PLASMA POINT

TÜV NORD
TÜV NORD Cert GmbH
ISO 9001

Consumable parts
for robotic welding

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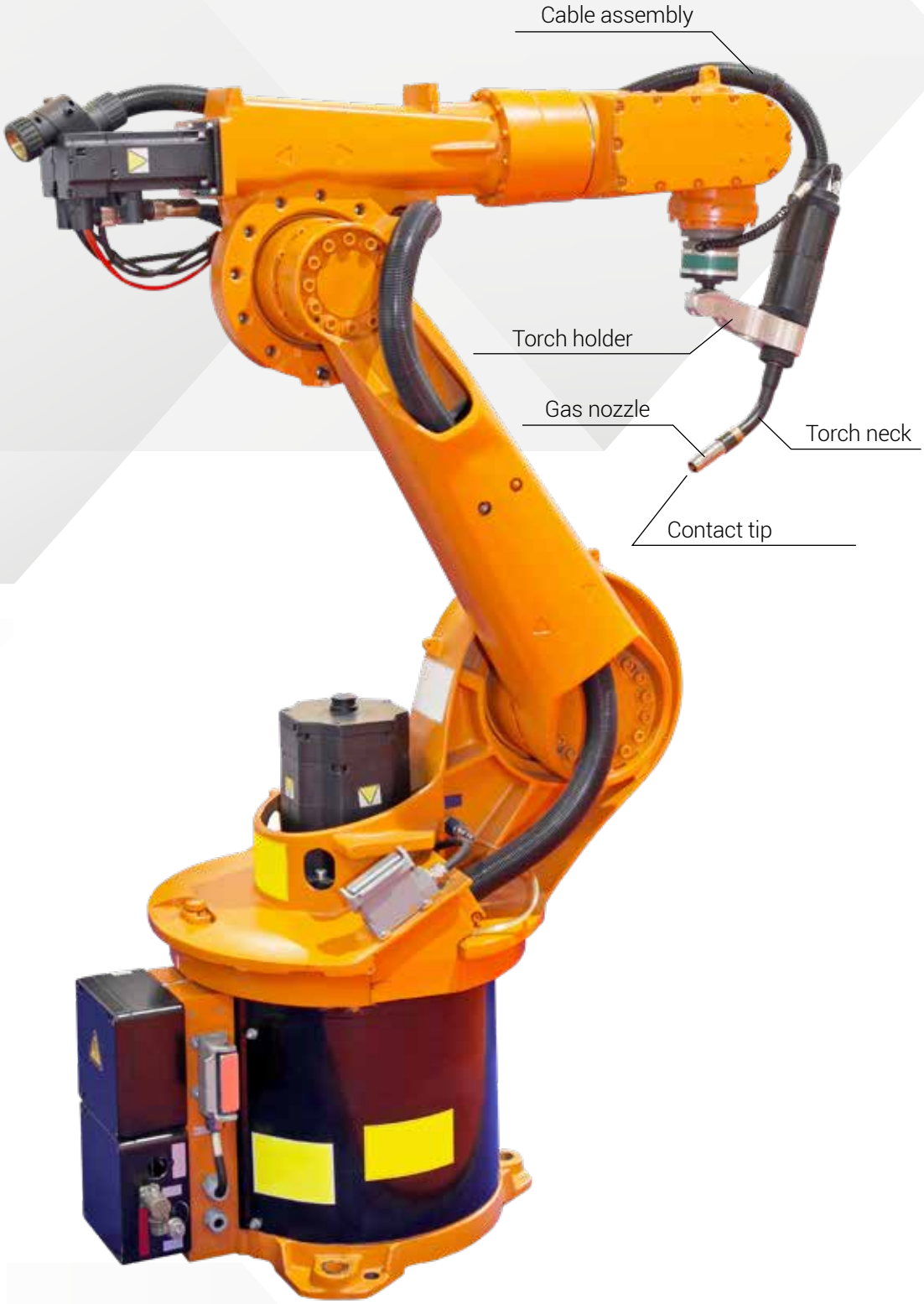
Welding torch – main elements



About us

About us

Plasma Point Poland is a renowned supplier of consumables parts for welding processes, spot welding, resistance/electric welding, gas, laser and plasma cutting to almost all the leading manufacturers of this type of equipment.

