



MXH 315 PP

MXH 420w PP

Instruction Manual



DOKP4M4060 2021 02 02 3.0



DOKP4M4060



EU DECLARATION OF CONFORMITY

According to
The Low Voltage Directive 2014/35/EU
The RoHS Directive 2011/65/EU

Type of equipment

MIG/MAG welding torch

Type designation

Air Cooled Variant: MXH 315 PP
Water Cooled Variant: MXH 420w PP

Brand name or trademark

ESAB

Manufacturer or his authorised representative established within the EEA

Name, address, and telephone No:

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The following harmonised standard in force within the EEA has been used in the design:

EN 60974-7:2013, Arc Welding Equipment - Part 7: Torches

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.

Date

Gothenburg 2020-02-06

Signature

A handwritten signature in blue ink, appearing to read "Flavio Santos".

Flavio Santos
General Manager
Global Equipment Solutions

CE 2020

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1 Important basic information

1.1 Safety instructions







Danger!

In order to prevent serious personal injuries and/or damage to your installation and equipment the information and statements given in these operating instructions must be observed. All personnel operating machines fitted with the product or doing work on the product itself must have read these operating instructions thoroughly before starting and must always follow the given instructions.

1. Please keep this operating manual for future reference and pass it on with the product.
2. A welding system comprises a variety of potential hazards for humans and environment. The product must only be used by trained personnel, this also applies to setup and maintenance. Therefore, all safety regulations in this manual, as well as in those of the connected appliances like power source must be followed.
3. The accident prevention regulations as well as in-house and national safety-related provisions must be strictly observed.
4. When the power source is switched on, do not touch any live parts of the torch.
5. Always keep the torch away from your body and any bystanders! Danger of the wire end exiting the torch nozzle! If necessary, wear an eye protection during maintenance work on the torch.
6. Parts of the torch, especially in the front part, can reach very high temperatures during operation. Please hold the torch only in the area of the handle and let it cool down before starting maintenance work. Do not place the hot torch on or near heat-sensitive objects.
7. All leads and wires must be protected from damage. The condition of the device must be examined periodically by trained personnel. Any damage must be professionally repaired before further use of the system.
8. Make sure the trigger will not be activated accidentally when the torch is put down. The use of an adequate torch holder is highly recommended.
9. Welding fumes are harmful to your health. Do only work in well ventilated areas or use a fume extraction unit with enough capacity. Be especially careful with painted surfaces and residues of detergents. It may be necessary to prepare these surfaces adequately to avoid the formation of highly toxic gases.
10. Never weld near flammable or explosive materials. Risk of fire!
11. When working in closed, humid or narrow spaces, special safety measures must be observed. The safety officer for the concerned working place must be consulted for this purpose.
12. During the welding process, there are dangers for the eyes, the skin and the hearing. Therefore, complete welding safety equipment must be worn. This specifically includes gloves, welding jackets as well as a face- and eye protection. Welding produces very intense light, as well as UV radiation, which will harm the unprotected eye and skin. Take care that bystanders are also protected, e.g. by using welding curtains.
13. Prior to doing installation and maintenance work on the product, the power supply to the complete system must be disconnected. Make sure that the whole system is switched off and will remain so for the time of the work. There is a risk of a life-threatening electrical shock, as well as burn and stab injuries caused by the wire.
14. For water-cooled torch systems, please take care that no cooling water will enter the interior of the torch. Caution is required when changing the torch neck or during transport/storage. If caution is not taken, there is a risk of fatal electric shock and damaging the torch. Water-cooled torches should always be equipped with a torch neck or a suitable transportation lock.
15. Modifications of the torch are not permitted and will cause the invalidation of the declaration of CE-conformity.

1.2 Symbols and signal words

Symbol	Signal word	Meaning
	Danger!	Description of a hazard with a high degree of risk, which can lead to death or serious injuries if it is not avoided.
	Warning!	Description of a hazard with a medium degree of risk, which can lead to death or serious injuries if it is not avoided.
	Caution!	Description of a hazard with a low degree of risk, which can lead to minor or moderate injuries if it is not avoided.
	Note! Important note!	Indication of a note that contributes to intended use, or to information on the product.

1.3 Conditions of intended use

1.3.1 Application, Transport and Storage

1. The device should only be used within the above-mentioned technical specifications and for its intended purpose. It must only be used with Original ESAB torch necks, accessories, spare parts and wear parts.
 - Do not hammer with the torch, do not use it as a bending tool
 - Do not pull on the cable assembly
 - Do not kink cable assembly or control cable
 - Do not roll up the cable assembly to a radius smaller than 0.25 m
 - Please follow the instructions for regular cleaning in Section 5
2. The product is intended for industrial and commercial use and must only be utilized by trained personnel. The manufacturer is not liable for any damage or accidents resulting from improper usage.
3. All installation instructions, operating instructions and maintenance instructions listed in this manual must be observed.
4. The product must be kept dry and protected from humidity and corrosive agents when transported, stored or used.

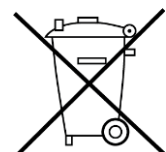
The welding torch is made for use within an ambient temperature between -10° and 40°C / 14° to 104°F . Outside this range, special measures may be necessary. In freezing conditions, please use an adequate cooling liquid.

1.3.2 Scope of delivery

- Operating instructions
- ESAB MXH Push-Pull welding torch

1.3.3 Disposal and recycling

- Please do not dispose of the ESAB MXH Push-Pull welding torch in the household waste.
- Please dispose of the ESAB MXH Push-Pull welding torch according to country-specific regulations.



1.4 Warranty

Before delivery, our products are carefully checked. We guarantee, that each product is free from defects of material and workmanship at the time of delivery and is functioning according to its intended use.

ESAB provides warranty on defects of material and workmanship according to legal requirements. Wearing parts are exempt from this warranty.

The warranty does not cover any damages or functional deficiencies resulting from

- overloading, abusing or non-intended use of the product
- accidents
- noncompliance with indications stated in these operating instructions
- improper installation or assembly
- insufficient maintenance
- modifying the product from its original state
- chemical influences
- normal wear and tear during proper operation

ESAB assumes no liability other than for replacement or repair of faulty parts.

2 Product description, Technical data

2.1 General area of application and functions

2.1.1 Area of application

ESAB MXH PP-TX welding torches were developed as an easy way to upgrade ESAB MIG/MAG welding power sources into a high-performance Push-Pull system.

Considerably longer cable assemblies can be used with the Push-Pull torch. Wires that are difficult to handle e.g. AlMg wires can be easily fed over distances of up to 10.5 m through the additional wire feed system in the torch handle. The welding process remains stable due to the even wire feed speed.

The powerful wire feed with large feed roll provides optimal performance whilst protecting the wire.

ESAB MXH PP-TX welding torches are equipped with easily changeable torch necks. Thus, the torch can be optimally adjusted to changing tasks. Even in the event of a faulty neck, work can continue immediately with a spare neck.

The neck can also rotate in the holder. This also makes many tasks easier.


The handle was manufactured using 2-component technology and provides an appealing, ergonomic shape with optimized non-slip properties. The drive mechanism is easily accessible thanks to the large cover. The contact force of the feed roll can be adjusted over a wide range.

2.1.2 Function

The wire feeding system integrated into the handle of the ESAB MXH PP-TX torch supports the main feed unit of the power source for the wire feed. Therefore, the friction of the wire in the cable assemble no longer has a direct impact on the wire speed, the wire is fed at a consistent speed.

In the drive unit, the wire is pressed into the groove of the driven feed roll by a smooth pressure roll. A high feeding force can thereby be transferred without deformation of the wire.

2.2 Specifications

ESAB MXH PP	
Field of application	ESAB MIG/MAG welding torches are intended for use on CE-compliant welding power sources for metal inert gas welding (MIG), metal active gas welding (MAG) and metal inert gas soldering processes with commercially-available round wires. The torches may not be used for other processes.
Type of guidance	by hand
Voltage rating	The torch is rated for a welding voltage of max. 113 V (peak value). The control circuit (switch or micro switch) is rated for a voltage of 50 V, max. 1 A. Remote control devices with electronic elements may be subject to individual specifications.
Cooling method	Gas-cooled and water-cooled versions are available. The water-cooled version includes the additional connections for water inlet and return.
Capacity	The maximum welding current depends on the torch version used, please refer to the type plate on the machine side connector of the torch for applicable data. The following maximum values apply: <ul style="list-style-type: none"> ▪ MXH 315 PP (gas-cooled): Mix: 270A; CO₂: 310 A, 60% duty cycle (10 min.) ▪ MXH 420w PP (water-cooled): Mix: 400A; CO₂: 430A, 100% duty cycle (10 min.)
Wire diameter	0.8 - 1.6 mm
Gas flow	10 - 20 l/min
Potentiometer (2x)	standard value 10 kΩ
Operating principle for drive	Wire feed with driven roll and a parallel pressure roll
Electrical connection for motor	Max. supply voltage 42 V DC, rated power 17.5 W
Wire feed speed	approx. 2.5 - 18 m/min (depending on electrical connection of the Push-Pull torch)
Cable assembly lengths	6, 8 & 12 m
Limits of the torch cooling circuit (for water cooled models only)	<ul style="list-style-type: none"> ▪ Min. flow: 1,2 l/min / 1,1 quarts/min ▪ Min. water pressure: 2,5 bar / 36,3 PSI ▪ Max. water pressure: 3,5 bar / 50,8 PSI ▪ Input temperature: max. 40° C / 104° F ▪ Return temperature: max. 60° C / 140° F ▪ Cooling capacity: min. 1600 W, depending on the application <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Important note!</p> <p> Return temperatures of more than 60 °C / 140° F may cause damage or destroy the cable assembly. The cooler must always be filled with enough cooling liquid, please consult the user manual of the cooling unit. In case of a high thermal load on the torch, please use a cooler with enough capacity.</p> </div>
Ambient conditions	Storage -25° to +55°C (-13° to 131° F) Operation -10° to +40°C (14° to 104° F)
Relative air humidity	to 90% at +20°C (68° F)
Technical specification	The ESAB MXH Push-Pull welding torch comply with the harmonized standard IEC/EN 60974-7 and bear the CE mark.



