



EN

Air-cooling units for water-cooled welding torches

cool50-2 U40

cool50-2 U42

099-008603-EW501

Observe additional system documents!

15.05.2017

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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.

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.

1 Contents

1	Contents	3
2	For your safety	4
2.1	Notes on the use of these operating instructions	4
2.2	Explanation of icons.....	5
2.3	Part of the complete documentation	6
3	Intended use	7
3.1	Applications.....	7
3.1.1	For operation only with the following equipment	7
3.2	Documents which also apply	7
3.2.1	Warranty	7
3.2.2	Declaration of Conformity.....	7
3.2.3	Service documents (spare parts and circuit diagrams).....	7
4	Machine description – quick overview	8
4.1	Front view	8
4.2	Rear view	9
5	Design and function	10
5.1	Assembly/disassembly	10
5.1.1	Connecting the supply lines	11
5.2	Transport and installation	11
5.2.1	Machine cooling.....	11
5.2.2	Ambient conditions	11
5.2.2.1	In operation	11
5.2.2.2	Transport and storage.....	11
5.2.3	Welding torch cooling system.....	12
5.2.3.1	Coolant.....	12
5.2.3.2	Approved coolants overview	12
5.2.3.3	Maximal hose package length	12
5.3	Functional characteristics	12
5.3.1	Adding coolant.....	13
5.3.2	Welding torch connection	14
5.3.3	Connecting the wire feed unit.....	15
6	Maintenance, care and disposal	16
6.1	General	16
6.2	Cleaning.....	16
6.2.1	Dirt filter	16
6.3	Maintenance work, intervals	17
6.3.1	Daily maintenance tasks	17
6.3.2	Monthly maintenance tasks.....	17
6.3.3	Annual test (inspection and testing during operation).....	17
6.4	Disposing of equipment	18
6.5	Meeting the requirements of RoHS	18
7	Rectifying faults	19
7.1	Checklist for rectifying faults	19
7.2	Vent coolant circuit.....	20
7.3	Fixing the pump shaft (coolant circuit).....	20
8	Technical data	22
8.1	cool50 U40, -U42; cool50-2 U40, -U42.....	22
9	Accessories	23
9.1	General accessories	23
10	Appendix A	24
10.1	Overview of EWM branches	24

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.



Special technical points which users must observe.


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 keep pressed
			Switch
	Wrong		Turn
	Correct		Numerical value – adjustable
	Menu entry		Signal light lights up in green
	Navigating the menu		Signal light flashes green
	Exit menu		Signal light lights up in red
	Time representation (e.g.: wait 4 s/activate)		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.

