



FE Fume Extraction torches



Instruction manual



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

| | | | |
|--------------------------|--------------------------|------------------------|---------------|
| FE Fume Extraction Torch | FE MINI 200; FE 400w; | FE MINI 250; FE 300 | FE MINI 320w; |
|--------------------------|--------------------------|------------------------|---------------|

Brand name or trademark

ESAB

Manufacturer or his authorised representative established within the EEA

ESAB AB
Lindholmsallén 9, Box 8004, SE-402 77 Göteborg, Sweden
Phone: +46 31 50 90 00, www.esab.com

The following EN standards and regulations in force within the EEA has been used in the design:

| | |
|---------------------|---|
| EN IEC 60974-7:2019 | Arc welding equipment - Part 7: Torches |
|---------------------|---|

Additional Information:

Restrictive use, Class A equipment, intended for use in locations other than residential.

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 and environmental requirements stated above.

Place/Date

Signature

Gothenburg
2024-04-14

Peter Burchfield
General Manager, Equipment Solutions

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1 SAFETY

1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!



DANGER!

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



WARNING!

Means potential hazards which could result in personal injury or loss of life.



CAUTION!

Means hazards which could result in minor personal injury.



WARNING!

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



1.2 Safety precautions

Users of ESAB equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
 - its operation
 - location of emergency stops
 - its function
 - relevant safety precautions
 - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
 - no unauthorised person is stationed within the working area of the equipment when it is started up
 - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
 - be suitable for the purpose
 - be free from drafts
4. Personal safety equipment:
 - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
 - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns

5. General precautions:

- Make sure the return cable is connected securely
- Work on high voltage equipment **may only be carried out by a qualified electrician**
- Appropriate fire extinguishing equipment must be clearly marked and close at hand
- Lubrication and maintenance must **not** be carried out on the equipment during operation

**WARNING!**

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting.

**ELECTRIC SHOCK - Can kill**

- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing
- Insulate yourself from work and ground.
- Ensure your working position is safe

**ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
 - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
 - Connect the work cable to the workpiece as close as possible to the area being welded.

**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area

**ARC RAYS - Can injure eyes and burn skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing
- Protect bystanders with suitable screens or curtains

**NOISE - Excessive noise can damage hearing**

Protect your ears. Use earmuffs or other hearing protection.

**MOVING PARTS - Can cause injuries**

- Keep all doors, panels, guards and covers closed and securely in place.
- Have only qualified people remove covers for maintenance and troubleshooting as necessary.



- Keep hands, hair, loose clothing and tools away from moving parts.
- Reinstall panels or covers and close doors when service is finished and before starting the unit.

**FIRE HAZARD**

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby
- Do not use on closed containers.

MALFUNCTION - Call for expert assistance in the event of malfunction.

PROTECT YOURSELF AND OTHERS!



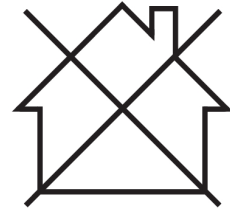
CAUTION!

This product is solely intended for arc welding.



CAUTION!

Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.



NOTE!

Dispose of electronic equipment at the recycling facility!

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.

As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.



ESAB has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.

2 INTRODUCTION

The **FE Welding Torch** is a patented MIG welding torch with integrated extraction at the nozzle of the welding torch.

The extraction is close to the weld pool, so the fumes coming from the welding process are extracted immediately. The FE Welding Torch is available in a gas- and water-cooled version.

2.1 Equipment

The welding torch is supplied with:

- Contact tip, 1.0 mm for FE Mini 200/250/320w
- Contact tip, 1.2 mm for FE 300/400w
- Gas flow meter
- Nozzle cleaning brush
- Multitool

3 TECHNICAL DATA

| | FE MINI 200 | FE MINI 250 | FE MINI 320w | FE 300 | FE 400w |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Cooling | Air | Air | Water | Air | Water |
| Power rating | | | | | |
| Mixed gas | 200 A | 250 A | 320 A | 300 A | 350 A |
| CO ₂ | 230 A | 280 A | 360 A | 320 A | 390 A |
| Duty cycle | 60% | 60% | 100% | 60% | 100% |
| Contact tip | 0.8-1.0 mm | 0.8-1.2 mm | 0.8-1.6 mm | 0.8-1.2 mm | 0.8-1.6 mm |
| Extraction flow rate | 55-60 m ³ /h | 55-60 m ³ /h | 55-60 m ³ /h | 55-60 m ³ /h | 55-60 m ³ /h |
| Underpressure rate (torch length 4mtr) | | | | | |
| 56 m ³ /h | 10.5 kPa | 10.5 kPa | 10.5 kPa | 9.5 kPa | 9.5 kPa |
| 60 m ³ /h | 11.5 kPa | 11.5 kPa | 11.5 kPa | 10.5 kPa | 10.5 kPa |
| Gas flow rate | 15-16 l/min | 15-16 l/min | 15-16 l/min | 16-18 l/min | 16-18 l/min |