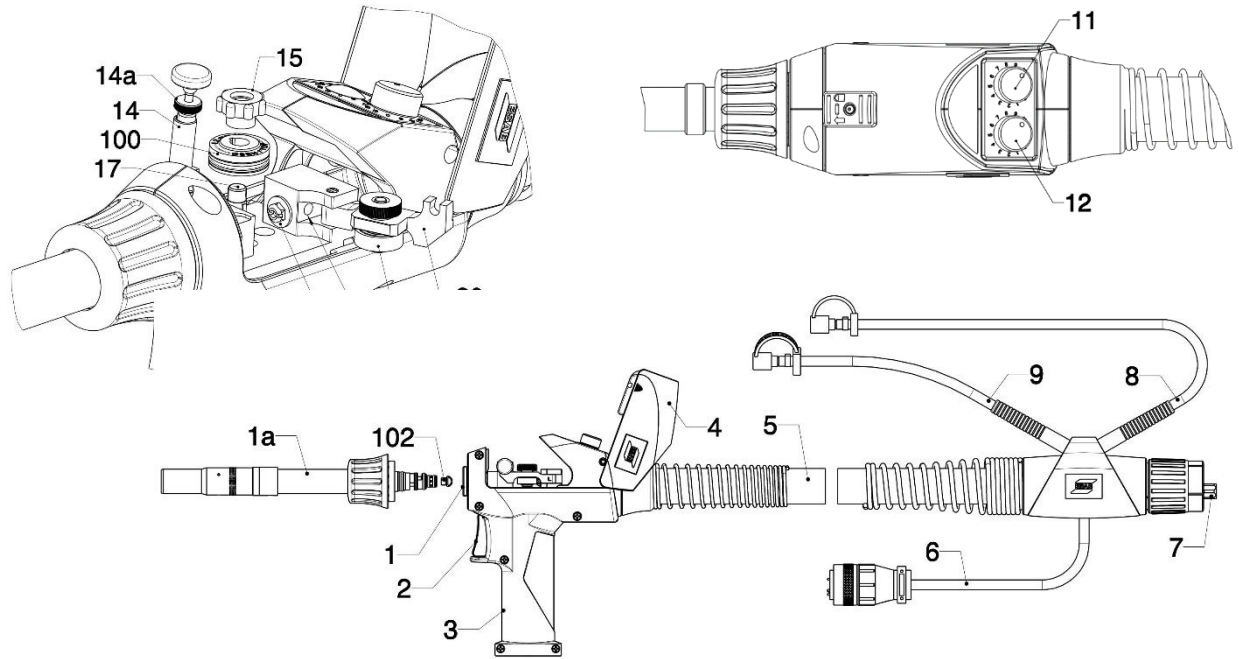
Important note!

- The torch capacity values given refer to a standard application case using standard accessories.
- The torch and cable assembly capacity drop when using pulsed arc power sources.
- In special cases e.g. in the event of very high reflective heat, the torch may overheat even under less load than the maximum rated capacity. In this case, the welding duration in the duty cycle must be reduced, a more powerful torch selected, or the welding conditions must be improved.
- ESAB products are manufactured to the current state of the art and are safe to operate if they are used as intended.
- The ratings are valid for cable lengths 8 and 12 m.
- For special cable lengths > 12m, a reduction in performance is required due to the increased heat influence.
- For water-cooled special cable lengths > 12m a sufficient dimensioned cooling device is needed (cooling capacity > 2KW). The coolant flow rate should not fall below 1.2 L / min.

2.3 Selection of a suitable torch

The torch model must be chosen according to the welding application. The required duty-cycle and capacity, the cooling method and the wire diameter must be considered. If there are increased requirements, for example caused by preheated work pieces, high heat reflection in corners etc., these must be considered by choosing a welding torch with adequate reserve in power rating (see section 2.2).

2.4 Torch design



Item	Description	Function/ Description
1	MXH torch neck holder	Quick-change system
1a	MXH PP Torch neck	In different versions (air and/or water-cooled models)
2	Torch switch	power source On/Off
3	Handle	
4	Cover	
5	Cable assembly	
6	Control cable	To connect drive motor (supply voltage) and control elements
7	EURO central connector	
8	Water inlet	Marked blue (water-cooled version only)
9	Water return	Marked red (water-cooled version only)
11 & 12	Potentiometer	To connect to the remote-control interface of the power supply
13	Viewing window	Control viewing window for the correct positioning of the wire guide
14	Tension spring holder	Locking device for pressure roll holder
14a	Adjusting screw	Regulating the contact pressure (pressure roll holder)
15	Knurled nut	Fixing the drive roll
100	Feed roll	For feeding the welding wire
17	Drive shaft	Drive/mounting of drive roll
19	Pressure roll	For the wire guide to the drive roller
20	Pressure roll holder	Holder of the counter-pressure roll
101	Wire guide	guides the welding wire to the feed roll
102	Inlet guide	for fixing the wire guide in the torch neck

3 Preparing the product for use

3.1 Transport and storage

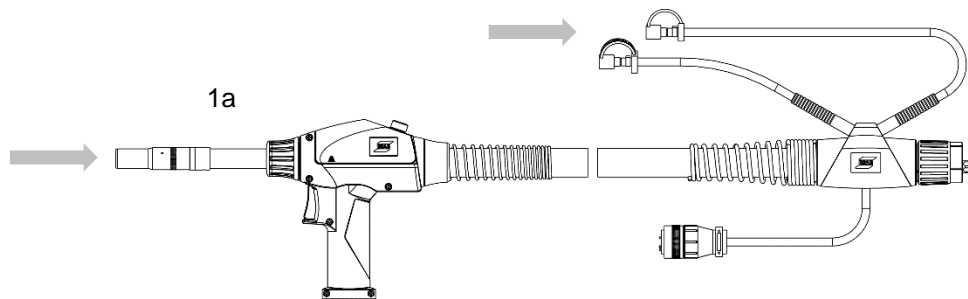
The following points must be observed during transport and storage:

- To prevent danger due to the ESAB MXH PP torch falling, only place it down on substrata that have a high load-bearing capacity and are stable.
- The ambient temperature specifications must be observed.
(see section 2.2)
- Protect the ESAB MXH PP torch from moisture and environmental influences.



Important note!

If the ESAB MXH PP is transported and/or stored, the torch neck (1a) must always be installed for a water-cooled system. Otherwise there is a danger that the cooling water could get inside the torch body.



3.2 Installation

The following points must be observed during installation:

- Carefully remove the packaging; to prevent danger due to the torch falling, only place it down on substrata that have a high load-bearing capacity and are stable.
- Ensure that all ESAB MXH PP torch components are present.
(see section 2.4)
- Please observe all sections described below for additional servicing.

3.3 Preparation



DANGER

Danger!

The supply voltage to the welding machine must be disconnected before starting installation work. It must be ensured that the entire facility remains switched off for the duration of the work. There is a risk of fatal electric shock.

You must observe the 'Safety instructions' at the beginning of this document.

3.3.1 Equipping the torch

The ESAB MXH PP welding torch can be used for various welding tasks and filler materials. The accessories integrated into the MXH PP must be individually adapted to each task for the torch to function properly and to ensure optimum welding results. The necessary work steps are described below.

3.3.2 Installing and changing the drive roll

The wire feed will only function properly if the right drive roll is used. The drive roll must be selected according to the wire material used and the wire diameter in accordance with Table 1. Please refer to our current list of spare parts, if necessary. (see section 6)

Table 1: Drive rolls for ESAB MXH PP

Welding wire				Wire diameter [mm]						
				Pressure roll part no.	Feed roll part no.	Marking on the feeder roll	0,8	0,9	1,0	1,2
All wire types except AISi	0459 990 081	0459 990 051	08 X	x						
		0459 990 052	09 X		x					
		0459 990 053	10 X			x				
		0459 990 054	12 X				x			
		0459 990 055	14 X					x		
		0459 990 056	16 X							x
AISi *	0459 990 082	0459 990 057	1.0 -AISi			x				
		0459 990 058	1.2 -AISi				x			
		0459 990 059	1.6 -AISi							x

*) The feed rolls for AISi wires must be installed together with the special pressure roll for AISi (part no. 0459990082) (see section 3.3.3)

Drive roll in bold = **standard version**

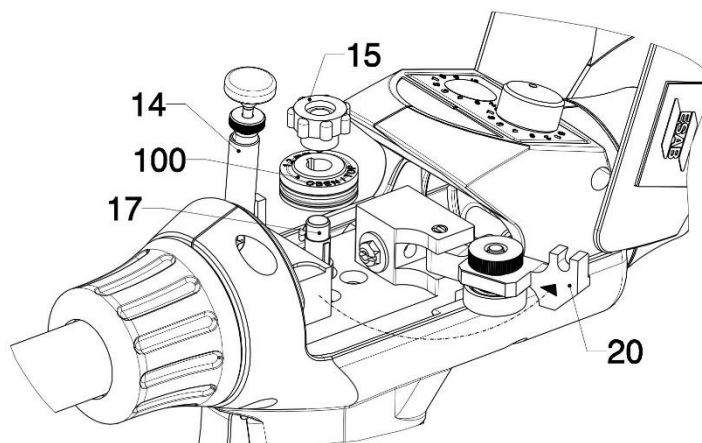


Note:

To ensure that the torch functions correctly, only original drive rolls specified for the ESAB MXH PP should be used!

Perform the following steps to change the drive roll.

1. Open cover (4), loosen tension spring holder (14) from locking device and flip up to open.
2. Open pressure roll holder (20) and fold to the side.
3. Loosen and unscrew knurled nut (15). If necessary, carefully remove the existing drive roll (100) from the drive shaft (do not use any tools!)
4. Push the new drive roll (100) on to the shaft (17); in doing so the marking with the required wire diameter must be facing upward.
5. Then put the knurled nut (15) back on and tighten by hand.

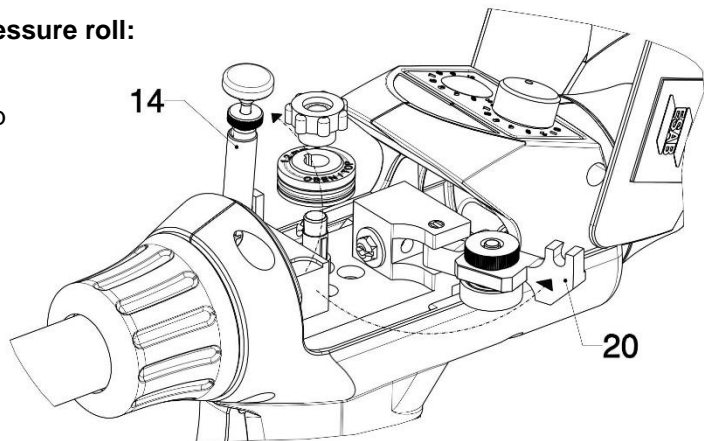


3.3.3 Installing and changing pressure roll for AISi wire

The optional pressure roll for AISi wires must be installed together with the AISi feed rolls!

Perform the following steps to change the pressure roll:

1. Open cover (4), loosen tension spring holder (14) from locking device and flip up to open.
2. Open pressure roll holder (20) and fold to the side
3. Install pressure roll for AISi (part no. 0459 990 082) according to the supplied installation instructions:



1.0	<p>1.</p> <p>2.</p> <p>2mm Hex Wrench or Torx T10</p>	1.1	<p>Clean the pressure roll holder</p>	2.0	<p>Part no. 0459 990 082</p>
2.1	<p>Chamfer on Top</p> <p>Groove at the bottom</p>	2.2	<p>1.</p> <p>2. Only tighten very lightly</p> <p>2mm Hex Wrench or Torx T10</p>		
2.3	<p>1. Block screw position</p> <p>2. Tighten plastic nut strongly</p>				

3.3.4 Changing the torch neck

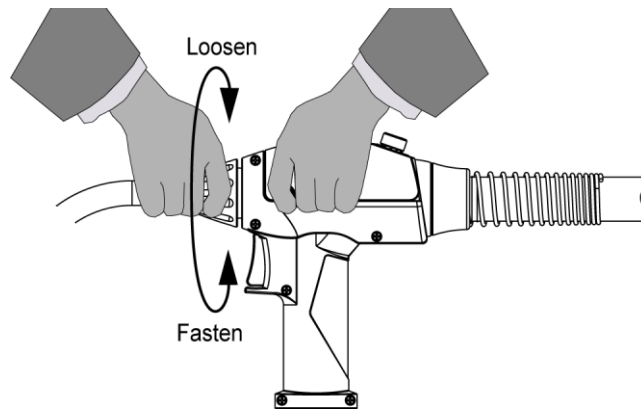
The MXH cable assembly may only be equipped with a suitable MXH PP torch neck. Different removable torch necks, which are very easy to fit, are available for optimal adjustment to different tasks.



