



EN

welding torch

MT301-451W F2

MT301-551W (ON SRA-Kit)

PM301-551W (ON SRA-Kit)

099-510058-EW501

Observe additional system documents!

07.01.2021

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General instructions

WARNING



Read the operating instructions!

The operating instructions provide an introduction to the safe use of the products.

- Read and observe the operating instructions for all system components, especially the safety instructions and warning notices!
- Observe the accident prevention regulations and any regional regulations!
- The operating instructions must be kept at the location where the machine is operated.
- Safety and warning labels on the machine indicate any possible risks. Keep these labels clean and legible at all times.
- The machine has been constructed to state-of-the-art standards in line with any applicable regulations and industrial standards. Only trained personnel may operate, service and repair the machine.
- Technical changes due to further development in machine technology may lead to a differing welding behaviour.

In the event of queries on installation, commissioning, operation or special conditions at the installation site, or on usage, please contact your sales partner or our customer service department on +49 2680 181-0.

A list of authorised sales partners can be found at www.ewm-group.com/en/specialist-dealers.

Liability relating to the operation of this equipment is restricted solely to the function of the equipment. No other form of liability, regardless of type, shall be accepted. This exclusion of liability shall be deemed accepted by the user on commissioning the equipment.

The manufacturer is unable to monitor whether or not these instructions or the conditions and methods are observed during installation, operation, usage and maintenance of the equipment.

An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

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Dr. Günter-Henle-Strasse 8
56271 Mündersbach Germany
Tel.: +49 2680 181-0, Fax: -244
Email: info@ewm-group.com
www.ewm-group.com

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2 For your safety

2.1 Notes on using these operating instructions

DANGER

Working or operating procedures which must be closely observed to prevent imminent serious and even fatal injuries.

- Safety notes include the "DANGER" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol on the edge of the page.

WARNING

Working or operating procedures which must be closely observed to prevent serious and even fatal injuries.

- Safety notes include the "WARNING" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol in the page margin.

CAUTION

Working or operating procedures which must be closely observed to prevent possible minor personal injury.

- The safety information includes the "CAUTION" keyword in its heading with a general warning symbol.
- The risk is explained using a symbol on the edge of the page.



Technical aspects which the user must observe to avoid material or equipment damage.

Instructions and lists detailing step-by-step actions for given situations can be recognised via bullet points, e.g.:

- Insert the welding current lead socket into the relevant socket and lock.

2.2 Explanation of icons

Symbol	Description	Symbol	Description
	Indicates technical aspects which the user must observe.		Activate and release / Tap / Tip
	Switch off machine		Release
	Switch on machine		Press and hold
			Switch
	Incorrect / Invalid		Turn
	Correct / Valid		Numerical value – adjustable
	Input		Signal light lights up in green
	Navigation		Signal light flashes green
	Output		Signal light lights up in red
	Time representation (e.g.: wait 4 s / actuate)		Signal light flashes red
	Interruption in the menu display (other setting options possible)		
	Tool not required/do not use		
	Tool required/use		

2.3 Safety instructions

WARNING



Risk of accidents due to non-compliance with the safety instructions!
Non-compliance with the safety instructions can be fatal!

- Carefully read the safety instructions in this manual!
- Observe the accident prevention regulations and any regional regulations!
- Inform persons in the working area that they must comply with the regulations!



Risk of injury from electrical voltage!

Voltages can cause potentially fatal electric shocks and burns on contact. Even low voltages can cause a shock and lead to accidents.

- Never touch live components such as welding current sockets or stick, tungsten or wire electrodes!
- Always place torches and electrode holders on an insulated surface!
- Wear the full personal protective equipment (depending on the application)!
- The machine may only be opened by qualified personnel!
- The device must not be used to defrost pipes!



Hazard when interconnecting multiple power sources!

If a number of power sources are to be connected in parallel or in series, only a technical specialist may interconnect the sources as per standard IEC 60974-9:2010: Installation and use and German Accident Prevention Regulation BVG D1 (formerly VBG 15) or country-specific regulations.

Before commencing arc welding, a test must verify that the equipment cannot exceed the maximum permitted open circuit voltage.

- Only qualified personnel may connect the machine.
- When taking individual power sources out of operation, all mains and welding current leads must be safely disconnected from the welding system as a whole. (Hazard due to reverse polarity voltage!)
- Do not interconnect welding machines with pole reversing switch (PWS series) or machines for AC welding since a minor error in operation can cause the welding voltages to be combined, which is not permitted.



Risk of injury due to radiation or heat!

Arc radiation can lead to skin and eye injuries.

Contact with hot workpieces and sparks can lead to burns.

- Use hand shield or welding helmet with the appropriate safety level (depends on the application).
- Wear dry protective clothing (e.g. hand shield, gloves, etc.) in accordance with the applicable regulations of your country.
- Persons who are not directly involved should be protected with a welding curtain or suitable safety screen against radiation and the risk of blinding!

WARNING



Risk of injury due to improper clothing!

During arc welding, radiation, heat and voltage are sources of risk that cannot be avoided. The user has to be equipped with the complete personal protective equipment at all times. The protective equipment has to include:

- Respiratory protection against hazardous substances and mixtures (fumes and vapours); otherwise implement suitable measures such as extraction facilities.
- Welding helmet with proper protection against ionizing radiation (IR and UV radiation) and heat.
- Dry welding clothing (shoes, gloves and body protection) to protect against warm environments with conditions comparable to ambient temperatures of 100 °C or higher and arcing and work on live components.
- Hearing protection against harming noise.



Explosion risk!

Apparently harmless substances in closed containers may generate excessive pressure when heated.

- Move containers with inflammable or explosive liquids away from the working area!
- Never heat explosive liquids, dusts or gases by welding or cutting!



Fire hazard!

Due to the high temperatures, sparks, glowing parts and hot slag that occur during welding, there is a risk of flames.

- Be watchful of potential sources of fire in the working area!
- Do not carry any easily inflammable objects, e.g. matches or lighters.
- Ensure suitable fire extinguishers are available in the working area!
- Thoroughly remove any residue of flammable materials from the workpiece prior to starting to weld.
- Only further process workpieces after they have cooled down. Do not allow them to contact any flammable materials!

⚠ CAUTION



Smoke and gases!

Smoke and gases can lead to breathing difficulties and poisoning. In addition, solvent vapour (chlorinated hydrocarbon) may be converted into poisonous phosgene due to the ultraviolet radiation of the arc!

- Ensure that there is sufficient fresh air!
- Keep solvent vapour away from the arc beam field!
- Wear suitable breathing apparatus if appropriate!



Noise exposure!

Noise exceeding 70 dBA can cause permanent hearing damage!

- Wear suitable ear protection!
- Persons located within the working area must wear suitable ear protection!



According to IEC 60974-10, welding machines are divided into two classes of electromagnetic compatibility (the EMC class can be found in the Technical data) > see 8 chapter:



Class A machines are not intended for use in residential areas where the power supply comes from the low-voltage public mains network. When ensuring the electromagnetic compatibility of class A machines, difficulties can arise in these areas due to interference not only in the supply lines but also in the form of radiated interference.



Class B machines fulfil the EMC requirements in industrial as well as residential areas, including residential areas connected to the low-voltage public mains network.

Setting up and operating

When operating arc welding systems, in some cases, electro-magnetic interference can occur although all of the welding machines comply with the emission limits specified in the standard. The user is responsible for any interference caused by welding.

In order to **evaluate** any possible problems with electromagnetic compatibility in the surrounding area, the user must consider the following: (see also EN 60974-10 Appendix A)

- Mains, control, signal and telecommunication lines
- Radios and televisions
- Computers and other control systems
- Safety equipment
- The health of neighbouring persons, especially if they have a pacemaker or wear a hearing aid
- Calibration and measuring equipment
- The immunity to interference of other equipment in the surrounding area
- The time of day at which the welding work must be carried out

Recommendations for reducing interference emission

- Mains connection, e.g. additional mains filter or shielding with a metal tube
- Maintenance of the arc welding system
- Welding leads should be as short as possible and run closely together along the ground
- Potential equalization
- Earthing of the workpiece. In cases where it is not possible to earth the workpiece directly, it should be connected by means of suitable capacitors.
- Shielding from other equipment in the surrounding area or the entire welding system



Electromagnetic fields!

The power source may cause electrical or electromagnetic fields to be produced which could affect the correct functioning of electronic equipment such as IT or CNC devices, telecommunication lines, power cables, signal lines and pacemakers.



- Observe the maintenance instructions > see 6.2 chapter!
- Unwind welding leads completely!
- Shield devices or equipment sensitive to radiation accordingly!
- The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

CAUTION



Obligations of the operator!

The respective national directives and laws must be complied with when operating the machine!

- Implementation of national legislation relating to framework directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work and associated individual guidelines.
- In particular, directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work.
- The regulations applicable to occupational safety and accident prevention in the country concerned.
- Setting up and operating the machine as per IEC 60974.-9.
- Brief the user on safety-conscious work practices on a regular basis.
- Regularly inspect the machine as per IEC 60974.-4.



The manufacturer's warranty becomes void if non-genuine parts are used!

- ***Only use system components and options (power sources, welding torches, electrode holders, remote controls, spare parts and replacement parts, etc.) from our range of products!***
- ***Only insert and lock accessory components into the relevant connection socket when the machine is switched off.***

Requirements for connection to the public mains network

High-performance machines can influence the mains quality by taking current from the mains network. For some types of machines, connection restrictions or requirements relating to the maximum possible line impedance or the necessary minimum supply capacity at the interface with the public network (Point of Common Coupling, PCC) can therefore apply. In this respect, attention is also drawn to the machines' technical data. In this case, it is the responsibility of the operator, where necessary in consultation with the mains network operator, to ensure that the machine can be connected.

2.4 Transport and installation

WARNING



Risk of injury due to improper handling of shielding gas cylinders!

Improper handling and insufficient securing of shielding gas cylinders can cause serious injuries!

- Observe the instructions from the gas manufacturer and any relevant regulations concerning the use of compressed air!
- Do not attach any element to the shielding gas cylinder valve!
- Prevent the shielding gas cylinder from heating up.

⚠ CAUTION



Risk of accidents due to supply lines!

During transport, attached supply lines (mains leads, control cables, etc.) can cause risks, e.g. by causing connected machines to tip over and injure persons!

- Disconnect all supply lines before transport!



Risk of tipping!

There is a risk of the machine tipping over and injuring persons or being damaged itself during movement and set up. Tilt resistance is guaranteed up to an angle of 10° (according to IEC 60974-1).

- Set up and transport the machine on level, solid ground.
- Secure add-on parts using suitable equipment.



Risk of accidents due to incorrectly installed leads!

Incorrectly installed leads (mains, control and welding leads or intermediate hose packages) can present a tripping hazard.

- Lay the supply lines flat on the floor (avoid loops).
- Avoid laying the leads on passage ways.



Risk of injury from heated coolant and its connections!

The coolant used and its connection or connection points can heat up significantly during operation (water-cooled version). When opening the coolant circuit, escaping coolant may cause scalding.

- Open the coolant circuit only when the power source or cooling unit is switched off!
- Wear proper protective equipment (protective gloves)!
- Seal open connections of the hose leads with suitable plugs.



The units are designed for operation in an upright position!

Operation in non-permissible positions can cause equipment damage.

- ***Only transport and operate in an upright position!***



Accessory components and the power source itself can be damaged by incorrect connection!

- ***Only insert and lock accessory components into the relevant connection socket when the machine is switched off.***
- ***Comprehensive descriptions can be found in the operating instructions for the relevant accessory components.***
- ***Accessory components are detected automatically after the power source is switched on.***



Protective dust caps protect the connection sockets and therefore the machine against dirt and damage.

- ***The protective dust cap must be fitted if there is no accessory component being operated on that connection.***
- ***The cap must be replaced if faulty or if lost!***

3 Intended use

WARNING



Hazards due to improper usage!

The machine has been constructed to the state of the art and any regulations and standards applicable for use in industry and trade. It may only be used for the welding procedures indicated at the rating plate. Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!

- The equipment must only be used in line with its designated purpose and by trained or expert personnel!
- Do not improperly modify or convert the equipment!

3.1 Applications

Welding fume extractor torch for arc welding machines for GMAW.

3.2 Documents which also apply

3.2.1 Warranty

For more information refer to the "Warranty registration" brochure supplied and our information regarding warranty, maintenance and testing at www.ewm-group.com!

3.2.2 Declaration of Conformity



This product corresponds in its design and construction to the EU directives listed in the declaration. The product comes with a relevant declaration of conformity in the original.

The manufacturer recommends carrying out the safety inspection according to national and international standards and guidelines every 12 months.

3.2.3 Service documents (spare parts)

WARNING



Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!

The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

Spare parts can be obtained from the relevant authorised dealer.

3.2.4 Part of the complete documentation

This document is part of the complete documentation and valid only in combination with all other parts of these instructions! Read and observe the operating instructions for all system components, especially the safety instructions!

The illustration shows a general example of a welding system.

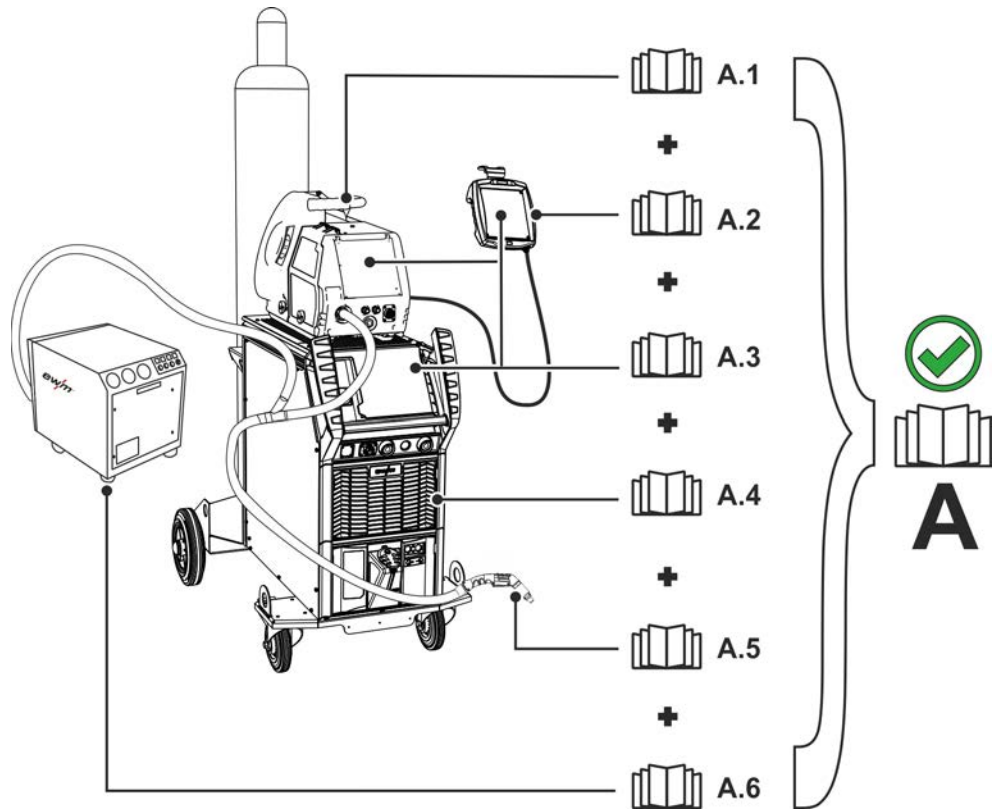


Figure 3-1

The illustration shows a general example of a welding system.

