



EN

Air-cooling units for water-cooled welding torches

cool40 U31

cool41 U31

099-008593-EW501

Observe additional system documents!

26.07.2019

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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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The content of this document has been prepared and reviewed with all reasonable care. The information provided is subject to change; errors excepted.

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2 For your safety

2.1 Notes on the use of 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 Part of the complete documentation

These operating instructions are 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.

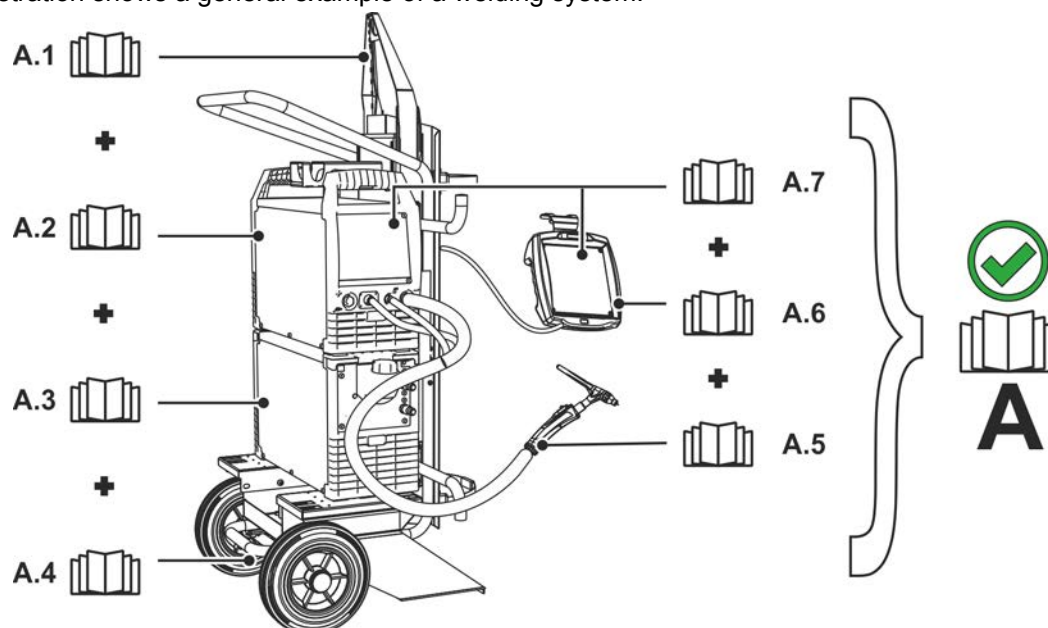


Figure 2-1

Item	Documentation
A.1	Options conversion instructions
A.2	Power source
A.3	Cooling unit, voltage converter, tool box etc.
A.4	Transport cart
A.5	Welding torch
A.6	Remote control
A.7	Control
A	Complete documentation

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

These cooling modules are designed solely for cooling welding torches.

We can only guarantee smooth and trouble-free operation when used in conjunction with the welding machines, welding torches, coolants and accessory components from our range.

3.1.1 For operation only with the following equipment

3.1.1.1 cool 40 U31

- Picotig 200 AC/DC puls
- Tetrax 230 DC Smart 2.0
- Tetrax 230 Comfort 2.0
- Tetrax 230 AC/DC Smart 2.0
- Tetrax 230 AC/DC Comfort 2.0

3.1.1.2 cool41 U31

- Tetrax 300 DC Smart 2.0 puls
- Tetrax 300 Comfort 2.0 puls
- Tetrax 300 AC/DC Smart 2.0 puls
- Tetrax 300 AC/DC Comfort 2.0 puls

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

The labelled product complies with the following EC directives in terms of its design and construction:



- Low Voltage Directive (LVD)
- Electromagnetic Compatibility Directive (EMC)
- Restriction of Hazardous Substance (RoHS)

In case of unauthorised changes, improper repairs, non-compliance with specified deadlines for "Arc Welding Equipment – Inspection and Testing during Operation," and/or prohibited modifications which have not been explicitly authorised by the manufacturer, this declaration shall be voided. An original document of the specific declaration of conformity is included with every product.

