CPX—G	SKH51 equivalent	58～60HRC	
CPP—G	SKD61 equivalent	48～52HRC	0 −0.005
CPH—G	SKH51 equivalent	58～60HRC	



H	Part Number Type	Part Number No.	L	P 0.01mm increments
2	CPX—G CPH—G	0.5	60	0.30～ 0.49
3		0.6		0.50～ 0.59
	CPD—G CPX—G CPP—G CPH—G	1	60 100	0.60～ 0.99
		1.5		1.00～ 1.49
4		2		1.50～ 1.99
5		2.5		2.00～ 2.49
6		3		2.50～ 2.99
7		3.5		3.00～ 3.49
		4		3.50～ 3.99
8		4.5		4.00～ 4.49
		5		4.50～ 4.99
9		5.5		5.00～ 5.49
		6		5.50～ 5.99
10		6.5		6.00～ 6.49
		7		6.50～ 6.99
11		8		7.00～ 7.99
15		10		8.00～ 9.99
18		13		10.00～12.99
21		16		13.00～15.99
25		20		16.00～19.99

Order

Part Number	—	L	—	P
CPD—G3	—	60	—	P2.77

Days to Ship: Quotation

Price: Quotation

Alterations

Part Number	—	L	—	P	—	(KC・WKC…etc.)
CPD—G3	—	60	—	P2.70	—	KC1.5

Alteration details P.395

Alterations	Code	Spec.	1Code
KC 0 −0.01	KC	Single flat cutting P/2≦KC<H/2 P≧0.6	Quotation
WKC 0 −0.01	WKC	Two flats cutting P/2≦WKC<H/2 P≧0.6	
KAC KBC 0 −0.01	KAC KBC	Varied width parallel flats cutting P/2≦KAC<H/2 KBC=0.1mm increments only P≧0.6 KAC<KBC<H/2	
RKC 0 −0.01	RKC	Two flats (right angled) cutting P/2≦RKC<H/2 P≧0.6	
DKC DKC 0 −0.01	DKC	Three flats cutting P/2≦DKC<H/2 P≧0.6	
SKC 0 −0.01	SKC	Four flats cutting P/2≦SKC<H/2 P≧0.6	
AG° ±0.5 0° KGC 0 −0.01	KGC	Two flats (angled) cutting P/2≦KGC<H/2 P≧0.6, 0<AG<360 AG=1° increments	
120° 120° 120° KTC 0 −0.01	KTC	Three flats cutting at 120° P/2≦KTC<H/2, P≧0.6	

(1)To align the key flat with the shaft diameter
Unit of designation 0.005mm increments possible

(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

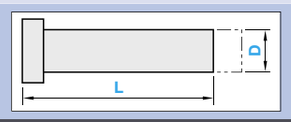
About Designation Unit for Key Flat Cutting

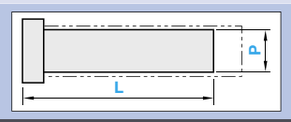
Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	Head diameter change HC=0.1mm increments P≦HC<H, P≧0.3 In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
H HCC 0 −0.02	HCC	Head diameter change (precision) HCC=0.1mm increments P+0.5≦HCC<H−0.3, P≧0.6	
TC 0 −0.02 4	TC	Head thickness change TC=0.1mm increments (Dimension L becomes shorter by 4−TC) 4−TC≦Lmax.−L P: 0.30≦P<0.80 TC: 2.0≦TC<4.0; 0.80≦P≦19.99 TC: 1.5≦TC<4.0	
	TRN	Relief under the head (No need for plate chamfering) Available when P≧0.6	
A15 8	NHC	Numbering on the head How to order P.396 Available when H≧2 Combination with SKC not available.	

NAK80 | DH2F
SUS440C
MAS1C

STRAIGHT CORE PINS

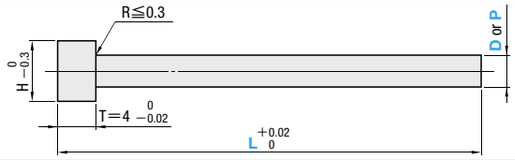
—SHAFT DIAMETER (D) SELECTION／SHAFT DIAMETER (P) DESIGNATION・L DIMENSION DESIGNATION・SHAFT DIAMETER TOLERANCE$^{-0.01}_{-0.02}$ ／$^{0}_{-0.005}$ TYPE—





Non JIS material definition is listed on P.1351 - 1352

RoHS



Type: Shaft diameter (D) selection	Type: Shaft diameter (P) designation	M	H	T: D or P	T: L
CPN—L	CPNB—L	NAK80	37～43HRC	$^{-0.01}_{-0.02}$	$^{+0.02}_{0}$
CPF—L	CPFB—L	DH2F	38～42HRC		
CPA—L	CPAB—L	MAS1C	50～54HRC		
CPK—L	CPKB—L	NAK80	37～43HRC	$^{0}_{-0.005}$	
CPG—L	CPGB—L	DH2F	38～42HRC		
CPY—L	CPYB—L	MAS1C	50～54HRC		
CPW—L	CPWB—L	SUS440C	56～60HRC		

MAS1C will be discontinued when stocked materials are finished.

Price **Quotation**

■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments
3	CPW—L	0.6	7.00～100.00
		0.7	
	CPN—L CPF—L CPA—L (D≦4) CPK—L CPG—L CPY—L (D≦4) CPW—L	0.8	
		0.9	
		1	
		1.1	
		1.2	
		1.3	
		1.4	
		1.5	
4		1.6	
		1.7	
		1.8	
		1.9	
		2	
5		2.5	
6		3	
7		3.5	7.00～120.00
		4	
8		4.5	
		5	
9		5.5	
		6	
10		6.5	8.00～120.00
		7	
11		8	
15		10	
18		13	
21		16	

■Shaft diameter (P) designation type

H	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments
3	CPWB—L	1	7.00～100.00	0.60～ 0.79
				0.80～ 0.99
	CPNB—L CPFB—L CPAB—L (P≦3.99) CPKB—L CPGB—L CPYB—L (P≦3.99) CPWB—L	1.5		1.00～ 1.49
4		2		1.50～ 1.99
5		2.5		2.00～ 2.49
6		3		2.50～ 2.99
7		3.5	7.00～120.00	3.00～ 3.49
		4		3.50～ 3.99
8		4.5		4.00～ 4.49
		5		4.50～ 4.99
9		5.5		5.00～ 5.49
		6		5.50～ 5.99
10		6.5	8.00～120.00	6.00～ 6.49
		7		6.50～ 6.99
11		8		7.00～ 7.99
15		10		8.00～ 9.99
18		13		10.00～12.99
21		16		13.00～15.99

Order

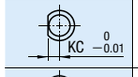
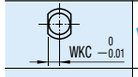
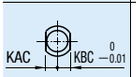
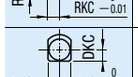
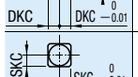
・Shaft diameter (D) selection type: Part Number — L
CPW—L1.6 — 72.35

・Shaft diameter (P) designation type: Part Number — L — P
CPKB—L3 — 35.72 — P2.77