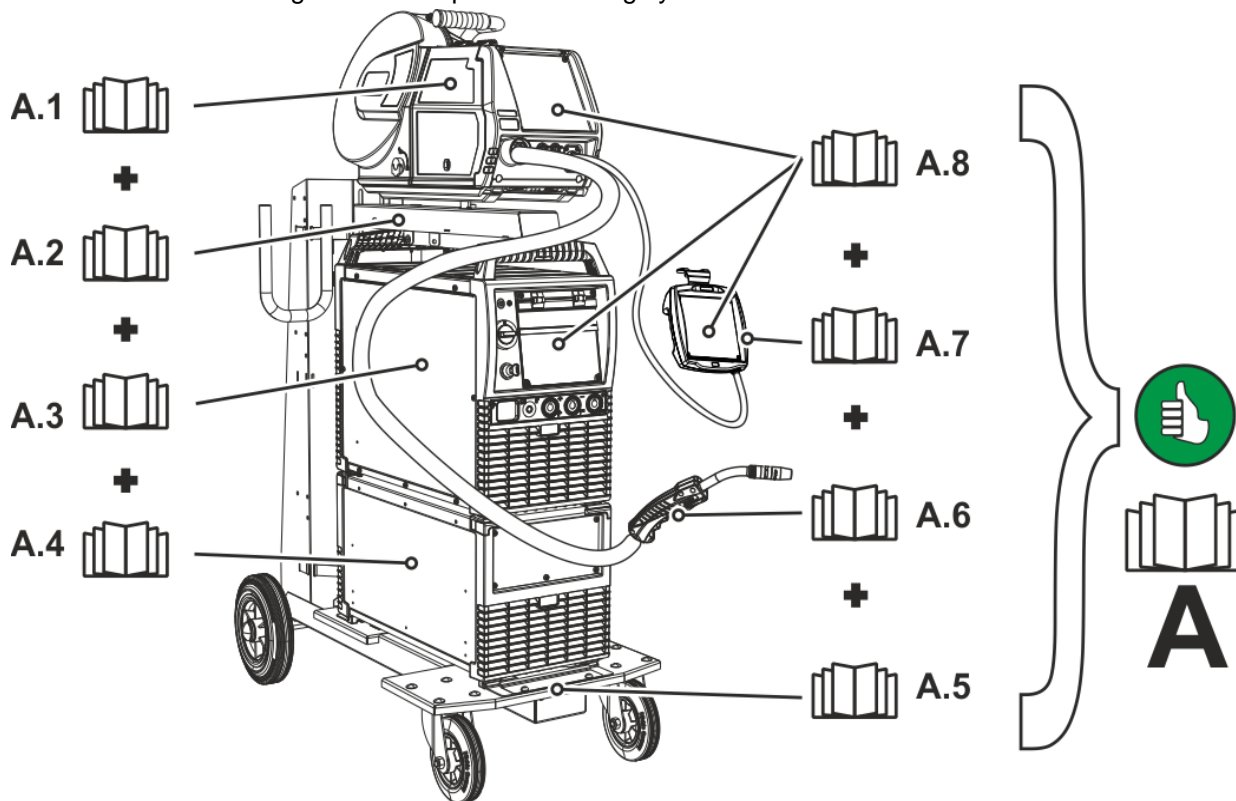


Figure 2-1

Item	Documentation
A.1	Wire feeder
A.2	Conversion instructions
A.3	Power source
A.4	Cooling unit, voltage converter, tool box etc.
A.5	Trolley
A.6	Welding torch
A.7	Remote control
A.8	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

- Phoenix 355, 405, 505 TDM
- Taurus 355, 405, 505 TDM

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 machine 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 EWM, 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