Important note!

Water-cooled cable assemblies must always be equipped with a water-cooled neck; gas-cooled cable assemblies must always be equipped with a gas-cooled neck!

1. Switch off the cooling device for water-cooled torches. If another neck is not installed immediately, empty the cooling circuit by blowing through with compressed air. The torch should be laid horizontally for this task.
2. Cleanly cut off any welding wire still in the torch neck in front of the contact tip.
3. Loosen locking nut and pull the torch neck out of the MXH body.
Attention: Cooling liquid can leak from the neck and cable assembly of water-cooled torches. This must not get into the handle and torch body.



4. Check the O-rings on the flange of the new torch neck to be installed for damage or loss, replace if necessary.
5. Put on the torch neck and tighten the locking nut by hand. Do not use any tools!



Important note!

Water-cooled cable assemblies may only be transported and stored with mounted torch neck in order to prevent the water from leaking out of the cooling circuit and getting into the inside of the handle. The torch could be damaged from intruding liquids.

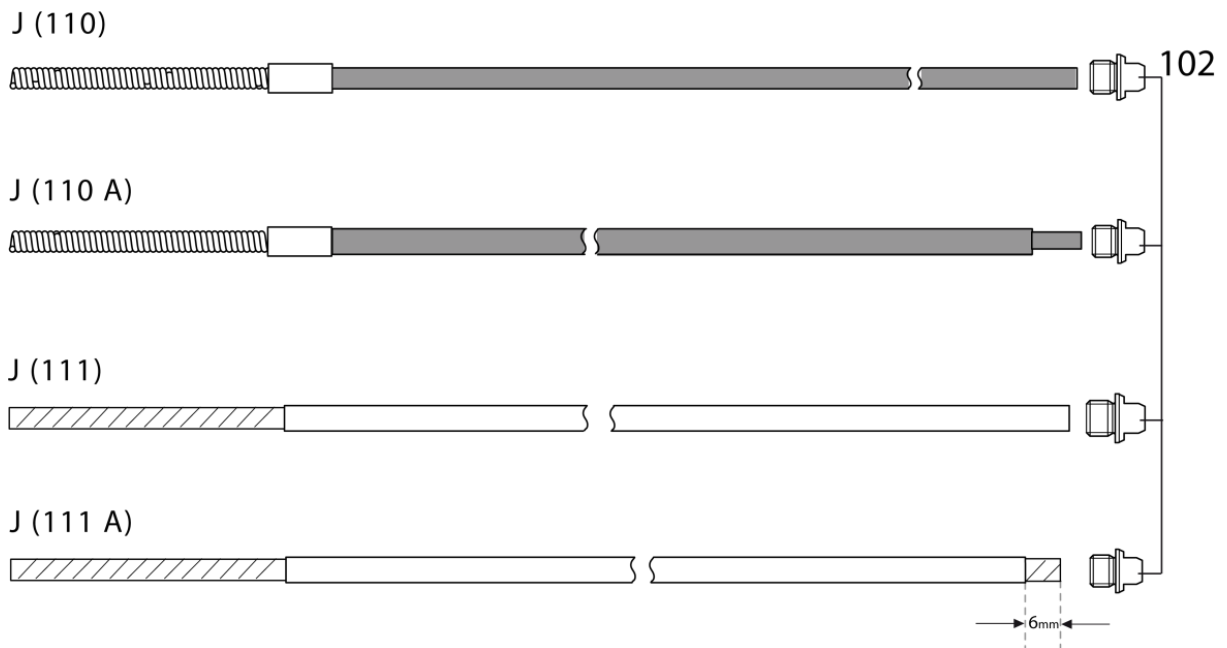
3.3.5 Installing or changing the wire guide in the torch neck

The wire guide must be selected to match the material and diameter of the welding wire; always use the complete equipment kit according to the following table.

Table 2: Equipment kits for torch neck

Welding wire	Equipment kit part no.	Wire diameter [mm]	Material of the wire guide (J)	Length [mm]	Inlet guide (102) Part no.
AlMg, AlSi, CuSi, fill wire, stainless steel	0700 025 313	0.8 - 1.0	PA/ Bronze liner (110)	320	0700 025 321
	0700 025 314	1.2	PA/ Bronze liner (110)	320	0700 025 322
	0700 025 315	1.6	PA/ Bronze liner (110 A)	320	0700 025 323
Steel	0700 025 316	0.8 - 1.0	Insulated liners, blue (111)	320	0700 025 324
	0700 025 317	1.2	Insulated liners, red (111)	320	0700 025 325
	0700 025 318	1.6	Insulated liners, yellow (111 A)	320	0700 025 323

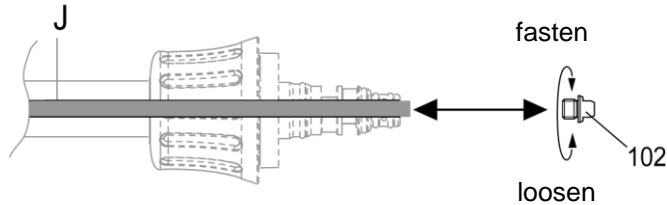
Wire guides in bold = standard version



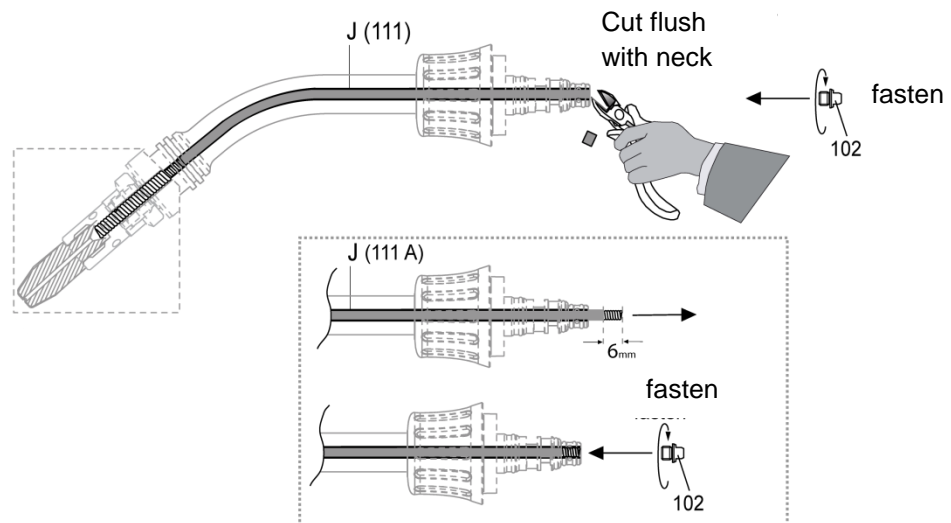
For installation of a PA/ Bronze liner used for Alu or stainless-steel wires, please follow the instructions included with the liner.

Complete the following steps to install an insulated liner for steel wire:

1. Remove the torch neck from the torch, see Section 3.3.3. Remove gas nozzle, contact tip and tip holder.
2. Loosen and unscrew inlet guide (102).



3. Pull the old wire guide backwards out of the torch neck. To do this, press the wire guide into the neck from the front if necessary.
4. Blow out the torch neck with compressed air.
5. Reassemble tip holder, contact tip and gas nozzle.
6. Select new wire guide (J) to suit the welding wire. Monitor the front end for a free inner hole and protruding burrs; rework if necessary.
7. Insert the new wire guide (J) into the torch neck from the back.
Note: The bare end of the liner must point forwards towards the contact tip.
8. Hold the wire guide in the torch neck whilst applying light pressure to ensure that it pushes forward against the contact tip. Then cut the wire guide flush with the end of the torch neck.



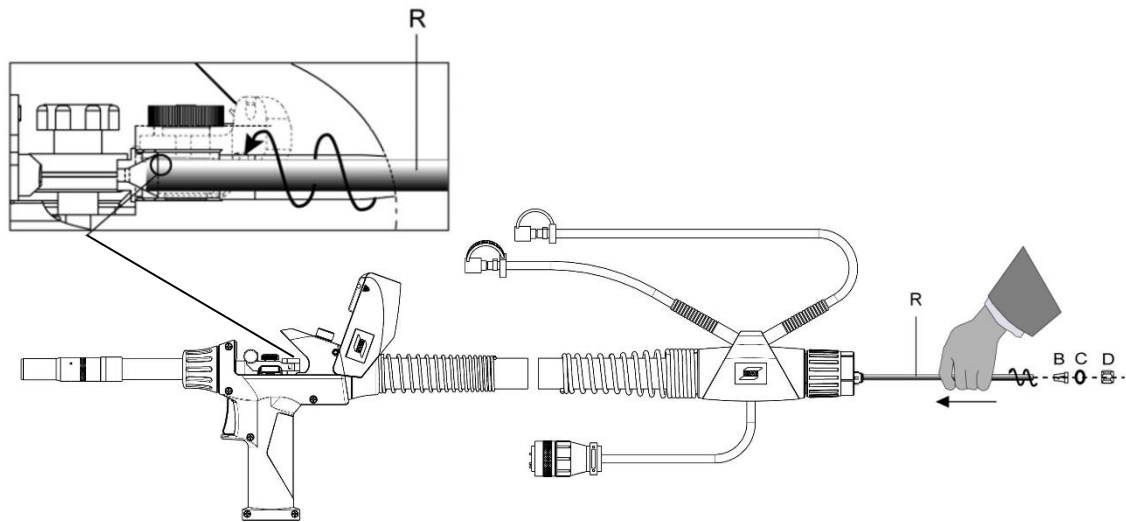
9. Monitor the end of the wire guide for a free inner hole and protruding burrs. It must be able to be inserted into the liner nipple later. Remove the wire guide from the neck again and rework if necessary.
10. When using the yellow steel liner (111 A), the insulation must be removed on a length of 6 mm in order to insert the liner into the nipple (see drawing).
11. The inlet guide (102) included in the equipment set must always be used. Screw inlet guide on to the torch neck and lightly tighten.
Note: The wire guide must be inserted into the large borehole of the inlet guide in order to minimize the loss of gas.
12. Check the O-rings on the flange of the torch neck for damage or loss; replace if necessary.
13. Put on the torch neck and tighten the locking nut by hand. Do not use any tools!

3.3.6 Installing or changing the wire guide in the cable assembly

A universal PA wire guide (see Table 3) is recommended for all wire types.

Table 3

Welding wire	PA wire guide	
	Length	Part no.
All wire types (0.8 – 1.6 mm)	8 m	0700 025 319
	12 m	0700 025 320



1. Straighten out cable assembly
2. Any welding wire remaining in the torch must be removed.
3. Loosen the locking nut (D) at the central adaptor; if necessary, strip the liner nipple (B) and O-ring (C) from the old wire guide (R) and pull out whilst turning slightly.
4. Blow dry and oil-free compressed air through the cable assembly before installing the new wire guide (position on central adaptor wire nipple).
5. Lightly sharpen the front end of the plastic liner, then insert as far as it will go whilst turning slightly.

Note:



Ensure that the wire guide is as far forward as it can go.

To do this, open the cover (4), lift up tension spring holder (14), push pressure roll holder (20) to the side and use the viewing window (13) to check whether the wire guide has been fed through to the viewing window (see Figure above). If necessary, push it further forward by simultaneously pushing and turning the wire guide.