Days to Ship **Quotation**

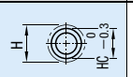
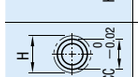
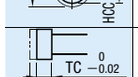
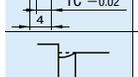
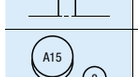
Alterations

Part Number — L — P — (KC・WKC…etc.)
CPG —L1.6 — 72.35 — HC 3.0
CPKB—L3 — 35.72 — P2.77 — TC 2.0

Alterations	Code	Spec.	1Code
	KC	Single flat cutting (D or P)/2≦KC＜H/2	Quotation
	WKC	Two flats cutting (D or P)/2≦WKC＜H/2	
	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
	RKC	Two flats (right angled) cutting (D or P)/2≦RKC＜H/2	
	DKC	Three flats cutting (D or P)/2≦DKC＜H/2	
	SKC	Four flats cutting (D or P)/2≦SKC＜H/2	
	KGC	Two flats (angled) cutting (D or P)/2≦KGC＜H/2 0＜AG＜360 AG=1° increments	
	KTC	Three flats cutting at 120° (D or P)/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation: Shaft diameter (D) selection 0.05mm increments possible; Shaft diameter (P) designation 0.005mm increments
(2)To designate arbitrary key flat dimensions
Unit of designation: 0.1mm

Alteration details P.395

Alterations	Code	Spec.	1Code
	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H CPY—L/CPYB—L:(D or P)+0.5≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)+0.5≦HCC＜H—0.3	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4—TC≦Lmax.—L D or P / TC 0.6≦D or P＜0.8 / 2.0≦TC＜4.0 0.8≦D or P≦16 / 1.5≦TC＜4.0	
	TRN	Relief under the head (No need for plate chamfering)	
	NHC	Numbering on the head How to order P.396 Available when H≧2 Combination with SKC not available.	
	GVC	Gas vent machining GS・GB=1mm increments 2≦GS≦10 GS+2≦GB≦30 Available when D or P≧2 L—GB≧10 How to order P.396	

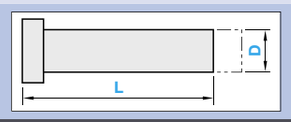
Similar products with GVC alteration "Gas release core pins" P.409

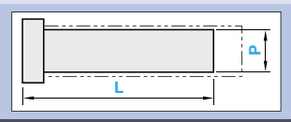
PROVA400

STAVAX ESR®

STRAIGHT CORE PINS

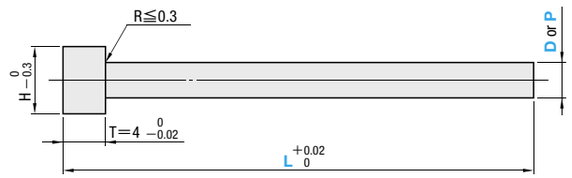
—SHAFT DIAMETER (D) SELECTION／SHAFT DIAMETER (P) DESIGNATION・L DIMENSION DESIGNATION・SHAFT DIAMETER TOLERANCE$^{-0.01}_{-0.02}$／$^{0}_{-0.005}$TYPE—





Non JIS material definition is listed on P.1351 - 1352

RoHS



Type		M	H	T	
Shaft diameter (D) selection	Shaft diameter (P) designation			D or P	L
CPT—L	CPTB—L	STAVAX ESR® Prehardened steel	29～35HRC	−0.01 −0.02	+0.02 0
CPTH—L	CPTHB—L	STAVAX ESR® Hardening Steel	50～54HRC		
CPQ—L	CPQB—L	PROVA400 Prehardened steel	29～35HRC		
CPQH—L	CPQHB—L	PROVA400 Hardening Steel	50～54HRC		
CPE—L	CPEB—L	STAVAX ESR® Prehardened steel	29～35HRC	0 −0.005	
CPEH—L	CPEHB—L	STAVAX ESR® Hardening Steel	50～54HRC		
CPR—L	CPRB—L	PROVA400 Prehardened steel	29～35HRC		
CPRH—L	CPRHB—L	PROVA400 Hardening Steel	50～54HRC		

PROVA400(prehardened steel) and PROVA400(hardening steel) will be discontinued when stocked materials are finished.

Order

・Shaft diameter (D) selection type: Part Number — L
CPT—L5 — 72.35

・Shaft diameter (P) designation type: Part Number — L — P
CPTB—L4 — 52.50 — P3.75

Days to Ship Quotation

Price Quotation

Alterations Part Number — L — P — (KC・WKC…etc.)
CPT—L5 — 72.35 — HC 3.0
CPTB—L4 — 52.50 — P3.75 — TC 2.0

Alteration details P.395

Alterations	Code	Spec.	1Code
KC 0 −0.01	KC	Single flat cutting (D or P)/2≦KC＜H/2	Quotation
WKC 0 −0.01	WKC	Two flats cutting (D or P)/2≦WKC＜H/2	
KAC KBC 0 −0.01	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only KAC＜KBC＜H/2	
RKC RKC 0 −0.01	RKC	Two flats (right angled) cutting (D or P)/2≦RKC＜H/2	
DKC DKC DKC 0 −0.01	DKC	Three flats cutting (D or P)/2≦DKC＜H/2	
SKC SKC 0 −0.01	SKC	Four flats cutting (D or P)/2≦SKC＜H/2	
AG°±0.5 0° KGC KGC 0 −0.01	KGC	Two flats (angled) cutting (D or P)/2≦KGC＜H/2 0＜AG＜360 AG=1° increments	
120° 120° 120° KTC 0 −0.01	KTC	Three flats cutting at 120° (D or P)/2≦KTC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation: Shaft diameter (D) selection 0.05mm increments possible; Shaft diameter (P) designation 0.005mm increments
(2)To designate arbitrary key flat dimensions
Unit of designation: 0.1mm

Alterations	Code	Spec.	1Code
H HC 0 −0.3	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H ⓘ In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
H HCC 0 −0.02	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)+0.5≦HCC＜H−0.3	
TC 0 −0.02 4	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4—TC≦Lmax.—L (D or P 0.8≦D or P≦16: 1.5≦TC＜4.0)	Quotation
	TRN	Relief under the head (No need for plate chamfering)	
A15 8	NHC	Numbering on the head How to order P.396 ⓘ Available when H≧2 ⊗ Combination with SKC not available.	
T GS L GB	GVC	Gas vent machining GS・GB=1mm increments ⓘ 2≦GS≦10 GS+2≦GB≦30 ⓘ Available when D or P≧2 L—GB≧10 How to order P.396	

ⓘ Similar products with GVC alteration "Gas release core pins" P.409

■Characteristics of PROVA400

- Good in corrosion resistance due to marten site stainless steel material.
- Good for mirror finish due to high cleanliness steel with ultimate reduced non steel inclusion.
- Good in abrasion resistance due to heat treated hardness as 53HRC.
- Extremely less in dimensional changes during heat treatment process due to homogenized processing.