4 INSTALLATION

The installation must be carried out by a professional.

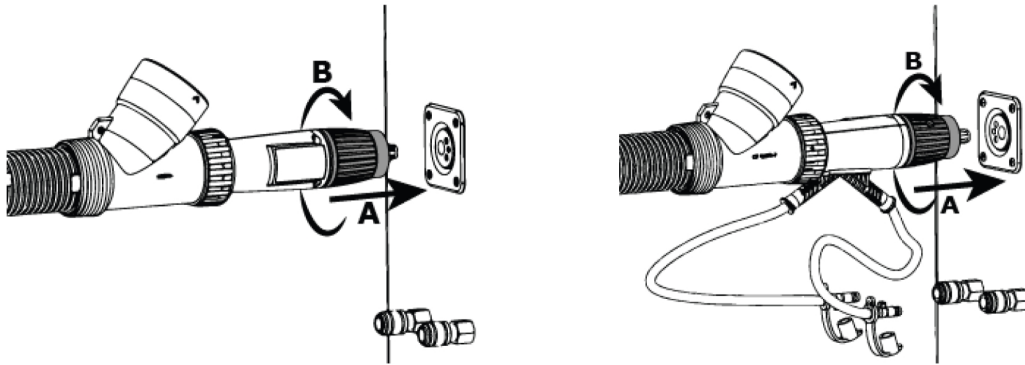


CAUTION!

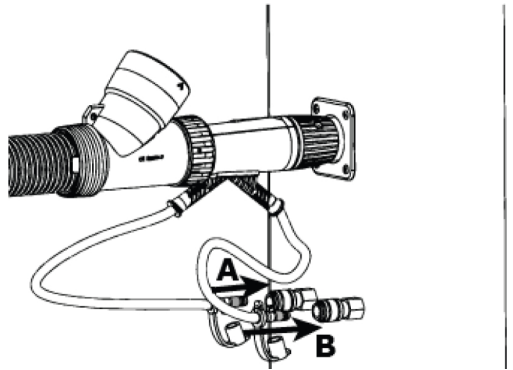
This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the user's responsibility to take adequate precautions.

4.1 Mount the torch to the welding equipment

- 1) Connect the torch hose to the welding connection.
- 2) Fasten the hose connection.

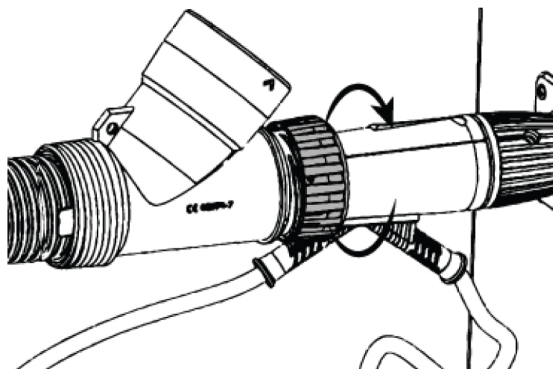


- 3) For water cooled torches, connect the cooling connections.



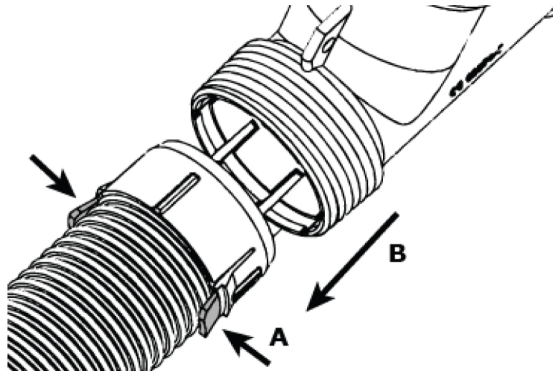
4.2 Mount the Y-piece

- 1) Disassemble the connection ring from the torch.