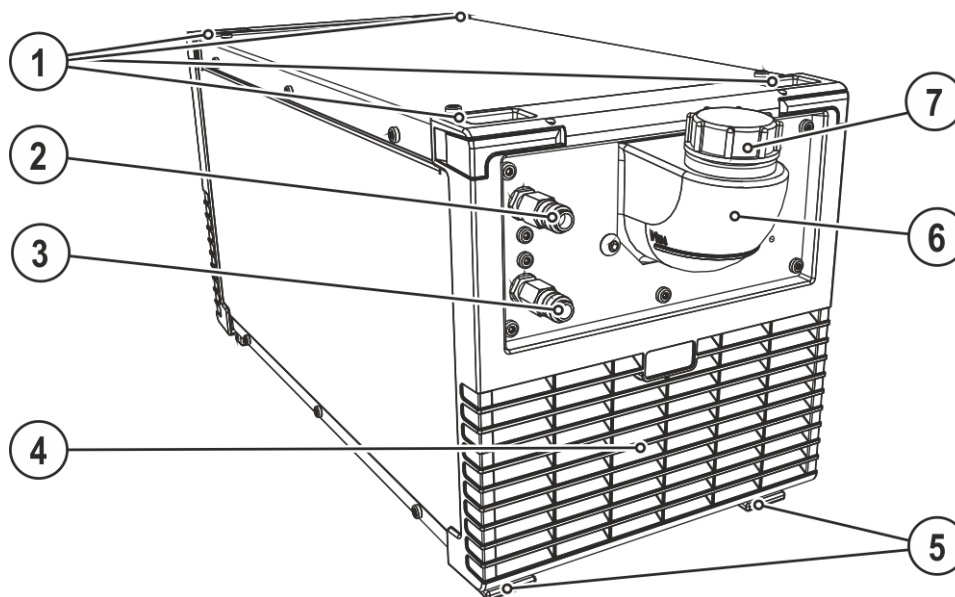


Figure 4-1

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

4.2 Rear view

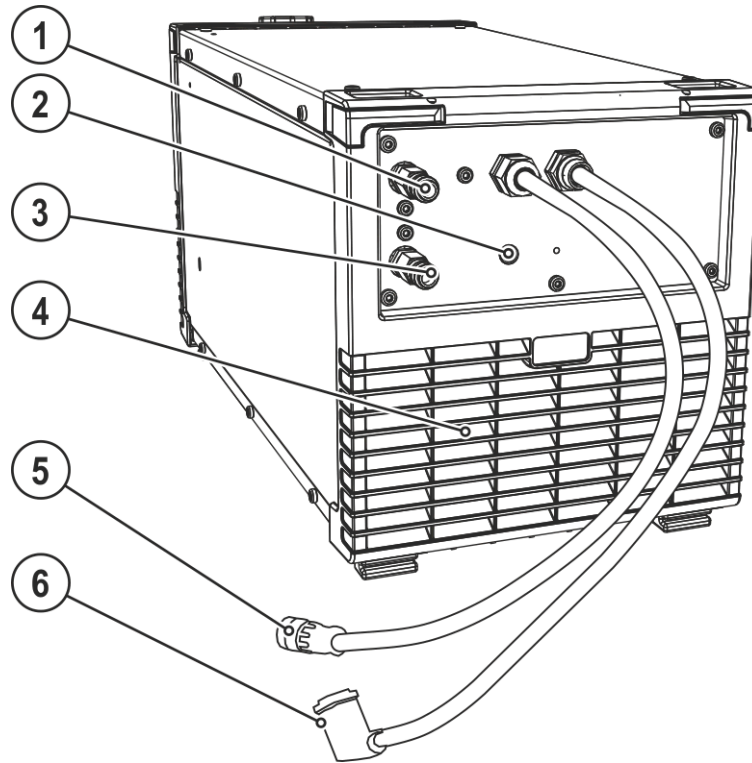


Figure 4-2

Item	Symbol	Description
1		Quick connect coupling, red Coolant return from the welding torch
2		Automatic cut-out of coolant pump key button press to reset a triggered fuse
3		Quick connect coupling, blue Coolant supply to the welding torch
4		Cooling air outlet
5		Connector plug, 8-pole Cooling unit control lead
6		Connector plug, 4-pole Cooling unit voltage supply

5 Design and function

⚠ WARNING



Risk of injury from electric shock!

Contact with live parts, e.g. welding current sockets, is potentially fatal!

- Follow safety instructions on the opening pages of the operating instructions.
- Commissioning may only be carried out by persons who have the relevant expertise of working with arc welding machines!
- Connection and welding leads (e.g. electrode holder, welding torch, workpiece lead, interfaces) may only be connected when the machine is switched off!



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

5.1 Assembly/disassembly

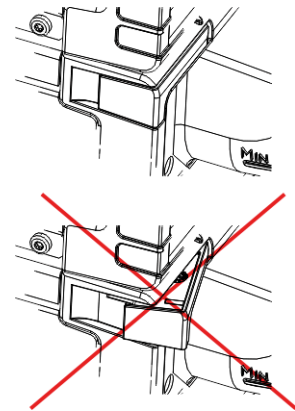
⚠ WARNING



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.