■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	U/Price 1～4 CPT—L (STAVAX ESR® Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPTH—L (STAVAX ESR® Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPQ—L (PROVA400 Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPQH—L (PROVA400 Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPE—L (STAVAX ESR® Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPEH—L (STAVAX ESR® Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPR—L (PROVA400 Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPRH—L (PROVA400 Hardening Steel) L 7.00～100.00	L 100.01～120.00
3	PROVA400 CPQ—L CPQH—L CPR—L CPRH—L	0.8	7.00～ 60.00																
		0.9																	
		1	7.00～100.00																
		1.1																	
		1.2																	
		1.3																	
		1.4																	
		1.5																	
4		1.6	7.00～120.00																
		1.7																	
		1.8																	
		1.9																	
		2																	
5		2.5								Quotation									
6	PROVA400 CPQ—L CPQH—L CPR—L CPRH—L	3	7.00～120.00																
7		3.5																	
		4																	
8		4.5																	
		5																	
9		5.5																	
		6																	
10	STAVAX CPT—L CPTH—L CPE—L CPEH—L	6.5	8.00～120.00																
		7																	
11		8																	
15		10																	
18		13																	
21		16																	

■Shaft diameter (P) designation type

H	Part Number Type	No.	L 0.01mm increments	P 0.01mm increments	U/Price 1～4 CPTB—L (STAVAX ESR® Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPTHB—L (STAVAX ESR® Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPQB—L (PROVA400 Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPQHB—L (PROVA400 Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPEB—L (STAVAX ESR® Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPEHB—L (STAVAX ESR® Hardening Steel) L 7.00～100.00	L 100.01～120.00	CPRB—L (PROVA400 Prehardened steel) L 7.00～100.00	L 100.01～120.00	CPRHB—L (PROVA400 Hardening Steel) L 7.00～100.00	L 100.01～120.00
3	PROVA400 CPQB—L CPQHB—L CPRB—L CPRHB—L	1	7.00～ 60.00	0.80～ 0.99																
		1.5	7.00～100.00	1.00～ 1.49																
4		2		1.50～ 1.99																
5		2.5	7.00～120.00	2.00～ 2.49																
6		3		2.50～ 2.99																
7	PROVA400 CPQB—L CPQHB—L CPRB—L CPRHB—L	3.5	7.00～120.00	3.00～ 3.49																
		4		3.50～ 3.99																
8		4.5		4.00～ 4.49																
		5		4.50～ 4.99							Quotation									
9		5.5		5.00～ 5.49																
		6		5.50～ 5.99																
10	STAVAX CPTB—L CPTHB—L CPEB—L CPEHB—L	6.5	8.00～120.00	6.00～ 6.49																
		7		6.50～ 6.99																
11		8		7.00～ 7.99																
15		10		8.00～ 9.99																
18		13		10.00～12.99																
21		16		13.00～15.99																

ⓘ Refer to P.521 for the size larger than 16 ϕ of the material STAVAX ESR®.
ⓘ STAVAX ESR® is a registered trademark of UDDEHOLM TOOL CO.
ⓘ PROVA400 is equivalent to SUS420J2 upgrading steel from Fujikoshi CO.

High Speed Steel
SKH51 equivalent

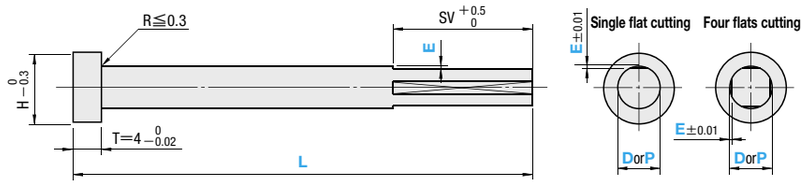
GAS RELEASE STRAIGHT CORE PINS WITH CUTTING FACETS

—SHAFT DIAMETER (D) SELECTION ／ (P) DESIGNATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

RoHS

Type: Shaft diameter (D) selection	Type: Shaft diameter (P) designation	M H	Group	T: D or P	T: L
GW—CPX—L GWS—CPX—L	GW—CPXB—L GWS—CPXB—L	SKH51 equivalent 58～60HRC	Standard	−0.01 −0.02	+0.02 0
GW—CPH—L GWS—CPH—L	GW—CPHB—L GWS—CPHB—L			0 −0.005	
GW—CPV—L GWS—CPV—L	GW—CPVB—L GWS—CPVB—L		Precision	0 −0.005	+0.01 0



Limit of E±0.01 is within 10mm from the tip.

■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	E 0.01mm increments	SV
2	Single flat cutting GW—CPX—L GW—CPH—L GW—CPV—L	0.5	15.00～60.00	0.02～0.05	L: 15.00～ 50.00 — L−10 50.01～ 80.00 — 40 80.01～120.00 — 50
3		0.6	15.00～100.00		
		0.7			
		0.8			
		0.9			
		1			
		1.2			
		1.5			
4		2			
5		2.5			
6		3			
7	Four flats cutting (D≧1) GWS—CPX—L GWS—CPH—L GWS—CPV—L	3.5	15.00～120.00		
		4			
8		4.5			
		5			
9		6			
10		7			
11		8			
15		10			
18		13			

■Shaft diameter (P) designation type

H	Part Number Type	No.	L 0.01mm increments	P Standard 0.01mm increments	P Precision 0.005mm increments	E 0.01mm increments	SV
3	Single flat cutting GW—CPXB—L GW—CPHB—L GW—CPVB—L	0.6	15.00～100.00	0.50～ 0.59	0.500～ 0.595	0.02～0.05	L: 15.00～ 50.00 — L−10 50.01～ 80.00 — 40 80.01～120.00 — 50
		1		0.60～ 0.99	0.600～ 0.995		
		1.5		1.00～ 1.49	1.000～ 1.495		
4		2		1.50～ 1.99	1.500～ 1.995		
5		2.5		2.00～ 2.49	2.000～ 2.495		
6		3		2.50～ 2.99	2.500～ 2.995		
7	Four flats cutting (P≧1.000) GWS—CPXB—L GWS—CPHB—L GWS—CPVB—L	3.5	15.00～120.00	3.00～ 3.49	3.000～ 3.495		
		4		3.50～ 3.99	3.500～ 3.995		
8		4.5		4.00～ 4.49	4.000～ 4.495		
		5		4.50～ 4.99	4.500～ 4.995		
9		6		5.00～ 5.99	5.000～ 5.995		
10		7		6.00～ 6.99	6.000～ 6.995		
11		8		7.00～ 7.99	7.000～ 7.995		
15		10		8.00～ 9.99	8.000～ 9.995		
18		13		10.00～12.99	10.000～12.995		

Order

Part Number	L	P	E
GW—CPV—L3	18.36		E0.02
GW—CPVB—L1	20.05	P0.995	E0.02

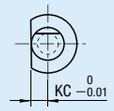
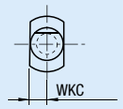
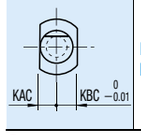
Days to Ship: Quotation

Price: Quotation

Alterations

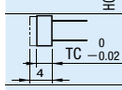
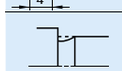
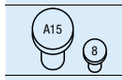
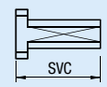
Part Number	L	P	E	(KC・WKC…etc.)
GW—CPV—L3	18.36		E0.02	WKC1.5
GW—CPVB—L1	20.05	P0.995	E0.02	TRN

Alteration details P.395

Alterations	Code	Spec.	1Code
	KC	Single flat cutting (D or P)/2≦KC＜H/2 (D or P)≧0.6	Quotation
	WKC	Two flats cutting (D or P)/2≦WKC＜H/2 (D or P)≧0.6	
	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only (D or P)≧0.6 KAC＜KBC＜H/2	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation
Shaft diameter (D) selection 0.05mm increments possible
Shaft diameter (P) designation Standard: 0.005mm increments possible
Precision: 0.0025mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm
Flat cutting is set at a face of cutting facet.