Item	Documentation
A.1	Wire feeder
A.2	Remote control
A.3	Control
A.4	Power source
A.5	Welding torch
A.6	Extraction and filter system
A	Complete documentation

4 Product description – quick reference

4.1 Product variants

Version	Functions	Performance class
W	Water-cooled	MT301, MT451, MT551 PM301, PM451, PM551
F2	Welding fume extractor The welding torch is designed to extract welding fumes and equipped with a ball joint.	MT301, MT451

4.2 Welding fume extractor

4.2.1 MT301-, MT451W F2

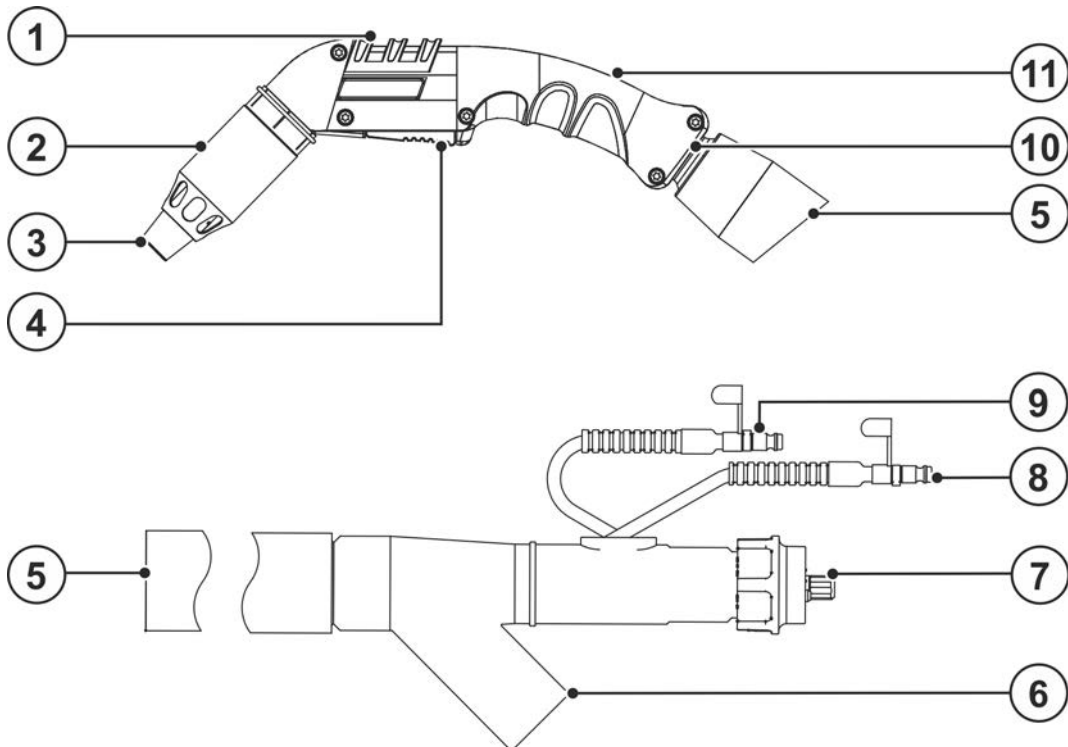


Figure 4-1

Item	Symbol	Description
1		Bypass slider, extraction capacity
2		Extraction nozzle
3		Gas nozzle
4		Torch trigger
5		Welding torch hose package
6		Connection, extraction unit Connect to extraction device or central extraction unit Ø = 42.5 mm
7		Euro central connection
8		Quick connect coupling, blue (coolant supply)
9		Quick connect coupling, red (coolant return)
10		Ball joint
11		Grip plate

4.2.2 MT- / PM 301W, - 451W,- 551W with conversion kit ON SRA-Kit PM / MT

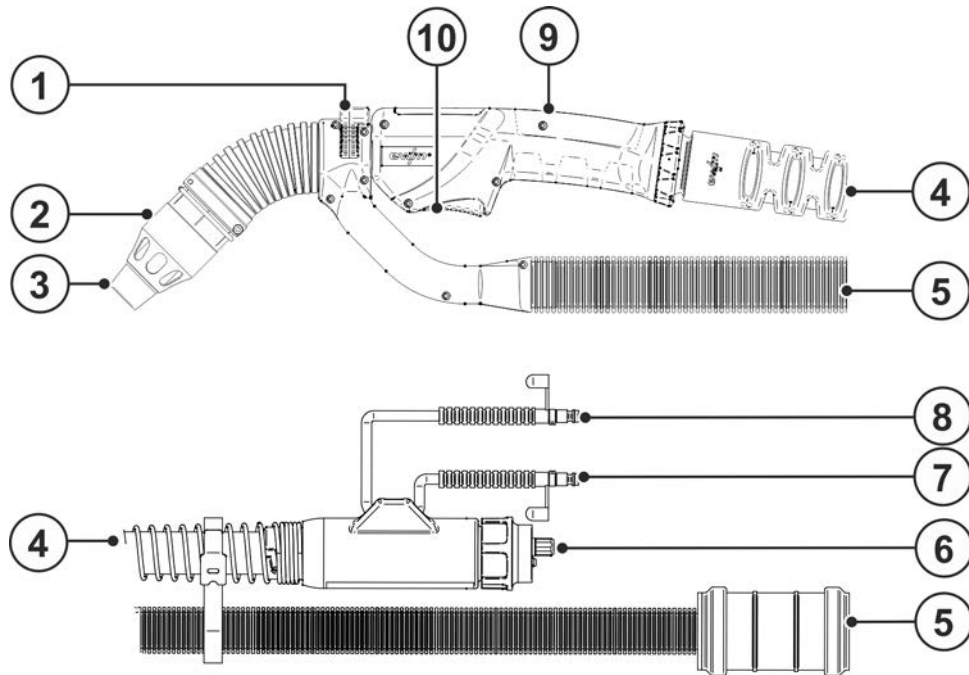



Figure 4-2

Item	Symbol	Description
1		Bypass slider, extraction capacity
2		Extraction nozzle
3		Gas nozzle
4		Welding torch hose package
5		Connection, extraction unit Connection to the extraction unit or central extraction - Ø = 50 mm
6		Euro central connection
7		Quick connect coupling, blue (coolant supply)
8		Quick connect coupling, red (coolant return)
9		Grip plate
10		Torch trigger

5 Design and function

5.1 General

WARNING



Risk of injury from electrical voltage!

Contact with live parts, e.g. power connections, can be fatal!

- Observe the safety information on the first pages of the operating instructions!
- Commissioning must be carried out by persons who are specifically trained in handling power sources!
- Connect connection or power cables while the machine is switched off!

CAUTION



Risk of injury due to moving parts!

The wire feeders are equipped with moving parts, which can trap hands, hair, clothing or tools and thus injure persons!

- Do not reach into rotating or moving parts or drive components!
- Keep casing covers or protective caps closed during operation!



Risk of injury due to welding wire escaping in an unpredictable manner!

Welding wire can be conveyed at very high speeds and, if conveyed incorrectly, may escape in an uncontrolled manner and injure persons!

- Before mains connection, set up the complete wire guide system from the wire spool to the welding torch!
- Check wire guide at regular intervals!
- Keep all casing covers or protective caps closed during operation!



Accessory components and the power source itself can be damaged by incorrect connection!

- **Only insert and lock accessory components into the relevant connection socket when the machine is switched off.**
- **Comprehensive descriptions can be found in the operating instructions for the relevant accessory components.**
- **Accessory components are detected automatically after the power source is switched on.**



Protective dust caps protect the connection sockets and therefore the machine against dirt and damage.

- **The protective dust cap must be fitted if there is no accessory component being operated on that connection.**
- **The cap must be replaced if faulty or if lost!**

Read and observe the documentation to all system and accessory components!

5.2 Scope of delivery

The delivery is checked and packaged carefully before dispatch, however it is not possible to exclude the possibility of damage during transit.

Receiving inspection

- Check that the delivery is complete using the delivery note!

In the event of damage to the packaging

- Check the delivery for damage (visual inspection)!

In the event of complaints

If the delivery has been damaged during transport:

- Please contact the last haulier immediately!
- Keep the packaging (for possible checking by the haulier or for the return shipment).

Packaging for returns

If possible, please use the original packaging and the original packaging material. If you have any queries on packaging and protection during transport, please contact your supplier.

5.3 Transport and installation

⚠ CAUTION



Risk of accidents due to supply lines!

During transport, attached supply lines (mains leads, control cables, etc.) can cause risks, e.g. by causing connected machines to tip over and injure persons!

- Disconnect all supply lines before transport!

5.3.1 Ambient conditions



Equipment damage due to contamination!

Unusually high amounts of dust, acids, corrosive gases or substances can damage the machine (observe maintenance intervals > see 6.2 chapter).

- **Avoid large amounts of smoke, steam, oily fumes, grinding dust and corrosive ambient air!**

5.3.1.1 In operation

Temperature range of the ambient air:

- -10 °C to +40 °C (-13 F to 104 F)^[1]

Relative humidity:

- up to 50 % at 40 °C (104 F)
- up to 90 % at 20 °C (68 F)

5.3.1.2 Transport and storage

Storage in a closed area, temperature range of the ambient air:

- -25 °C to +55 °C (-13 F to 131 F)^[1]

Relative humidity

- up to 90 % at 20 °C (68 F)

^[1] Ambient temperature dependent on coolant! Observe the coolant temperature range of the torch cooling

5.3.2 Welding torch cooling system



Insufficient frost protection in the welding torch coolant.

Depending on the ambient conditions, different liquids are used to cool the welding torch > see 5.3.2.1 chapter. Coolant with frost protection (KF 37E or KF 23E) must be checked at regular intervals for sufficient frost protection to prevent damage to the machine or the accessory components.

- **The coolant must be checked with the frost protection tester TYP 1 > see 8.4 chapter for sufficient frost protection.**
- **Replace coolant with insufficient frost protection if necessary.**



Material damage due to unsuitable coolants!

Unsuitable coolant, coolants mixed with other types / liquids or use in an unsuitable temperature range will result in material damage and loss of the manufacturer's warranty!

- **Operation without coolant is not permitted (dry running will destroy the coolant pump)!**
- **Only use the coolants described in these instructions for the specified ambient conditions (temperature range) > see 5.3.2.1 chapter.**
- **Do not mix coolants of different types (including those described in these instructions).**
- **When changing the coolant, all liquid must be replaced and the cooling system flushed.**

Dispose of the coolant in accordance with local regulations and the material safety data sheets.

5.3.2.1 Permitted torch coolant

Coolant	Temperature range
blueCool -10	-10 °C to +40 °C (14 °F to +104 °F)
KF 23E (Standard)	-10 °C to +40 °C (14 °F to +104 °F)
KF 37E	-20 °C to +30 °C (-4 °F to +86 °F)
blueCool -30	-30 °C to +40 °C (-22 °F to +104 °F)

5.3.2.2 Maximal hose package length

All information relates to the total hose package length of the complete welding system and presents exemplary configurations (of components of the EWM product portfolio with standard lengths). A straight kink-free installation is to be ensured, taking into account the max. delivery height.

Pump: Pmax = 3,5 bar (0.35 MPa)

Power source	Hose package	Wire feeder	miniDrive	Welding torch	Max.
Compact			 (25 m / 82 ft.)	 (5 m / 16 ft.)	30 m 98 ft.
	 (20 m / 65 ft.)			 (5 m / 16 ft.)	
Decompact	 (25 m / 82 ft.)			 (5 m / 16 ft.)	
	 (15 m / 49 ft.)		 (10 m / 32 ft.)	 (5 m / 16 ft.)	

Pump: Pmax = 4.5 bar (0.45 MPa)

Power source	Hose package	Wire feeder	miniDrive	Welding torch	Max.
Compact			 (25 m / 82 ft.)	 (5 m / 16 ft.)	30 m 98 ft.
	 (30 m / 98 ft.)			 (5 m / 16 ft.)	40 m 131 ft.
Decompact	 (40 m / 131 ft.)			 (5 m / 16 ft.)	45 m 147 ft.
	 (40 m / 131 ft.)		 (25 m / 82 ft.)	 (5 m / 16 ft.)	70 m 229 ft.

5.4 Configure welding torch

WARNING



Risk of burns and electric shock on the welding torch!

Welding torch (torch neck or torch head) and coolant (water-cooled version) heat up strongly during the welding process. During assembly work, you may come into touch with electrical voltage or hot components.



- Wear proper protective equipment!
- Switch off the power source or torch cooling and allow the welding torch to cool!

Switch off the extraction system.

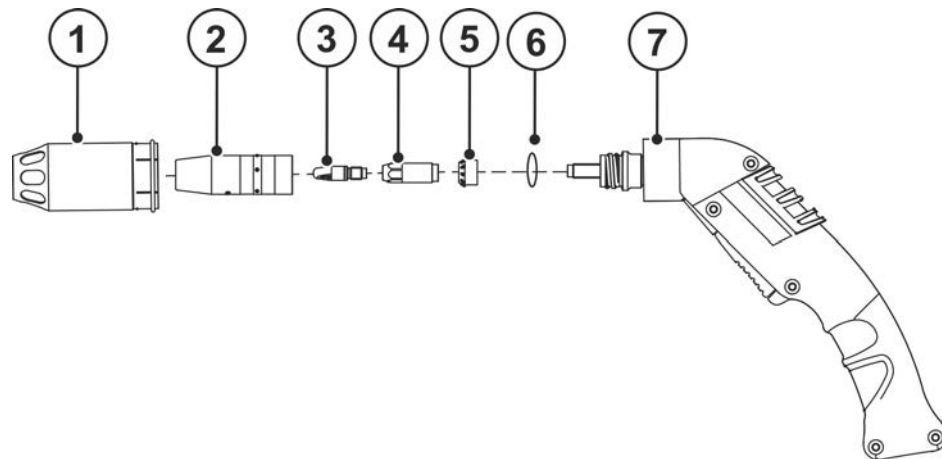


Figure 5-1

Item	Symbol	Description
1		Extraction nozzle
2		Gas nozzle
3		Contact tip
4		Contact tip holder
5		Gas distributor
6		O-ring
7		Grip plate

Impurities in the welding result from worn O-rings!

Worn O-rings lead to gas losses or the penetration of atmospheric oxygen that may adversely affect the welding result.

- Check and if necessary replace the O-rings when converting the welding torch!

