

WSR POSITIONING PINS –

THE RELIABLE ALTERNATIVE FOR BODY-IN-WHITE CONSTRUCTION

A JOINT DEVELOPMENT OF MISUMI, THE ISF OF RWTH AACHEN AND THE FEF



IT'S ALL ABOUT TIME

■ ■ What are WSR positioning pins?

MISUMI offers a steel pin with an optimised surface and an aluminium chromium nitride (AlCrN) coating. “WSR” stands for “Weld Spatter Resistant”. The new WSR positioning pins are therefore extremely weld spatter and wear-resistant and ideally suited to the requirements of resistance welding on steel sheets in body-in-white construction.



■ ■ What is special about the WSR positioning pins?

The new positioning pins from **MISUMI** are the first steel pins that can achieve at least the same results in body-in-white construction as ceramic pins.

■ ■ This is what our project manager has to say:

„After a development period of more than two years, we created a combination of an optimised positioning pin and coating which represents a reliable alternative to the ceramic pins available on the market to date. Our WSR positioning pins offer all the benefits of a steel pin and also have outstanding properties in terms of weld spatter and wear resistance. As a machine construction engineer with years of professional experience in the car body production of two OEMs, I am impressed by our innovative solution from both a technical and financial perspective.“

Robin Christ

Business Development Specialist at MISUMI Europa GmbH



■ ■ The main benefits of WSR positioning pins at a glance

- **Extremely weld spatter and wear-resistant**
- **Full steel pin = No ceramic sleeve that can break or become detached**
- **Very reliable**
- **At least the same performance as with ceramic pins**
- **In the same price range as ceramic pins**
- **Outstanding results in the practical test**

Are you interested in our WSR positioning pins?

We would be pleased to advise you in a personal interview!

MISUMI Europa GmbH

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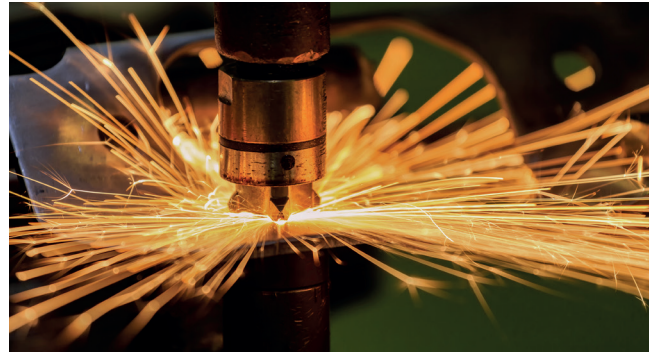
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Requirement in the scope of application

In the case of ceramic pins that were previously the standard solution for resistance welding to steel sheets in body-in-white production, the sleeves may become detached or break as a result of damage from weld spatter, wear or transverse forces when using the steel core. Numerous car bodies are therefore often unusable. Due to the weakness of ceramic pins, a major European car manufacturer contacted **MISUMI** requesting a more reliable alternative.



Formation

MISUMI was able to attract two renowned partners from the world of science for the development of a coated steel positioning pin with optimised properties: the Institut für Schweißtechnik of RWTH Aachen (institute for welding technology) and Forschungs und Entwicklungsgesellschaft Fügetechnik (FEF - a research and development company). The scientists analysed coatings from 18 leading manufacturers; the most

suitable coatings for the specific application on the production side. This ensured that no coating remained unaccounted for. **MISUMI** also enhanced the surface of its positioning pins and minimised their roughness. A positioning pin with aluminium chromium nitrate (AlCrN) coating recorded by far the best performance in the laboratory tests.

Outstanding results in series production

WSR positioning pins have been used since September 2018 for testing in the series production of a renowned car manufacturer. After more than one and a half years, the first positioning pins still have no noticeable wear or weld spatter adhesion. The user can therefore expect the positioning pins to reach more than one million cycles. That is impressive: The user has a direct replacement for his ceramic pins with WSR positioning pins.



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Overview of the AlCrN coating properties

COLOUR	Anthracite
HARDNESS (HV)	~ 3,200
THICKNESS [M]	0.2 - 1.0
FRICITION COEFFICIENT AGAINST STEEL, DRY	0.15 - 2.0
SURFACE ROUGHNESS RZ [M]	< 1
COATING PROCEDURE	PVD (physical vapour deposition, for example by thermal evaporation and sputtering)
USED FOR	e.g. resistance welding of steel sheets, positioning steel sheets

About MISUMI

MISUMI is a global manufacturer and leading provider of more than 20 million mechanical components and indirect materials for special machine construction and assembly automation. A large number of **MISUMI** products are configured individually. The company founded in Tokyo in 1963 has sales offices worldwide and employs more than 10,000 workers. The European headquarters has now been located in Germany in

Frankfurt am Main for more than 15 years. Components are designed here that are tailored precisely to the requirements of major European machine manufacturers. The **MISUMI** business model is based on the high quality, low costs and short delivery times and is the product of choice for more than 220,000 customers around the globe.



**FURTHER INFORMATION CAN BE FOUND AT
WWW.MISUMI-EUROPE.COM**