Flat cutting position is set at 90° of cutting facet in counterclockwise direction.

Alterations	Code	Spec.	1Code
	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)+0.5≦HCC＜H−0.3, (D or P)≧0.6	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4−TC≦Lmax.−L D or P / TC: 0.5≦D or P＜0.8 / 2.0≦TC＜4.0; 0.8≦D or P≦13 / 1.5≦TC＜4.0	
	TRN	Relief under the head (No need for plate chamfering) (D or P)≧0.6	
	NHC	Numbering on the head How to order P.396 Available when H≧2	
	SVC	Extend the flat section SV to the bottom. SVC is only available for single face cutting in the upper position of four flats cutting. (D or P)＜1 ⋯ L=Applicable until 60 When used concurrently with key flat cutting, SVC processing is done perpendicularly to the key flat surface.	

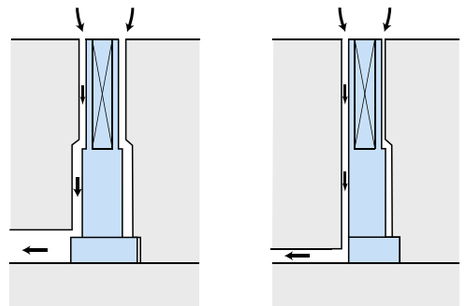
■ Characteristics

For the molds using the resin which generates gas easily, this core pin performs good effect of gas release from inside cavity through the clearance.

Example

Assemble at the surface of product to release gas.

Gas is released from the clearance. (Example of four flats cutting)
※ → Gas flow



＜AlterationSVC＞

Please use SVC alteration when processing plate by wire cutting.

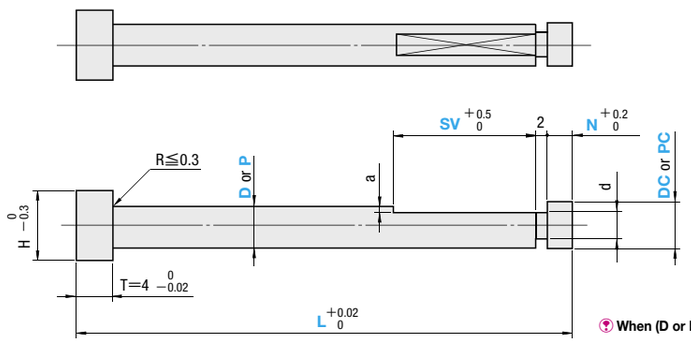
GAS RELEASE STRAIGHT CORE PINS

—SHAFT DIAMETER (D) SELECTION TYPE／SHAFT DIAMETER (P) DESIGNATION (0.01mm INCREMENTS) TYPE—

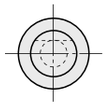
Non JIS material definition is listed on P.1351 - 1352

RoHS

Type: Shaft diameter (D) selection	Type: Shaft diameter (P) designation	M	H	T: D・DC・P・PC
GV—CPN—L	GV—CPNB—L	NAK80	37～43HRC	—0.01 —0.02
GV—CPF—L	GV—CPFB—L	DH2F	38～42HRC	
GV—CPD—L	GV—CPDB—L	SKD61 equivalent	48～52HRC	
GV—CPX—L	GV—CPXB—L	SKH51 equivalent	58～60HRC	
GV—CPK—L	GV—CPKB—L	NAK80	37～43HRC	0 —0.005
GV—CPG—L	GV—CPGB—L	DH2F	38～42HRC	
GV—CPP—L	GV—CPPB—L	SKD61 equivalent	48～52HRC	
GV—CPH—L	GV—CPHB—L	SKH51 equivalent	58～60HRC	



D	P	d	a
0.5～ 0.9	0.50～ 0.99	(D or P)—0.1	0.05
1 ～ 2.5	1.00～ 2.49	(D or P)—0.2	0.10
3 ～ 4	2.50～ 3.99	(D or P)—0.4	0.20
4.5・ 5	4.00～ 4.99	(D or P)—0.6	0.30
6 ～13	5.00～12.99	(D or P)—1.0	0.50



When (D or P)$^{-0.01}_{-0.02}$, Shaft diameter selection: DC designation not available. DC=D
Shaft diameter designation: PC designation not availablePC=P

■Shaft diameter (D) selection type

H	Part Number: Type	D	L 0.01mm increments	DC 0.005mm increments	N 0.1mm increments	SV 0.5mm increments	U/Price 1～4: GV-CPN-L GV-CPF-L	GV-CPD-L	GV-CPX-L	GV-CPK-L GV-CPG-L	GV-CPP-L GV-CPH-L	
							Designated uselessness of DC・DCX (D=DC)			D=DC (DCX) / D≠DC	D=DC (DCX) / D≠DC	
2	GV—CPX—L GV—CPH—L	0.5	15.00～ 60.00	(D—0.08)≦ DC≦D When $D^{-0.01}_{-0.02}$, DC not available. When DC=D, designation of DCX.	0.3～10.0 L—(2+SV+N)≧10	2.0～50.0	Quotation					
3	GV—CPN—L (D≧0.8) GV—CPF—L (D≧0.8) GV—CPD—L	0.6	15.00～100.00									
		0.7										
		0.8										
		0.9										
		1										
		1.2										
		1.5										
4	GV—CPX—L	2										
5		2.5										
6		3										
7	GV—CPK—L (D≧0.8) GV—CPG—L (D≧0.8) GV—CPP—L GV—CPH—L	3.5	15.00～120.00		0.5～15.0 L—(2+SV+N)≧10	2.0～60.0						
		4										
8		4.5										
		5										
9		6										
10		7										
11		8										
15		10										
18		13										