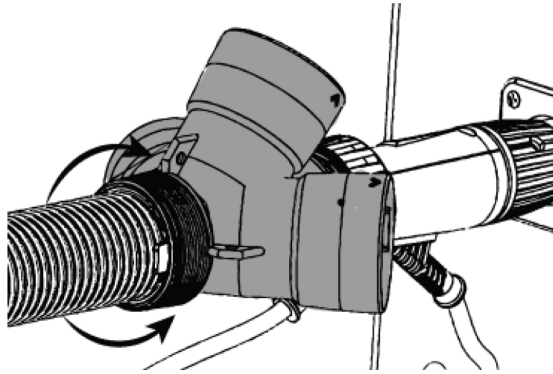


4 INSTALLATION

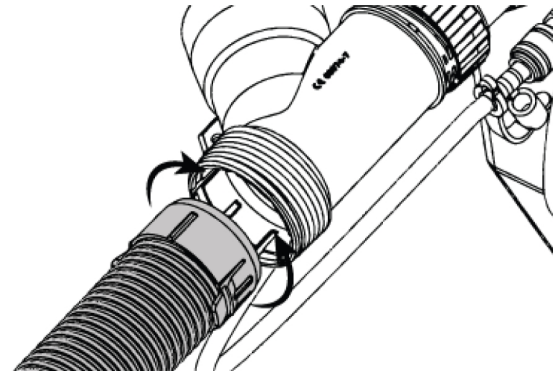
- 2) Remove the suction hose connection.



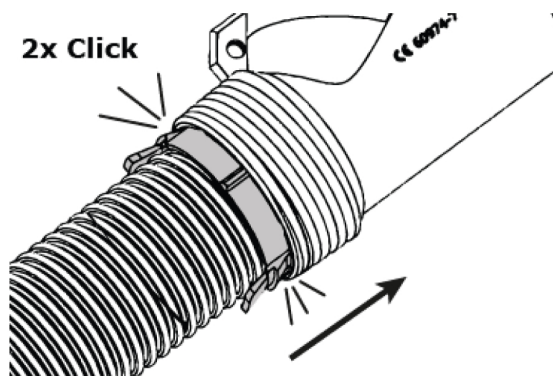
- 3) Place the Y-piece to the desired position.



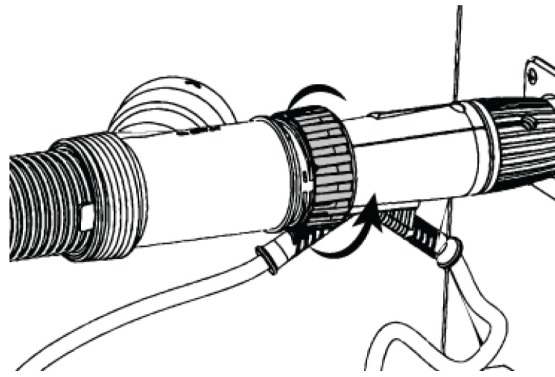
- 4) Rotate the suction hose connection to the most convenient position.



- 5) Connect the suction hose connection to the Y-piece.

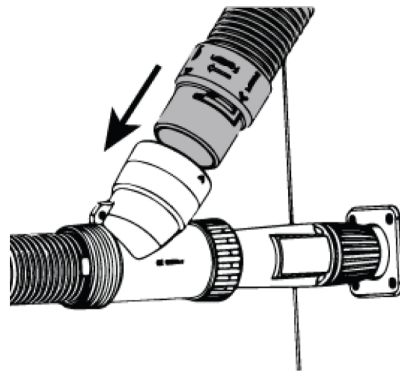


- 6) Reassemble the connection ring to the torch.



4.3 Mount the external suction hose

- 1) Install the Y-piece, see details in Section 4.2 "Mount the Y-piece", page 9.
- 2) Connect the external suction hose to the Y-piece.
For special FE adapters, rotate it into lock position.



5 OPERATION

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!



WARNING!

Electric shock! Do not touch the workpiece or the welding head during operation!