5.5 Equipment recommendations

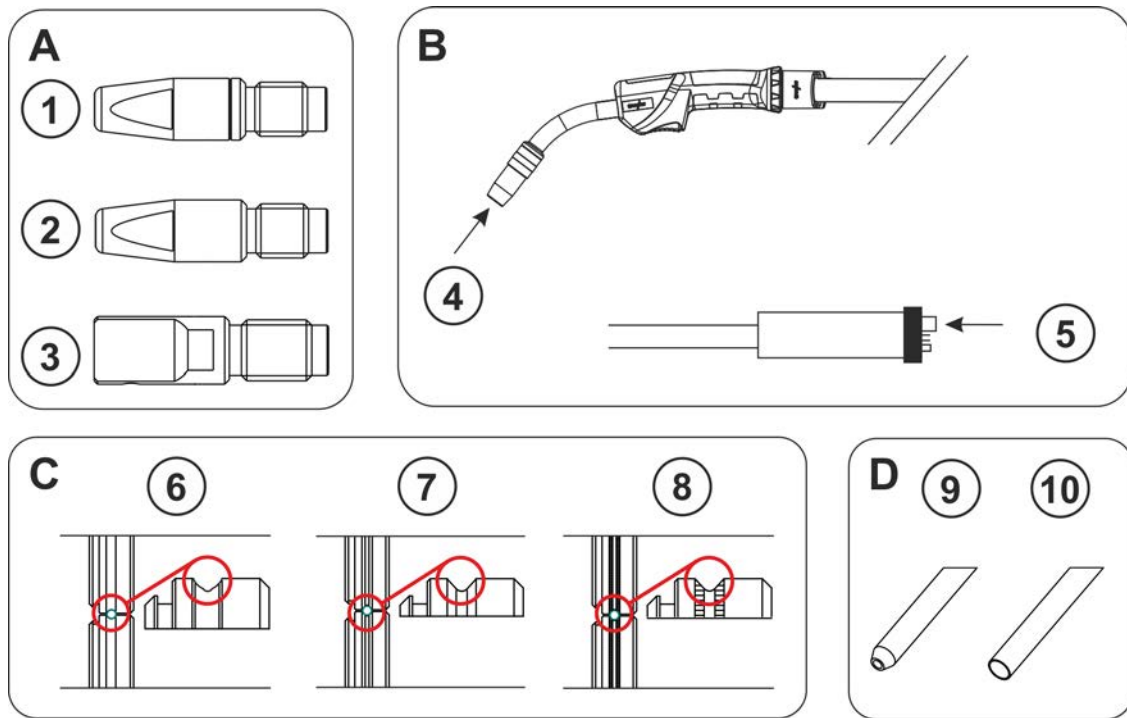


Figure 5-2

	Material	Design of contact tip (A)	Equipment side (B)	Wire feed rolls (C)	Capillary tube (9) / guide tube (10)(D)
DWire electrodes	Low-alloy	① CT CuCrZr	⑤	⑦ V-groove	⑨
	medium-alloy	① CT CuCrZr	⑤	⑦ V-groove	⑩
	Hardfacing	① CT CuCrZr	⑤	⑦ V-groove	⑩
	High-alloy	① CT CuCrZr	⑤	⑦ V-groove	⑩
	Aluminium	② CTAL E-Cu	④	⑥ U-groove	⑩
	Aluminium (AC)	③ CT ZWK CuCrZr	④	⑥ U-groove	⑩
	Copper alloy	① CT CuCrZr	⑤	⑦ V-groove	⑩
Flux cored wire electrode	Low-alloy	① CT CuCrZr	⑤	⑧ V-groove knurled	⑨
	High-alloy	① CT CuCrZr	⑤	⑧ V-groove knurled	⑩

	Material	Ø Wire	Ø Wire guide	Liner	Length of brass liner
Wire electrodes	Low-alloy	0.8	1.5 x 4.0	Steel liner	
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.4 x 4.5		
	medium-alloy	0.8	1.5 x 4.0	Combined liner	200 mm
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.3 x 4.7		
	Hardfacing	0.8	1.5 x 4.0	Combined liner	200 mm
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.3 x 4.7		
	High-alloy	0.8	1.5 x 4.0	Combined liner	200 mm
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.3 x 4.7		
	Aluminium	0.8	1.5 x 4.0	Combined liner	30 mm
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.3 x 4.7		
Aluminium AC welding	0.8	1.5 x 4.0	Combined liner	100 mm	
	1.0	1.5 x 4.0			
	1.2	2.0 x 4.0			
	1.6	2.3 x 4.7			
Copper alloy	0.8	1.5 x 4.0	Combined liner	200 mm	
	1.0	1.5 x 4.0			
	1.2	2.0 x 4.0			
	1.6	2.3 x 4.7			
Flux cored wire electrode	Low-alloy	0.8	1.5 x 4.0	Steel liner	
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.4 x 4.5		
	High-alloy	0.8	1.5 x 4.0	Combined liner	200 mm
		1.0	1.5 x 4.0		
		1.2	2.0 x 4.0		
		1.6	2.3 x 4.7		

5.6 Adapting the Euro torch connection on the device

On delivery, the Euro torch connector is fitted with a capillary tube for welding torches with steel liners!

5.6.1 Liner

- Push forward the capillary tube on the wire feed side in the direction of the Euro torch connector and remove it there.
- Insert the guide tube from the Euro torch connection.
- Insert the welding torch connector with the excessively long liner carefully into the Euro torch connector and screw hand-tight using the crown nut.
- Cut off the liner using a special cutter or sharp knife just before the wire feed roller, making sure not to pinch it.
- Loosen the welding torch connector and remove.
- Cleanly trim the separated end of the liner!

5.6.2 Replace steel liner

Check the Euro torch connector for correct seating of the capillary tube!

- Insert the welding torch connector into the Euro torch connector and screw hand-tight using the crown nut.

5.7 Assemble the wire guide

Use the correct wire guide from spool to molten pool!

The wire guide has to be adjusted to the wire electrode type and diameter in order to achieve good welding results!

- Equip the wire feeder according to wire electrode type and diameter!
- Refer to the manufacturer instructions for the right wire feed unit equipment. Refer to Annex 1 in these operating instructions for the right EWM machine equipment.
- Use a steel liner inside the torch hose package to guide hard, unalloyed wire electrodes (steel)!
- Use a plastic liner inside the torch hose package to guide soft or alloyed wire electrodes!

A steel liner is installed at the connection side, whereas a combined liner is installed at the torch side.

5.7.1 Liner

Observe permissible torque > see 8 chapter!

The distance between the plastic liner and drive rollers should be as short as possible.

Use only sharp, stable knives or special tongs for cutting to ensure that the plastic liner does not become misshapen!

Always make sure the the hose package is straight when replacing the wire guide.

The illustration serves as an example only.

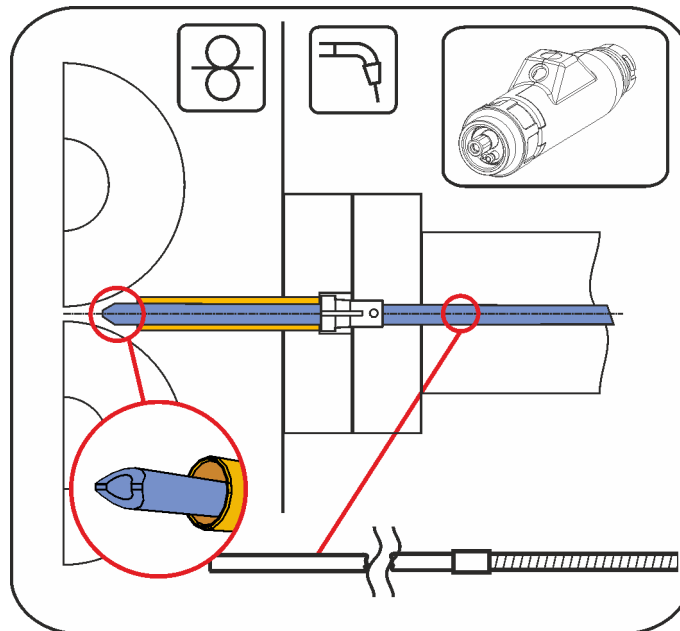


Figure 5-3

1.

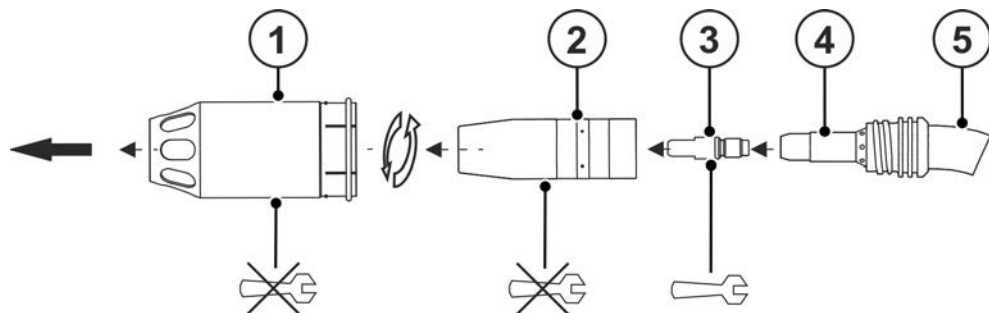


Figure 5-4

2.

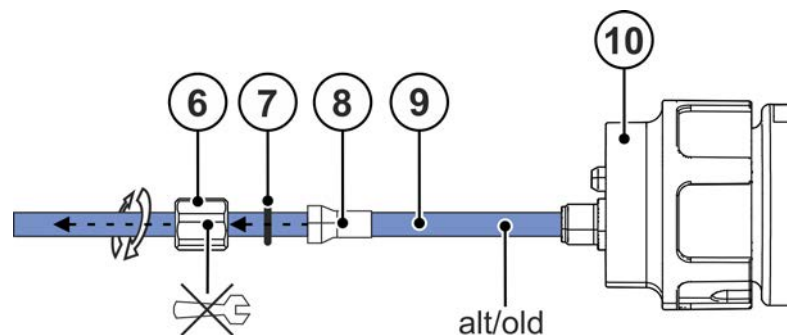
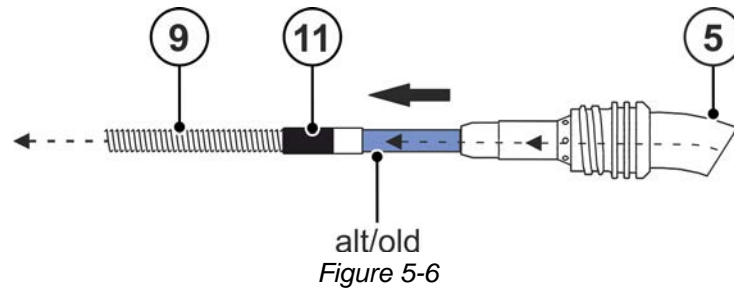


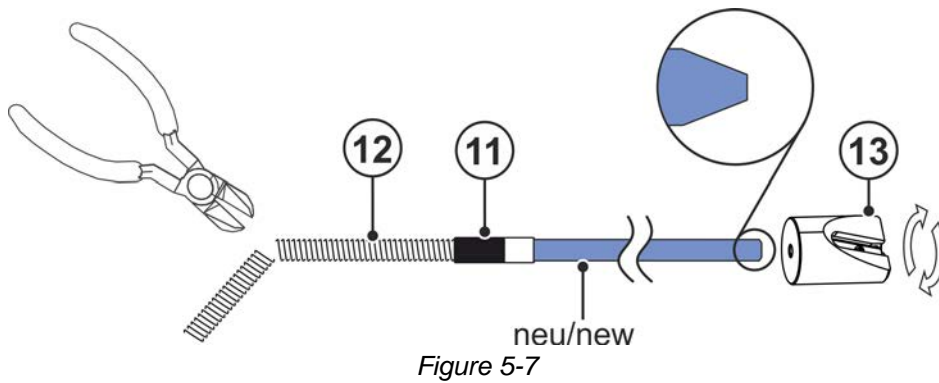
Figure 5-5

3.

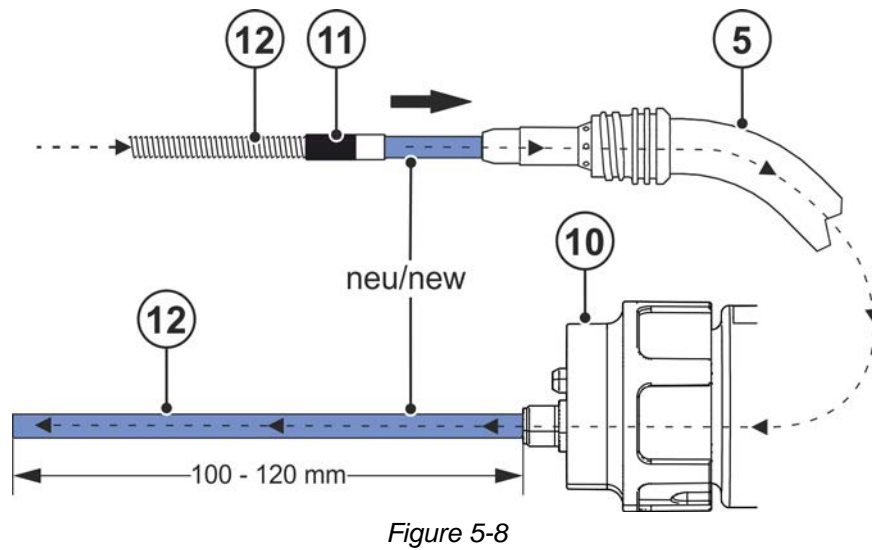


4.

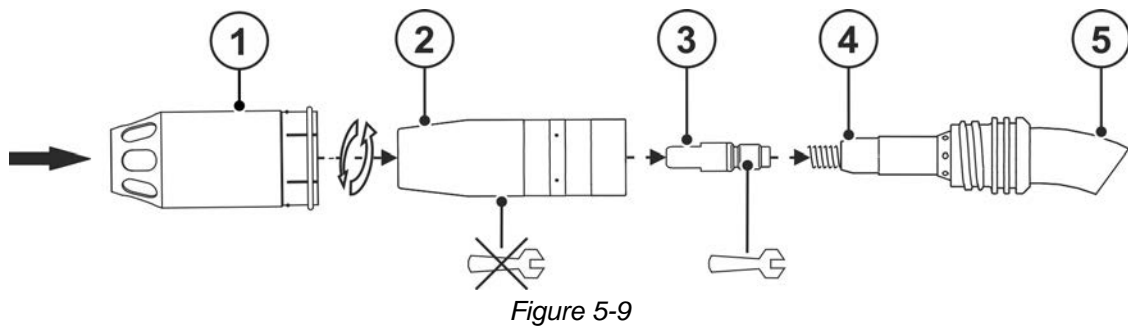
Adjust the brass liner > see 5.5 chapter.



5.



6.



7.

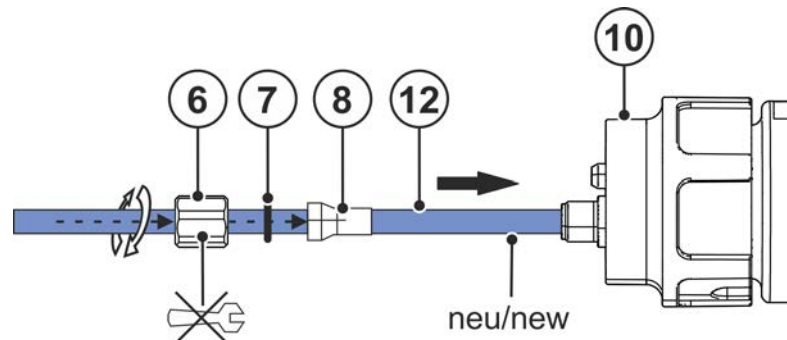


Figure 5-10

8.

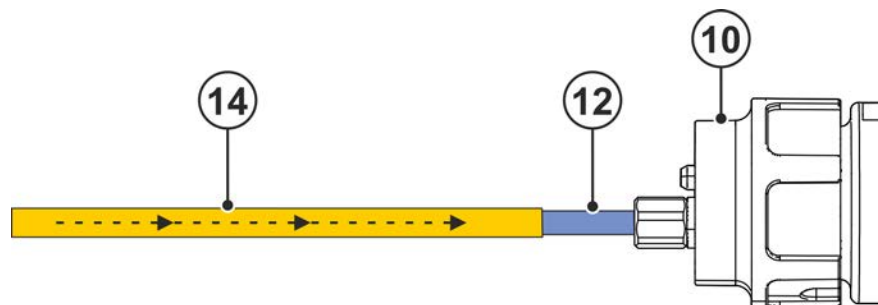


Figure 5-11

Item	Symbol	Description
1		Extraction nozzle
2		Gas nozzle
3		Contact tip
4		Contact tip holder
5		Torch neck 45°
6		Crown nut
7		O-ring
8		Collet
9		Combined liner
10		Euro central connection
11		Connecting sleeve
12		New combined liner
13		Liner sharpener > see 8.4 chapter
14		Guiding tube for welding torch Euro torch connector

5.7.2 Guide spiral

Observe permissible torque > see 8 chapter!