■Shaft diameter (P) designation type

H	Part Number: Type	No.	0.01mm increments: L	P	PC 0.005mm increments	N 0.1mm increments	SV 0.5mm increments	U/Price 1～4: GV-CPNB-L GV-CPFB-L	GV-CPDB-L	GV-CPXB-L	GV-CPKB-L GV-CPGB-L	GV-CPPB-L GV-CPHB-L	
								Designated uselessness of PC・PCX (P=PC)			P=PC (PCX) / P≠PC	P=PC (PCX) / P≠PC	
3	GV—CPXB—L GV—CPHB—L	0.6	15.00～100.00	0.50～ 0.59	(P—0.08)≦ PC≦P When $P^{-0.01}_{-0.02}$ PC not available. When PC=P, designation of PCX.	0.3～10.0 L—(2+SV+N)≧10	2.0～50.0	Quotation					
	GV—CPNB—L (P≧0.80) GV—CPFB—L (P≧0.80) GV—CPDB—L	1		0.60～ 0.99									
		1.5		1.00～ 1.49									
4		2		1.50～ 1.99									
5		2.5		2.00～ 2.49									
6		3		2.50～ 2.99									
7	GV—CPXB—L	3.5	15.00～120.00	3.00～ 3.49		0.5～15.0 L—(2+SV+N)≧10	2.0～60.0						
		4		3.50～ 3.99									
8	GV—CPKB—L (P≧0.80) GV—CPGB—L (P≧0.80) GV—CPPB—L GV—CPHB—L	4.5		4.00～ 4.49									
		5		4.50～ 4.99									
9		6		5.00～ 5.99									
10		7		6.00～ 6.99									
11		8		7.00～ 7.99									
15		10		8.00～ 9.99									
18		13		10.00～12.99									

Order

Part Number	L	P	DC(DCX) PC(PCX)	N	SV
GV—CPX —L1	20.05			N2	SV4
GV—CPHB—L3	18.36	P2.96	PC2.950	N2	SV4

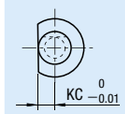
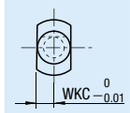
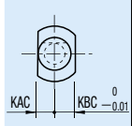
Days to Ship Quotation

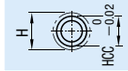
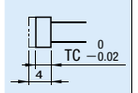
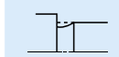
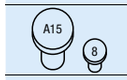
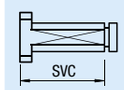
Price Quotation

Alterations

Part Number	L	P	PC(PCX) PC(PCX)	N	SV(SVC)	(KC・WKC…etc.)
GV—CPH —L3	18.36		DCX	N2	SVC	WKC1.5
GV—CPHB—L3	18.36	P2.96	PCX	N2	SVC	WKC1.48

Alteration details P.395

Alterations	Code	Spec.		1Code
	KC	Single flat cutting (D or P)/2≦KC＜H/2 (D or P)≧0.6	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation Shaft diameter (D) selection 0.05mm increments possible Shaft diameter (P) designation 0.005mm increments possible	Quotation
	WKC	Two flats cutting (D or P)/2≦WKC＜H/2 (D or P)≧0.6		
	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only (D or P)≧0.6 KAC＜KBC＜H/2	(2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	

Alterations	Code	Spec.	1Code
	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)＋0.5≦HCC＜H—0.3, (D or P)≧0.6	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4—TC≦Lmax.—L ・Shaft diameter (D) selection: D 0.5≦D＜0.8 TC 2.0≦TC＜4.0; 0.8≦D≦13 TC 1.5≦TC＜4.0 ・Shaft diameter (P) designation: P 0.50≦P＜0.80 TC 2.0≦TC＜4.0; 0.80≦P≦12.99 TC 1.5≦TC＜4.0	
	TRN	Relief under the head (No need for plate chamfering) Available when (D or P)≧0.6	
	NHC	Numbering on the head How to order P.396 Available when H≧2	
	SVC	Extend the flat section SV to the bottom. Only available for GV—CPN—L・GV—CPK—L GV—CPNB—L・GV—CPKB—L when (D or P)≧2 (D or P)＜1 ··· L=Applicable until 60 When used concurrently with key flat cutting, SVC processing is done perpendicularly to the key flat surface.	

■ Characteristics

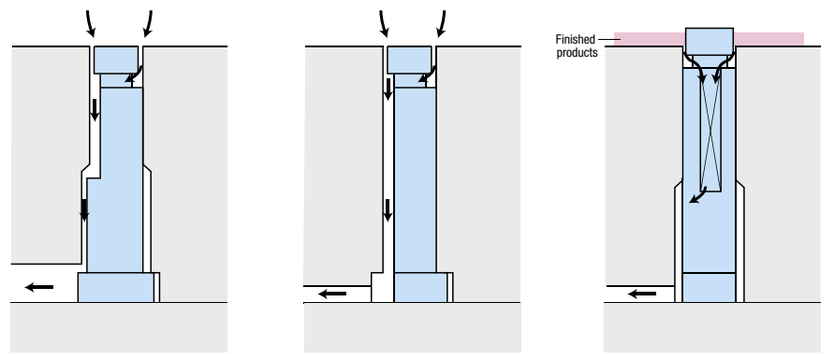
For the molds using the resin which generates gas easily, this core pin performs good effect of gas release from inside cavity through the clearance.

Example
1. Assemble at the surface of product to release gas.
2. Assemble to the place where the gas gathers in the runner part, and release gas.

Gas is released from the clearance.

Please set clearance to include the way of gas-flow according to resin and molding condition (Designate on DC・PC).

※ ⟶ Gas flow



＜Alteration SVC＞
Please use SVC alteration when processing plate by wire cutting.

＜Alteration WKC＞

SKD61 equivalent
SKH51 equivalent

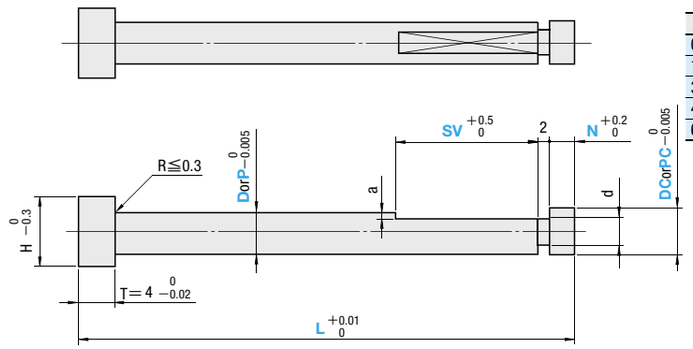
PRECISON GAS RELEASE STRAIGHT CORE PINS

—SHAFT DIAMETER (D) SELECTION／(P) 0.005mm DESIGNATION TYPE—

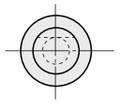
Non JIS material definition is listed on P.1351 - 1352

RoHS

Type		M	H
Shaft diameter (D) selection	Shaft diameter (P) designation		
GV—CPZ—L	GV—CPZB—L	SKD61 equivalent	48～52HRC
GV—CPV—L	GV—CPVB—L	SKH51 equivalent	58～60HRC



D	P	d	a
0.5～0.9	0.500～ 0.995	(D or P)—0.1	0.05
1 ～2.5	1.000～ 2.495	(D or P)—0.2	0.10
3 ～4	2.500～ 3.995	(D or P)—0.4	0.20
4.5・5	4.000～ 4.995	(D or P)—0.6	0.30
6 ～13	5.000～12.995	(D or P)—1.0	0.50