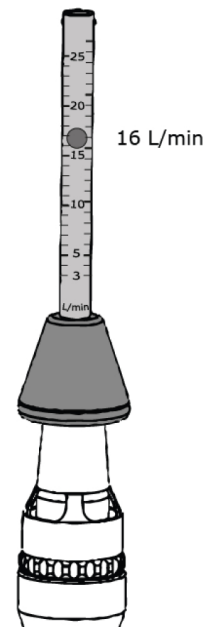
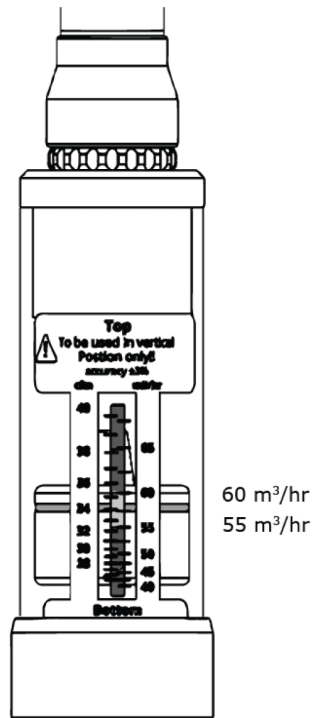


CAUTION!

Do not use anti-spat spray or paste. Only ceramic spray must be used. For more details ask local ESAB support.

5.1 Start-up

- 1) Set the extraction flow rate between **55-60 m³/h** on the nozzle.
- 2) Check the protective gas flow with the special gas flow meter.



It must be:

- For FE 300/400w: **16-18 l/min** at the nozzle
- For FE MINI 200/250/320w: **15-16 l/min** at the nozzle

The functionality depends on the settings of the welding machine during use.

6 REPLACING INSTRUCTIONS

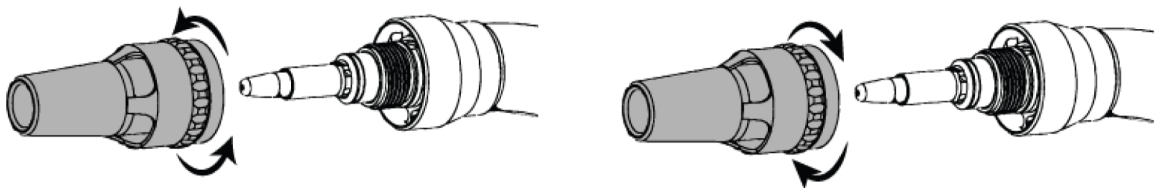
6.1 Replace nozzle



WARNING!

The welding machine and the extraction unit must be turned off before any part of the torch will be removed.

- 1) Loose the old nozzle from the welding torch.
- 2) Clean excess dirt, if there is any with the nozzle cleaning brush.
- 3) Fasten the new nozzle to the torch.



6.2 Replace contact tip

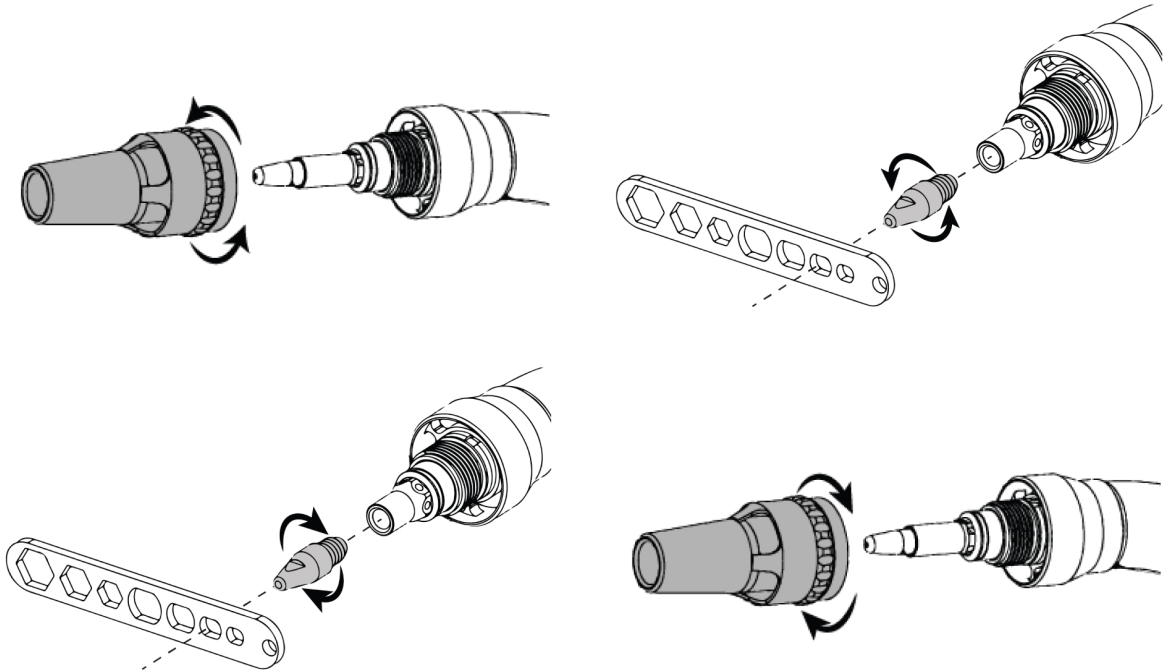


WARNING!