6. Slip the liner nipple (B) and O-ring (C) over the wire guide (R) and fasten the locking nut (D) using the spanner.
7. Shorten the wire guide behind the central adaptor to the required length. Follow the operating instructions of your power source.

3.4 Electrical connection



DANGER

Danger!

The supply voltage to the welding machine must be disconnected before starting installation work. It must be ensured that the entire facility remains switched off for the duration of the work. There is a risk of fatal electric shock.

You must observe the 'Safety instructions' at the beginning of this document.

3.4.1 Connectivity

3.4.1.1 Connection via Push-Pull interface of the power source

To connect the MXH PP torch to the power source, it is possible to use the push-pull interface of the power source. This is available as a connection kit on many models.

For commissioning and wiring of this interface, please observe the instructions of the welding machine. The assignment of the burner control line can be found in the following diagram.



Important note!

The following conditions must be met to connect the ESAB MXH PP welding torch to the Push-Pull interface:

P_{\max} 17W / 100%

P_{\max} 25W / 60%

Please note the operating instructions of the welding machine. If in doubt, please contact your welding machine retailer.

3.4.1.2 Connection via Syntronic 3

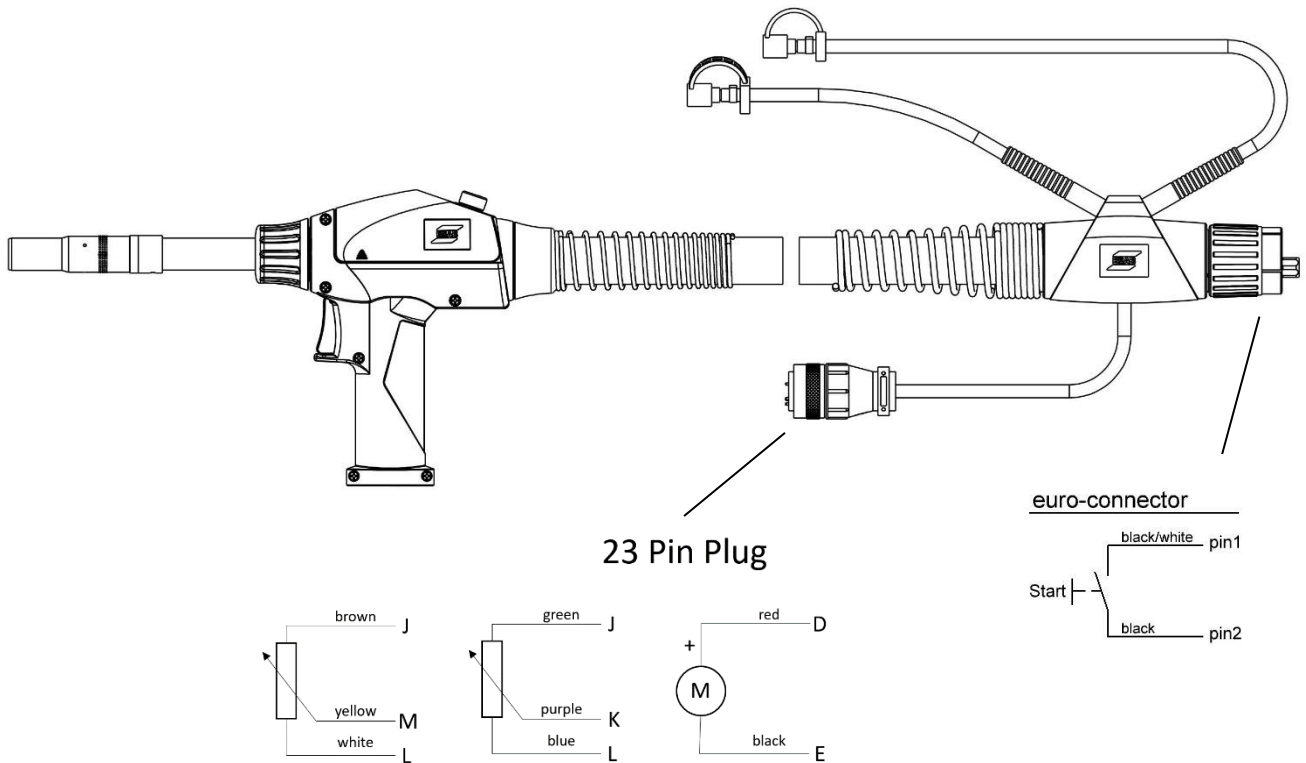
The Syntronic 3 (ESAB Part No. 0700 025 311) can be used as an alternative to the Push-Pull interface of the power source. The Syntronic 3 is an independent motor control unit that allows the characteristics curve between the main drive unit and Push-Pull drive to be calibrated accurately. The main feed unit is not influenced by the Syntronic, so that even complex regulated systems are not impaired and operate at full capacity even with the Push-Pull torch.

The wire feed speed can be regulated between 2 m/min and max. 15 m/min.

Please follow the separate instructions for connecting the Syntronic 3.



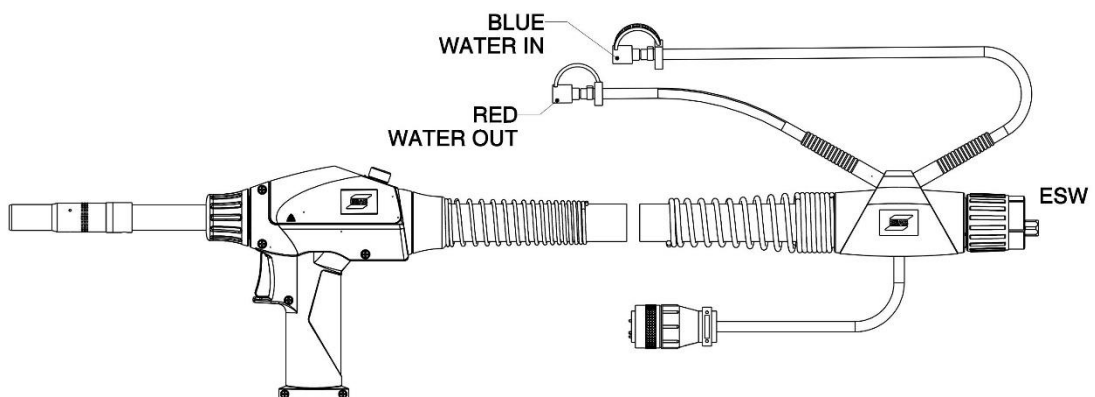
3.4.2 Connection plan for ESAB MXH PP



3.5 Connection to the power source

- Connect the central connector of the torch to the power source socket.
- Ensure that the wire guide behind the central connector is cut to the correct length. Please also observe the instructions of your power source. When processing aluminum wire, the wire guide must reach the feed rolls of the power source.
- Tighten the locking nut of the central connector by hand.
- Connect the control cable plug to the corresponding socket (suitable connection kit).

3.6 Connection to the cooling circuit (water-cooled torch only)



- Connect the blue-marked connection hose of the torch to the inlet flow (“water-in”, cold water) of the welding machine (cooling device).
- Connect the red-marked connection hose of the torch to the return flow (“water-out”, warm water) of the welding machine (cooling device).



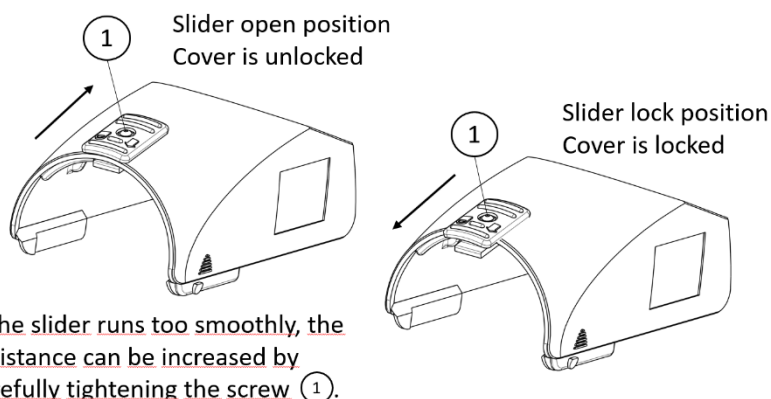
Important note!

Water inlet and return must not be mixed up, otherwise there is a danger of overheating and damaging the torch.

Specifications of the torch cooling circuit (for liquid cooled torches only):

- minimum flow 1.2 l/min
- min. water pressure: 2.5 bar
- max. water pressure: 3.5 bar
- input temperature: max. 40 °C
- return temperature: max. 60 °C
- cooling capacity: min. 1600 W, up to 2000 W depending on the application

3.7 Cover Locking System



4 Product operation

Follow all instructions from section 3 before the product can be put into operation

4.1 Normal operation: Start-up



DANGER

Danger!

Before starting up the system, the entire installation must be inspected in accordance with all instructions and the applicable safety regulations.

The safety instructions at the beginning of this operating manual must be observed!

Please check the following to make sure that the system has been installed correctly:

1. Are all parts bolted tightly? (see section 3.3)
2. Has the torch neck been fastened as described and correctly and fully equipped? (see section 3.3.4, 3.3.5)
3. Is the Euro central connector or direct connector fastened tightly? (see section 3.5, 3.6)
4. Has the wire guide been selected and installed according to specifications? (see section 3.3.5, 3.3.6)
5. The wire run-in can now be started. (see section 4.3)
6. Has the spring tension for the pressure roll been set correctly? (see section 4.4)
7. Is the adjustment of motor characteristics required and has it been performed accordingly?
8. The ESAB MXH PP welding torch is now ready for operation.

Take the necessary safety precautions before starting the welding process!

4.2 What to do in case of faults or maintenance



DANGER

Danger!

Please observe the safety instructions at the beginning of this manual!