■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	DC 0.005mm increments	N 0.1mm increments	SV 0.5mm increments
2	GV—CPV—L	0.5	15.00～ 60.00	(D—0.08)≦DC≦D When DC=D, designation of DCX.	0.3～10.0 L—(2+SV+N)≧10	2.0～50.0
3	GV—CPZ—L GV—CPV—L	0.6	15.00～100.00			
		0.7				
		0.8				
		0.9				
		1				
		1.2				
		1.5				
4		2				
5		2.5				
6		3				
7		3.5	15.00～120.00		0.5～15.0 L—(2+SV+N)≧10	2.0～60.0
		4				
8		4.5				
		5				
9		6				
10		7				
11		8				
15		10				
18		13				

■Shaft diameter (P) designation type

H	Part Number Type	No.	L 0.01mm increments	P 0.005mm increments	PC 0.005mm increments	N 0.1mm increments	SV 0.5mm increments
3	GV—CPVB—L	0.6	15.00～100.00	0.500～ 0.595	(P—0.08)≦PC≦P When PC=P, designation of PCX.	0.3～10.0 L—(2+SV+N)≧10	2.0～50.0
	GV—CPZB—L GV—CPVB—L	1		0.600～ 0.995			
		1.5		1.000～ 1.495			
4		2		1.500～ 1.995			
5		2.5		2.000～ 2.495			
6		3		2.500～ 2.995			
7		3.5	15.00～120.00	3.000～ 3.495		0.5～15.0 L—(2+SV+N)≧10	2.0～60.0
		4		3.500～ 3.995			
8		4.5		4.000～ 4.495			
		5		4.500～ 4.995			
9		6		5.000～ 5.995			
10		7		6.000～ 6.995			
11		8		7.000～ 7.995			
15		10		8.000～ 9.995			
18		13		10.000～12.995			

Order

Part Number	L	P	DC(DCX) PC(PCX)	N	SV
GV—CPZ—L3	18.36		DC2.955	N2	SV4
GV—CPVB—L1	20.05	P0.995	PCX	N2	SV4

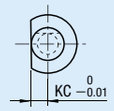
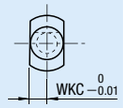
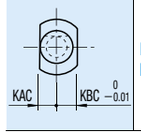
Days to Ship Quotation

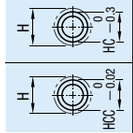
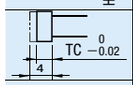
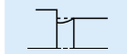
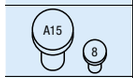
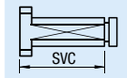
Price Quotation

Alterations

Part Number	L	P	DC(DCX)・PC(PCX)	N	SV(SVC)	(KC・WKC…etc.)
GV—CPV—L3	18.36		DC2.990	N2	SVC	WKC1.5
GV—CPZB—L1	20.05	P0.995	PCX	N2	SV4	TRN

Alteration details P.395

Alterations	Code	Spec.		1Code
	KC	Single flat cutting (D or P)/2≦KC＜H/2 (D or P)≧0.6	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation Shaft diameter (D) selection 0.05mm increments possible Shaft diameter (P) designation 0.0025mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	Quotation
	WKC	Two flats cutting (D or P)/2≦WKC＜H/2 (D or P)≧0.6		
	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only (D or P)≧0.6 KAC＜KBC＜H/2		

Alterations	Code	Spec.	1Code
	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)+0.5≦HCC＜H—0.3, (D or P)≧0.6	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4—TC≦Lmax.—L (D or P: 0.5≦D or P＜0.8 / 0.8≦D or P≦13; TC: 2.0≦TC＜4.0 / 1.5≦TC＜4.0)	
	TRN	Relief under the head (No need for plate chamfering) (D or P)≧0.6	
	NHC	Numbering on the head How to order P.396 Available when H≧2	
	SVC	Extend the flat section SV to the bottom. (D or P)＜1 ⇢ L=Applicable until 60 When used concurrently with key flat cutting, SVC processing is done perpendicularly to the key flat surface.	

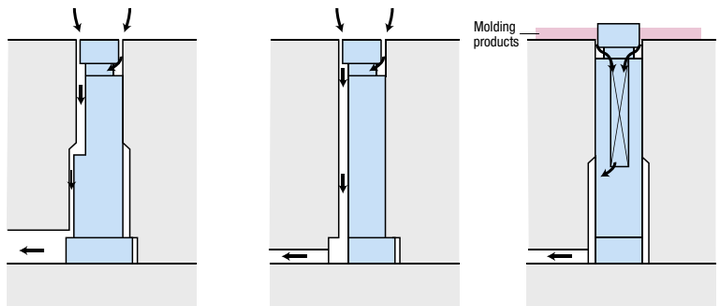
■ Characteristics

For the molds using the resin which generates gas easily, this core pin performs good effect of gas release from inside cavity through the clearance.

Example

1. Assemble at the surface of product to release gas.
2. Assemble to the place where the gas gathers in the runner part, and release gas.

Gas is released from the clearance.
Please set clearance to include the way of gas-flow according to resin and molding condition (Designate on DC・PC)
※ ⟶ Gas flow



<Alteration SVC>
Please use SVC alteration when processing plate by wire cutting.

<Alteration WKC>

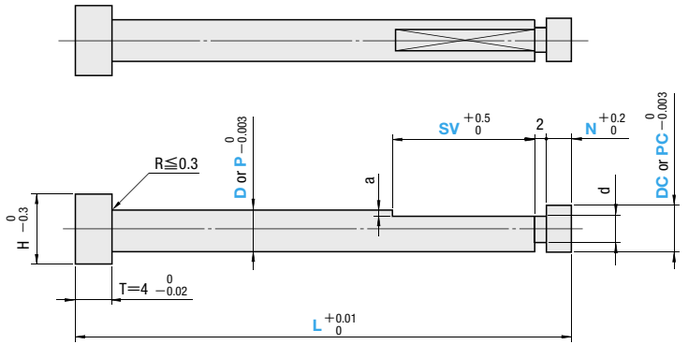
EXTRA PRECISON GAS RELEASE STRAIGHT CORE PINS

—SHAFT DIAMETER (D) SELECTION／(P) 0.001mm DESIGNATION TYPE—

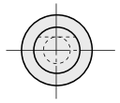
Non JIS material definition is listed on P.1351 - 1352

RoHS

Type		M	H
Shaft diameter (D) selection	Shaft diameter (P) designation		
GV—CPM—L	GV—CPMB—L	SKH51 equivalent	58～60HRC



D	P	d	a
0.5～ 0.9	0.500～ 0.999	(D or P)—0.1	0.05
1 ～ 2.5	1.000～ 2.499	(D or P)—0.2	0.10
3 ～ 4	2.500～ 3.999	(D or P)—0.4	0.20
4.5・ 5	4.000～ 4.999	(D or P)—0.6	0.30
6 ～13	5.000～12.999	(D or P)—1.0	0.50