Insert the grinded end towards the contact tip holder to ensure tight fit with the contact tip.
 Always make sure the the hose package is straight when replacing the wire guide.
 The illustration serves as an example only.

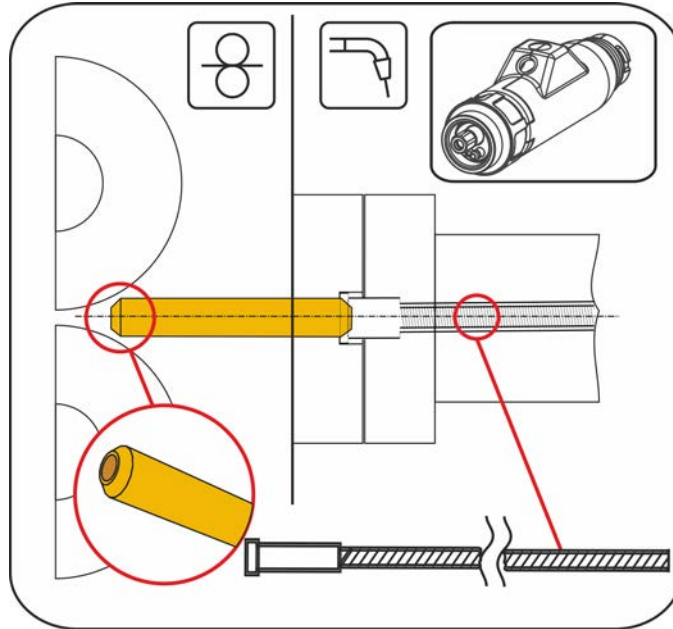


Figure 5-12

1.

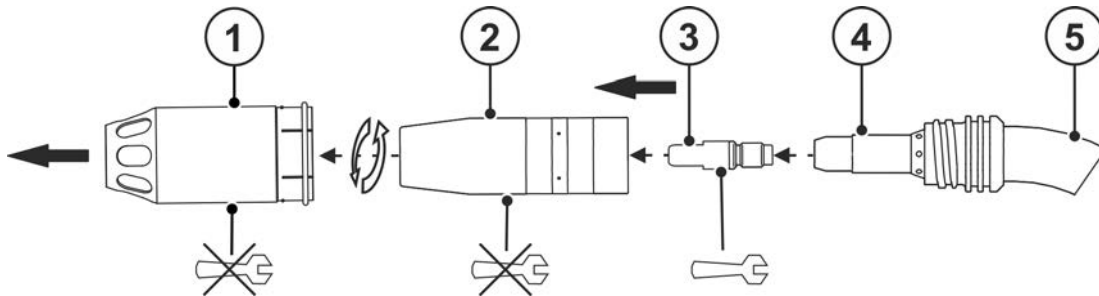


Figure 5-13

2.

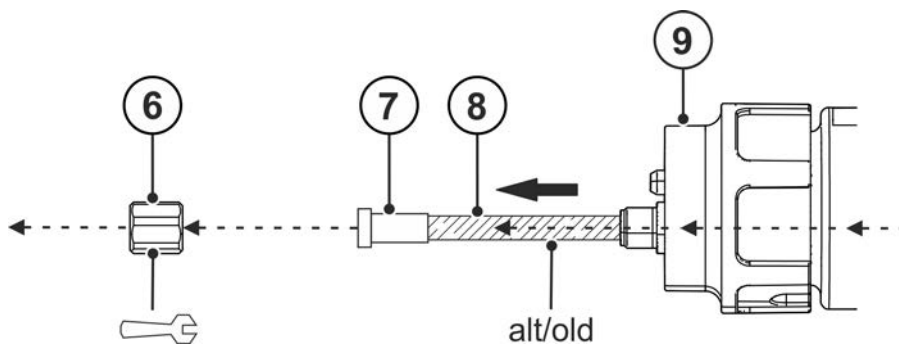


Figure 5-14

3.

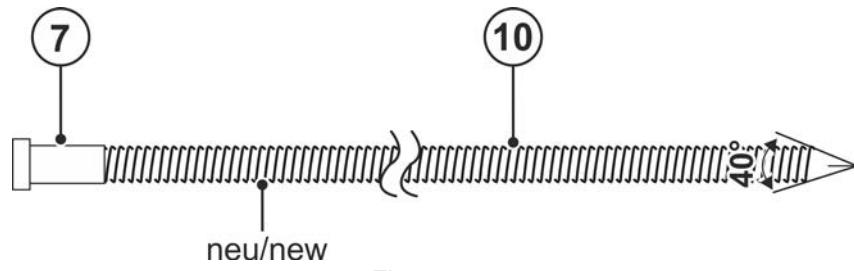


Figure 5-15

4.

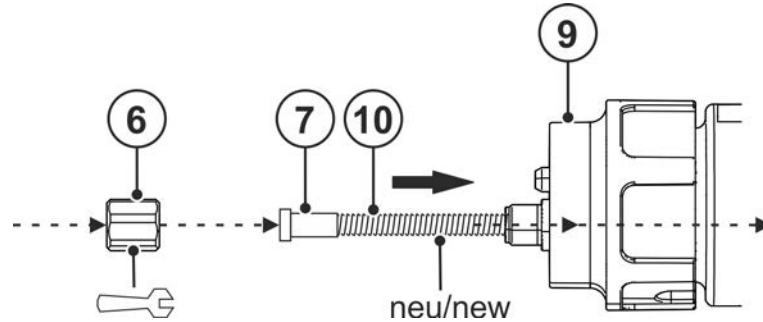


Figure 5-16

5.

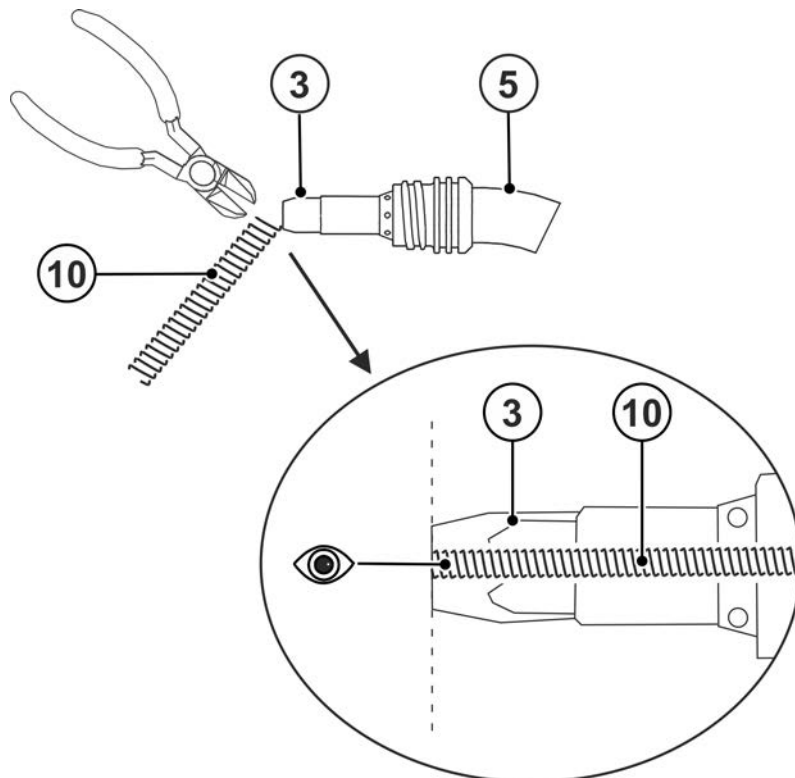


Figure 5-17

6.

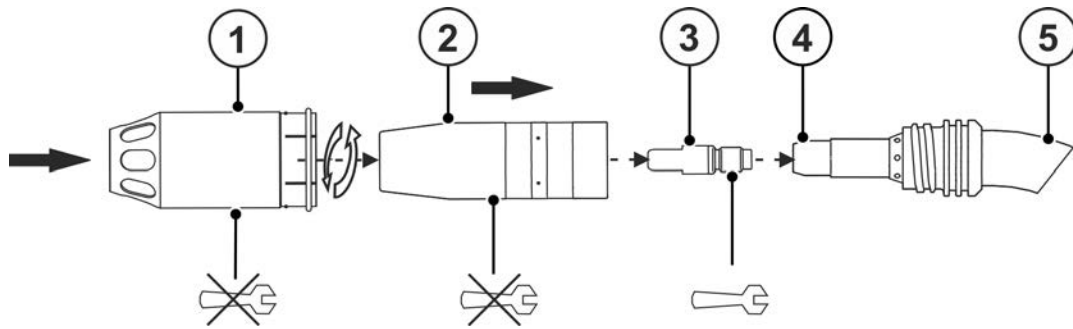


Figure 5-18

7.

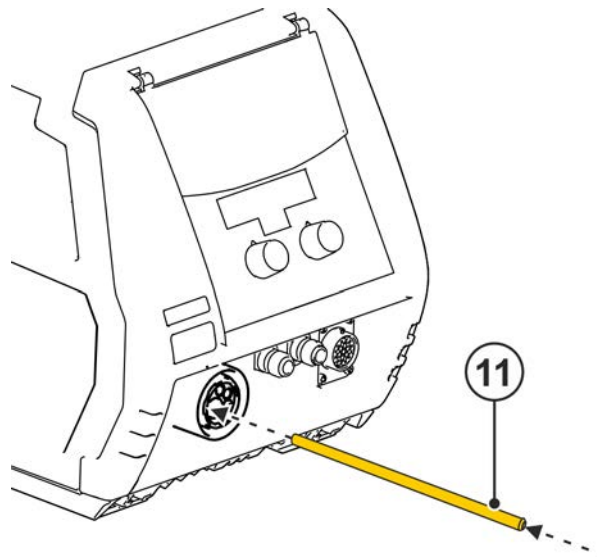


Figure 5-19

Item	Symbol	Description
1		Extraction nozzle
2		Gas nozzle
3		Contact tip
4		Contact tip holder
5		Torch neck 45°
6		Crown nut, welding torch central connection (euro)
7		Centring sleeve
8		old spiral guide
9		Euro central connection
10		new spiral guide
11		Capillary tube

5.8 Setting the welding smoke flow rate

- Before measuring the flow rate, it is necessary to measure the amount of shielding gas.
- The quantity of shielding gas is measured at the gas nozzle of the welding torch and is set either directly on the pressure regulator or, if available, on the gas control unit of the wire feeder or power source.

The welding smoke flow rate can be influenced by using the bypass slider.

The illustration serves as an example only.

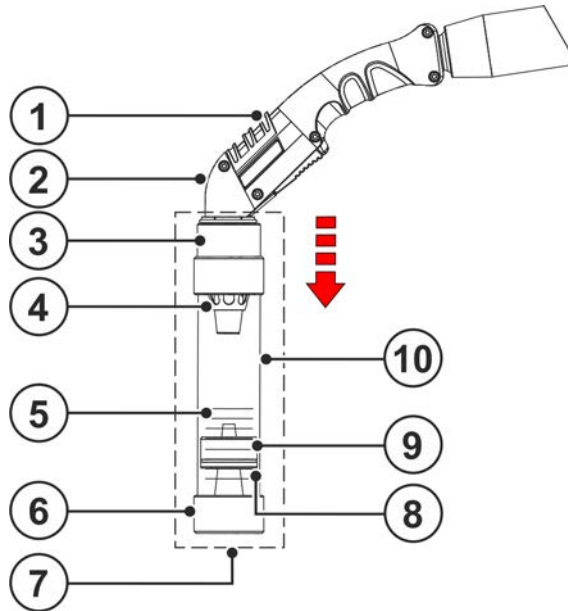


Figure 5-20

Item	Symbol	Description
1		Bypass slider, extraction capacity
2		Welding fume extractor
3		Nozzle holder with diaphragm grommet
4		Extraction nozzle
5		Scale Welding smoke flow rate (values > see 8 chapter)
6		Endcap
7		BG AFM - Airflow meter assembly > see 8.4 chapter
8		O-ring Floater
9		Floater
10		Measuring tube

5.8.1 Measurement preparation

- Connect the welding torch to the welding machine or wire feeder.
- Connect the welding fume extractor hose to the welding torch using an adapter > see 8.4 chapter.
- Connect the welding fume extractor hose to the extraction system

5.8.2 Measuring the welding fume flow rate

- Setting values of the welding smoke flow rate > see 8 chapter.
- Calculate the welding smoke flow rate as a function of the altitude > see 11.1 chapter.
- Insert the welding smoke extractor torch with the welding smoke extraction nozzle installed vertically from above as far as it will go into the nozzle holder of the airflow meter. The openings of the welding fume extraction nozzle must not be clogged and be free of dirt.

Removing the extraction nozzle during welding leads to a reduction in welding smoke capture. As a result, the welding torch no longer conforms to the standard and the performance specifications in the technical data.

- Note the installation direction of the floater. The O-ring of the floater must point downwards.
- The welding fume extraction nozzle of the welding fume extractor torch must sit precisely in the airflow meter.
- Close the bypass slider on the welding fume extractor torch.
- Switch on the filter and extraction system.
- The welding smoke flow rate is indicated at the centre of the o-ring of the floater, on the scale of the measuring tube of the airflow meter.
- Readjust the welding fume flow rate on the controller of the extraction system until the specified value Q_{vn} and the displayed value match.

6 Maintenance, care and disposal

6.1 General

DANGER



Risk of injury due to electrical voltage after switching off!

Working on an open machine can lead to fatal injuries!

Capacitors are loaded with electrical voltage during operation. Voltage remains present for up to four minutes after the mains plug is removed.

1. Switch off machine.
2. Remove the mains plug.
3. Wait for at last 4 minutes until the capacitors have discharged!

WARNING



Incorrect maintenance, testing and repair!

Maintenance, testing and repair of the machine may only be carried out by skilled and qualified personnel. A qualified person is one who, because of his or her training, knowledge and experience, is able to recognise the dangers that can occur while testing welding power sources as well as possible subsequent damage, and who is able to implement the required safety procedures.

Observe the maintenance instructions > see 6.2 chapter.

- In the event that the provisions of one of the below-stated tests are not met, the machine must not be operated again until it has been repaired and a new test has been carried out!

Repair and maintenance work may only be performed by qualified authorised personnel; otherwise the right to claim under warranty is void. In all service matters, always consult the dealer who supplied the machine. Return deliveries of defective equipment subject to warranty may only be made through your dealer. When replacing parts, use only original spare parts. When ordering spare parts, please quote the machine type, serial number and item number of the machine, as well as the type designation and item number of the spare part.

Under the specified ambient conditions and normal working conditions this machine is essentially maintenance-free and requires just a minimum of care.

Contamination of the machine may impair service life and duty cycle. The cleaning intervals depend on the ambient conditions and the resulting contamination of the machine. The minimum interval is every six months.

6.2 Maintenance work, intervals

6.2.1 Daily maintenance tasks

The illustration serves as an example only.