We offer both original and replacement parts made by us and for us by specialized European producers. We provide comprehensive services for our clients. Many years of experience working within the industry is our guarantee of a professional client service in a range of materials to help our clients to maintain continuity in their production process. Thanks to a network of mobile technical advisors, we are able to identify your demand directly at your production plant, based on technical documentation, catalogue numbers and/or based on samples. Since the inception of the company, we have been actively supporting our clients in selecting operational equipment optimal for their needs.

We operate in accordance with the ISO 9001:2015 standard. We fulfil orders based on our integrated CRM system. We are using all our knowledge and capabilities to guarantee continued operation in accordance with the latest standards and to shorten delivery times.

We have quickly become one of the leading suppliers in the market due to our innovative, flexible, creative and highly motivated staff and our simple organizational structure.

Our wide range of customers include the largest companies in the automotive industry, the construction, engineering, and energy sectors; boiler manufacturers, shipyards and many other plants. For several years we have consistently increased our export market.

Warehouse

Our warehouse is at the very heart of our company. In cooperation with DHL and TNT we fulfil dozens of shipments and deliveries daily. We aim to keep most parts in stock to ensure quick delivery to the customer. In the past year we have completed more than 82% of deliveries within 2 business days. For our largest customers we operate consignment stocks that allow them to get required parts on demand.

Our mission

Our mission is to provide customers with cost-effective consumables, replacement parts for equipment used in cutting and welding processes. The mission is completed by the delivery of the highest quality parts backed by the expertise of our staff and our high customer service standards.

Quality & service

Quality is one of the pillars of our business. We strive to maintain the stable high quality of the products through constant monitoring of the processes and procedures in our company.

Parts are manufactured on the latest CNC machines while maintaining rigorous inter-operational control. Each production lot is controlled by the Quality Department before entering the warehouse. Laser Marking the production batch number has become standard for most parts, which enables the analysis of the whole process backwards.

Our measurement room is equipped with modern, specialized measuring instruments, allowing us greater control over the final products. On request, we present measurement protocols and materials certificates.

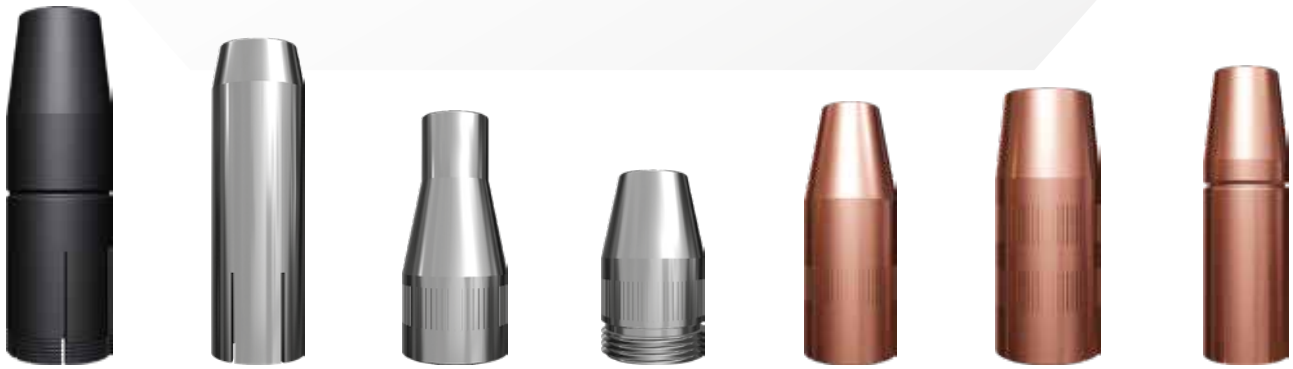
We constantly analyse the needs of the market and introduce more and more modern design solutions in our products. Often our spare parts achieve better process parameters and work longer hours than parts supplied by machine manufacturers.