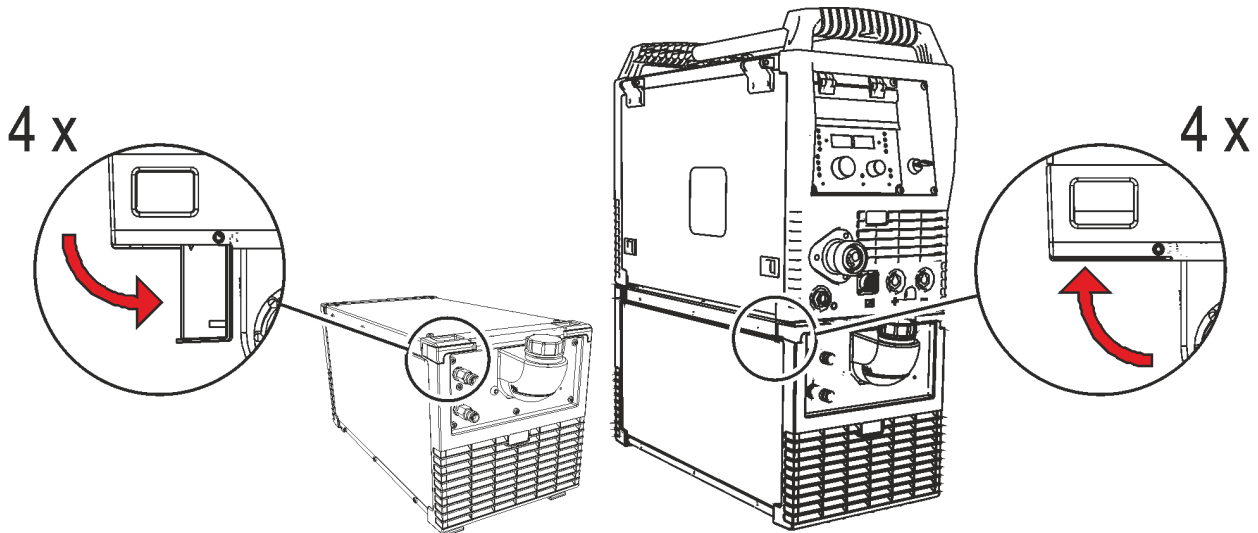


Figure 5-1

- 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.



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.***

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.***



Unusually high quantities of dust, acid, corrosive gases or substances may damage the equipment.

- ***Avoid high volumes of smoke, vapour, oil vapour and grinding dust!***
- ***Avoid ambient air containing salt (sea air)!***

5.2.2.1 In operation

Temperature range of the ambient air:

- -25 °C to +40 °C

Relative air humidity:

- Up to 50% at 40 °C
- Up to 90% at 20 °C

5.2.2.2 Transport and storage

Storage in an enclosed space, temperature range of the ambient air:

- -30 °C to +70 °C

Relative air humidity

- Up to 90% at 20 °C

5.2.3 Welding torch cooling system

5.2.3.1 Coolant



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 (German waste code number: 70104).

May not be disposed of in household waste.

Prevent entry into sewers.

Absorb with liquid-binding material (sand, gravel, acid-binding agents, universal binding agents, sawdust).

5.2.3.2 Approved coolants overview

Coolant	Temperature range
KF 23E (Standard)	-10 °C to +40 °C
KF 37E	-20 °C to +10 °C

5.2.3.3 Maximal hose package length

	Pump 3.5 bar	Pump 4.5 bar
Machines with or without separate wire feeder	30 m	60 m
Compact machines with additional intermediate drive (example. miniDrive)	20 m	30 m
Machines with separate wire feeder and additional intermediate drive (example: miniDrive)	20 m	60 m

Data as a rule refer to the entire hose package length

including welding torch. The pump output is shown on the type plate (parameter: Pmax).

Pump 3.5 bar: Pmax = 0.35 MPa (3.5 bar)

Pump 4.5 bar: Pmax = 0.45 MPa (4.5 bar)

5.3 Functional characteristics



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!

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).

5.3.1 Adding coolant



After the initial filling, wait for at least one minute when the machine is switched on so that the hose package is filled with coolant completely and without bubbles.

With frequent changes of torch and during the initial filling process, the cooling unit tank should be topped up as necessary.

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

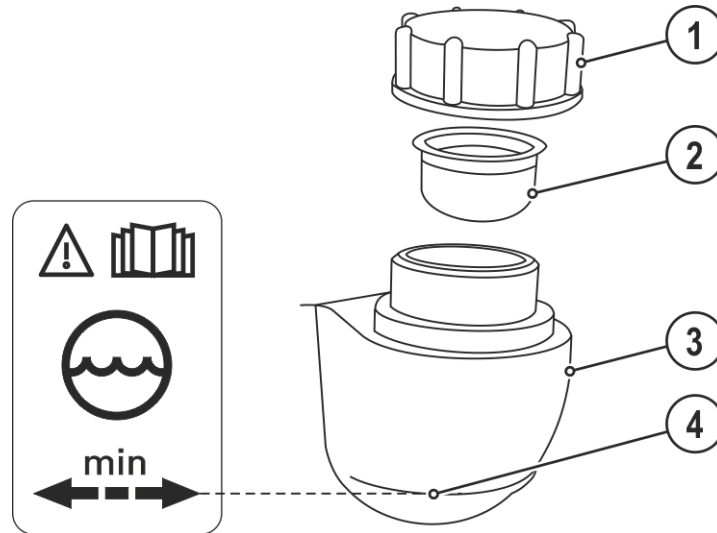


Figure 5-2

Item	Symbol	Description
1		Coolant tank cap
2		Coolant filter sieve
3		Coolant tank
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.