3.2.3 Service documents (spare parts and circuit diagrams)

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)!

Original copies of the circuit diagrams are enclosed with the unit.
Spare parts can be obtained from the relevant authorised dealer.

4 Machine description – quick overview

4.1 Front view

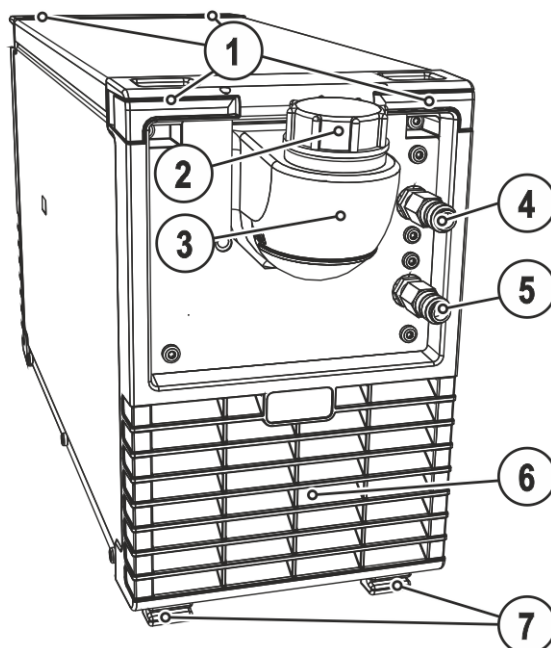


Figure 4-1

Item	Symbol	Description
1		Screw connector Connects cooling module and welding machine
2		Coolant tank cap
3		Coolant tank > see 5.2.3 chapter
4		Quick connect coupling, red Coolant return from the welding torch
5		Quick connect coupling, blue Coolant supply to the welding torch
6		Cooling air inlet
7		Machine feet

4.2 Rear view

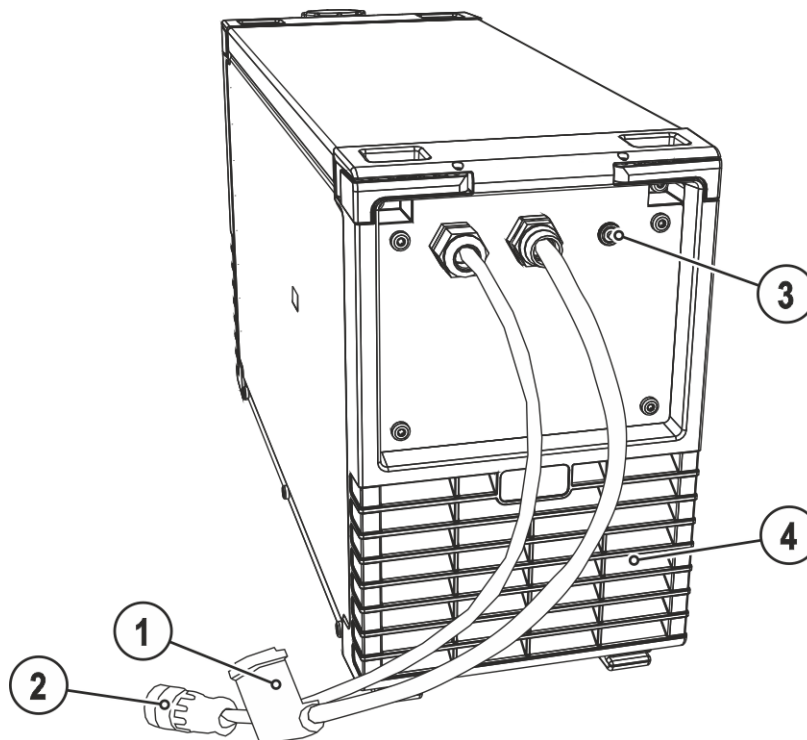


Figure 4-2

Item	Symbol	Description
1		Voltage supply connector plug 4-pole: -- cool41 U31 5-pole: -- cool40 U31 Machine assignment > see 3.1.1 chapter
2		Connector plug, 8-pole Cooling unit control lead
3		Automatic cut-out of coolant pump key button press to reset a triggered fuse
4		Cooling air outlet

5 Design and function

⚠ 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!