Production

The components we offer are made both in our factory and in cooperation with our long-term partners, based on our own technical documentation and drawings owned by the client. We have a specialized design and quality control department, which allows us to significantly reduce the time of tendering, making changes and delivering the final product.

Fronius® – compatible spare parts

Gas nozzles



42.0001.5675/AN | 42.0001.2933/AN | 42.0001.4745/AN | 42.0001.5041/AN | 42.0001.4084/AN | 42.0001.4476/AN | 42.0001.5173/AN

Contact tips

42.0001.0054/FTE | 42.0001.1577/CEP | 42.0001.2912/CEP | 42.0001.6466/FTC | 42.0001.3555/FTC | 42.0001.5051/FTC | 42.0001.4463/CEP

Tip holders

42.0001.5044/AN | 42.0001.5084/AN | 42.0001.5382/AN | 42.0001.5579/AN | 42.0001.3928/AN | 42.0001.4622/AN | 42.0001.4920/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.

42.0100.0449/AN | 42.0100.1016/AN | 42.0300.0098/AN | 42.0100.1007/AN | 42.0100.0583/AN | 42.0001.2995/AN | 42.0001.4153/AN

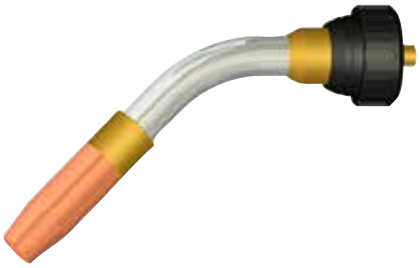
Examples of torches we are offering consumables for