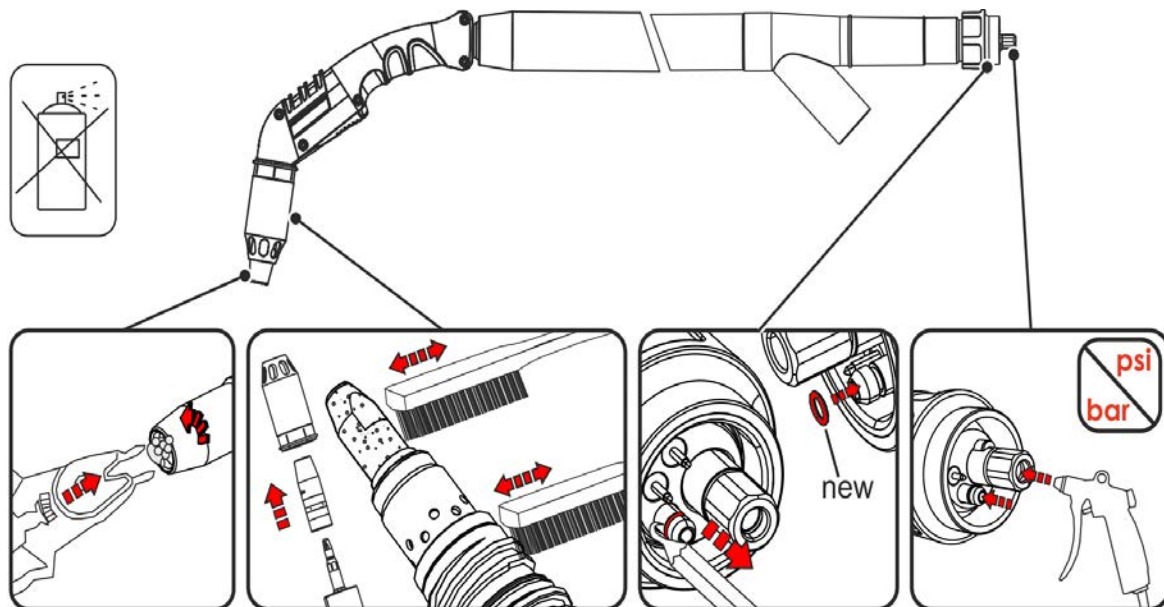


Figure 6-1



Welding spatter protection spray must not be used on the gas nozzle of the welding fume extractor torch or other components. The aerosols clog the filters of the extraction system.

- Purge the wire guide from the direction of the Euro torch connector with oil- and condensate-free compressed air or shielding gas.
- Check that coolant connections are tight.
- Check that the welding torch, and where applicable the power source cooling, are functioning correctly.
- Check the coolant level.
- Check the O-rings on the torch neck and Euro torch connector for damage and presence. Replace defective O-ring.
- Check torch, hose package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!
- Check and clean the welding torch. Deposits in the welding torch may cause short circuits, impair the welding result and lead to welding torch damage!
- Check the wearing parts in the torch.

6.2.2 Monthly maintenance tasks

- Check the coolant container for sludge deposits and check the coolant for cloudiness. Clean the coolant container if contaminated, and change the coolant.
- If the coolant is dirty, rinse through the welding torch alternately several times with fresh coolant using the coolant return and supply.
- Check that all connections and wearing parts are hand-tight and tighten if necessary.
- Check and clean the welding torch. Deposits in the torch can cause short circuits and have a negative impact on the welding result, ultimately causing damage to the torch.
- Check the wire guide.
- Check that all screw and plug connections and replaceable parts are secured correctly, tighten if necessary.

6.3 Maintenance work



Electric current!

Repairs may only be carried out by authorised specialist staff!

- **Do not remove the torch from the hose package!**
- **Never clamp the torch body in a vice or similar, as this can cause the torch to be irreparably destroyed!**
- **If damage occurs to the torch or to the hose package which cannot be corrected as part of the maintenance work, the entire torch must be returned to the manufacturer**

6.4 Disposing of equipment



Proper disposal!

The machine contains valuable raw materials, which should be recycled, and electronic components, which must be disposed of.

- **Do not dispose of in household waste!**
- **Observe the local regulations regarding disposal!**
- According to European provisions (Directive 2012/19/EU on Waste of Electrical and Electronic Equipment), used electric and electronic equipment may no longer be placed in unsorted municipal waste. It must be collected separately. The symbol depicting a waste container on wheels indicates that the equipment must be collected separately. This machine has to be disposed of, or recycled, in accordance with the waste separation systems in use.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG)), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.
- Information about returning used equipment or about collections can be obtained from the respective municipal administration office.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.

7 Rectifying faults

All products are subject to rigorous production checks and final checks. If, despite this, something fails to work at any time, please check the product using the following flowchart. If none of the fault rectification procedures described leads to the correct functioning of the product, please inform your authorised dealer.

7.1 Checklist for rectifying faults

The correct machine equipment for the material and process gas in use is a fundamental requirement for perfect operation!

Legend	Symbol	Description
	↘	Fault/Cause
	✘	Remedy

Welding torch overheated

- ↘ Insufficient coolant flow
 - ✘ Check coolant flow rate
 - ✘ Check coolant level and refill if necessary
 - ✘ Eliminate kinks in conduit system (hose packages)
 - ✘ Vent coolant circuit > see 7.2 chapter
- ↘ Loose welding current connections
 - ✘ Tighten power connections on the torch and/or on the workpiece
 - ✘ Screw contact tip holder and gas nozzle tightly into place correctly
- ↘ Overload
 - ✘ Check and correct welding current setting
 - ✘ Use a more powerful welding torch

Functional error with the welding torch operating elements

- ↘ Connection problems
 - ✘ Make control lead connections and check that they are fitted correctly.
- ↘ High welding fume load
 - ✘ Check the welding smoke flow rate using an airflow meter and if necessary correct
 - ✘ Clean the welding torch.
 - ✘ If necessary, close the bypass slider on the welding torch.

Wire feed problems

- ✎ Unsuitable or worn welding torch equipment
 - ✘ Adjust contact tip to wire diameter and -material and replace if necessary
 - ✘ Adjust wire guide to material in use, blow through and replace if necessary
- ✎ Kinked hose packages
 - ✘ Extend and lay out the torch hose package
- ✎ Incompatible parameter settings
 - ✘ Check settings and correct if necessary
- ✎ Contact tip blocked
 - ✘ Clean and, if necessary, replace.
- ✎ Setting the spool brake
 - ✘ Check settings and correct if necessary
- ✎ Setting pressure units
 - ✘ Check settings and correct if necessary
- ✎ Worn wire rolls
 - ✘ Check and replace if necessary
- ✎ Wire feed motor without supply voltage (automatic cutout triggered by overloading)
 - ✘ Reset triggered fuse (rear of the power source) by pressing the key button
- ✎ Wire guide core or spiral is dirty or worn
 - ✘ Clean core or spiral; replace kinked or worn cores

Unstable arc

- ✎ Unsuitable or worn welding torch equipment
 - ✘ Adjust contact tip to wire diameter and -material and replace if necessary
 - ✘ Adjust wire guide to material in use, blow through and replace if necessary
- ✎ Incompatible parameter settings
 - ✘ Check settings and correct if necessary

Pore formation

- ✎ Inadequate or missing gas shielding
 - ✘ Check shielding gas setting and replace shielding gas cylinder if necessary
 - ✘ Shield welding site with protective screens (draughts affect the welding result)
 - ✘ Use gas lens for aluminium applications and high-alloy steels
 - ✘ Check the welding smoke flow rate using an airflow meter and if necessary correct
 - ✘ Depending on the application, reduce the welding fume flow rate using the bypass slider.
- ✎ Unsuitable or worn welding torch equipment
 - ✘ Check size of gas nozzle and replace if necessary
 - ✘ Check the O-ring on the Euro torch connector and if necessary replace.
- ✎ Condensation in the gas tube
 - ✘ Purge hose package with gas or replace

7.2 Vent coolant circuit

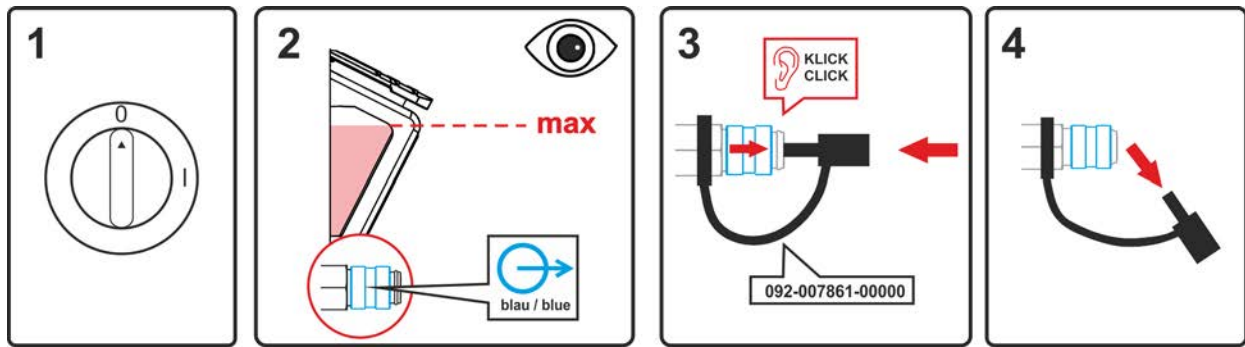


Figure 7-1

- Switch off the machine and fill the coolant tank to the maximum level.
- Unlock the quick-connect coupling with a suitable tool (connection open).

To vent the cooling system always use the blue coolant connection, which is located as deep as possible inside the system (close to the coolant tank)!

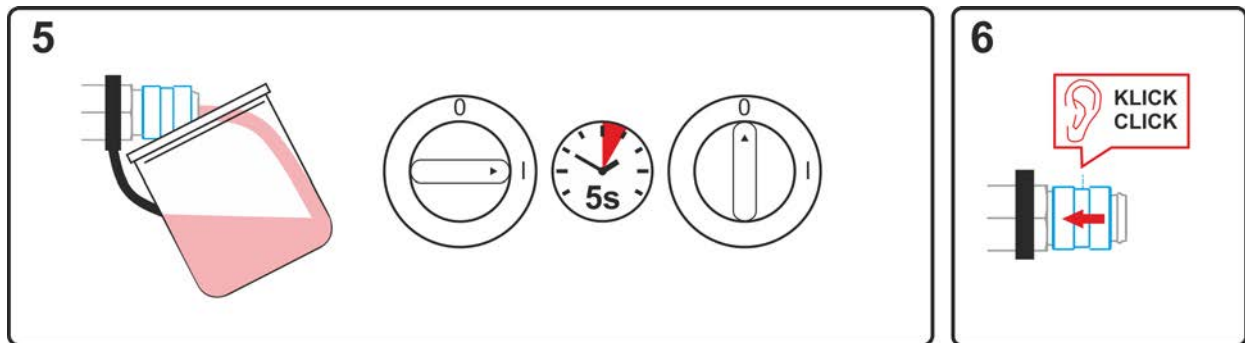


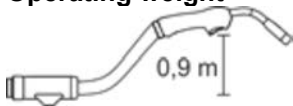
Figure 7-2

- Position a suitable collection container for collecting the escaping coolant at the quick-connect coupling and switch on the machine for approx. 5s.
- Lock the quick-connect coupling by pushing back the locking ring.

8 Technical data

Performance specifications and guarantee only in connection with original spare and replacement parts!

8.1 MT301-, MT451W F2

	MT301 W F2	MT451 W F2
Welding torch polarity	Usually positive	
Guide type	Manually operated	
Voltage type	Direct voltage DC	
Shielding gas	Shielding gas according to ISO 14175	
Duty cycle DC at 40° C ^[1]	100 %	
Maximum welding current CO ²	330 A	500 A
Maximum welding current M21	290 A	450 A
Maximum welding current pulse M21	250 A	350 A
Switching voltage Push-button	15 V	
Switching current Push-button	10 mA	
Cooling capacity	min. 800 W	
max. Flow temperature	40 °C	
Torch input pressure, coolant	3 - 6 bar (min. - max.)	
Flow rate	66 m ³ /h	88 m ³ /h
Connector Q _{vc} ^[2]	17435 gal/h	23247 gal/h
Flow rate	50 m ³ /h	61 m ³ /h
Nozzle Q _{vn} ^[2]	13208 gal/h	16114 gal/h
Low pressure Connector Δ _{pc} ^{[2] [3]}	14127 Pa	7840 Pa
Flow volume (min.)	1,2 l/min 0,32 gal./min	1,4 l/min 0,37 gal./min
Wire types	Standard round wires	
Wire diameter	0,8 - 1,2 mm 0,03 - 0,047 inch	0,8 - 1,6 mm 0,03 - 0,063 inch
Ambient temperature	-10 °C to + 40 °C	
Voltage measurement	113 V (Peak value)	
Protection classification for the machine connections (EN 60529)	IP3X	
Gas flow	10 - 25 l/min / 2,64 - 6,6 gal./min	
Hose package length	3-, 4-, 5 m / 118-, 157-, 197 inch	
Tightening torque Contact tip holder	max. 15 Nm	max. 20 Nm
Tightening torque Contact tip	max. 10 Nm	max. 15 Nm
Connection	Euro torch connector	
Operating weight	1,25 kg 2,76 lb.	1,42 kg 3,13 lb.
		
Standards used	See declaration of conformity (appliance documents)	
Safety marking	CE	

^[1] Load cycle: 10 min. (60 % DC ± 6 min. welding, 4 min. pause)

^[2] > see 8.3 chapter.

^[3] Reference altitude sea level (SL) > see 11.1 chapter

8.2 MT- / PM 301W, - 451W,- 551W with conversion kit ON SRA-Kit PM / MT

MT / PM	301 W	451 W	551 W
Welding torch polarity	Usually positive		
Guide type	Manually operated		
Voltage type	Direct voltage DC		
Shielding gas	Shielding gas according to ISO 14175		
Duty cycle DC at 40° C ^[1]	100 %		
Maximum welding current CO ²	330 A	500 A	650 A
Maximum welding current M21	290 A	450 A	550 A
Maximum welding current pulse M21	250 A	350 A	500 A
Switching voltage Push-button	15 V		
Switching current Push-button	10 mA		
Cooling capacity	min. 800 W		
max. Flow temperature	40 °C		
Torch input pressure, coolant	3 -6 bar (min. - max.)		
Flow rate Connector Q _{vc} ^[2]	51 m ³ /h 13473 gal/h	49 m ³ /h 12944 gal/h	50 m ³ /h 13208 gal/h
Flow rate Nozzle Q _{vn} ^[2]	43 m ³ /h 11359 gal/h	42 m ³ /h 11095 gal/h	43 m ³ /h 11359 gal/h
Low pressure Connector Δ _{pc} ^{[2] [3]}	8802 Pa	7966 Pa	9013 Pa
Flow volume (min.)	1,2 l/min 0,32 gal./min	1,4 l/min 0,37 gal./min	
Wire types	Standard round wires		
Wire diameter	0,8 - 1,2 mm 0,03 - 0,047 inch	0,8 - 1,6 mm 0,03 - 0,063 inch	0,8 - 2,0 mm 0,03 - 0,079 inch
Ambient temperature	-10 °C to+ 40 °C		
Voltage measurement	113 V (Peak value)		
Protection classification for the machine connections (EN 60529)	IP3X		
Gas flow	10 to 25 l/min / 2,64 to 6,6 gal./min		
Hose package length	3-, 4-, 5 m / 118-, 157-, 197 inch		
Tightening torque Contact tip holder	max. 15 Nm	max. 20 Nm	
Tightening torque Contact tip	max. 10 Nm	max. 15 Nm	
Connection	Euro torch connector		
Operating weight	1,03 kg 2,27 lb.	1,09 kg 2,4 lb.	1,1 kg 2,42 lb.
Standards used	See declaration of conformity (appliance documents)		
Safety marking	CE		

^[1] Load cycle: 10 min. (60 % DC ± 6 min. welding, 4 min. pause)

^[2] > see 8.3 chapter.

^[3] Reference altitude sea level (SL) > see 11.1 chapter

8.3 Explanation of terms

The illustration serves as an example only.