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

5.1 Assembly/disassembly

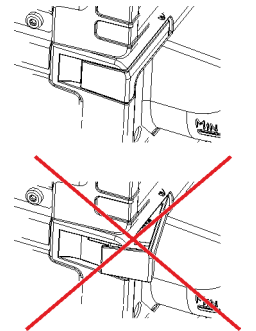
⚠ WARNING



Risk of accidents due to screw connectors that are not locked!

Attention must be paid to cleanliness and correct installation when mounting a power source with a cooling module. The cooling module could become loose if not properly mounted, thereby causing serious injuries.

- Remove dirt from the feet of the power source's unit and the screw connectors of the cooling module before mounting.
- Check that the connections are locked in place before each transport (push the screw connections back in as far as they will go)!



Assembly and disassembly is very simple and doesn't require any tools.

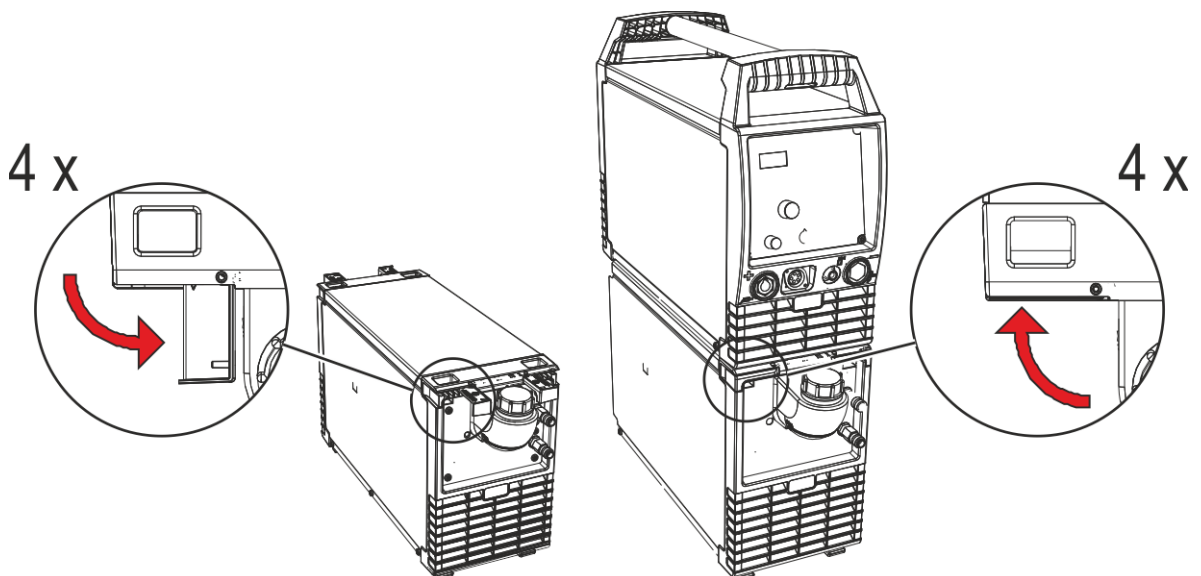


Figure 5-1

- Open out all four screw connectors on the cooling module as far as they will go.
- Position the welding machine precisely with the machine's feet in the openings of the screw connectors provided on the cooling module.
- Push all four screwed connectors back in as far as they will go.

5.1.1 Connecting the supply lines

Control and supply lead to the welding machine

The cooling module and welding machine are connected using two leads.

- Insert the control lead plug on the welding machine.
- Insert the power supply lead plug on the welding machine.

5.2 Transport and installation

WARNING



Risk of accident due to improper transport of machines that must not be lifted!
Do not lift or suspend the machine! The machine can drop and cause injuries! The handles, straps or brackets are suitable for transport by hand only!