The welding machine and the extraction unit must be turned off before any part of the torch will be removed.

- 1) Loose the nozzle from the welding torch.
- 2) Loosen the old contact tip with the help of the multitool.
- 3) Fasten the new contact tip.

- 4) Fasten the nozzle to the welding torch.



6.3 Replace tip adapter



WARNING!

The welding machine and the extraction unit must be turned off before any part of the torch will be removed.

- 1) Remove the nozzle and tip from the torch as it is described in Section 6.2 "Replace contact tip", page 13.
- 2) Remove the old tip adapter with the help of the multitool.
- 3) Fasten the new tip adapter with the help of the multitool.



- 4) Reassemble the nozzle and tip to the torch as it is described in Section 6.2 "Replace contact tip", page 13.

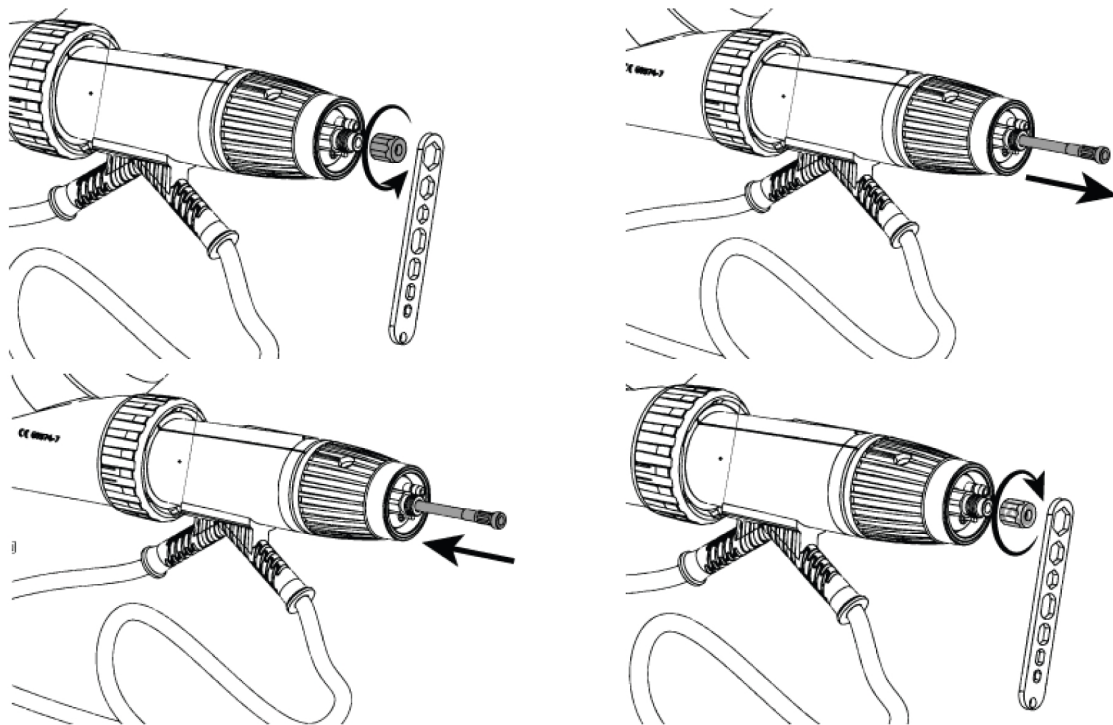
6.4 Replace the liner



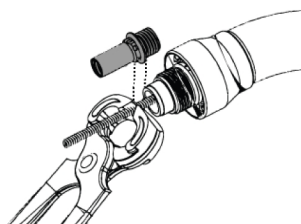
WARNING!

The welding machine and the extraction unit must be turned off before any part of the torch will be removed.