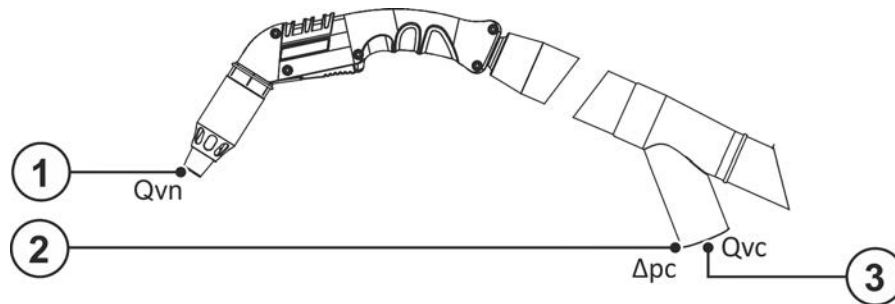


Figure 8-1

Item	Symbol	Description
1	Q_{vn}	Flow-rate nozzle
2	Δ_{pc}	Vacuum connector
3	Q_{vc}	Flow rate connector

8.4 General accessories

Performance-dependent accessories like torches, workpiece leads, electrode holders or intermediate hose packages are available from your authorised dealer.

Type	Designation	Item no.
BG AFM	Airflow meter assembly	092-004851-00000

8.5 Spare parts for airflow meters

Type	Designation	Item no.
MBDT D68X10,1	Diaphragm grommet	059-003992-00000

8.5.1 Option

Type	Designation	Item no.
ON SRA-Kit PM / MT 221G / 301W	Welding fume extractor kit for PM 221 G / MT221G and PM 301 W / MT301W	092-007945-00000
ON SRA-Kit PM / MT 451W	Welding fume extractor kit for PM 451 W / MT451W	092-007946-00000
ON SRA-Kit PM / MT 551W	Welding fume extractor kit for PM 551 W / MT551W	092-007947-00000
ON AA NW44	Adapter for welding fume extractor torch "F2" for connection to extraction hose \varnothing 44 mm	094-026782-00000
ON AA NW51	Adapter for welding fume extractor torch "F2" for connection to extraction hose \varnothing 51 mm	094-026788-00000

9 Replaceable parts



The manufacturer's warranty becomes void if non-genuine parts are used!

- Only use system components and options (power sources, welding torches, electrode holders, remote controls, spare parts and replacement parts, etc.) from our range of products!
- Only insert and lock accessory components into the relevant connection socket when the machine is switched off.

9.1 MT301W F2

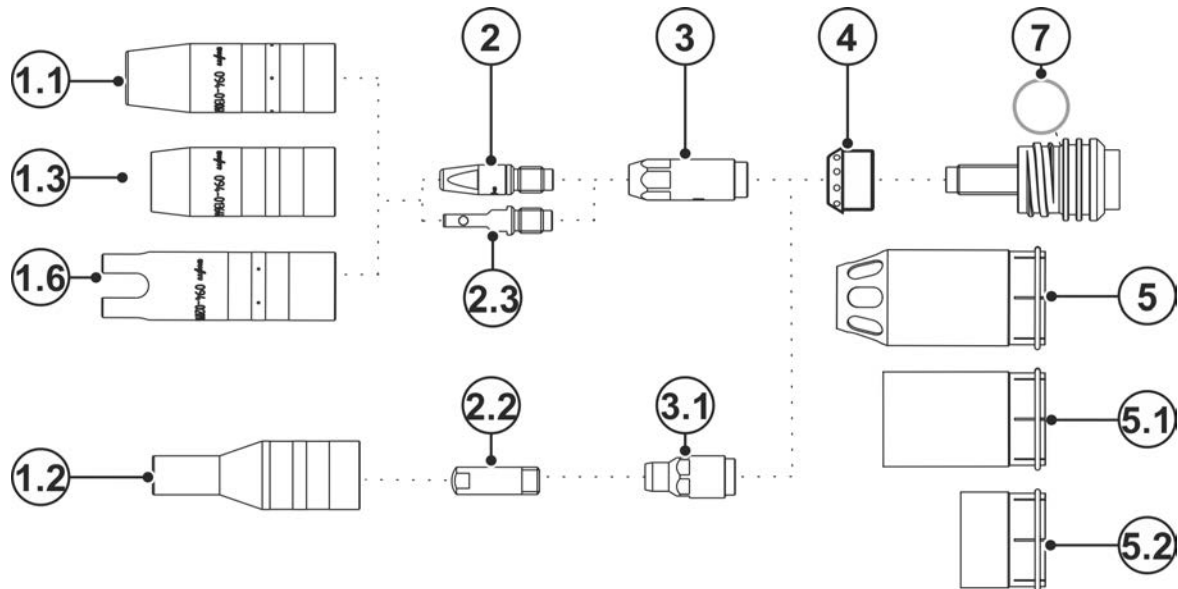


Figure 9-1

Item	Order number	Type	Name
1.1	094-013061-00001	GN TR 20 66mm D=13mm	Gas nozzle
1.1	094-013062-00001	GN TR 20 66mm D=11mm	Gas nozzle
1.1	094-013063-00001	GN TR 20 66mm D=16mm	Gas nozzle
1.2 *	094-020136-00000	GN TR 20x4 68mm D=10,5mm	Gas nozzle, cylinder neck
1.3	094-013644-00000	GN FCW TR 20 58mm	Gas nozzle, inner shield
1.6	094-020944-00000	GN TR 20, 75 mm, D=18 mm	Spot welding nozzle
2	094-013071-00000	CT M6 CuCrZr, D=0,8 mm	Contact tip
2	094-013072-00000	CT M6 CuCrZr, D=1,0 mm, L=28 mm	Contact tip
2	094-013122-00000	CT M6 CuCrZr, D=0,9 mm	Contact tip
2	094-013535-00001	CT CUCRZR M7X30MM D=0.8MM	Contact tip
2	094-013536-00001	CT CUCRZR M7X30MM D=0.9MM	Contact tip
2	094-013537-00001	CT CUCRZR M7X30MM D=1.0MM	Contact tip
2	094-013538-00001	CT CUCRZR M7X30MM D=1.2MM	Contact tip
2	094-013550-00000	CTAL E-CU M7X30MM D=0.8MM	Contact tip, aluminium welding
2	094-013551-00000	CTAL E-CU M7X30MM D=0.9MM	Contact tip, aluminium welding
2	094-013552-00000	CTAL E-CU M7X30MM D=1.0MM	Contact tip, aluminium welding
2	094-013553-00000	CTAL E-CU M7X30MM D=1.2MM	Contact tip, aluminium welding
2	094-014317-00000	CT M6 CuCrZr D=1,2 mm	Contact tip
2	094-016101-00000	CT M6x28mm 0.8mm E-CU	Contact tip
2	094-016102-00000	CT M6x28mm 0.9mm E-CU	Contact tip

Item	Order number	Type	Name
2	094-016103-00000	CT M6x28mm 1.0mm E-CU	Contact tip
2	094-016104-00000	CT M6x28mm 1.2mm E-CU	Contact tip
2	094-016105-00000	CTAL E-CU M6X28MM D=0.8MM	Contact tip, aluminium welding
2	094-016106-00000	CTAL E-CU M6X28MM D=0.9MM	Contact tip, aluminium welding
2	094-016107-00000	CTAL E-CU M6X28MM D=1.0MM	Contact tip, aluminium welding
2	094-016108-00000	CTAL E-CU M6X28MM D=1.2MM	Contact tip, aluminium welding
2.2	094-005403-00000	CT M6 x 25 mm, 0.6 mm, CuCrZr	Contact tip
2.2	094-020689-00000	CT M6 x 25 mm, 0.8 mm, CuCrZr	Contact tip
2.2	094-020690-00000	CT M6 x 25 mm, 1.0 mm, CuCrZr	Contact tip
2.2	094-020691-00000	CT M6 x 25 mm, 0.6 mm, E-Cu	Contact tip
2.2	094-020692-00000	CT M6 x 25 mm, 0.8 mm, E-Cu	Contact tip
2.2	094-020693-00000	CT M6 x 25 mm, 0.9 mm, E-Cu	Contact tip
2.2	094-020694-00000	CT M6 x 25 mm, 1.0 mm, E-Cu	Contact tip
2.2	094-020695-00000	CT M6 x 25 mm, 0.6 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020696-00000	CT M6 x 25 mm, 0.8 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020697-00000	CT M6 x 25 mm, 0.9 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020698-00000	CT M6 x 25 mm, 1.0 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.3	094-025535-00000	CT ZWK CuCrZr M7x30 mm Ø 1,0mm	Contact tip, forced contact
2.3	094-025536-00000	CT ZWK CuCrZr M7x30 mm Ø 1,2mm	Contact tip, forced contact
3	094-013069-00002	CTH CUCRZR M6 L=30.5MM	Contact tip holder
3	094-013070-00002	CTH CUCRZR M6 L=33.5MM	Contact tip holder
3	094-013541-00002	CTH CUCRZR M7 L=31.5MM	Contact tip holder
3	094-013542-00002	CTH CUCRZR M7 L=34.5MM	Contact tip holder
3.1	094-020562-00000	CTH M6 CuCrZr 30.5mm	Contact tip holder
4	094-013094-00004	GD PM / MT 221G / 301W	Gas diffuser
5	094-026560-00003	SRAD DN 23 mm, Ø 38 mm, L 82 mm	Welding fume extraction nozzle, conical
5.1	094-026559-00001	SRAD DN 23 mm, Ø 38 mm, L 64 mm	Welding fume extraction nozzle, cylindrical
5.2	094-026511-00000	SRAD DN 23 mm, Ø 38 mm, L 33 mm	Welding fume extraction nozzle, cylindrical
7	094-025320-00000	17 mm x 1,8 mm	O-ring for gas nozzle holder
-	094-016038-00001	TT SW5-SW12MM	Torch key
	094-013967-00000	4,0MMX1,0MM	O-ring for Euro torch connector
	098-005149-00000	O-Ring Picker	O-ring for picker

* Only possible in combination with cylindrical welding fume extraction nozzles, i.e. 5.1 and 5.2.

9.2 MT451W F2

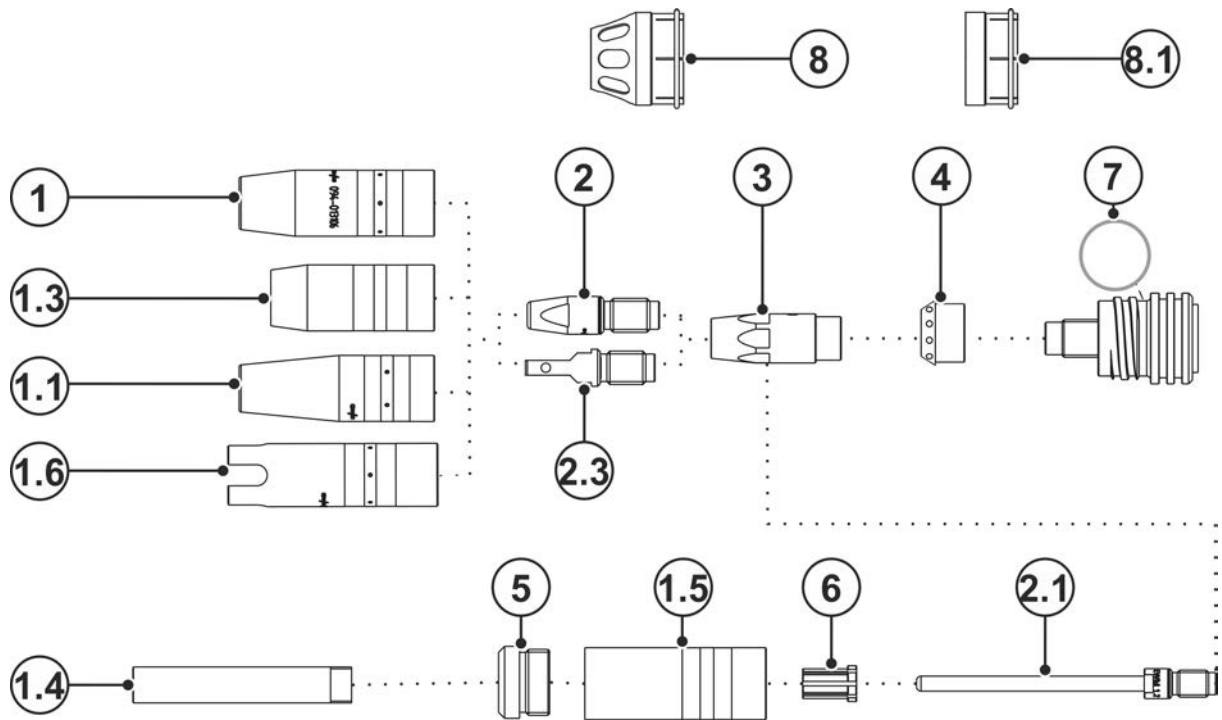


Figure 9-2

Item	Order number	Type	Name
1	094-013105-00001	GN TR 22 71mm D=13mm	Gas nozzle
1	094-013106-00001	GN TR 22 71mm D=15mm	Gas nozzle
1	094-013107-00001	GN TR 22 71mm D=18mm	Gas nozzle
1	094-019821-00001	GN TR 22 65mm D=15mm	Gas nozzle, short
1	094-019822-00001	GN TR 22 65mm D=18mm	Gas nozzle, short
1.1	094-019853-00001	GN NG TR22X4 71mm D=13mm	Highly conical gas nozzle, narrow gap welding
1.3	094-019554-00000	GN FCW TR 22x4 59.5MM	Gas nozzle, inner shield
1.4	094-019626-00000	GN NG M12 73mm	Gas nozzle, narrow gap welding
1.4	094-022226-00000	GN NG M12 76mm	Gas nozzle, narrow gap welding
1.5	094-019623-00000	GNC TR22x4	Gas nozzle body
1.6	094-020945-00000	GN TR 22, 80 mm, D=20 mm	Spot welding nozzle
2	094-007238-00000	CT E-CU M8X30MM D=1.2MM	Contact tip
2	094-013113-00000	CT M8 CuCrZr 30mm, 1.2mm	Contact tip
2	094-013129-00000	CT CUCRZR M8X30MM D=0.9MM	Contact tip
2	094-013528-00001	CT CUCRZR M9X35MM D=0.8MM	Contact tip
2	094-013529-00001	CT CUCRZR M9X35MM D=0.9MM	Contact tip
2	094-013530-00001	CT M9 CuCrZr 1.0mm	Contact tip
2	094-013531-00001	CT CUCRZR M9X35MM D=1.2MM	Contact tip
2	094-013532-00001	CT CUCRZR M9X35MM D=1.4MM	Contact tip
2	094-013533-00001	CT CUCRZR M9X35MM D=1.6MM	Contact tip
2	094-013543-00000	CTAL E-CU M9X35MM D=0.8MM	Contact tip, aluminium welding
2	094-013544-00000	CTAL E-CU M9X35MM D=0.9MM	Contact tip, aluminium welding