5.3.2 Welding torch connection

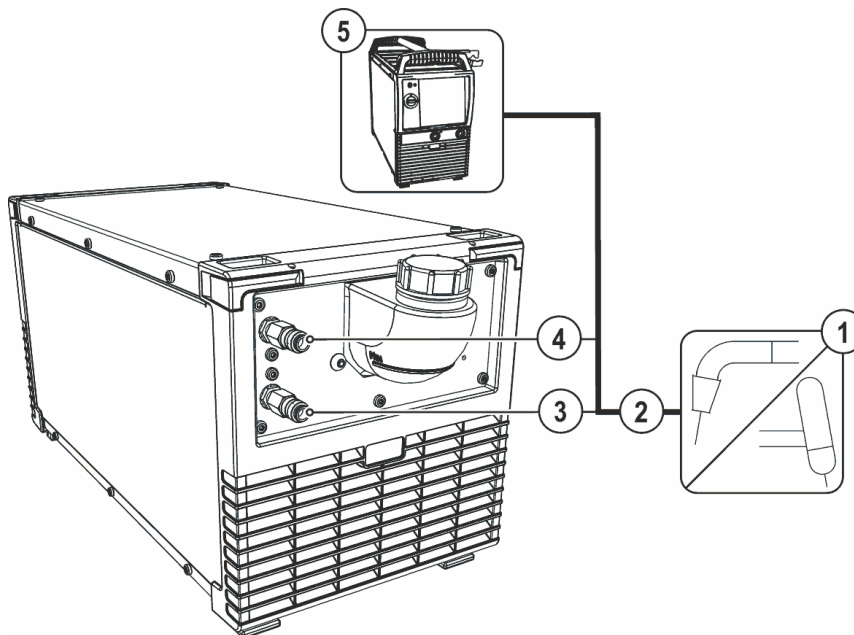


Figure 5-3

Item	Symbol	Description
1		Welding torch
2		Welding torch hose package
3		Quick connect coupling, blue Coolant supply to the welding torch
4		Quick connect coupling, red Coolant return from the welding torch
5		Power source

- 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).