MTB 320i WR®

MTB 330i WR®

MTB 400i GR®

MTB 400i WR®



MTB 500i WR®

Robacta 280®

Robacta 300®

Robacta 2500®

Robacta 5000®

SKS® – compatible spare parts

Gas nozzles


401-48-50-G/AN


41-8-13-TS/AN


401-8-62-G/AN


41-12-13-TS/AN


41-8-113/AN


41-8-13-BF/AN


401-81-62-G/AN

Contact tips


40-3-0.8S/FTE


40-4-5-1.0/FTE


40-4-7-1.0S/FTC


40-4-9-1/CEP


40-6-5-035/FTE


40-6-7-035/CEP


40-7-0.8/FTAg

Tip holders


43-16-2/AN


43-9-2/AN


43-3-1/AN


43-24-1/AN


43-8-6/AN


43-20-1/AN

Other equipment


58-1-5/AN


65-7/AN


51-9001-00/AN


71-3-25/AN


66-15-S/AN


66-16-R/AN

Examples of torches we are offering consumables for

Standard®

Power Lock®

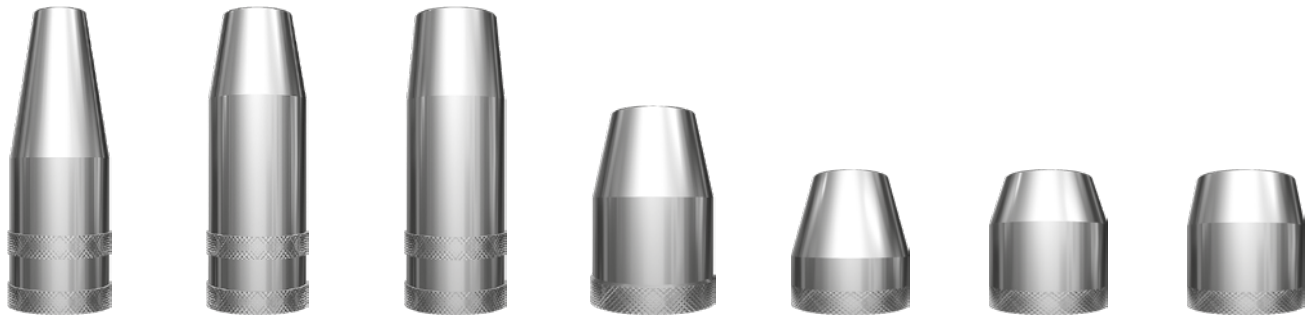
QK CeraMIG®

ZK®

QK®

Dinse® – compatible spare parts

Gas nozzles



6390152090/AN | 6390152120/AN | 6390152150/AN | 6390159140/AN | 628040315/AN | 628040318/AN | 628040321/AN

Contact tips

629034610/FTAg | 619035410/FTC | 629034210/FTC | 629030008/CEP | 629030010/FTC | 629030110/CEP | 629033010/FTAg

Tip holders

6390433000/AN | 629040301/AN | 629040302/AN | 628150008/AN | 618150001/AN | 619040560/AN | 628150006/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.

6390252000/AN

6390250000/AN

628040303/AN

6391053000/AN

639061500041/AN

6391052001/AN

628040301/AN

Examples of torches we are offering consumables for

DIX METZ 352®

DIX MET 3222®

DIX METZ 542®

DIX MET 3745®

DIX METZ 568®

DIX METZ 524®

DIX METZ 590®

DIX MET 394®

DIX MFTZ 5400®

Binzel® – compatible spare parts

Gas nozzles


145.0553 /AN


145.0089/AN


145.0601/AN


145.0495/AN


145.0671/AN


145.0573/AN


145.0686/AN

Contact tips


140.1356/FTE


140.1563/FTC


140.0245/CEP


140.0316/FTC


140.0348/FTAg


147.0245/FTC/S


147.0316/FTC/S

Tip holders


142.0117.10/AN


142.0133.10/AN


142.0214.10/AN


785.5052/AN


142.0160.5/AN


142.0170.5/AN


142.0158.5/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.


980.0019/AN


146.0064/AN


146.0079.10/AN


943.0284/AN


146.0056/AN


962.0657/AN


980.0142.10/AN

Examples of torches we are offering consumables for

Abirob W300®

Abirob W500®

Robo WH W300®

Abirob A500®

Robo WH A500®

Abirob 350GC®

Robo 455D®

Robo WH W600®

Robo WH A360®

Cloos® – compatible spare parts

Gas nozzles


063053900/AN


063056113/AN


0709000005/AN


063012000/AN


0709000005/AN


0709000100/AN

Contact tips


062120003/FTC


062120003/FTC/S


062122207/FtAg


062010004/CEP


062020603/FTC

Tip holders


0709000004/AN


0708000001/AN


0707000002/AN


0707000002/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.


0709000003/AN


0063051001/AN


0063051000/AN


0709000002/AN


0591000202/AN

Examples of torches we are offering consumables for

MRW 300®

MRW350®

MRW380®

MRW450®

MRW500®

MRW610®

OTC® – compatible spare parts

Gas nozzles


U724E01/AN


L10612C04/AN


L10612C06/AN


U2774E01/AN


U2774E04/AN


L10603C02/AN


L10603C03/AN

Contact tips


L7250B03/FTC


L7250B04/CEP


L10361B05/FTC


L10669C03/CEP


L10669F02/FTAg

Tip holders


L10603C01/AN


L10603C01/AN


L10603F01/AN


L10603F01/AN


L10606C01/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.