Item	Order number	Type	Name
2	094-013545-00000	CTAL E-CU M9X35MM D=1.0MM	Contact tip, aluminium welding
2	094-013546-00000	CTAL E-CU M9X35MM D=1.2MM	Contact tip, aluminium welding
2	094-013547-00000	CTAL E-CU M9X35MM D=1.4MM	Contact tip, aluminium welding
2	094-013548-00000	CTAL E-CU M9X35MM D=1.6MM	Contact tip, aluminium welding
2	094-014024-00000	CT CUCRZR M8X30MM D=0.8MM	Contact tip
2	094-014191-00000	CT CUCRZR M8X30MM D=1.4MM	Contact tip
2	094-014192-00000	CT CUCRZR M8X30MM D=1.6MM	Contact tip
2	094-014222-00000	CT CUCRZR M8X30MM D=1.0MM	Contact tip
2	094-016109-00000	CT E-CU M8X30MM D=0.8MM	Contact tip
2	094-016110-00000	CT E-CU M8X30MM D=0.9MM	Contact tip
2	094-016111-00000	CT E-CU M8X30MM D=1.0MM	Contact tip
2	094-016112-00000	CT E-CU M8X30MM D=1.4MM	Contact tip
2	094-016113-00000	CT E-CU M8X30MM D=1.6MM	Contact tip
2	094-016115-00000	CTAL E-CU M8X30MM D=0.8MM	Contact tip, aluminium welding
2	094-016116-00000	CTAL E-CU M8X30MM D=0.9MM	Contact tip, aluminium welding
2	094-016117-00000	CTAL E-CU M8X30MM D=1.0MM	Contact tip, aluminium welding
2	094-016118-00000	CTAL E-CU M8X30MM D=1.2MM	Contact tip, aluminium welding
2	094-016119-00000	CTAL E-CU M8X30MM D=1.4MM	Contact tip, aluminium welding
2	094-016120-00000	CTAL E-CU M8X30MM D=1.6MM	Contact tip, aluminium welding
2.1	094-019616-00000	CT M9 x 100 mm; Ø 1,0 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019617-00000	CT M9 x 100 mm; Ø 1,2 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019618-00000	CT M9 x 100 mm; Ø 1,6 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-020019-00000	CT M9 x 100 mm; Ø 1,4 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-021189-00000	CT M9 x 100 mm; Ø 0,8 mm CuCrZr	Contact tip, narrow gap welding
2.3	094-017007-00001	CT ZWK CuCrZr M9x35 mm Ø 1,0 mm	Contact tip, forced contact
2.3	094-016159-00001	CT ZWK CuCrZr M9x35 mm Ø 1,2 mm	Contact tip, forced contact
2.3	094-025533-00001	CT ZWK CuCrZr M9x35 mm Ø 1,6 mm	Contact tip, forced contact
3	094-013109-00003	CTH CUCRZR M8 L=34.1MM	Contact tip holder
3	094-013110-00002	CTH CUCRZR M8 L=37.1MM	Contact tip holder
3	094-013539-00002	CTH M9 CuCrZr 34.5mm	Contact tip holder
3	094-013540-00002	CTH M9 CuCrZr 37.5mm	Contact tip holder
4	094-013096-00004	GD Ø11,7 mm, L=14 mm	Gas diffuser
5	094-019625-00000	IT ES M22X1,5 M12X1	Insulation part
6	094-019627-00000	ZH GDE ID=5MM AD=10MM L=15MM	Centring sleeve
7	094-025089-00000	18,5 mm x 2 mm	O-ring for gas nozzle holder
8	094-026557-00003	SRAD DN 25 mm, Ø 41 mm, L 41 mm	Welding fume extraction nozzle, conical
8.1	094-026556-00001	SRAD DN 25 mm, Ø 41 mm, L 23 mm	Welding fume extraction nozzle, cylindrical
	094-016038-00001	TT SW5-SW12MM	Torch key
	094-013967-00000	4,0MMX1,0MM	O-ring for Euro torch connector

Item	Order number	Type	Name
	098-005149-00000	O-Ring Picker	O-ring for picker

9.3 MT- / PM 301W (ON SRA-KIT PM/MT301W-221G)

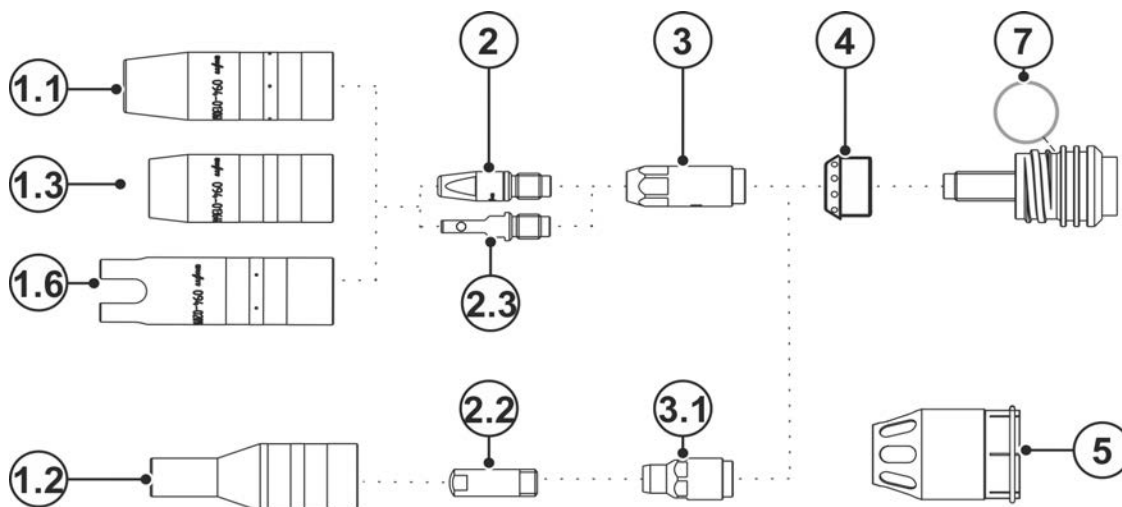


Figure 9-3

Item	Order number	Type	Name
1.1	094-013061-00001	GN TR 20 66mm D=13mm	Gas nozzle
1.1	094-013062-00001	GN TR 20 66mm D=11mm	Gas nozzle
1.1	094-013063-00001	GN TR 20 66mm D=16mm	Gas nozzle
1.2*	094-020136-00000	GN TR 20x4 68mm D=10,5mm	Gas nozzle, cylinder neck
1.3	094-013644-00000	GN FCW TR 20 58mm	Gas nozzle, inner shield
1.6	094-020944-00000	GN TR 20, 75 mm, D=18 mm	Spot welding nozzle
2	094-013071-00000	CT M6 CuCrZr, D=0,8 mm	Contact tip
2	094-013072-00000	CT M6 CuCrZr, D=1,0 mm, L=28 mm	Contact tip
2	094-013122-00000	CT M6 CuCrZr, D=0,9 mm	Contact tip
2	094-013535-00001	CT CUCRZR M7X30MM D=0.8MM	Contact tip
2	094-013536-00001	CT CUCRZR M7X30MM D=0.9MM	Contact tip
2	094-013537-00001	CT CUCRZR M7X30MM D=1.0MM	Contact tip
2	094-013538-00001	CT CUCRZR M7X30MM D=1.2MM	Contact tip
2	094-013550-00000	CTAL E-CU M7X30MM D=0.8MM	Contact tip, aluminium welding
2	094-013551-00000	CTAL E-CU M7X30MM D=0.9MM	Contact tip, aluminium welding
2	094-013552-00000	CTAL E-CU M7X30MM D=1.0MM	Contact tip, aluminium welding
2	094-013553-00000	CTAL E-CU M7X30MM D=1.2MM	Contact tip, aluminium welding
2	094-014317-00000	CT M6 CuCrZr D=1,2 mm	Contact tip
2	094-016101-00000	CT M6x28mm 0.8mm E-CU	Contact tip
2	094-016102-00000	CT M6x28mm 0.9mm E-CU	Contact tip
2	094-016103-00000	CT M6x28mm 1.0mm E-CU	Contact tip
2	094-016104-00000	CT M6x28mm 1.2mm E-CU	Contact tip
2	094-016105-00000	CTAL E-CU M6X28MM D=0.8MM	Contact tip, aluminium welding
2	094-016106-00000	CTAL E-CU M6X28MM D=0.9MM	Contact tip, aluminium welding

Item	Order number	Type	Name
2	094-016107-00000	CTAL E-CU M6X28MM D=1.0MM	Contact tip, aluminium welding
2	094-016108-00000	CTAL E-CU M6X28MM D=1.2MM	Contact tip, aluminium welding
2.2	094-005403-00000	CT M6 x 25 mm, 0.6 mm, CuCrZr	Contact tip
2.2	094-020689-00000	CT M6 x 25 mm, 0.8 mm, CuCrZr	Contact tip
2.2	094-020690-00000	CT M6 x 25 mm, 1.0 mm, CuCrZr	Contact tip
2.2	094-020691-00000	CT M6 x 25 mm, 0.6 mm, E-Cu	Contact tip
2.2	094-020692-00000	CT M6 x 25 mm, 0.8 mm, E-Cu	Contact tip
2.2	094-020693-00000	CT M6 x 25 mm, 0.9 mm, E-Cu	Contact tip
2.2	094-020694-00000	CT M6 x 25 mm, 1.0 mm, E-Cu	Contact tip
2.2	094-020695-00000	CT M6 x 25 mm, 0.6 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020696-00000	CT M6 x 25 mm, 0.8 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020697-00000	CT M6 x 25 mm, 0.9 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.2	094-020698-00000	CT M6 x 25 mm, 1.0 mm, E-Cu (Alu)	Contact tip, aluminium welding
2.3	094-025535-00000	CT ZWK CuCrZr M7x30 mm Ø 1,0mm	Contact tip, forced contact
2.3	094-025536-00000	CT ZWK CuCrZr M7x30 mm Ø 1,2mm	Contact tip, forced contact
3	094-013069-00002	CTH CUCRZR M6 L=30.5MM	Contact tip holder
3	094-013070-00002	CTH CUCRZR M6 L=33.5MM	Contact tip holder
3	094-013541-00002	CTH CUCRZR M7 L=31.5MM	Contact tip holder
3	094-013542-00002	CTH CUCRZR M7 L=34.5MM	Contact tip holder
3.1	094-020562-00000	CTH M6 CuCrZr 30.5mm	Contact tip holder
4	094-013094-00004	GD PM / MT 221G / 301W	Gas diffuser
5	094-025863-00003	SRAD DN 23 mm, Ø 38 mm, L 60 mm	Welding fume extraction nozzle, conical
7	094-025320-00000	17 mm x 1,8 mm	O-ring for gas nozzle holder
-	094-016038-00001	TT SW5-SW12MM	Torch key
	094-013967-00000	4,0MMX1,0MM	O-ring for Euro torch connector
	098-005149-00000	O-Ring Picker	O-ring for picker

* Only possible in combination with cylindrical welding fume extraction nozzles, i.e. 5.1 and 5.2.

9.4 MT- / PM 451W (ON SRA-KIT PM/MT451W)

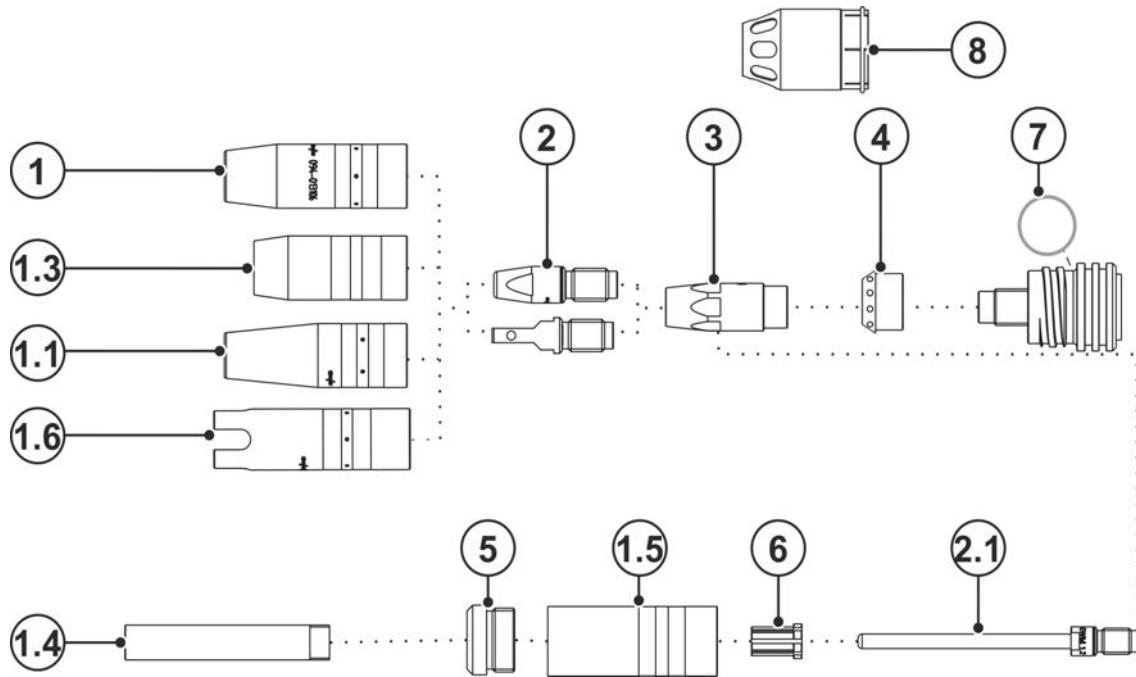


Figure 9-4

Item	Order number	Type	Name
1	094-013105-00001	GN TR 22 71mm D=13mm	Gas nozzle
1	094-013106-00001	GN TR 22 71mm D=15mm	Gas nozzle
1	094-013107-00001	GN TR 22 71mm D=18mm	Gas nozzle
1	094-019821-00001	GN TR 22 65mm D=15mm	Gas nozzle, short
1	094-019822-00001	GN TR 22 65mm D=18mm	Gas nozzle, short
1.1	094-019853-00001	GN NG TR22X4 71mm D=13mm	Highly conical gas nozzle, narrow gap welding
1.3	094-019554-00000	GN FCW TR 22x4 59.5MM	Gas nozzle, inner shield
1.4	094-019626-00000	GN NG M12 73mm	Gas nozzle, narrow gap welding
1.4	094-022226-00000	GN NG M12 76mm	Gas nozzle, narrow gap welding
1.5	094-019623-00000	GNC TR22x4	Gas nozzle body
1.6	094-020945-00000	GN TR 22, 80 mm, D=20 mm	Spot welding nozzle
2	094-007238-00000	CT E-CU M8X30MM D=1.2MM	Contact tip
2	094-013113-00000	CT M8 CuCrZr 30mm, 1.2mm	Contact tip
2	094-013129-00000	CT CUCRZR M8X30MM D=0.9MM	Contact tip
2	094-013528-00001	CT CUCRZR M9X35MM D=0.8MM	Contact tip
2	094-013529-00001	CT CUCRZR M9X35MM D=0.9MM	Contact tip
2	094-013530-00001	CT M9 CuCrZr 1.0mm	Contact tip
2	094-013531-00001	CT CUCRZR M9X35MM D=1.2MM	Contact tip
2	094-013532-00001	CT CUCRZR M9X35MM D=1.4MM	Contact tip
2	094-013533-00001	CT CUCRZR M9X35MM D=1.6MM	Contact tip
2	094-013543-00000	CTAL E-CU M9X35MM D=0.8MM	Contact tip, aluminium welding
2	094-013544-00000	CTAL E-CU M9X35MM D=0.9MM	Contact tip, aluminium welding
2	094-013545-00000	CTAL E-CU M9X35MM D=1.0MM	Contact tip, aluminium welding