Damaged torches or cable assemblies must not be used anymore!
Known defects must be repaired prior to the next use of the equipment

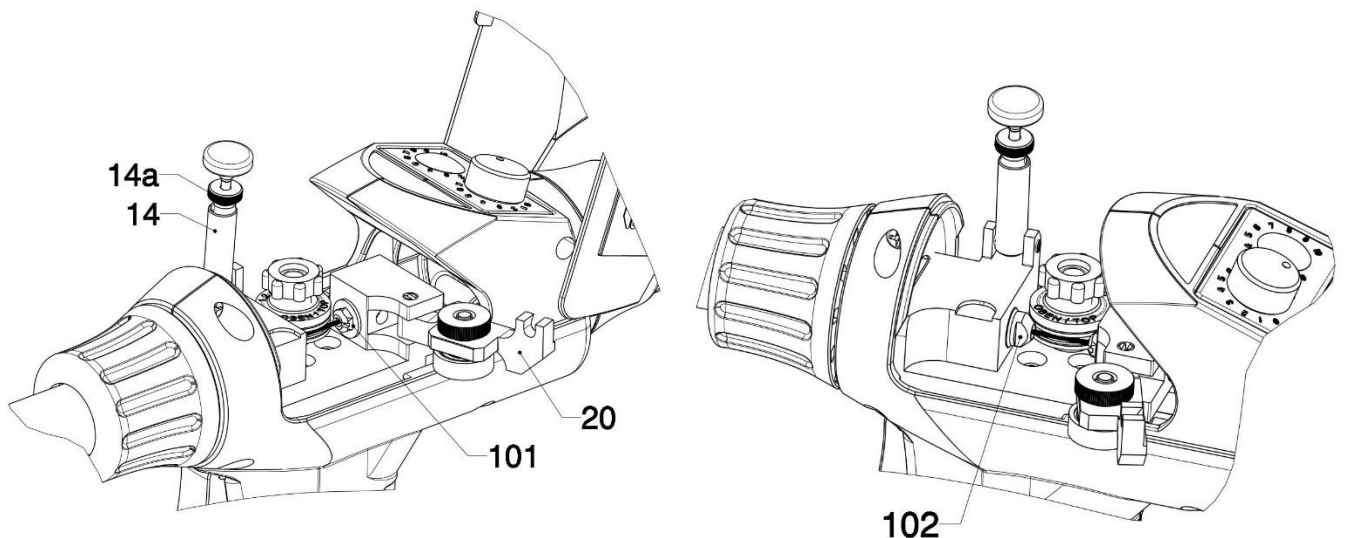
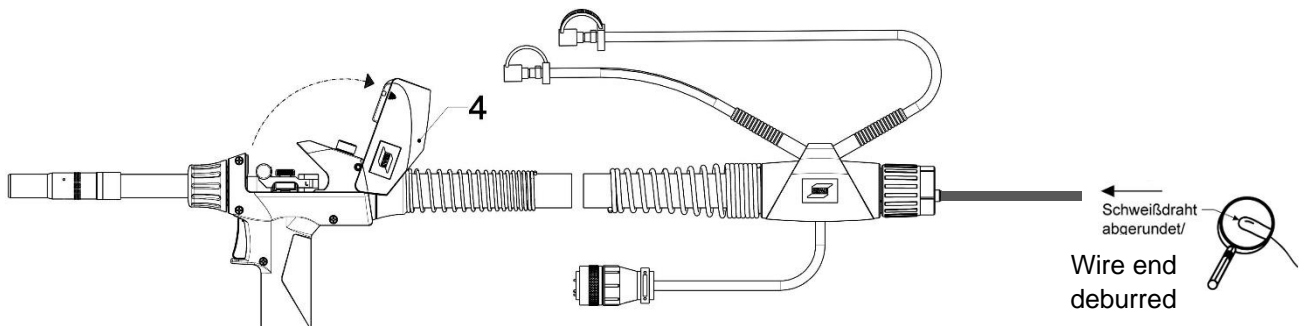
Danger of burn injuries!

Gas nozzle and torch head get very hot during welding. Let the torch cool down prior to doing maintenance work!!

For safety reasons the following sequence is to be strictly followed:

1. Before performing maintenance on the system, the main power of the installation must be turned off.
2. Let the torch cool down prior to doing maintenance work (e.g. replacing wear parts)!
3. Eliminate fault (see section 7) or perform maintenance (see section 5)
4. Turn on the main power of the installation.
5. If necessary, perform the wire run-in. (see section 4.3)
6. The ESAB MXH PP welding torch is now ready for operation.

4.3 Wire run-in



1. Open cover (4) towards cable assembly, loosen tension spring holder (14) from locking device and flip up to open.
2. Open pressure roll holder (20) and fold to the side.
3. Check that the drive roll has been correctly installed.
4. Manually straighten the first 10 cm of the welding wire to be inserted and work the tip and/or cut edge of the wire in such a way that it is free of burrs and as "round" as possible. This can be done with a file or with abrasive paper.
5. Now, with the cable assembly straightened out, manually insert the welding wire about 20 cm. To do this, disengage the pressure roll of main drive unit and then engage it again.
6. Gradually feed the welding wire through the whole cable assembly until it emerges from the inlet nozzle (101). Place welding wire in the groove of the drive roll and feed it into the liner nipple (102). Stop feed when the welding wire emerges from the contact tip.
7. Fold in and lock pressure roll holder (20) and tension spring holder (14). Set the pressing force of the holder or the counter-pressure roll using the adjusting screw (14a). The spring installed inside the tension spring holder (14) determines the pressure. Turning the adjusting screw (14a) clockwise increases the pressure. Turning the adjusting screw (14a) anti-clockwise reduces the pressing force of the closed holder and/or the counter-pressure roll.
8. Finally close the cover (4).

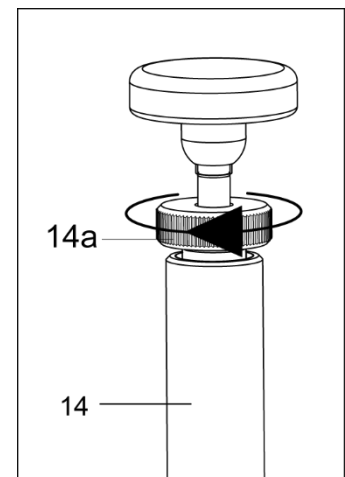
4.4 Adjusting the pressing force

The pressing force of the counter-pressure roll can be adjusted to accommodate different welding wire materials. This is performed using the adjusting screw on the tension spring holder. The pressing force must be adjusted in such a way that a soft welding wire is not deformed and to prevent slippage of the welding wire.

The welding wire must be fed smoothly without stopping in order to ensure optimal welding results.

Please note the following:

- Always set the contact pressure as weak as possible. The optimum setting depends on the welding wire used. A hard wire will tolerate even a strong contact pressure without problems.
- Particularly for aluminum wire, the contact pressure must be adjusted carefully to achieve good feeding properties. Let the wire run out of the torch a little and check whether the surface is damaged and/or whether any parts of the wire have been flattened. If yes, reduce the contact pressure by unscrewing the adjusting screw (14a).
- If the wire cannot be fed smoothly, the contact pressure should probably be increased. It is easiest to check for correct setting during welding. If the arc tends to burn back too strong or the length does not remain stable, increase the pressing force by tightening the adjusting screw (14a).



Steps for correcting the pressing force:

Symptoms	Possible causes	Measures
Welding wire is deformed by the drive, leading to wire feeding problems	Pressing force of the counter-pressure roll is too high	Gradually loosen the adjusting screw (14a) of the tension spring holder, check the wire for deformation until the wire is fed smoothly.
The welding wire is fed in pulses	The contact pressure of the counter-pressure roll is too low, the welding wire can only be fed irregularly.	Gradually tighten the adjusting screw (14a) of the tension spring holder, until a smooth wire feed is achieved.

5 Maintenance and repairs



Danger!

- Before performing maintenance on the system, the main power of the installation must be turned off. **The safety instructions at the beginning of this manual must be observed.**
- Damaged torches or cable assemblies must not be used anymore! Known defects must be repaired by qualified personnel prior to the next use of the equipment.

Danger of burn injuries!

Gas nozzle and torch head get very hot during welding. Let the torch cool down prior to doing maintenance work!

5.1 Regular checks

To assure a faultless function and long life of the equipment, torch and cable assembly must be checked and serviced regularly:

General	<ul style="list-style-type: none"> ▪ Check the torch and cable assembly for damages before every use. Damages must be repaired by qualified personnel prior to further use of the product. This is especially important in regard of damages on the electrical insulation of the torch or cable. ▪ Cleaning and maintenance work must be done at the latest, if the welding performance is degrading. ▪ The contact tip should be exchanged if the inner hole is countersunk or if there are ignition problems ▪ Change the contact tip and the liner if there are wire feeding problems. Take care to install the new liner correctly and precisely fit it to the length of the cable. ▪ Blow out the torch with compressed air every time the wire guide is changed to remove wire abrasion. (with dry and oil-free air) ▪ For water-cooled welding torches, pay attention to the cleanliness of the cooling liquid in the system, change if necessary. Contamination of the cooling water can clog up the water pipes in the system. ▪ The use of a high-quality anti-spatter spray or anti spatter paste is highly recommended and will tremendously increase the life time of the consumables. ▪ Worn and damaged torch parts must be replaced with original ESAB spare and wear parts immediately.
Daily	<ul style="list-style-type: none"> ▪ Visual inspection for damages – e.g. bends or cracks. ▪ Torch cleaning/maintenance: Contact tip and gas nozzle should be cleaned as soon as there is noticeable spatter adhesion. It must be avoided that a spatter bridge will build up between contact tip and gas nozzle, the torch could be damaged. The gas nozzle should be cleaned regularly on the inside to prevent adhering spatter from causing gas swirling. ▪ Contamination and wire abrasion can settle in the drive system (drive roll, drive shaft and counter-pressure roll). Clean the drive system every day with dry, oil-free compressed air as preventative maintenance. Wipe the drive shaft with a clean cloth every time the drive roll is changed. ▪ Note: Do not oil or grease the drive (drive roll, drive shaft and counter-pressure roll)

Weekly	<ul style="list-style-type: none"> ▪ Blow out the wire guide channel with dry and oil-free compressed air. ▪ Check the wire guide for wear and tear. ▪ Inspect all connections and hoses for damages
Annually	<ul style="list-style-type: none"> ▪ If necessary, have a specialist do an electrical inspection according to the legal regulations of your country.

5.2 Repairs on the MXH PP

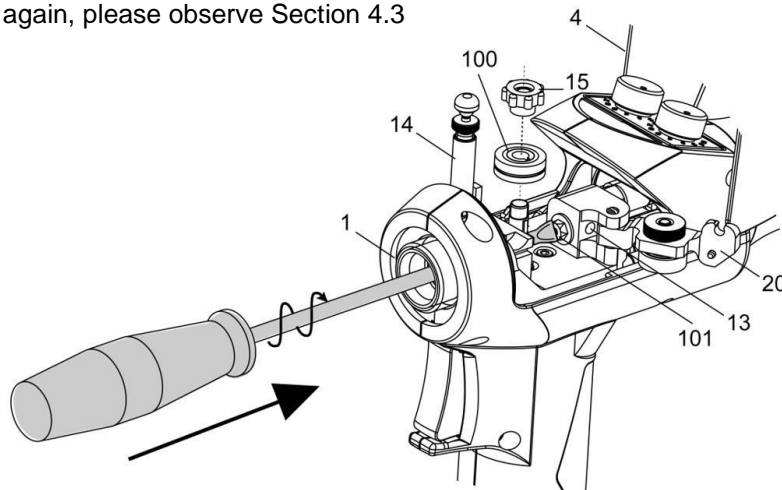
Repairs on the ESAB MXH PP that go beyond replacing wear parts may only be performed by ESAB or by an authorized representative.

5.3 Changing the inlet nozzle

The ESAB MXH PP is equipped with an inlet nozzle (101, part no. 0459 990 079) that is designed for all permissible welding wires (0.8-1.6 mm). It should be cleaned regularly with compressed air, checked for wear and replaced if necessary.