U2774E03/AN


U3766K01/AN


U4167G02/AN


U2437H01/AN


L10603B04/AN


3574-017/AN


L6573C02/AN

Examples of torches we are offering consumables for

RT3500H®

RTW5000H®

RT5000H®

RTW5000S®

RT3500S®

RT5000S®

RT5000L®

RTW5000L®

RT3500L®

Panasonic® – compatible spare parts

Gas nozzles


TGN00038/AN


TGN00044/AN


TGN00065/AN


TGN00105/AN


TGN 01208/AN


TGN00010/AN


TGN 01208/AN

Contact tips


TET 01046/FTAg


TET 01072/FTE


TET01068/FTC


TET01067/FTE


TET01296/CEP


TET01093/FTC/S


TET 01013/CEP

Tip holders


U4170G03/AN


U4173G21/AN


WTCX-3503/AN


TEB 00027/AN


TEB 35116/AN


TEB 35116/AN

Other equipment

diffusors, sleeves, insulation rings, o-rings, etc.


TGR01001/AN


U608T00/AN


U4173G02/AN


U4173L00/AN


TFZ35101/AN

Examples of torches we are offering consumables for

TCU20111®

TCU35001®

TCU35022®

Other manufacturers whose parts we offer

IGM®	LINCOLN®
TOKIN®	MOTOMAN®
KEMPPI®	VALK WELDING®

Specialist welding consumables for repair and regeneration

In our product portfolio we also have specialized welding consumables used for repair and regeneration as well as protection against various forms of wear such as attrition, abrasion, fatigue caused by repeated impact or pressure.

These products are most often used for: unalloyed and fine-grained steels, low-alloy steels, stainless and heat-resistant steels, for alloys based on nickel, cast iron, copper and manganese steels, tool steels for both cold and hot work as well as cobalt alloys.

Our consumables comply with the standards (AWS, EN, DIN, No. Werkstoff) of all top manufacturers of those types of consumables.

Coated electrodes

TIG rods

Solid wires

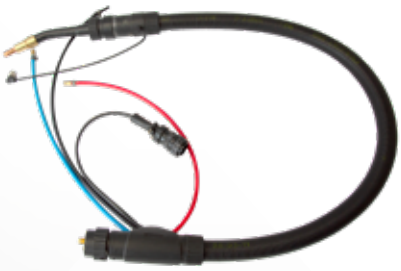
Powder wires

Our offer also includes:

torch necks

alignment jig
for torch necks

pins, RPS, shims
and special parts



regeneration
of welding torches
and cables

Contact tip and welding continuity and stability

The contact tip is one of smallest and relatively cheapest parts of the welding torch, but its defects or wear can cause breakdowns leading to production downtime which generates high costs. In most cases, the economic losses caused by the wear of the contact tip are many times higher than the value of the new part.

The primary task of each contact tip is to transfer electricity to the welding wire being fed. Electrical contact occurs between the wire and the edge of the tip hole. Contact tip defects occurring in both robotic and manual welding can be divided into those which:

- cause the process to stop,
- cause a lack of ignition (wire sticking, wrong start, arc instability),
- affect the quality of the welding joint .

In the process of manual welding, the welder usually decides about replacing the tip with a new one, and any problems are monitored on an ongoing basis. In robotic applications, users strive to maintain maximum process continuity and minimize downtime, so the tips are replaced according to the imposed schedule, most often after each one or several production shifts. At the same time, the tips are subject to very high quality requirements, because the breakdown of the process results in serious losses.