- 1) Remove the nozzle and tip from the torch as it is described in Section 6.2 "Replace contact tip", page 13.
- 2) Remove the tip adapter with the help of the multitool.
- 3) Remove the liner holding screw with the help of the multitool.
- 4) Remove the old liner.
- 5) Insert the new liner into the torch.
- 6) Fasten the liner holding screw with the help of the multitool.



- 7) Cut the liner to the desired size.
Use the tip adapter to get the right size.



- 8) Fasten the tip adapter with the help of the multitool.
- 9) Reassemble the nozzle and tip to the torch as it is described in Section 6.2 "Replace contact tip", page 13.

7 MAINTENANCE

**WARNING!**

The welding machine and the extraction unit must be turned off before any part of the torch will be removed.

**CAUTION!**

The product is covered by manufacturer's warranty. Any attempt to carry out repair work by non-authorized service centers or personnel will invalidate the warranty.

**NOTE!**

Regular maintenance is important for safe and reliable operation.

**NOTE!**

Perform maintenance more often during severe dusty conditions.

Before each use - make sure that:

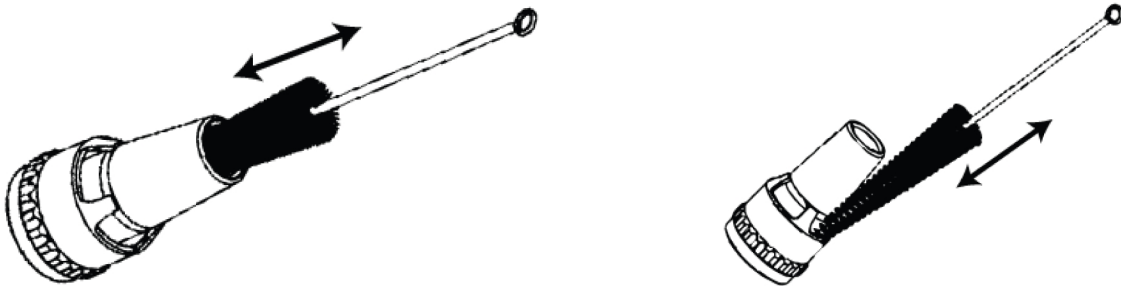
- Product and cables are not damaged,
- The torch is not damaged.

7.1 Maintenance procedure

Daily

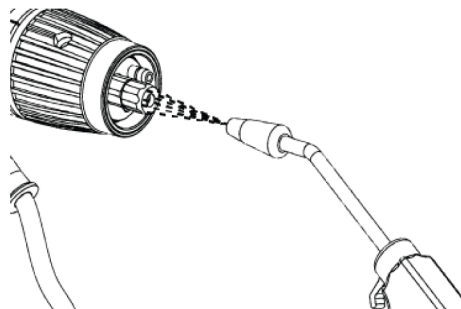
Check if the protective gas and extraction openings are clean. If necessary, remove the nozzle as described in Section 6.1 "Replace nozzle", page 13.

Clean the opening with the nozzle cleaning brush.

**Weekly**

Remove the welding wire from the torch as described in Section 6.4 "Replace the liner", page 15.

Use compressed air to clean the torch inside.



8 TROUBLESHOOTING

Perform these checks and inspections before sending for an authorised service technician.

- Check that the mains voltage is disconnected before starting any type of repair action.

| Type of fault | Possible cause |
|--|--|
| No arc | Power to work piece or swan neck interrupted. |
| | Defect power source or control unit. |
| | Control signal (cable) is interrupted. |
| | Switch protection in the power source is not activated. |
| Arcing to the work piece | Nozzle is contaminated. |
| Poor on no smoke extraction | Extraction unit is not switched on. |
| | Extraction flow is less than 55m ³ /h. |
| | Filter of the extraction unit is contaminated. |
| | Torch is externally damaged. |
| Swan neck overheats | Insufficient cooling water flow (when water cooled). |
| | Cooling water lines are blocked (when water cooled). |
| | Duty cycle exceeds the value allowed for the torch. |
| | Contact tip or tip adapter not properly fastened. |
| Welding wire fuses with the contact tip | Torch is externally damaged. |
| | Welding wire transport start too late. |
| | Welding wire is jammed inside the cable package due to contamination or bending. |
| | Welding wire speed is too low. |
| | Distance between the contact tip and the work piece is too big. |
| Contact tip overheats | Contact tip overheats. |
| | Insufficient cooling water flow (when water cooled). |
| | Cooling water lines are blocked (when water cooled). |
| | Duty cycle exceeds the value allowed for the torch. |
| | Contact tip or tip adapter not properly fastened. |
| Irregular welding wire feed | Torch is externally damaged. |
| | Pressure of the welding wire supply rolls is too low. |
| | Defect in the welding wire feed hose. |
| | Wrong liner is installed. |
| | Defect control unit. |
| | Excessive wear of the welding wire supply rolls. |
| Wrong welding wire supply rolls installed. | |