5.3.3 Connecting the wire feed unit

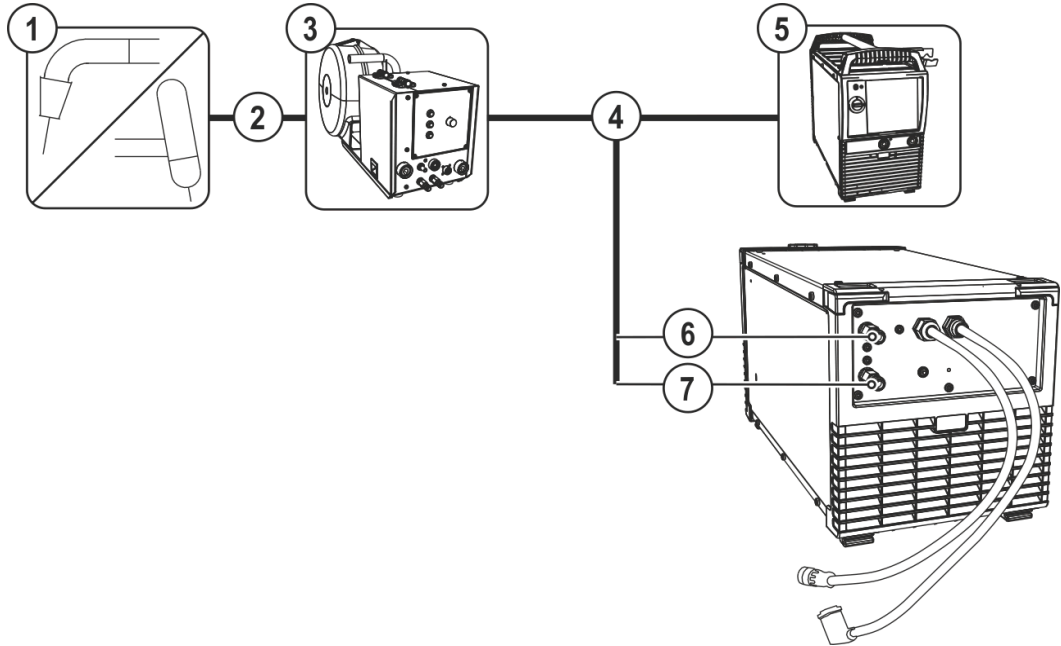


Figure 5-4

Item	Symbol	Description
1		Welding torch
2		Welding torch hose package
3		Wire feed unit
4		Intermediate hose package
5		Power source
6		Quick connect coupling, red Coolant return from the welding machine or wire feed unit
7		Quick connect coupling, blue Coolant supply to the welding machine or wire feed unit

- 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 last 4 minutes until the capacitors have discharged!

WARNING



Incorrect maintenance, testing and repair!

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

Observe the maintenance instructions > see 6.3 chapter.

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

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

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

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

6.2 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.

6.2.1 Dirt filter

The duty cycle of the welding machine decreases as an effect of the reduced cooling air volume. Depending on the amount of dirt building up (at least every two months), the dirt filter has to be uninstalled and cleaned regularly (e.g. by purging with compressed air).

6.3 Maintenance work, intervals

6.3.1 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).

6.3.2 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 that the wire guide elements (inlet nipple, wire guide tube) are fitted securely.
- 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.

6.3.3 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!

6.4 Disposing of equipment



Proper disposal!

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

- **Do not dispose of in household waste!**
- **Observe the local regulations regarding disposal!**
- According to European provisions (guideline 2012/19/EU of the European Parliament and the Council of July, 4th 2021), 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 is to be placed for disposal or recycling in the waste separation systems provided for this purpose.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG) from 16.03.2005), 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 giving back used equipment or about collections can be obtained from the respective municipal administration office.
- EWM participates in an approved waste disposal and recycling system and is registered in the Used Electrical Equipment Register (EAR) under number WEEE DE 57686922.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.




6.5 Meeting the requirements of RoHS

We, EWM AG in Mündersbach, Germany, hereby confirm that all products which we supply to you and that are subject to the RoHS directive comply with RoHS requirements (also see applicable EC directives on the Declaration of Conformity on your machine).

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)!