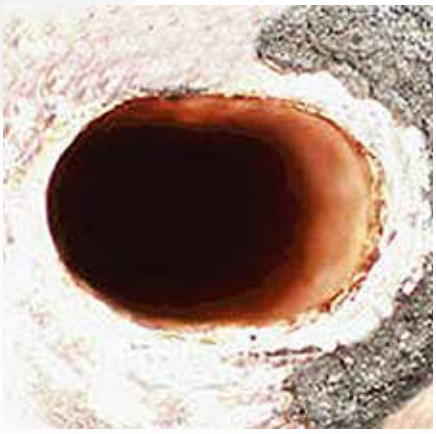


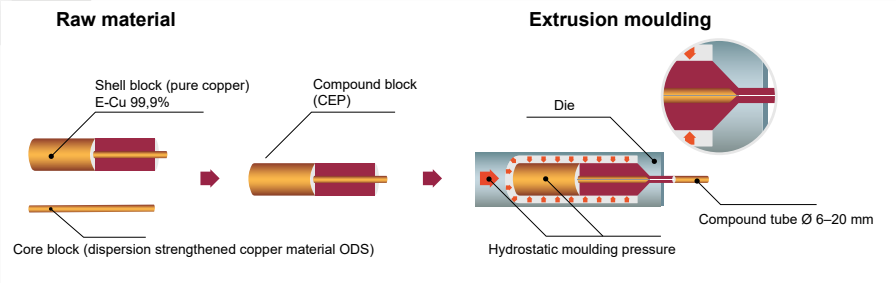
Photo 1. Elliptical hole in a contact tip

The repeatability of the working point of a robot handle, the so-called TCP, is necessary to avoid costly correction of the robot's trajectory. One of the most important problems related to the accuracy of the TCP position is the elliptical wear of the end part of the welding tip (photo 1) caused by the friction of the welding wire against the walls of the internal channel. This type of damage in welding at a robotic station can be the cause of a lack of penetration or of burnouts that the contact tip is most often damaged in the outlet area. In this area, the current and temperature are so high that the so-called electrical erosion occurs, as well as attrition and oxidation - phenomena that significantly accelerate wear.

As a result, the current transmitted to the wire is too low or unstable. The current flow largely depends on the contact resistance between the wire and the tip, and electrical conductivity plays a key role in the length of a tip's life. The use of an alloy with the highest electrical conductivity will increase the life of the tips.

Choice of alloys tailored to your application

For many decades, the material chosen for the production of contact tips was copper, mainly because of its electrical conductivity – second best after silver. However, its crystal structure causes natural ductility of the material, which, combined with the low hardness of copper, limits its use. Copper can be improved in the cold-work hardening and dispersion hardening processes. The most popular and the cheapest copper alloy, used for years for the production of contact tips, is phosphorus deoxidized copper DIN 2.0090 Cu – DHP. Alloys hardened by doping other elements such as FTC DIN 2.1293 (CuCrZr) and DIN 2.1291 (CuCr) are commonly used for the production of high quality contact tips – the so-called hardened ones. Unfortunately, processes of copper strengthening cause deterioration of its electrical conductivity. As a result, the optimal selection of the contact tip depends on the type of welding and many external factors. The comparison of possibilities offered by different materials from which tips are made is as follows:



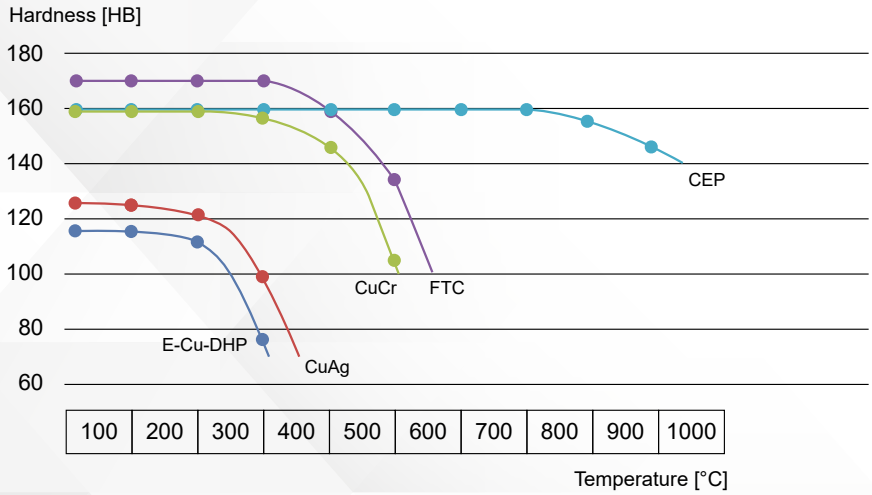
Pict. 1. Illustration of the hydrostatic extrusion procedure

DHP – Cu99% – phosphorus deoxidized copper, standard material, very good properties.