Item	Order number	Type	Name
2	094-013546-00000	CTAL E-CU M9X35MM D=1.2MM	Contact tip, aluminium welding
2	094-013547-00000	CTAL E-CU M9X35MM D=1.4MM	Contact tip, aluminium welding
2	094-013548-00000	CTAL E-CU M9X35MM D=1.6MM	Contact tip, aluminium welding
2	094-014024-00000	CT CUCRZR M8X30MM D=0.8MM	Contact tip
2	094-014191-00000	CT CUCRZR M8X30MM D=1.4MM	Contact tip
2	094-014192-00000	CT CUCRZR M8X30MM D=1.6MM	Contact tip
2	094-014222-00000	CT CUCRZR M8X30MM D=1.0MM	Contact tip
2	094-016109-00000	CT E-CU M8X30MM D=0.8MM	Contact tip
2	094-016110-00000	CT E-CU M8X30MM D=0.9MM	Contact tip
2	094-016111-00000	CT E-CU M8X30MM D=1.0MM	Contact tip
2	094-016112-00000	CT E-CU M8X30MM D=1.4MM	Contact tip
2	094-016113-00000	CT E-CU M8X30MM D=1.6MM	Contact tip
2	094-016115-00000	CTAL E-CU M8X30MM D=0.8MM	Contact tip, aluminium welding
2	094-016116-00000	CTAL E-CU M8X30MM D=0.9MM	Contact tip, aluminium welding
2	094-016117-00000	CTAL E-CU M8X30MM D=1.0MM	Contact tip, aluminium welding
2	094-016118-00000	CTAL E-CU M8X30MM D=1.2MM	Contact tip, aluminium welding
2	094-016119-00000	CTAL E-CU M8X30MM D=1.4MM	Contact tip, aluminium welding
2	094-016120-00000	CTAL E-CU M8X30MM D=1.6MM	Contact tip, aluminium welding
2.1	094-019616-00000	CT M9 x 100 mm; Ø 1,0 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019617-00000	CT M9 x 100 mm; Ø 1,2 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019618-00000	CT M9 x 100 mm; Ø 1,6 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-020019-00000	CT M9 x 100 mm; Ø 1,4 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-021189-00000	CT M9 x 100 mm; Ø 0,8 mm CuCrZr	Contact tip, narrow gap welding
2.3	094-017007-00001	CT ZWK CuCrZr M9x35 mm Ø 1,0 mm	Contact tip, forced contact
2.3	094-016159-00001	CT ZWK CuCrZr M9x35 mm Ø 1,2 mm	Contact tip, forced contact
2.3	094-025533-00001	CT ZWK CuCrZr M9x35 mm Ø 1,6 mm	Contact tip, forced contact
3	094-013109-00003	CTH CUCRZR M8 L=34.1MM	Contact tip holder
3	094-013110-00002	CTH CUCRZR M8 L=37.1MM	Contact tip holder
3	094-013539-00002	CTH M9 CuCrZr 34.5mm	Contact tip holder
3	094-013540-00002	CTH M9 CuCrZr 37.5mm	Contact tip holder
4	094-013096-00004	GD Ø11,7 mm, L=14 mm	Gas diffuser
5	094-019625-00000	IT ES M22X1,5 M12X1	Insulation part
6	094-019627-00000	ZH GDE ID=5MM AD=10MM L=15MM	Centring sleeve
7	094-025089-00000	18,5 mm x 2 mm	O-ring for gas nozzle holder
8	094-026615-00002	SRAD DN 25 mm, Ø 41 mm, L 60 mm	Welding fume extraction nozzle, conical
	094-016038-00001	TT SW5-SW12MM	Torch key
	094-013967-00000	4,0MMX1,0MM	O-ring for Euro torch connector
	098-005149-00000	O-Ring Picker	O-ring for picker

9.5 MT- / PM 551W (ON SRA-KIT PM/MT551W)

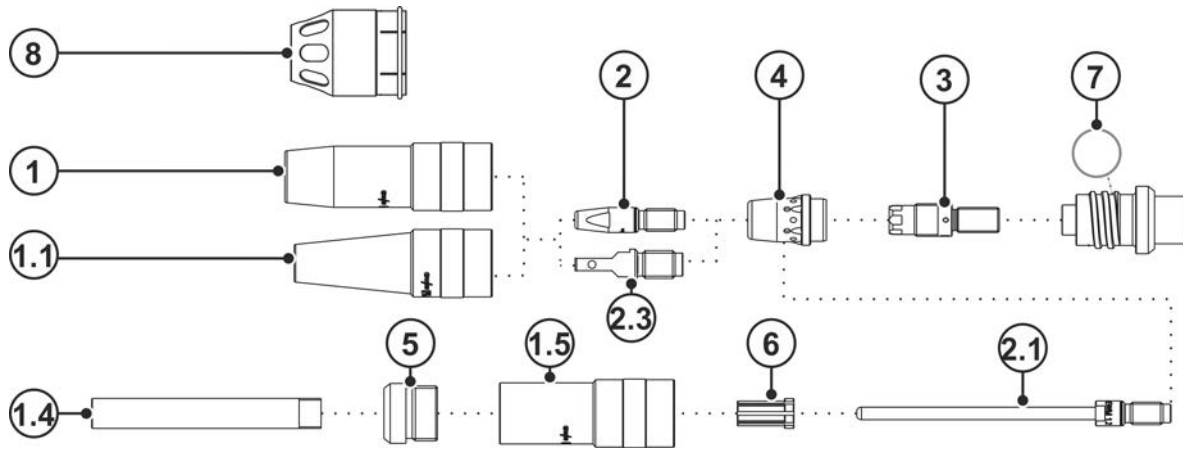


Figure 9-5

Item	Order number	Type	Name
1	094-014177-00001	GN TR 23 63mm D=15mm	Gas nozzle
1	094-014178-00001	GN TR 23 66mm D=15mm	Gas nozzle
1	094-014179-00001	GN TR 23 63mm D=17mm	Gas nozzle
1	094-014180-00001	GN TR 23 66mm D=17mm	Gas nozzle
1	094-014181-00001	GN TR 23 63mm D=19mm	Gas nozzle
1	094-014182-00001	GN TR 23 66mm D=19mm	Gas nozzle
1.1	094-019702-00000	GN NG TR23X4 63mm D=13mm	Highly conical gas nozzle, narrow gap welding
1.1	094-022227-00000	GN NG TR23X4 66mm D=13mm	Highly conical gas nozzle, narrow gap welding
1.4	094-019626-00000	GN NG M12 73mm	Gas nozzle, narrow gap welding
1.4	094-022226-00000	GN NG M12 76mm	Gas nozzle, narrow gap welding
1.5	094-019624-00000	GNC TR23x4	Gas nozzle body
2	094-007238-00000	CT E-CU M8X30MM D=1.2MM	Contact tip
2	094-013113-00000	CT M8 CuCrZr 30mm, 1.2mm	Contact tip
2	094-013129-00000	CT CUCRZR M8X30MM D=0.9MM	Contact tip
2	094-013528-00001	CT CUCRZR M9X35MM D=0.8MM	Contact tip
2	094-013529-00001	CT CUCRZR M9X35MM D=0.9MM	Contact tip
2	094-013530-00001	CT M9 CuCrZr 1.0mm	Contact tip
2	094-013531-00001	CT CUCRZR M9X35MM D=1.2MM	Contact tip
2	094-013532-00001	CT CUCRZR M9X35MM D=1.4MM	Contact tip
2	094-013533-00001	CT CUCRZR M9X35MM D=1.6MM	Contact tip
2	094-013534-00001	CT CUCRZR M9X35MM D=2.0MM	Contact tip
2	094-013543-00000	CTAL E-CU M9X35MM D=0.8MM	Contact tip, aluminium welding
2	094-013544-00000	CTAL E-CU M9X35MM D=0.9MM	Contact tip, aluminium welding
2	094-013545-00000	CTAL E-CU M9X35MM D=1.0MM	Contact tip, aluminium welding
2	094-013546-00000	CTAL E-CU M9X35MM D=1.2MM	Contact tip, aluminium welding
2	094-013547-00000	CTAL E-CU M9X35MM D=1.4MM	Contact tip, aluminium welding
2	094-013548-00000	CTAL E-CU M9X35MM D=1.6MM	Contact tip, aluminium welding

Item	Order number	Type	Name
2	094-013549-00000	CTAL E-CU M9X35MM D=2.0MM	Contact tip, aluminium welding
2	094-014024-00000	CT CUCRZR M8X30MM D=0.8MM	Contact tip
2	094-014191-00000	CT CUCRZR M8X30MM D=1.4MM	Contact tip
2	094-014192-00000	CT CUCRZR M8X30MM D=1.6MM	Contact tip
2	094-014193-00000	CT CUCRZR M8X30MM D=2.0MM	Contact tip
2	094-014222-00000	CT CUCRZR M8X30MM D=1.0MM	Contact tip
2	094-016109-00000	CT E-CU M8X30MM D=0.8MM	Contact tip
2	094-016110-00000	CT E-CU M8X30MM D=0.9MM	Contact tip
2	094-016111-00000	CT E-CU M8X30MM D=1.0MM	Contact tip
2	094-016112-00000	CT E-CU M8X30MM D=1.4MM	Contact tip
2	094-016113-00000	CT E-CU M8X30MM D=1.6MM	Contact tip
2	094-016114-00000	CT E-CU M8X30MM D=2.0MM	Contact tip
2	094-016115-00000	CTAL E-CU M8X30MM D=0.8MM	Contact tip, aluminium welding
2	094-016116-00000	CTAL E-CU M8X30MM D=0.9MM	Contact tip, aluminium welding
2	094-016117-00000	CTAL E-CU M8X30MM D=1.0MM	Contact tip, aluminium welding
2	094-016118-00000	CTAL E-CU M8X30MM D=1.2MM	Contact tip, aluminium welding
2	094-016119-00000	CTAL E-CU M8X30MM D=1.4MM	Contact tip, aluminium welding
2	094-016120-00000	CTAL E-CU M8X30MM D=1.6MM	Contact tip, aluminium welding
2	094-016920-00000	CTAL E-CU M8X30MM D=2.0MM	Contact tip, aluminium welding
2.1	094-019616-00000	CT M9 x 100 mm; Ø 1,0 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019617-00000	CT M9 x 100 mm; Ø 1,2 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-019618-00000	CT M9 x 100 mm; Ø 1,6 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-020019-00000	CT M9 x 100 mm; Ø 1,4 mm CuCrZr	Contact tip, narrow gap welding
2.1	094-021189-00000	CT M9 x 100 mm; Ø 0,8 mm CuCrZr	Contact tip, narrow gap welding
2.3	094-017007-00001	CT ZWK CuCrZr M9x35 mm Ø 1,0 mm	Contact tip, forced contact
2.3	094-016159-00001	CT ZWK CuCrZr M9x35 mm Ø 1,2 mm	Contact tip, forced contact
2.4	094-025533-00000	CT ZWK CuCrZr M9x35 mm Ø 1,6 mm	Contact tip, forced contact
3	094-013856-00003	CTH CUCRZR M9 L=35MM	Contact tip holder
3	094-015489-00003	CTH M8 x 35 mm, CuCrZr	Contact tip holder
3	094-016018-00003	CTH M8 x 37,5 mm, CuCrZr	Contact tip holder
3	094-016425-00003	CTH CUCRZR M9 L=38MM	Contact tip holder
4	094-013111-00002	GD D=20,2; 25 mm	Gas diffuser
5	094-019625-00000	IT ES M22X1,5 M12X1	Insulation part
6	094-019627-00000	ZH GDE ID=5MM AD=10MM L=15MM	Centring sleeve
7	094-022875-00000	18,5 mm x 2,4 mm	O-ring for gas nozzle holder
8	094-025864-00004	SRAD DN 25 mm, Ø 41 mm, L 50 mm	Welding fume extraction nozzle, conical
-	094-016038-00001	TT SW5-SW12MM	Torch key
-	094-013967-00000	4,0MMX1,0MM	O-ring for Euro torch connector
-	098-005149-00000	O-Ring Picker	O-ring for picker

10 Service documents

10.1 Circuit diagrams

The circuit diagrams are only intended for authorised service personnel!

10.1.1 MT301-, MT451W F2

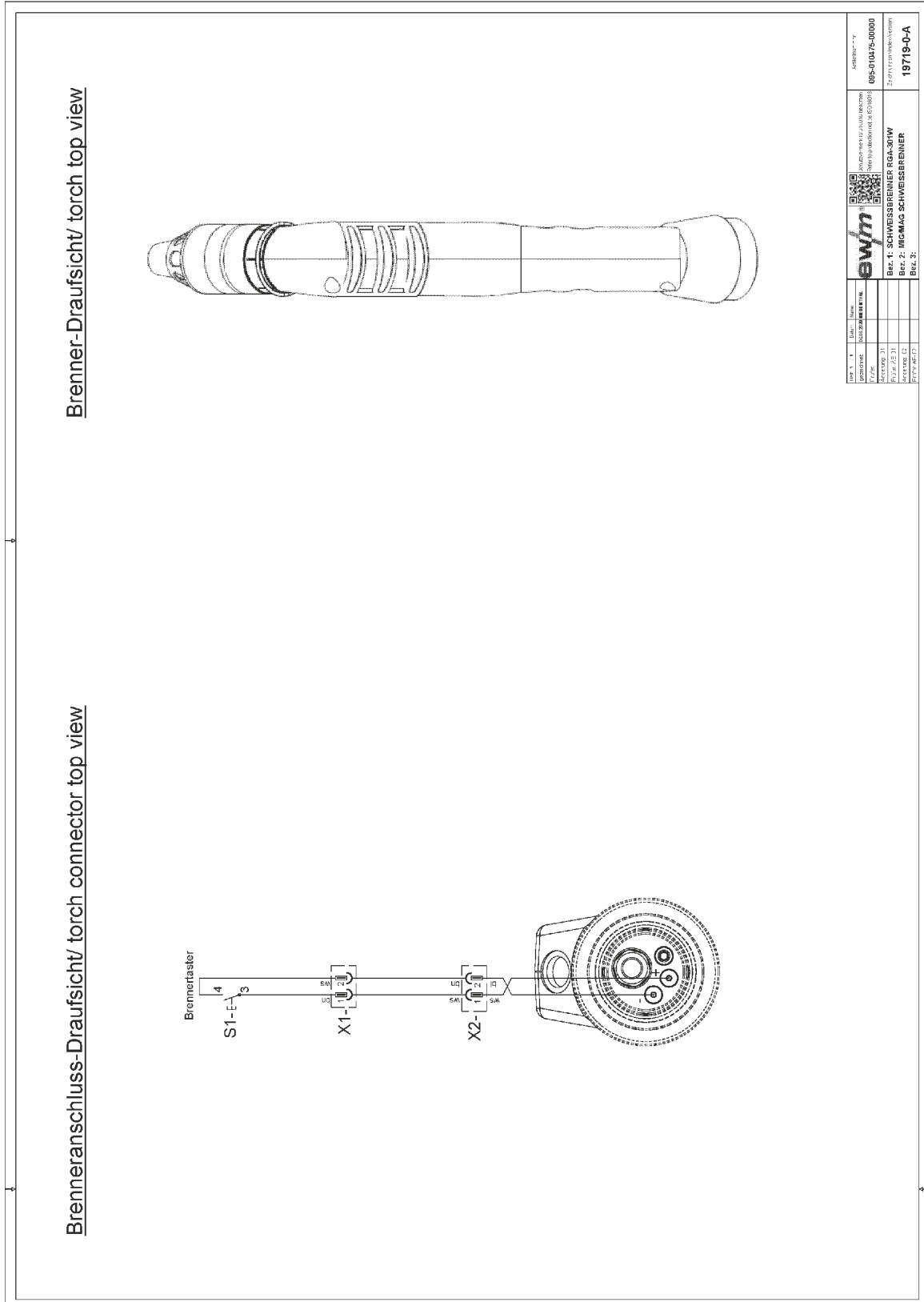


Figure 10-1

11 Appendix

11.1 Altitude alignment

The higher the altitude, the less vacuum is required at the connection piece Δp_c of the welding torch to achieve the required welding fume flow rate at the welding nozzle. Determine the corresponding factor in the following table:

$$P_{c \text{ user}}(Z) = f \times \Delta p_c$$

Explanation:

$P_{c \text{ user}}(Z)$	Required vacuum connector
f	Factor (determined in the following table)
Δp_c	Vacuum connector > see 8 chapter

Altitude Z in (m)	Factor f
0	1.00
250	0.97
500	0.94
750	0.91
1000	0.89
1250	0.86
1500	0.83
1750	0.81
2000	0.78
2250	0.76
2500	0.74

11.2 Searching for a dealer

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