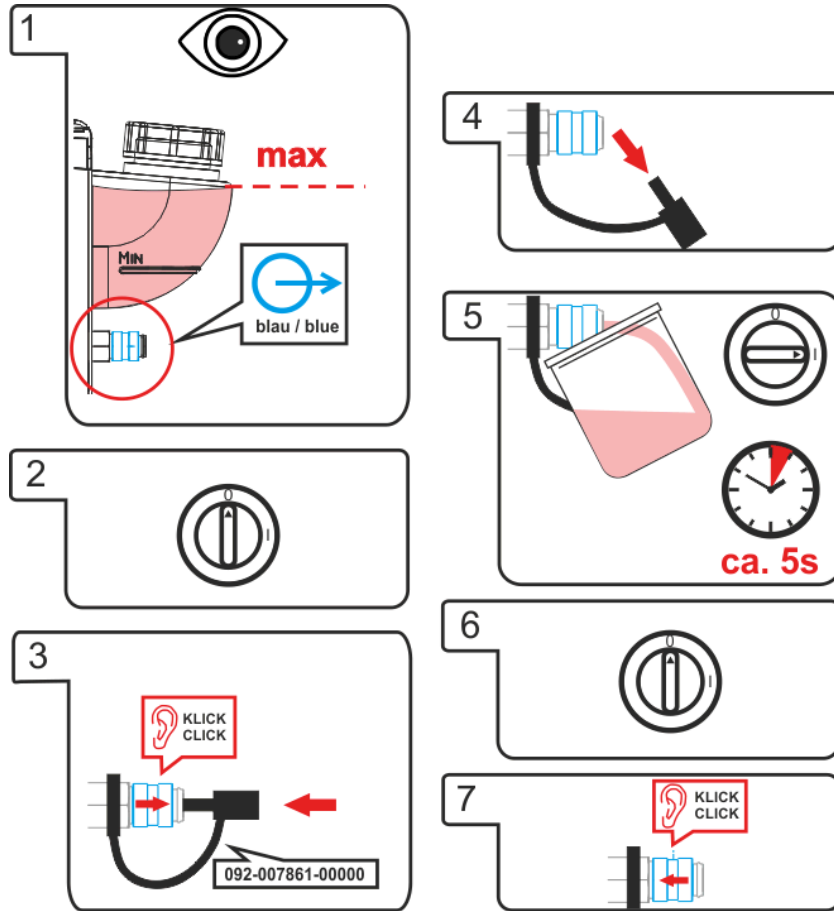


Figure 7-1

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!

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

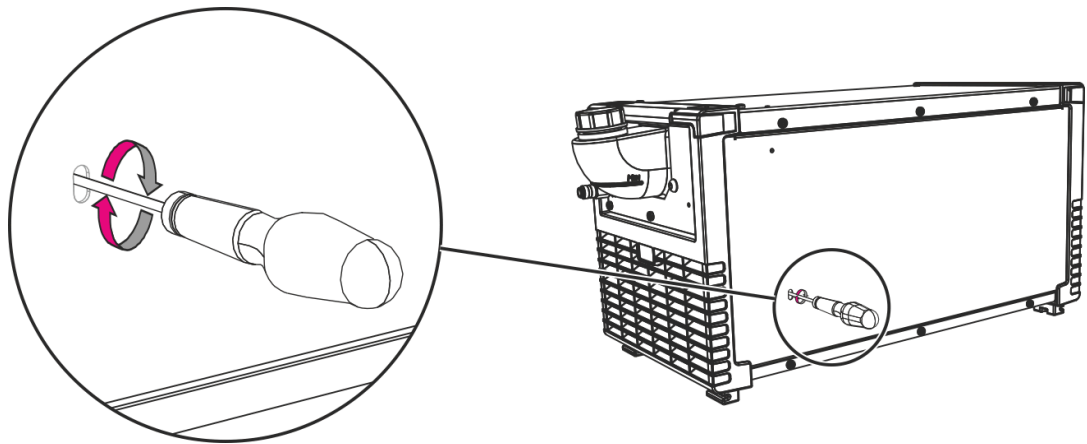


Figure 7-2

- Switch off machine at the main switch.
- Insert a plain slot screwdriver with a maximum tip width of 6.5 mm through the maintenance opening 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 cool50 U40, -U42; cool50-2 U40, -U42

	cool50 U40 cool50-2 U40	cool50 U42 cool50-2 U42
Supply voltage (from the welding machine)	400 V	
Mains frequency	50/60 Hz	
Cooling capacity	1000 W (1 l/min.)	
Max. flow rate	5 l/min.	20 l/min.
Max. coolant outlet pressure	3.5 bar	4.5 bar
Max. tank capacity	Approx. 4 l	
Coolant	> see 5.2.3.2 chapter	
Cooling mode/protection classification	F/IP 23	
Noise level	< 70 dB(A)	
EMC class	A	
Safety identification	CE / ENEC	
Harmonised standards used	see declaration of conformity (machine documentation)	
Dimensions L x W x H	695 x 298 x 329 mm	
	27.4 x 11.7 x 13 inch	
Weight (without coolant)	16.5 kg	17 kg
	36.4 lb	37.5 lb

9 Accessories**9.1 General accessories**

Type	Designation	Item no.
TYP 1	Frost protection tester	094-014499-00000
KF 23E-10	Coolant (-10 °C), 9.3 l	094-000530-00000
KF 23E-200	Coolant (-10 °C), 200 litres	094-000530-00001
KF 37E-10	Coolant (-20 °C), 9.3 l	094-006256-00000
KF 37E-200	Coolant (-20 °C), 200 l	094-006256-00001

10 Appendix A

10.1 Overview of EWM branches

Headquarters

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Production, Sales and Service

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EWM HIGHTEC WELDING s.r.o.

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Tel.: +420 412 358-551 · Fax: -504
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Sales and Service Germany

EWM AG

Sales and Technology Centre
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EWM Schweißtechnik Handels GmbH

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Sales and Service International

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