- The machine must not be suspended or lifted using a crane.

5.2.1 Machine cooling



Insufficient ventilation results in a reduction in performance and equipment damage.

- **Observe the ambient conditions!**
- **Keep the cooling air inlet and outlet clear!**
- **Observe the minimum distance of 0.5 m from obstacles!**

5.2.2 Ambient conditions



The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- **The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.**
- **Safe operation of the machine must be guaranteed at all times.**



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!**

5.2.2.1 In operation

Temperature range of the ambient air:

- -25 °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)

5.2.2.2 Transport and storage

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

- -30 °C to +70 °C (-22 °F to 158 °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

5.2.3 Welding torch cooling system



Insufficient frost protection in the welding torch coolant!

Depending on the ambient conditions, different liquids are used for cooling the welding torch > see 5.2.3.2 chapter.

Coolants with frost protection (KF 37E or KF 23E) must be checked regularly to ensure that the frost protection is adequate to prevent damage to the machine or the accessory components.

- The coolant must be checked for adequate frost protection with the TYP 1 frost protection tester .
- Replace coolant as necessary if frost protection is inadequate!



Coolant mixtures!

Mixtures with other liquids or the use of unsuitable coolants result in material damage and renders the manufacturer's warranty void!

- Only use the coolant described in this manual (overview of coolants).
- Do not mix different coolants.
- When changing the coolant, the entire volume of liquid must be changed.

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

5.2.3.1 Functional characteristics

The cooling modules (pump and fan) are controlled by the welding machine only.

The welding machine automatically detects and displays a lack of coolant (see the welding machine operating instructions).

5.2.3.2 Permitted torch coolant

Coolant	Temperature range
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)

5.2.3.3 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.)	

5.2.3.4 Adding coolant



If the cooling system is empty or only insufficiently filled with coolant, the coolant pump is automatically switched off after approx. one minute (protection against destruction). At the same time, the welding data display signals the lack of coolant or low coolant level.

- **Reset the coolant error, fill coolant and repeat the operation.**

The unit is supplied ex works with a minimum level of coolant.

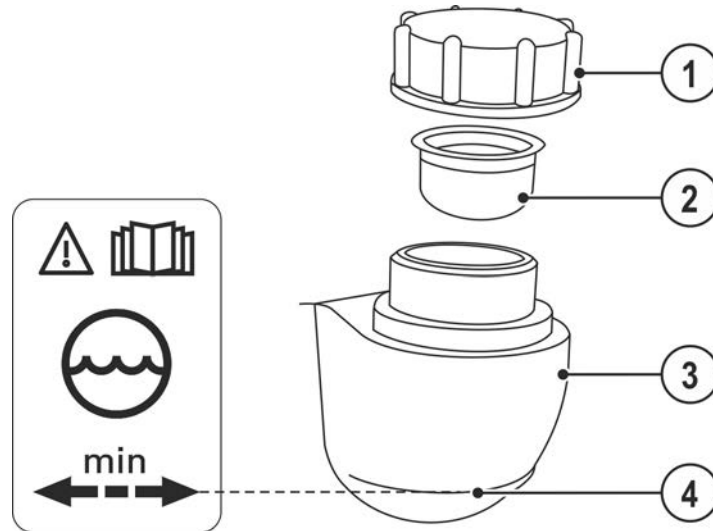


Figure 5-2

Item	Symbol	Description
1		Coolant tank cap
2		Coolant filter sieve
3		Coolant tank > see 5.2.3 chapter
4		"Min" mark Minimum coolant level

- Unscrew and remove the coolant tank sealing cover.
- Check filter sieve insert for dirt, clean if necessary and reinsert into position.
- Top up coolant to the filter sieve insert, close sealing cover again.



The level of coolant must never fall below the "min" mark.

If there is less coolant in the coolant tank than the minimum required you may need to vent the coolant circuit. In this case the welding machine will automatically shut down the coolant pump and signal an error, > see 7.2 chapter.

5.2.4 Welding torch connection



Overloading the coolant pump!