■Shaft diameter (D) selection type

H	Part Number Type	D	L 0.01mm increments	DC 0.001mm increments	N 0.1mm increments	SV 0.5mm increments
2	GV—CPM—L	0.5	15.00～ 60.00	(D—0.08)≦DC≦D (When DC=D, designation of DCX.)	0.3～10.0	2.0～50.0
3		0.6				
		0.8				
		1				
		1.2				
		1.5				
4		2				
5		2.5				
6		3				
7		3.5	15.00～100.00			
		4				
8		4.5				
		5				
9		6			0.5～15.0	2.0～60.0
10		7				
11		8				
15		10				
18		13				

L—(2+SV+N)≧10

■Shaft diameter (P) designation type

H	Part Number Type	No.	L 0.01mm increments	P 0.001mm increments	PC 0.001mm increments	N 0.1mm increments	SV 0.5mm increments
3	GV—CPMB—L	0.6	15.00～ 60.00	0.500～ 0.599	(P—0.08)≦PC≦P (When PC=P, designation of PCX.)	0.3～10.0	2.0～50.0
		1	15.00～100.00	0.600～ 0.999			
		1.5		1.000～ 1.499			
4		2		1.500～ 1.999			
5		2.5		2.000～ 2.499			
6		3		2.500～ 2.999			
7		3.5		3.000～ 3.499			
		4		3.500～ 3.999			
8		4.5		4.000～ 4.499			
		5		4.500～ 4.999			
9		6		5.000～ 5.999		0.5～15.0	2.0～60.0
10		7		6.000～ 6.999			
11		8		7.000～ 7.999			
15		10		8.000～ 9.999			
18		13		10.000～12.999			

L—(2+SV+N)≧10

Order

Part Number	L	P	DC(DCX) PC(PCX)	N	SV
GV—CPM—L3	18.36		DC2.950	N2	SV4
GV—CPMB—L1	20.05	P0.995	PCX	N2	SV4

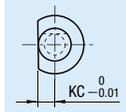
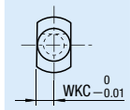
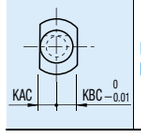
Days to Ship **Quotation**

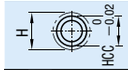
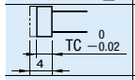
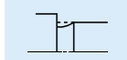
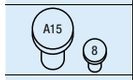
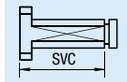
Price **Quotation**

Alterations

Part Number	L	P	DC(DCX)・PC(PCX)	N	SV(SVC)	(KC・WKC…etc.)
GV—CPM—L1	20.05		DCX	N2	SV4	TRN
GV—CPMB—L3	18.36	P2.960	PC2.950	N2	SVC	WKC1.48

Alteration details P.395

Alterations	Code	Spec.		1Code
	KC	Single flat cutting (D or P)/2≦KC＜H/2 (D or P)≧0.6	About Designation Unit for Key Flat Cutting (1)To align the key flat with the shaft diameter Unit of designation Shaft diameter (D) selection 0.05mm increments possible Shaft diameter (P) designation 0.0005mm increments possible (2)To designate arbitrary key flat dimensions Unit of designation 0.1mm	Quotation
	WKC	Two flats cutting (D or P)/2≦WKC＜H/2 (D or P)≧0.6		
	KAC KBC	Varied width parallel flats cutting (D or P)/2≦KAC＜H/2 KBC=0.1mm increments only (D or P)≧0.6 KAC＜KBC＜H/2		

Alterations	Code	Spec.	1Code
	HC	Head diameter change HC=0.1mm increments (D or P)≦HC＜H (In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	Quotation
	HCC	Head diameter change (precision) HCC=0.1mm increments (D or P)+0.5≦HCC＜H—0.3, (D or P)≧0.6	
	TC	Head thickness change TC=0.1mm increments (Dimension L remains unchanged.) 4—TC≦Lmax.—L D or P: 0.50≦D or P＜0.80 / 0.80≦D or P≦13; TC: 2.0≦TC＜4.0 / 1.5≦TC＜4.0	
	TRN	Relief under the head (No need for plate chamfering) Available when (D or P)≧0.6	
	NHC	Numbering on the head How to order P.396 Available when H≧2	
	SVC	Extend the flat section SV to the bottom. (D or P)＜1 ⇢ L=Applicable until 60 When used concurrently with key flat cutting, SVC processing is done perpendicularly to the key flat surface.	

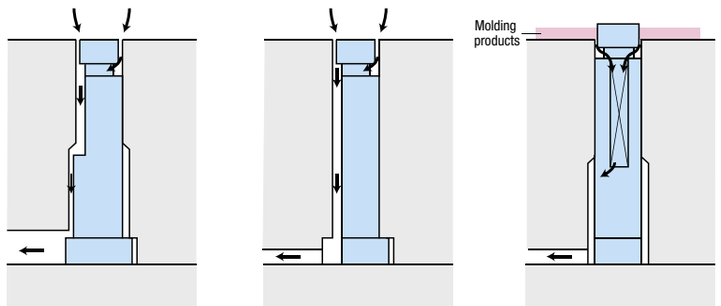
■ Characteristics

For the molds using the resin which generates gas easily, this core pin performs good effect of gas release from inside cavity through the clearance.

Example

1. Assemble at the surface of product to release gas.
2. Assemble to the place where the gas gathers in the runner part, and release gas.

Gas is released from the clearance.
Please set clearance to include the way of gas-flow according to resin and molding condition (Designate on DC・PC)
※ ⟶ Gas flow

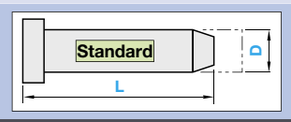


＜Alteration SVC＞
Please use SVC alteration when processing plate by wire cutting.

＜Alteration WKC＞

STRAIGHT CORE PINS WITH TIP PROCESS

—SHAFT DIAMETER (D) SELECTION TYPE—



Non JIS material definition is listed on P.1351 - 1352

RoHS

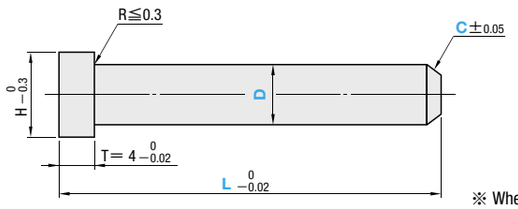
For SKH51 equivalent, the other shapes have been standardized as well. P.419

M H	Part Number Type T D$^{-0.01}_{-0.02}$	Part Number Type T D$^{0}_{-0.005}$	Shape
NAK80 37～43HRC	CPNL	CPKL	C
DH2F 38～42HRC	CPFL	CPGL	G
SKD61 equivalent 48～52HRC	CPDL	CPPL	T
SKH51 equivalent 58～60HRC	CPXL	CPHL	
SUS440C 56～60HRC	—	CPWL	R
MAS1C 50～54HRC	CPAL	CPYL	B

MAS1C will be discontinued when stocked materials are finished.