FTC – CuCrZr – alloy with increased hardness used for manual and robotic welding. Perfectly suited to rigid and abrasive alloyed wires. It is very widely used as a universal material for demanding applications.

CuAg – developed in cooperation with Japanese OEMs of welding equipment. The electrical conductivity of the copper-silver material (CuAg) is 98% IACS. It is not surprising that electrical conductivity is a parameter that distinguishes the CuAg alloy tips. This material has been used in the production of tips with increased properties limiting the occurrence of electric erosion. These features are directly related to a lower operating temperature, better conductivity and the ability to transfer the electric arc through the tip. It is characterized by a smooth ignition of the arc in robotic and automatic welding. Perfect for working with steel and aluminum wire and some types of cored wires.

CEP – the invention of the innovative hydrostatic extrusion process has enabled the production of composite wall tubes for the production of contact tips that combine the features of two materials. The external material is pure E-Cu copper (best electrical conductivity and relatively low price), and the guide channel is made of dispersion-hardened copper (very good hardness at high operating temperatures - about 160 HB at temperatures up to 800 ° C, increased abrasion resistance). The internal wire guide channel is perfectly round. We can also supply tips with an internal channel in the shape of a five-pointed star, characterized by better adhesion of the wire to the walls and about 30% greater ability to remove dirt and wire peeling.



Pict. 2. Change in contact tip hardness depending on work temperature

WEAR OF WELDING TIPS

Electrical erosion is a phenomenon very similar to the work of brushes in an electric motor or the spark in a spark plug. The welding wire is fed through the tip at a speed of about 8 m/min, and the electric current must be transferred from the welding tip to the wire, hence the colloquial name „contact tip".

The phenomenon of a continuous electric arc occurs at the contact point between the wire and the inner hole of the tip. As a result of electrical erosion, the contact surface of the hole gradually increases/melts. If a smooth arc ignition is key for the user, they should use a copper alloy with the best electrical performance. If the conductivity of the contact tip is higher, its transmission of the electric current to the wire will be smoother.

Another factor that influences the tip's work and its wear is the operating temperature. When the tip heats up during welding, the material softens and becomes less resistant to abrasion. The ability of the tip to dissipate heat (thermal conductivity) plays an important role in maintaining the proper operating temperature, while the lower temperature of the tip has a positive effect on the stability of the electrical contact between the tip and the wire.

The reasons behind a rapid wear of the contact tip may vary; often external factors also have a decisive influence. The electrical resistance of a material is inversely proportional to its electrical conductivity and directly affects the heat generated. Higher electrical conductivity improves the transfer of electric current to the tip, which facilitates ignition and reduces the phenomenon of sticking to the wire and the occurrence of chips. In the case of machines operating in the pulse mode, where the peak current reaches a very high value, current tips made of FTC and CEP materials will work best. We also suggest trying the CuAg alloy tips for manual welding. When welding with dirty or peeling wire, contaminants collect at the tip's ‚entrance'. It is recommended to change the wire guides more often or introduce additional wire cleaning through the eyelets/

MATERIAL	ALLOY	ELECTRICAL CONDUCTIVITY	HARDNESS	SOFTENING POINT	THERMAL CONDUCTIVITY
DHP – Deoxidized High Phosphorus Copper	Cu 99.9 + P	85% IACS	115 HB	300 °C	340 W/m · K
FTC – Copper Chrome Zirconium	CuCrZr	75% IACS	170 HB	500 °C	330 W/m · K
CuCr – Copper Chrome	CuCr	75% IACS	160 HB	480 °C	350 W/m · K
CuAg – Copper Silver	CuAg	98% IACS	125 HB	350 °C	380 W/m · K
CEP – Dispersion Strengthened Copper	Cu-CEP	75% IACS	160 HB	800 °C	340 W/m · K

Tab. Comparison of contact tips made of different alloys

brushes. However, the best choice will be to buy a good quality wire from another manufacturer.