The cooling unit must not be put into operation without a welding torch connected, as otherwise the coolant pump will be destroyed due to thermal overload (the coolant cannot circulate in the coolant circuit).

- **Connect the coolant connections for the water cooled welding torch to the cooling module.**
- **If air-cooled welding torches are used, the control and supply line between the cooling module and welding machine must be disconnected!**
- Lock connecting nipples of the cooling water tubes into the corresponding quick connect couplings: Return line red to quick connect coupling, red (coolant return) and supply line blue to quick connect coupling, blue (coolant supply).

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 least 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.

6.1.1 Cleaning

- Clean the outer surfaces with a moist cloth (no aggressive cleaning agents).
- Purge the machine venting channel and cooling fins (if present) with oil- and water-free compressed air. Compressed air may overspeed and destroy the machine fans. Never direct the compressed air directly at the machine fans. Mechanically block the fans, if required.
- Check the coolant for contaminants and replace, if necessary.

6.1.2 Dirt filter

The duty cycle of the welding machine decreases as an effect of the reduced cooling air volume. The dirt filter must be removed at regular intervals and cleaned by blowing out with compressed air (depending on the level of soiling).

6.2 Maintenance work, intervals

6.2.1 Daily maintenance tasks

Visual inspection

- Mains supply lead and its strain relief
- Gas cylinder securing elements
- Check hose package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!
- Gas tubes and their switching equipment (solenoid valve)
- Check that all connections and wearing parts are hand-tight and tighten if necessary.
- Check correct mounting of the wire spool.
- Wheels and their securing elements
- Transport elements (strap, lifting lugs, handle)
- Other, general condition

Functional test

- Operating, message, safety and adjustment devices (Functional test)
- Welding current cables (check that they are fitted correctly and secured)
- Gas tubes and their switching equipment (solenoid valve)
- Gas cylinder securing elements
- Check correct mounting of the wire spool.
- Check that all screw and plug connections and replaceable parts are secured correctly, tighten if necessary.
- Remove any spatter.
- Clean the wire feed rollers on a regular basis (depending on the degree of soiling).

6.2.2 Monthly maintenance tasks

Visual inspection

- Casing damage (front, rear and side walls)
- Wheels and their securing elements
- Transport elements (strap, lifting lugs, handle)
- Check coolant tubes and their connections for impurities

Functional test

- Selector switches, command devices, emergency stop devices, voltage reducing devices, message and control lamps
- Check wire guide elements (wire feed roll holder, wire feed nipple, wire guide tube) for tight fit. Recommendation for replacing the wire feed roll holder (eFeed) after 2000 hours of operation, see replacement parts).
- Check coolant tubes and their connections for impurities
- 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.

6.2.3 Annual test (inspection and testing during operation)

A periodic test according to IEC 60974-4 "Periodic inspection and test" has to be carried out. In addition to the regulations on testing given here, the relevant local laws and regulations must also be observed. For more information refer to the "Warranty registration" brochure supplied and our information regarding warranty, maintenance and testing at www.ewm-group.com!

6.3 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!



Please observe the welding machine operating instructions.

Legend	Symbol	Description
	↘	Fault/Cause
	⌘	Remedy

Coolant error/no coolant flowing

- ↘ Insufficient coolant flow
 - ⌘ Check coolant level and refill if necessary
 - ⌘ Eliminate kinks in conduit system (hose packages)
 - ⌘ Extend and lay out the torch hose package
 - ⌘ Reset automatic cutout of the coolant pump by activating
- ↘ Air in the coolant circuit
 - ⌘ Vent coolant circuit > see 7.2 chapter
- ↘ Coolant pump blocked
 - ⌘ Switch on pump shaft (specialist staff only) > see 7.3 chapter

Functional errors

- ↘ Connection problems
 - ⌘ Make control lead connections and check that they are fitted correctly.

7.2 Vent coolant circuit

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)!