| Type of fault | Possible cause |
|---------------|--|
| Porosity | Nozzle opening or contact tip is contaminated. |
| | Insufficient gas shielding (gas flow). |
| | Air flow disturbs the gas shielding. |
| | Liner nut not tightened correctly. |
| | Wrong liner is installed. |

9 ORDERING SPARE PARTS



CAUTION!

Repair and electrical work should be performed by an authorised ESAB service technician.
Use only ESAB original spare and wear parts.

FE Fume welding torch is designed and tested in accordance with the international and European standard **EN 60976-7**. On completion of service or repair work, it is the responsibility of the person(s) performing the work to ensure that the product still complies with the requirements of the above standards.

Spare parts and wear parts can be ordered through your nearest ESAB dealer, see [esab.com](https://www.esab.com). When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

APPENDIX

ORDERING NUMBERS



| Ordering number | Denomination | Type | Notes |
|-----------------|--------------|--------------|-------|
| 0700 027 000 | Torch | FE MINI 200 | 3 m |
| 0700 027 001 | Torch | FE MINI 200 | 4 m |
| 0700 027 002 | Torch | FE MINI 200 | 5 m |
| 0700 027 005 | Torch | FE MINI 250 | 3 m |
| 0700 027 006 | Torch | FE MINI 250 | 4 m |
| 0700 027 007 | Torch | FE MINI 250 | 5 m |
| 0700 027 010 | Torch | FE 300 | 3 m |
| 0700 027 011 | Torch | FE 300 | 4 m |
| 0700 027 012 | Torch | FE 300 | 5 m |
| 0700 027 015 | Torch | FE MINI 320w | 3 m |
| 0700 027 016 | Torch | FE MINI 320w | 4 m |
| 0700 027 017 | Torch | FE MINI 320w | 5 m |
| 0700 027 020 | Torch | FE MINI 400w | 3 m |
| 0700 027 021 | Torch | FE MINI 400w | 4 m |
| 0700 027 022 | Torch | FE MINI 400w | 5 m |

Technical documentation is available on the Internet at: www.esab.com

ACCESSORIES

| | | |
|--------------|---|---|
| 0700 027 126 | FE Bajonet hose adapter, black |  |
| 0700 027 135 | FE Hose adapter for CarryVac 3 |  |
| 0700 027 136 | Pistol grip |  |
| 0700 027 137 | Ball valve for suction hose | |
| 0700 027 132 | Tool set (brush + wrench) |  |
| 0700 027 135 | Hose adapter for ESAB CarryVac 3 (51 mm hose) |  |

APPENDIX

| | | |
|--------------|--|---|
| 0155 716 880 | Gasflow meter |  |
| 0465 720 002 | Coolant liquid, 10 l |  |
| 0700 013 016 | Jig & tool protector, ceramic spray for nozzle and tip |  |
| 0700 027 130 | Airflow meter, Mini |  |
| 0700 027 131 | Airflow meter | |

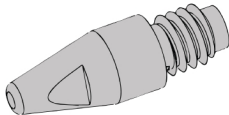
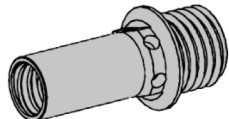
WEAR PARTS

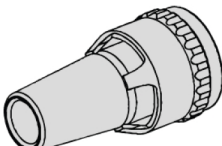
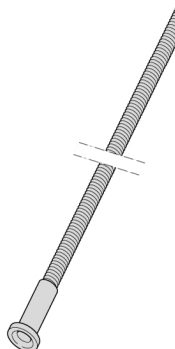
**WARNING!**

Never replace FE parts with standard MIG parts as FE parts are different.