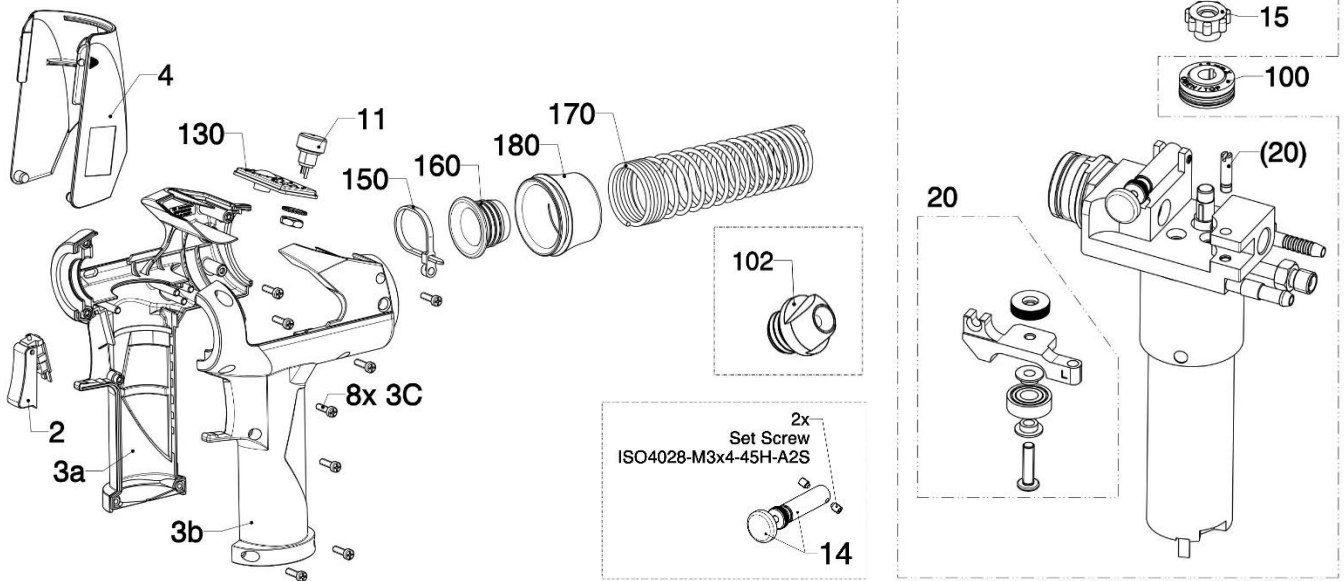
Proceed as follows to replace:

1. If necessary, remove torch neck.
2. Open (4) cover, loosen tension spring holder (14) from locking device and fold upwards.
3. Open pressure roll holder (20) and fold to the side.
4. Remove any welding wire still in the torch or pull back as far as the cable assembly.
5. Loosen and unscrew knurled nut (15). Carefully remove the drive roll (100) from the drive shaft. Please do not use any tools!
6. Insert a flat-head screwdriver (4.5 x 100) through flange (1) and position on inlet nozzle (101). Unscrew inlet nozzle (101) counter-clockwise and remove.
7. Insert new inlet nozzle and screw tight. In doing so, the inlet nozzle must be pushed over the wire guide in the cable assembly.
If the inlet nozzle cannot be used without force, the wire guide must first be pulled a few cm out of the cable assembly. Proceed as described under Section 3.3.6
8. If necessary, install the wire guide correctly in the cable assembly, and monitor correct positioning through the viewing window (13). (see Section 3.3.6)
9. Slip the drive roll (100) on and fix with the knurled nut (15). (see Section 3)
10. Reassemble torch neck.
11. Wire inlet can now proceed again, please observe Section 4.3



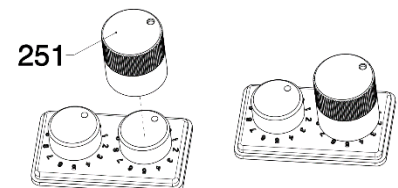
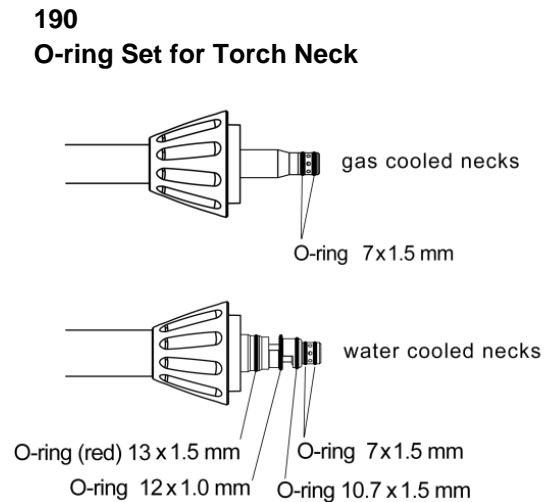
6 Spare parts

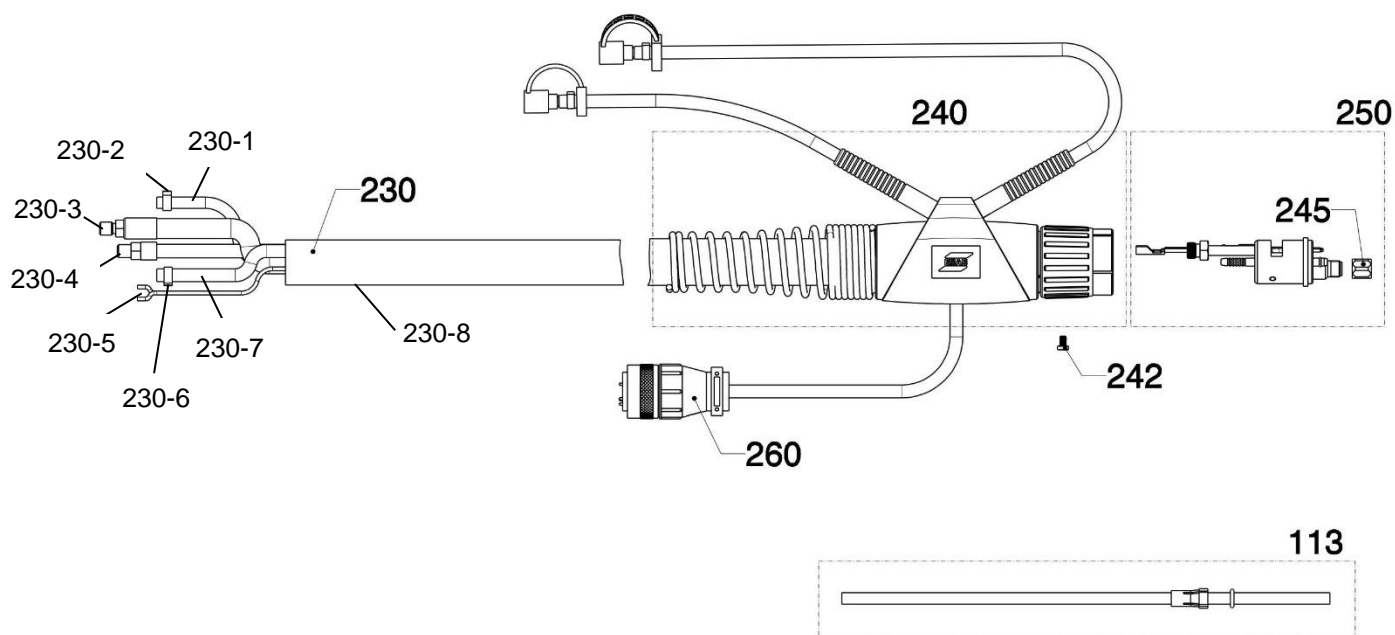
140



Pos.	Part no.	Description
2	0700 025 326	Electronic Trigger, yellow, 2 poles
3a,b, 4	0700 025 327	Handle Push-Pull cpl.
3c	0700 025 328	Screw for handle, 5x12 mm
11	0700 025 329	Knob Potentiometer 10 K OHM
14	0459 990 178	Tension Spring Holder w/o screws
15	0459 990 080	Knurled nut
20	0459 990 081	Pressure roll Holder cpl.
	0459 990 082	Pressure roll Holder cpl. for AISi wire
100	0459 990 051	Feed roll for wire 0.8 mm
	0459 990 052	Feed roll for wire 0.9 mm
	0459 990 053	Feed roll for wire 1.0 mm
	0459 990 054	Feed roll for wire 1.2 mm
	0459 990 055	Feed roll for wire 1.4 mm
	0459 990 056	Feed roll for wire 1.6 mm
	0459 990 057	Feed roll for Al wire 1.0 mm
	0459 990 058	Feed roll for Al wire 1.2 mm
	0459 990 059	Feed roll for Al wire 1.6 mm
101	0459 990 079	Wire guide 0.8 – 1.6 mm
102	0700 025 321	Inlet guide for wire Ø 0.8-1.0 mm
	0700 025 322	Inlet guide for wire Ø 1.2 mm
	0700 025 323	Inlet guide for wire Ø 1.6 mm
	0700 025 324	Inlet guide for wire Ø 0.8-1.0 mm
	0700 025 325	Inlet guide for wire Ø 1.2 mm
130	0700 025 330	Plate for Push Pull with 1 potentiometer
140	0700 025 331	Connection body and motor pre-assembled MXH PP, water-cooled
	0700 025 332	Connection body and motor pre-assembled MXH PP, gas-cooled
150	0700 025 333	Cable retainer 160 x 3.6mm
160	0700 025 334	Front clamping joint for MIG rubber hose 25x1.5
170	0700 025 335	Knuckle spring, large version
180	0700 025 336	Extension for Push Pull handle, black
190	0700 025 337	O-ring set for PP-TX torch neck gas-/water-cooled
251	0700 025 338	Option: Extension Knob for Poti

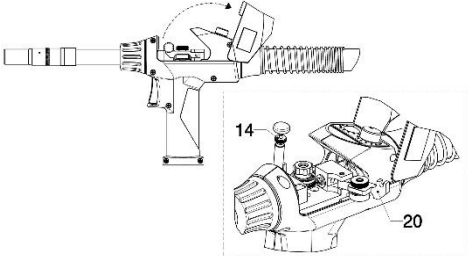
Ware parts in bold = **standard version**

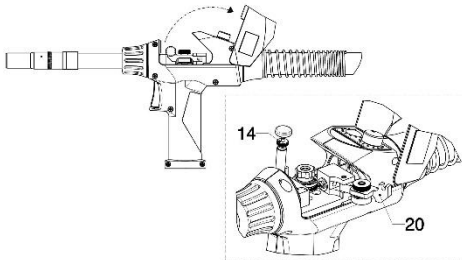
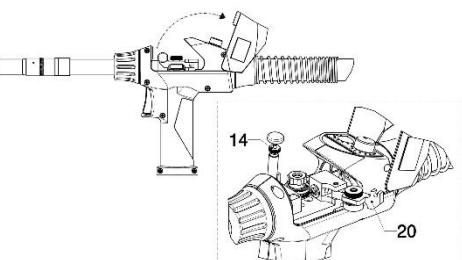