Shape (Tip shape)

Shape C (C chamfered)

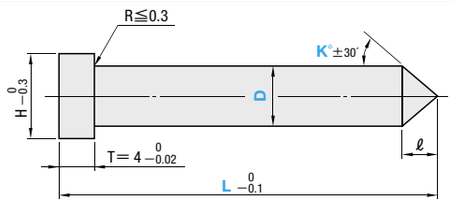


When no C specified
C=0.4±0.1
C…0.1mm increments
$0.1 \leqq C \leqq \frac{D-0.2}{2}$
and
L−C≧9.5

When CKC code is used
CKC=0.05mm increments

※ When GVC code is used ℓ=C (When CKC code is used:ℓ=CKC)

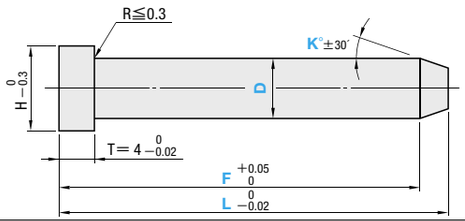
Shape G (Cone)



K…0.5° increments
20≦K≦60
and
(L−ℓ)≧10

ℓcalculation formula
$\ell = \frac{D}{2\tan K}$

Shape T (Tapered)

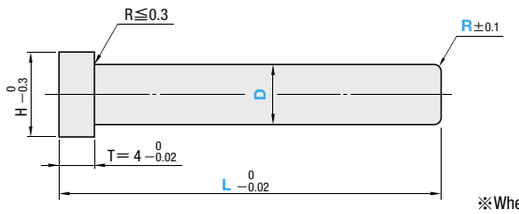


F…0.01mm increments
F≧10.00
and
$0.3 \leqq (L-F) \leqq \frac{L}{2}$
and
$\frac{D}{2} - (L-F)\tan K \geqq 0.1$

K…1° increments
1≦K≦45

※When GVC code is used ℓ=L−F

Shape R (R chamfered)

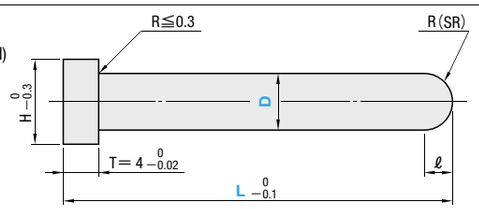


When no R specified
R=0.4±0.1

R…0.1mm increments
$0.2 \leqq R \leqq \frac{D-0.2}{2}$
and
L−R≧10

※When GVC code is used ℓ=R (When RTC code is used:ℓ=RTC)

Shape B (Spherical processed)



Fixed dimension for R
Spherical processed (SR)

When RC code is used
RC=0.1mm increments
D/2≦RC≦(1.5×D)
{D≧4 … D/2≦RC≦(3×D)}
However, RC≦32
and
L−ℓ≧10
ℓcalculation formula
$\ell = RC - \sqrt{RC^2 - \frac{D^2}{4}}$

H	Part Number Type Shaft diameter tolerance D$^{-0.01}_{-0.02}$	Part Number Type Shaft diameter tolerance D$^{0}_{-0.005}$	Shape	D	L 0.01mm increments	Shape (Tip size)
3	CPNL	CPKL	C	0.8, 0.9, 1, 1.1, 1.2, 1.3, 1.4, 1.5	10.00～100.00	Shape C: C…0.1mm increments; When no C specified C=0.4±0.1
4	CPFL	CPGL	G	1.6, 1.7, 1.8, 1.9, 2		Shape G: K…0.5° increments
5	CPDL	CPPL	T	2.5		Shape T: F…0.01mm increments; K…1° increments
6	CPXL	CPHL		3		
7				3.5	10.00～120.00	
8	—	CPWL	R	4, 4.5		Shape R: R…0.1mm increments; When no R specified R=0.4±0.1
9	CPAL (D≦4)	CPYL (D≦4)	B	5, 5.5, 6		
10				6.5, 7		Refer to the working limits shown in the drawing.
11				8		
15				10		
18				13		
21				16		
25	CPDL CPXL	CPPL CPHL		20		

Order — Part Number — L — Tip size (C・F・K・R)
CPKLG13 — 21.80 — K45
CPHLB10 — 40.00

Days to Ship — Quotation

Alterations — Part Number — L — Tip size C(CKC)・F・K・R(RTC) — (KC・WKC…etc.)
CPWLB0.8 — 13.00 — HCC2.5
CPHLT1 — 40.00 — F39.00 — K10 — WKC0.5—TC2.0

Price — Quotation

Alteration details P.395

Alterations	Code	Spec.	1Code
KC −0.01 0	KC	Single flat cutting D/2≦KC<H/2	Quotation
WKC −0.01 0	WKC	Two flats cutting D/2≦WKC<H/2	
KAC KBC −0.01 0	KAC KBC	Varied width parallel flats cutting D/2≦KAC<H/2 KBC=0.1mm increments only KAC<KBC<H/2	
RKC −0.01 0	RKC	Two flats (right angled) cutting D/2≦RKC<H/2	
DKC −0.01 0	DKC	Three flats cutting D/2≦DKC<H/2	
SKC −0.01 0	SKC	Four flats cutting D/2≦SKC<H/2	
AG°±0.5 0° KGC −0.01 0	KGC	Two flats (angled) cutting D/2≦KGC<H/2 0<AG<360 AG=1° increments	
120° 120° 120° KTC −0.01 0	KTC	Three flats cutting at 120° D/2≦KTC<H/2	
H HC −0.3 0	HC	Head diameter change HC=0.1mm increments D≦HC<H In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	

About Designation Unit for Key Flat Cutting
(1)To align the key flat with the shaft diameter
Unit of designation 0.05mm increments possible
(2)To designate arbitrary key flat dimensions
Unit of designation 0.1mm

Alterations	Code	Spec.	1Code
H HCC −0.02 0	HCC	Head diameter change (precision) HCC=0.1mm increments D+0.5≦HCC<H−0.3	
TC −0.02 0 4	TC	Head thickness change TC=0.1mm increments 1.5≦TC<4 (Dimension L remains unchanged.) 4−TC≦Lmax.−L	
	TRN	Relief under the head (No need for plate chamfering)	
A15 8	NHC	Numbering on the head How to order P.396 Available when H≧2 Combination with SKC not available.	Quotation
1 GS GB L	GVC	Gas vent machining GS・GB=1mm increments Available when D≧2 2+ℓ≦GS≦12 GS+2≦GB≦30 L−GB≧10 How to order P.396	
C T	CKC	Improves C chamfering tolerance C±0.05 … ±0.02 0.1≦CKC≦(D−0.2)/2 L−CKC≧9.5 Available for Shape C only CKC=0.05mm increments	
R T	RTC	Improves tip R tolerance R±0.1 … ±0.05 0.2≦RTC≦(D−0.2)/2 L−RTC≧10 Available for Shape R only RTC=0.1mm increments	
RC (SR)	RC	Tip R alteration RC=0.1mm increments D/2≦RC≦RCmax. and L−ℓ≧10 Shaft diameter D<4 … RCmax.=1.5×D Shaft diameter D≧4 … RCmax.=3×D However, RC≦32 Available for Shape B only	