Dirt is the cause of burnouts in the tip brought about by the retraction of the arc. If the dirt is dry and only abrasive, using FTC hardened tips will extend the exploitation time. For lubricants and other oily contaminants, we suggest using standard DHP tips, because the tips clog and burnout very quickly, which necessitates their frequent replacement, and the user usually takes into consideration to the lowest price.

The cored wires are cold drawn or hot drawn in the production process. Soft cored wire can be bent and hard cored wire will usually break when attempted to over bend. Soft cored wires fed through a feeder with guide rollers with a U-shaped working part will work perfectly with CuAg tips. Feeder rollers with a V-shaped work surface, flat or knurled, deform the steel wire and cause the coated wire to peel. The use of hardened FTC current tips will minimize their mechanical wear.

Cu-DHP standard tips are only offered to customers buying large quantities of parts for manual welding with plain wire, where price is the most important selection criterion. Wire sticking, no ignition or poor arc ignition can be caused by many factors, e.g. dirty wire guide and/or contact tip, coiled, bent or twisted welding gun wire or wire between the feeder and the welding gun on the robot. Too big or too short distance between the tip and the weld during welding, condition of ground and wire conductors, oil, dirt and mill scale on the surface of the welded structure, a large number of spatter on galvanized sheets or a poorly tightened tip or diffuser also have a significant impact. The use of CuAg, FTC and CEP alloy tips will help minimize the above problems, but will not eliminate them.

The wear of the outlet part of the contact tip results from both the hardness and the parameters of the tip itself, as well as from too long a period of time between its replacements. If the downtime associated with tip wear is rare and the process is carried out correctly after its replacement, you can take this condition as a reference for testing our tip materials.

Test results usually translate directly into money savings. Plasma Point Polska specializes in supplying wear parts for the cutting and welding process. Cooperation with us allows you to optimize the use of consumable parts and reduce their purchase costs. An additional and often key aspect is the improvement of product quality, reduction of production downtime and the number of modifications as well as stability of the TCP working point for robotic welding. Contact tips are manufactured in an automatic cycle on CNC production machines. Used are thick-walled pressed tubes of the highest quality, without admixtures of recycled copper, from renowned European producers of copper alloys for welding processes.

The main clients of Plasma Point Polska are companies from the Automotive sector using parts in robotic welding booths, which confirms the highest quality of the products. The company supplies consumable parts for welding equipment from manufacturers such as Fronius, Binzel, OTC, SKS, Dinse, Lincoln, Kemppi, Esab and Bernard and for submerged arc welding according to the Esab, Miller and Lincoln standards.

Customer service

Production

Quality control

Service

Warehouse

ISO 9001:2015

TÜV NORD

CERTIFICATE

Management system as per
ISO 9001 : 2015

PLASMA POINT POLSKA Marcin Niemiec
ul. Niedrzeczna 61, PL / 43-400 Tychy

Distribution of consumables and protective materials for following processes: plasma, laser and oxy-fuel cutting, welding and resistance welding. Sales of refractory metals, parts and electrodes made from them. Design and manufacturing of special parts.

Certification Body
at TÜV NORD CERT GmbH

This certification was conducted in accordance with the DIN EN ISO/IEC 17021-1:2015 and is subject to regular surveillance audits. The certificate is valid only in conjunction with the annex.

TÜV NORD CERT GmbH

IAF DAkkS

Our catalogues

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