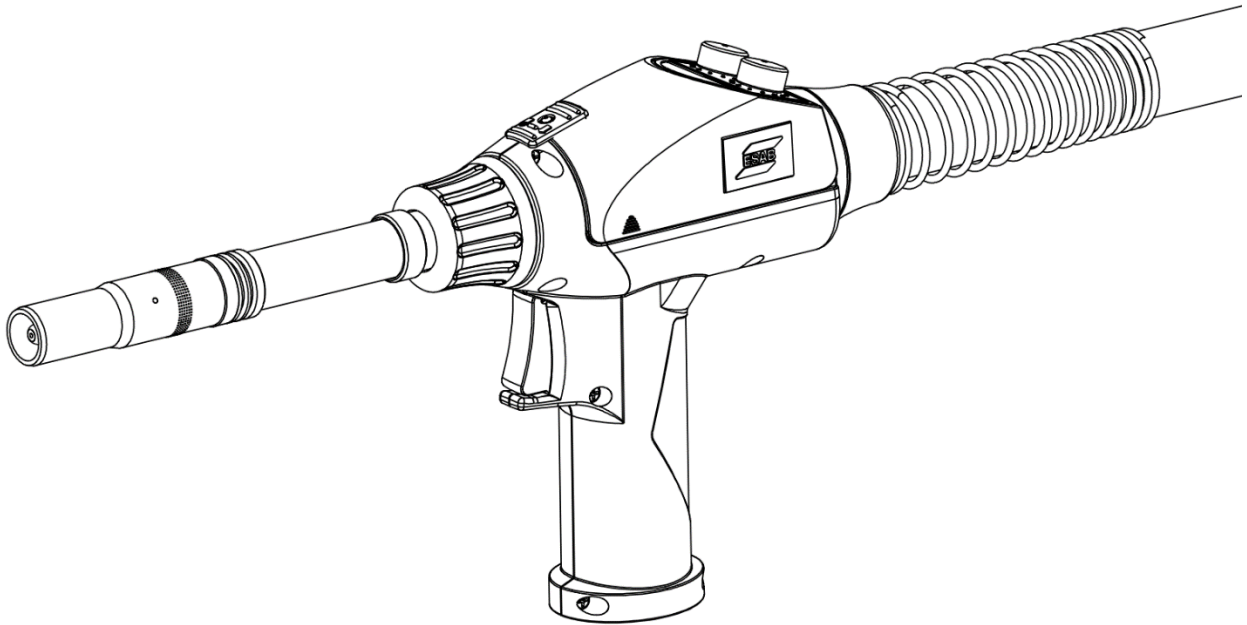
Pos.	Part no.	Description
113	0700 025 319	PA-liners, anthracite for all kinds of wire assembled (0.8 - 1.6mm), 8.5m
	0700 025 320	PA-liners, anthracite for all kinds of wire assembled (0.8 - 1.6mm), 12.5m
230	0700 025 373	Cable assembly MXH PP G cpl., 6m
	0700 025 339	Cable assembly MXH PP G cpl., 8m
	0700 025 340	Cable assembly MXH PP G cpl., 12m
	0700 025 374	Cable assembly MXH PP W cpl., 6m
	0700 025 341	Cable assembly MXH PP W cpl., 8m
	0700 025 342	Cable assembly MXH PP W cpl., 12m
230-1	302P010000	Gas hose (packaging unit 100m)
230-2	302P010000	Hose Clamp
230-3	318P50LM80	MXH PP G – Power Cable 8m
230-3	318P50LM1C	MXH PP G – Power Cable 12m
230-3	315P165180	MXH PP W – Rubber Power Water Cable 8m
230-3	315P1651C0	MXH PP W – Rubber Power Water Cable 12m
230-4	356P070680	MXH PP G – Wire Conduit yellow 8m
230-4	356P07061C	MXH PP G – Wire Conduit yellow 12m
230-4	356P080180	MXH PP W Wire Conduit Yellow 8m
230-4	356P0801C0	MXH PP W Wire Conduit Yellow 12m
230-5	300P100341	Control Cable for #260 (packaging unit 100m)
230-5	300P020751	Control Cable (packaging unit 100m)
230-6	373P100095	MXH PP W – Hose Clamp
230-7	303P070000	MXH PP W – Water Hose (packaging unit 100m)
230-8	307P283100	Fabric Outer Cover (packaging unit 40m)
240	0700 025 971	Cable support cpl., water cooled
	0700 025 950	Cable support cpl., gas cooled
242	0700 025 952	screw M4x6
245	0700 200 098	Nut M10x1
250	0700 025 970	Central adaptor ESW cpl. 2 poles, moveable pins
	0700 025 345	Central adaptor ESG cpl., (Push-Pull version),
260	0700 025 352	Plug 23-pole

7 Troubleshooting

Fault	Possible causes	Measures
The wire cannot be run-in	The drive is closed u for wire run-in	Open cover (4). Open drive unit by unlocking the tension spring holder (14) and opening the pressure roll holder (20). 
	The welding wire has not been carefully de-burred and straightened before it was fed into the cable assembly	Pull out the welding wire again, trim the end of burrs and straighten the first 10cm of the wire. Then re-thread into the cable assembly.
	Welding wire protrudes from the side of the drive unit	If necessary, pull a bit of the welding wire back into the feed unit and feed the welding wire end into the liner nipple (102) in the torch neck (see Section 4.3).
	The torch neck and cable assembly are not suitably equipped for the wire diameter and wire material	Check the wire guide (in the torch neck and cable assembly), liner nipple and contact tip.
	The liner nipple (102) on the torch neck is not selected for the wire diameter	Screw correct liner nipple into the torch neck.
	The wire guide is not correctly and fully inserted into the assembly cable	Check the correct positioning of the wire guide through the viewing window (13). (see Section 3.3.6). If no wire guide can be seen in the window, the wire guide has not been fully inserted. If necessary, make inserting easier by turning the wire guide between fingers.
Wire feed during the welding process is irregular or stops	Wire coil is empty	Check the amount of welding wire on the coil in the welding machine or wire feeder.
	Too much friction in the cable assembly, the contact tip or the wire guide is showing abrasion or wear.	Check contact tip, liner nipple (102) and/or wire guide, renew if necessary. Blow compressed air through torch neck, drive unit, wire guide channel and wire guide.
	Unsuitable control of the Push-Pull motor or cable break in the control cable.	Check for correct electrical connection. Adjust the characteristic curve correctly when using a Push-Pull control module or the Syntronic 3.

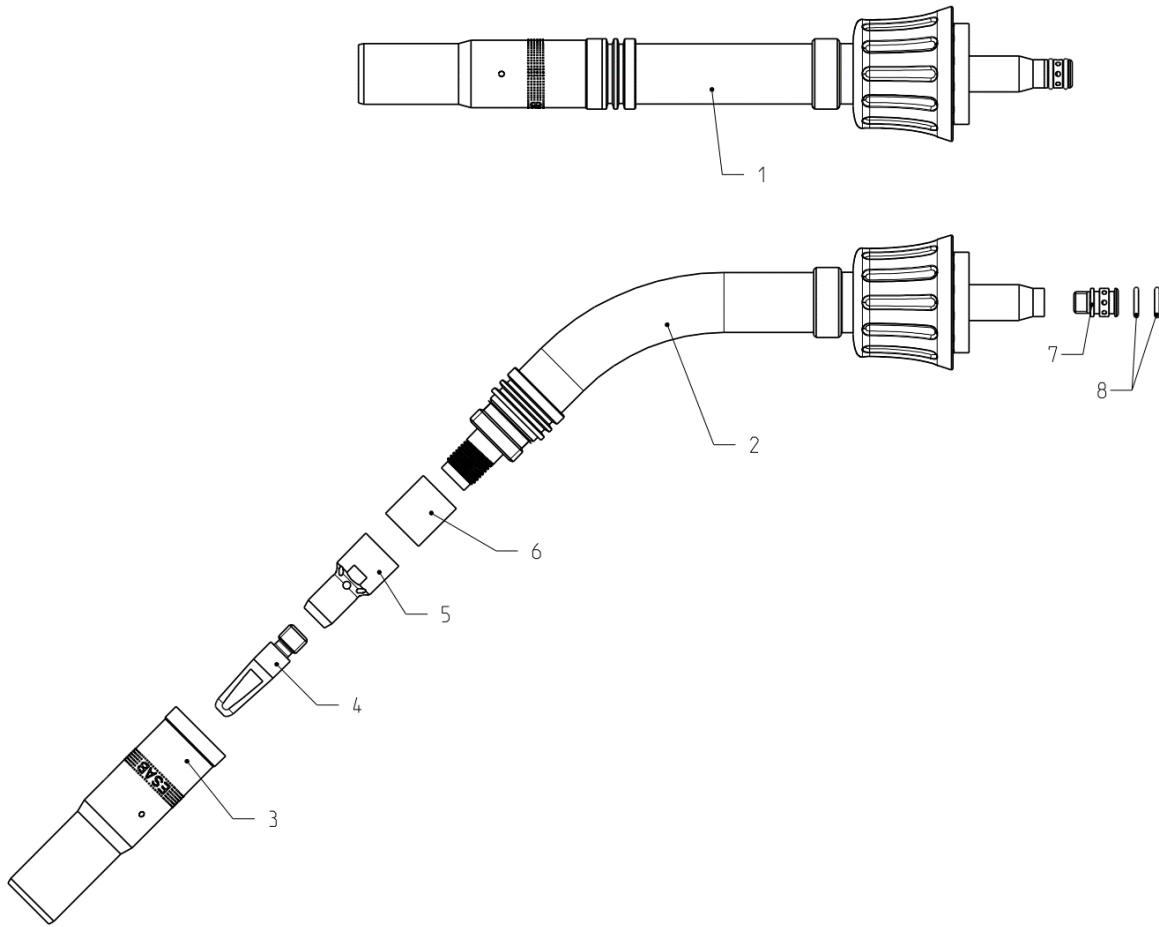
Fault	Possible causes	Measures
Wire feed during the welding process is irregular or stops and welding wire exhibits dents or striation	Drive unit (wire feeding roll and counter-pressure roll) is contaminated with wire abrasion	Clean drive unit with compressed air, then close cover (4). Open drive unit by unlocking the tension spring holder (14) and opening the pressure roll holder (20). 
	Wire feeding roll is damaged (worn out)	Replace wire feeding roll (see section 3)
No wire feeding	Wire feed at the welding power source (wire feeder) does not initiate.	Check whether the torch is correctly connected to the power source and control cable. Check function of welding machine and wire feeder, if needed.
	Wire feed of the welding power source (wire feeder) is configured wrongly.	Check for correct setting of the welding power source (wire feeder) according to instructions.
	The torch drive unit is not equipped with the suitable drive roll (100)	Check that the size of drive roll is correct for the welding wire used.
	The drive unit properly in not closed and locked after threading in of the wire	Open cover (4). Close pressure roll holder (20) properly and lock tension spring holder (14). Check whether the counter-pressure roll is applying enough pressing force. (see Section 4.3, Point 7). 
	Wire splatter is stuck to the contact tip or the contact tip is affected by wear.	Replace the contact tip.
	The cable assembly and torch are not suitably equipped for the material and the wire diameter	Check the core in the assembly cable and torch neck, as well as the contact tip. (see Section 3.3.5, 3.3.6)

8 Order Numbers *MXH 315 PP / 420w PP*

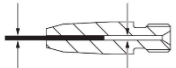


Part no.	Description	Type
0700 025 300	Torch Neck	MXH 315 PP, straight
0700 025 301	Torch Neck	MXH 315 PP, 45°
0700 025 302	Torch Neck	MXH 420w PP, straight
0700 025 303	Torch Neck	MXH 420w PP, 45°
0700 025 371	Welding Gun	MXH 315 PP, straight, 6 m (19 ft), 2x10 kΩ, EURO
0700 025 304	Welding Gun	MXH 315 PP, straight, 8 m (26 ft), 2x10 kΩ, EURO
0700 025 305	Welding Gun	MXH 315 PP, straight, 12 m (39 ft), 2x10 kΩ, EURO
0700 025 306	Welding Gun	MXH 315 PP, 45°, 12 m (39 ft), 2x10 kΩ, EURO
0700 025 372	Welding Gun	MXH 420w PP, straight, 6 m (19 ft), 2x10 kΩ, EURO
0700 025 307	Welding Gun	MXH 420w PP, straight, 8 m (26 ft), 2x10 kΩ, EURO
0700 025 308	Welding Gun	MXH 420w PP, straight, 12 m (39 ft), 2x10 kΩ, EURO
0700 025 309	Welding Gun	MXH 420w PP, 45°, 12 m (39 ft), 2x10 kΩ, EURO