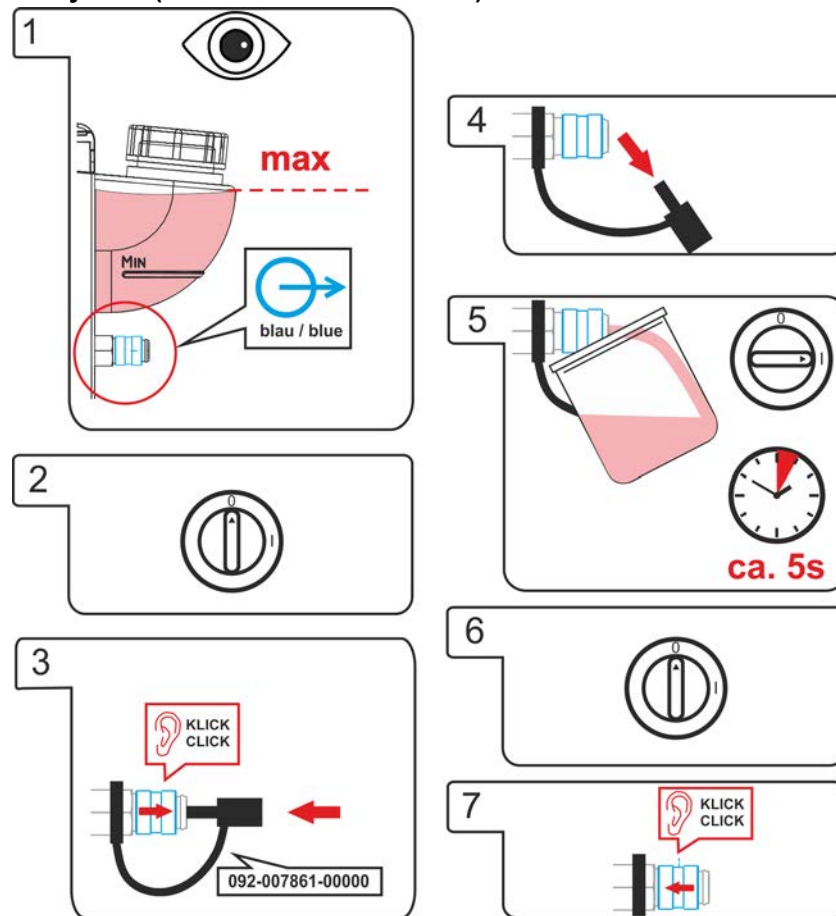


Figure 7-1

Complete the following steps to vent the welding torch:

- Connect the welding torch to the cooling unit
- Switch on the welding machine

Venting the welding torch starts and lasts for approx. 5 to 6 minutes.

7.3 Fixing the pump shaft (coolant circuit)

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)!



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!

Continuing non-use and impurities in the coolant may result in the the coolant pump not being in proper working order.