**CAUTION!**

ESAB original wear parts must be used.

| Item | FE MINI 200/250/320w | | FE 300/400w | |
|---|----------------------|---------------------------------|--------------|---------------------------------|
| | Ordering no. | Denomination | Ordering no. | Denomination |
|  | 0700 027 070 | Contact Tip FE 0.8 mm | 0700 027 070 | Contact Tip FE 0.8 mm |
| | 0700 027 071 | Contact Tip FE 1.0 mm | 0700 027 071 | Contact Tip FE 1.0 mm |
| | 0700 027 072 | Contact Tip FE 1.0 mm Alu | 0700 027 072 | Contact Tip FE 1.0 mm Alu |
| | 0700 027 073 | Contact Tip FE 1.0 mm CuCrZr | 0700 027 073 | Contact Tip FE 1.0 mm CuCrZr |
| | 0700 027 074 | Contact Tip FE 1.2 mm | 0700 027 074 | Contact Tip FE 1.2 mm |
| | 0700 027 075 | Contact Tip FE 1.2 mm Alu | 0700 027 075 | Contact Tip FE 1.2 mm Alu |
| | 0700 027 076 | Contact Tip FE 1.2 mm CuCrZr | 0700 027 076 | Contact Tip FE 1.2 mm CuCrZr |
| | | | 0700 027 077 | Contact Tip FE 1.6 mm |
| | | | 0700 027 078 | Contact Tip FE 1.6 mm CuCrZr |
| | | | 0700 027 079 | Contact Tip FE 1.4 mm CuCrZr |
|  | 0700 027 060 | Tip adapter | 0700 027 062 | Tip adapter |
| | 0700 027 061 | Tip adapter +30 mm | 0700 027 063 | Tip adapter +30 mm |
| | 0700 027 064 | Tip adapter +10 mm | 0700 027 065 | Tip adapter +10 mm |

| Item | FE MINI 200/250/320w | | FE 300/400w | |
|---|--|----------------------------------|--------------|----------------------------------|
| | Ordering no. | Denomination | Ordering no. | Denomination |
|  | 0700 027 050 | Nozzle 12 mm | 0700 027 055 | Nozzle 14 mm special |
| | 0700 027 051 | Nozzle 14 mm | 0700 027 056 | Nozzle 17 mm special |
| | 0700 027 052 | Nozzle 14 mm special | 0700 027 057 | Nozzle 14 mm special +30 mm ext. |
| | 0700 027 053 | Nozzle 17 mm special | 0700 027 059 | Nozzle 14 mm special +10 mm ext. |
| | 0700 027 054 | Nozzle 14 mm special +30 mm ext. | | |
| | 0700 027 058 | Nozzle 14 mm special +10 mm ext. | | |
|  | Steel liner | | | |
| | 0700 200 085 | 0.8–1.0, Blue, 3 m | 0700 200 085 | 0.8–1.0, Blue, 3 m |
| | 0700 200 086 | 0.8–1.0, Blue, 4 m | 0700 200 086 | 0.8–1.0, Blue, 4 m |
| | 0700 200 800 | 0.8–1.0, Blue, 5 m | 0700 200 800 | 0.8–1.0, Blue, 5 m |
| | 0700 200 087 | 1.0–1.2, Red, 3 m | 0700 200 087 | 1.0–1.2, Red, 3 m |
| | 0700 200 088 | 1.0–1.2, Red, 4 m | 0700 200 088 | 1.0–1.2, Red, 4 m |
| | 0700 025 801 | 1.0–1.2, Red, 5 m | 0700 025 801 | 1.0–1.2, Red, 5 m |
| | | | 0700 025 802 | 1.2–1.6, Yellow, 3 m |
| | | | 0700 025 803 | 1.2–1.6, Yellow, 4 m |
| | | | 0700 025 804 | 1.2–1.6, Yellow, 5 m |
| | PA/Bronze liner (for aluminium and stainless steel) | | | |
| | 0700 025 816 | 0.8–1.0, Anthracite, 3 m | 0700 025 816 | 0.8–1.0, Anthracite, 3 m |
| | 0700 025 817 | 0.8–1.0, Anthracite, 4 m | 0700 025 817 | 0.8–1.0, Anthracite, 4 m |
| | 0700 025 818 | 0.8–1.0, Anthracite, 5 m | 0700 025 818 | 0.8–1.0, Anthracite, 5 m |
| | | | 0700 025 819 | 1.2–1.6, Anthracite, 3 m |
| | | | 0700 025 820 | 1.2–1.6, Anthracite, 4 m |
| | | | 0700 025 821 | 1.2–1.6, Anthracite, 5 m |



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