Wear Parts MXH 315 PP



	Part no.	Description	Notes
1	0700 025 300	Torch Neck	MXH 315 PP, straight
2	0700 025 301	Torch Neck	MXH 315 PP, 45°
3	0458 464 882	Gas Nozzle	Standard Ø16 mm, Length 80 mm
	0458 465 882	Gas Nozzle	Conical Ø14 mm, Length 80 mm
	0458 470 882	Gas Nozzle	Straight Ø19 mm, Length 80 mm
5	0460 819 001	Tip Adaptor	M8, Length 31.6 mm
6	0366 397 002	Insulation Bushing	
7	0700 025 310	Neck Sleeve	
8	0700 300 398	O-Ring 7x1.5 mm	

	Part no.	Description	Gas / Wire Ø			
			M8	CO ₂	Mix/Ar	
4	0468 502 003	Contact Tip	0.8	-	-	W0.8 / 1.0
	0468 502 004	Contact Tip	0.9	0.8	-	W1.0 / 1.1
	0468 502 005	Contact Tip	1.0	0.9	-	W1.0 / 1.2
	0468 502 006	Contact Tip	1.2	-	-	W1.2 / 1.4
	0468 502 007	Contact Tip	1.2	1.0	-	W1.2 / 1.5
	0468 502 008	Contact Tip	1.4	1.2	-	W1.4 / 1.7
	0468 502 009	Contact Tip	1.6	-	-	W1.6 / 1.9

Wire Guide Sets for Torch Necks (assembled 320mm)

Part no.	Description	Wire Ø		Color of End Fitting
		Alu & Stainless-Steel Wire	Steel Wire	
0700 025 313	PA/Bronze Liner	0.8-1.0 mm	-	-
0700 025 314	PA/Bronze Liner	1.2 mm	-	-
0700 025 315	PA/Bronze Liner	1.6 mm	-	-
0700 025 316	Insulated Liner	-	0.8-1.0 mm	Blue
0700 025 317	Insulated Liner	-	1.2 mm	Red
0700 025 318	Insulated Liner	-	1.6 mm	Yellow

Wire Guides for Cable Assembly (for all Types of Wire)

Part no.	Description	Wire Ø	Lenght
0700 025 319	PA Liner	0.8-1.6 mm	8.5 m -
0700 025 320	PA Liner	0.8-1.6 mm	12.5 m -

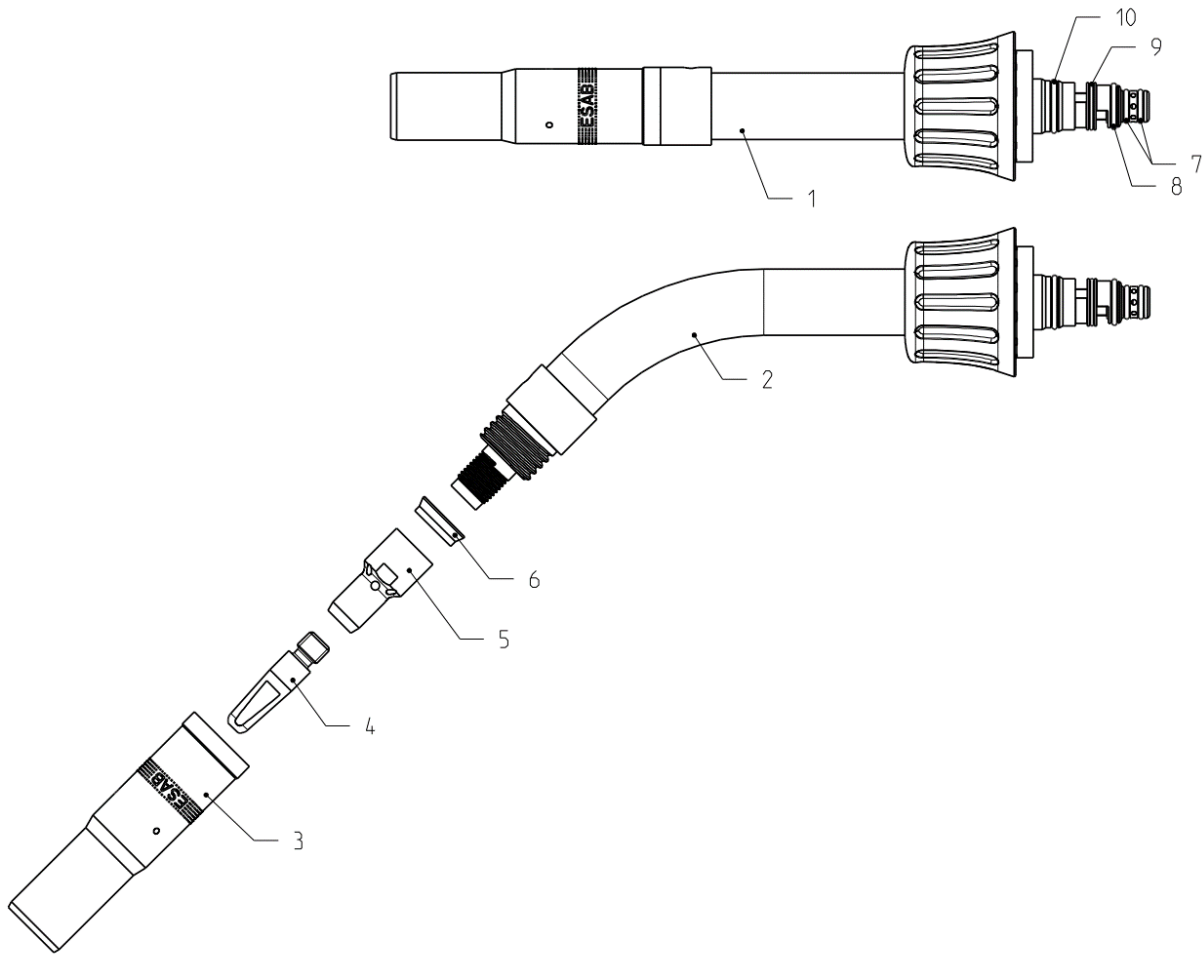
Feed Rolls for Wire

	Part no.	Description	Wire Ø	Notes
	0459 990 051	Feed Roll "X"	0.8 mm	Feed Roll for wire 0.8 mm
	0459 990 052	Feed Roll "X"	0.9 mm	Feed Roll for wire 0.9 mm
	0459 990 053	Feed Roll "X"	1.0 mm	Feed Roll for wire 1.0 mm
	0459 990 054	Feed Roll "X"	1.2 mm	Feed Roll for wire 1.2 mm
	0459 990 055	Feed Roll "X"	1.4 mm	Feed Roll for wire 1.4 mm
	0459 990 056	Feed Roll "X"	1.6 mm	Feed Roll for wire 1.6 mm
	0459 990 081	Pressure Roll "X"	--	Kit Pressure Roll Standard
	0459 990 057	Feed Roll "AlSi"	1.0 mm	Feed Roll for Al wire 1.0 mm
	0459 990 058	Feed Roll "AlSi"	1.2 mm	Feed Roll for Al wire 1.2 mm
	0459 990 059	Feed Roll "AlSi"	1.6 mm	Feed Roll for Al wire 1.6 mm
	0459 990 082	Pressure Roll "AlSi"	--	Kit Pressure Roll AlSi

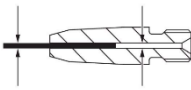
Syntronic Universal Synchronization Device

	Part no.	Description
	0700 025 311	Syntronic 3

Wear Parts MXH 420w PP



	Part no.	Description	Notes
1	0700 025 302	Torch Neck	MXH 420w PP, straight
2	0700 025 303	Torch Neck	MXH 420w PP, 45°
3	0458 464 882	Gas Nozzle	Standard Ø16 mm, Length 80 mm
	0458 465 882	Gas Nozzle	Conical Ø14 mm, Length 80 mm
	0458 470 882	Gas Nozzle	Straight Ø19 mm, Length 80 mm
5	0460 819 001	Tip Adaptor	M8, Length 31.6 mm
6	0458 874 001	Insulation Washer	
7	0700 300 398	O-Ring 7x1.5 mm	
8	0700 025 353	O-Ring 10.7x1.5 mm	
9	0700 025 354	O-Ring 12x1 mm	
10	0700 025 355	O-Ring 13x1.5 mm	

	Part no.	Description	Gas / Wire Ø		
			M8	CO ₂	
4	0468 502 003	Contact Tip	0.8	-	W0.8 / 1.0
	0468 502 004	Contact Tip	0.9	0.8	W1.0 / 1.1
	0468 502 005	Contact Tip	1.0	0.9	W1.0 / 1.2
	0468 502 006	Contact Tip	1.2	-	W1.2 / 1.4
	0468 502 007	Contact Tip	1.2	1.0	W1.2 / 1.5
	0468 502 008	Contact Tip	1.4	1.2	W1.4 / 1.7
	0468 502 009	Contact Tip	1.6	-	W1.6 / 1.9

Wire Guide Sets for Torch Necks (assembled 320mm)

	Part no.	Description	Wire Ø		Color of End Fitting
			Alu & Stainless-Steel Wire	Steel Wire	
	0700 025 313	PA/Bronze Liner	0.8-1.0 mm	-	-
	0700 025 314	PA/Bronze Liner	1.2 mm	-	-
	0700 025 315	PA/Bronze Liner	1.6 mm	-	-
	0700 025 316	Insulated Liner	-	0.8-1.0 mm	Blue
	0700 025 317	Insulated Liner	-	1.2 mm	Red
	0700 025 318	Insulated Liner	-	1.6 mm	Yellow

Wire Guides for Cable Assembly (for all Types of Wire)

	Part no.	Description	Wire Ø	Lenght
	0700 025 319	PA Liner	0.8-1.6 mm	8.5 m
	0700 025 320	PA Liner	0.8-1.6 mm	12.5 m

Feed Rolls for Wire

	Part no.	Description	Wire Ø	Notes
	0459 990 051	Feed Roll "X"	0.8 mm	Feed Roll for wire 0.8 mm
	0459 990 052	Feed Roll "X"	0.9 mm	Feed Roll for wire 0.9 mm
	0459 990 053	Feed Roll "X"	1.0 mm	Feed Roll for wire 1.0 mm
	0459 990 054	Feed Roll "X"	1.2 mm	Feed Roll for wire 1.2 mm
	0459 990 055	Feed Roll "X"	1.4 mm	Feed Roll for wire 1.4 mm
	0459 990 056	Feed Roll "X"	1.6 mm	Feed Roll for wire 1.6 mm
	0459 990 081	Pressure Roll "X"	--	Pressure Roll Standard
	0459 990 057	Feed Roll "AlSi"	1.0 mm	Feed Roll for Al wire 1.0 mm
	0459 990 058	Feed Roll "AlSi"	1.2 mm	Feed Roll for Al wire 1.2 mm
	0459 990 059	Feed Roll "AlSi"	1.6 mm	Feed Roll for Al wire 1.6 mm
	0459 990 082	Pressure Roll "AlSi"	--	Pressure Roll Al

Syntronic Universal Synchronization Device

	Part no.	Description
	0700 025 311	Syntronic 3