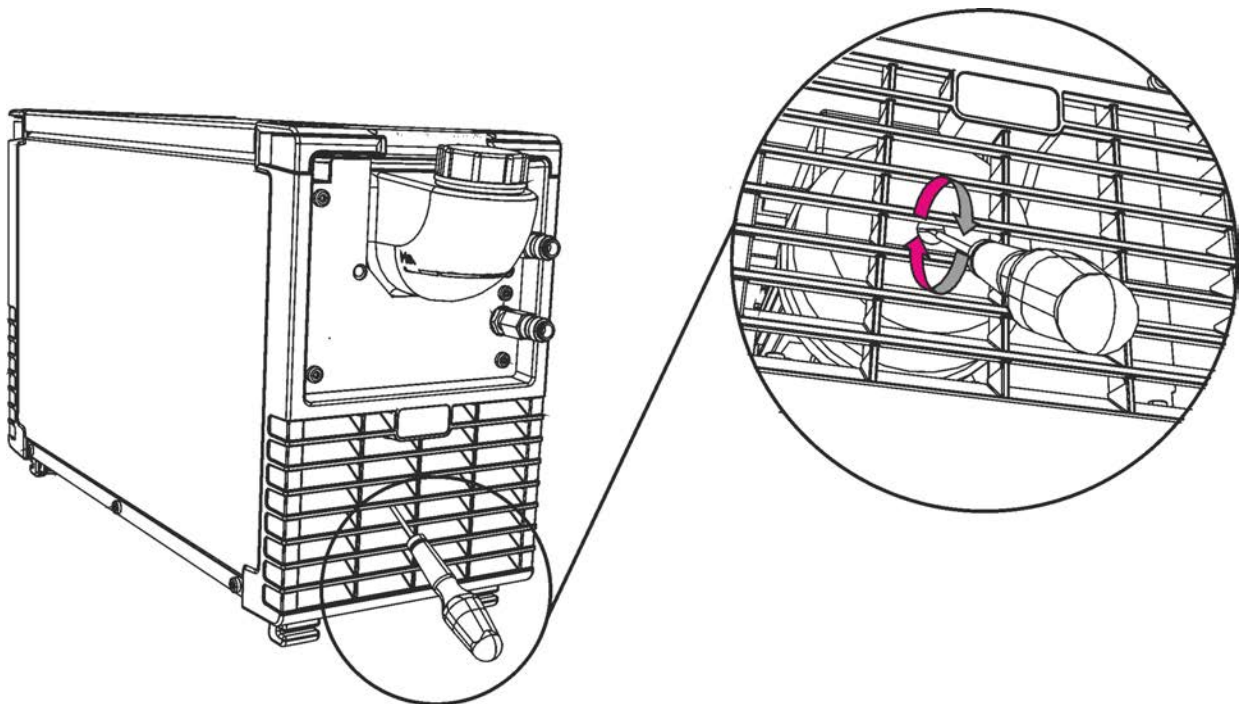


Figure 7-2

- Switch off machine at the main switch.
- Insert a plain slot screwdriver with a maximum tip width of 6.5 mm through one of the openings and place in the centre of the pump shaft. Turn the screwdriver clockwise until the pump shaft can be easily rotated again.
- Remove screwdriver.
- Switch on the power source at the main switch.

8 Technical data



Technical data limit values

The limit values determination from technical data is calculated taking account of the combined system as a whole (cooling unit and welding machine).

8.1 cool40 U31; cool41 U31

	cool40	cool41
Supply voltage (from the welding machine)	230 V	400 V
Frequency	50/60 Hz	
Cooling capacity at 1 l/min (+25°C/77°F) ^[1]	900 W	
Ambient temperature	-25 °C to +40 °C	
max. Flow rate	5 l/min 1,3 gal./min	
max. Delivery height	35 m 115 ft.	
max. Pump pressure	3,5 bar 0.35 MPa	
Pump	Centrifugal pump	
max. Tank content	4 l 1.06gal.	
Protection class	I	
Overvoltage category	III	
Contamination level	3	
Coolant	> see 5.2.3.2 chapter	
Machine cooling / protection classification	Fan (AF) / IP 23	
Noise level ^[2]	< 70 dB(A)	
EMC class	A	
Safety marking	CE / EAC	
Standards used	See declaration of conformity (appliance documents)	
Dimensions L x B x H	603 x 210 x 340 mm	
	23.7 x 8.3 x 13.4 inch	
without coolant	14,0 kg	18,4 kg
	30.9 lb.	40.6 lb.

^[1] Ambient temperature dependent on coolant! Observe coolant temperature range!

^[2] Noise level during idle mode and operation under standard load according to IEC 60974- 1 at the maximum operating point.

9 Accessories

9.1 General accessories

Type	Designation	Item no.
TYP 1	Frost protection tester	094-014499-00000
KF 23E-5	Coolant up to -10 °C (14 °F), 5 l	094-000530-00005
KF 23E-200	Coolant (-10 °C), 200 litres	094-000530-00001
KF 37E-5	Coolant up to -20 °C (4 °F), 5 l	094-006256-00005
KF 37E-200	Coolant (-20 °C), 200 l	094-006256-00001

10 Appendix

10.1 Searching for a dealer

Sales & service partners
www.ewm-group.com/en/specialist-dealers



"More than 400 EWM sales partners worldwide"