



EN

Power source

Tetrix XQ 230 puls DC Comfort 3.0
Tetrix XQ 230 puls AC/DC Comfort 3.0
Tetrix XQ 230 puls DC Expert 3.0
Tetrix XQ 230 puls AC/DC Expert 3.0

099-005630-EW501

Observe additional system documents!

26.10.2022

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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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2 For your safety

2.1 Notes on using these operating instructions

DANGER

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

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

WARNING

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

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

CAUTION

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

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



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

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

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

2.2 Explanation of icons

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

2.3 Safety instructions

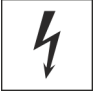
WARNING



Risk of accidents due to non-compliance with the safety instructions!

Non-compliance with the safety instructions can be fatal!

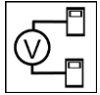
- Carefully read the safety instructions in this manual!
- Observe the accident prevention regulations and any regional regulations!
- Inform persons in the working area that they must comply with the regulations!



Risk of injury from electrical voltage!

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

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



Hazard when interconnecting multiple power sources!

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

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

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



Risk of injury due to radiation or heat!

Arc radiation can lead to skin and eye injuries.

Contact with hot workpieces and sparks can lead to burns.

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

 **WARNING****Risk of injury due to improper clothing!**

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

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

**Explosion risk!**

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

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

**Fire hazard!**

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

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

⚠ CAUTION



Smoke and gases!

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

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



Noise exposure!

Noise exceeding 70 dBA can cause permanent hearing damage!

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



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



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



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

Setting up and operating

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

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

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

Recommendations for reducing interference emission

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



Electromagnetic fields!

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



- Observe the maintenance instructions > see 6.3 chapter!
- Unwind welding leads completely!
- Shield devices or equipment sensitive to radiation accordingly!
- The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

⚠ CAUTION**Obligations of the operator!**

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

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



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

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

Requirements for connection to the public mains network

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

2.4 Transport and installation

⚠ WARNING**Risk of injury due to improper handling of shielding gas cylinders!**

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

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

CAUTION



Risk of accidents due to supply lines!

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

- Disconnect all supply lines before transport!



Risk of tipping!

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

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



Risk of accidents due to incorrectly installed leads!

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

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



Risk of injury from heated coolant and its connections!

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

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



The units are designed for operation in an upright position!

Operation in non-permissible positions can cause equipment damage.

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



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

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



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

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

3 Intended use

WARNING



Hazards due to improper usage!

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

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

3.1 Applications

Arc welding machine for TIG DC and AC welding with lift arc (touch starting) or HF ignition (contactless) and MMA welding as secondary process. It may be possible to expand the functionality by using accessories (see the documentation in the relevant chapter).

3.2 Use and operation solely with the following machines

The following system components can be combined:

Power source	Tetrix XQ 230 puls DC Tetrix XQ 230 puls AC/DC
Machine control	Comfort 3.0 Expert 3.0
Welding torch cooling unit	Cool XQ 40 Cool XQ 40 MV
Transport vehicle	Trolley XQ 35-3 Trolley XQ 55-3

3.3 Documents which also apply

3.3.1 Warranty

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

3.3.2 Declaration of Conformity



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

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

3.3.3 Welding in environments with increased electrical hazards



Power sources with this marking can be used for welding in an environment with increased electrical hazard (e.g. boilers). For this purpose, appropriate national or international regulations must be followed. The power source must not be placed in the danger zone!

3.3.4 Service documents (spare parts and circuit diagrams)



WARNING

No improper repairs and modifications!

To prevent injuries and damage to the machine, only competent personnel (authorised service personnel) are allowed to repair or modify the machine.

Unauthorised manipulations will invalidate the warranty!

- Instruct competent personnel (authorised service personnel) to repair the machine.

Original copies of the circuit diagrams are enclosed with the unit.

Spare parts can be obtained from the relevant authorised dealer.

3.3.5 Calibration/Validation

An original certificate is enclosed with the product. The manufacturer recommends calibration / validation at intervals of 12 months (from commissioning).

3.3.6 Part of the complete documentation

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

The illustration shows a general example of a welding system.

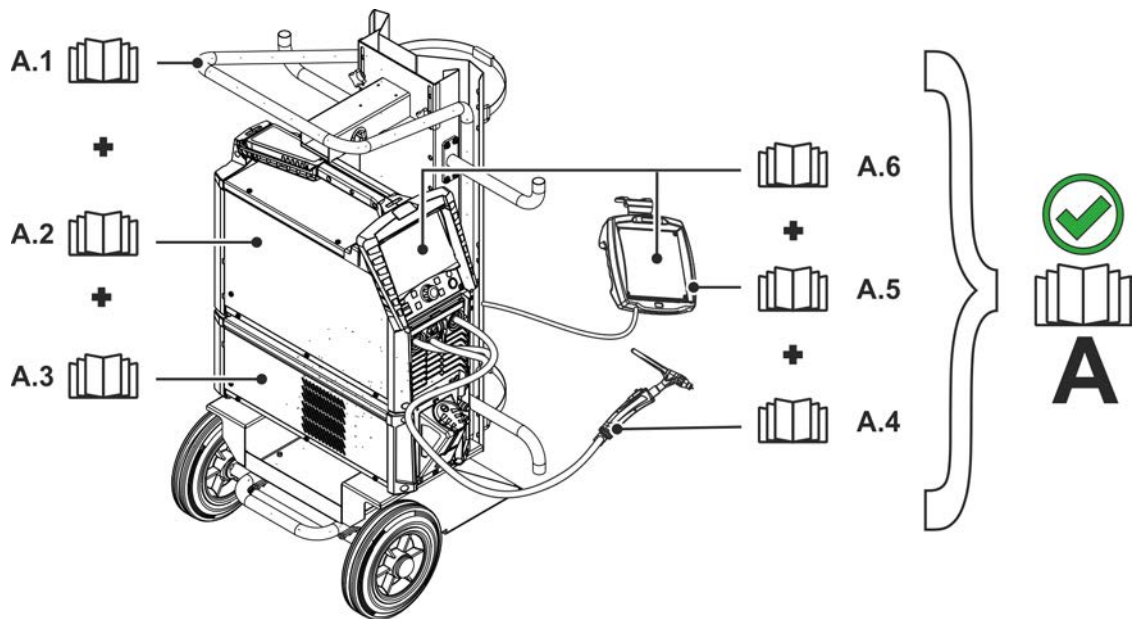


Figure 3-1

Item	Documentation
A.1	Transport vehicle
A.2	Power source
A.3	Cooling unit
A.4	Welding torch
A.5	Remote control
A.6	Control
A	Complete documentation

4 Machine description – quick overview

4.1 Front view / rear view

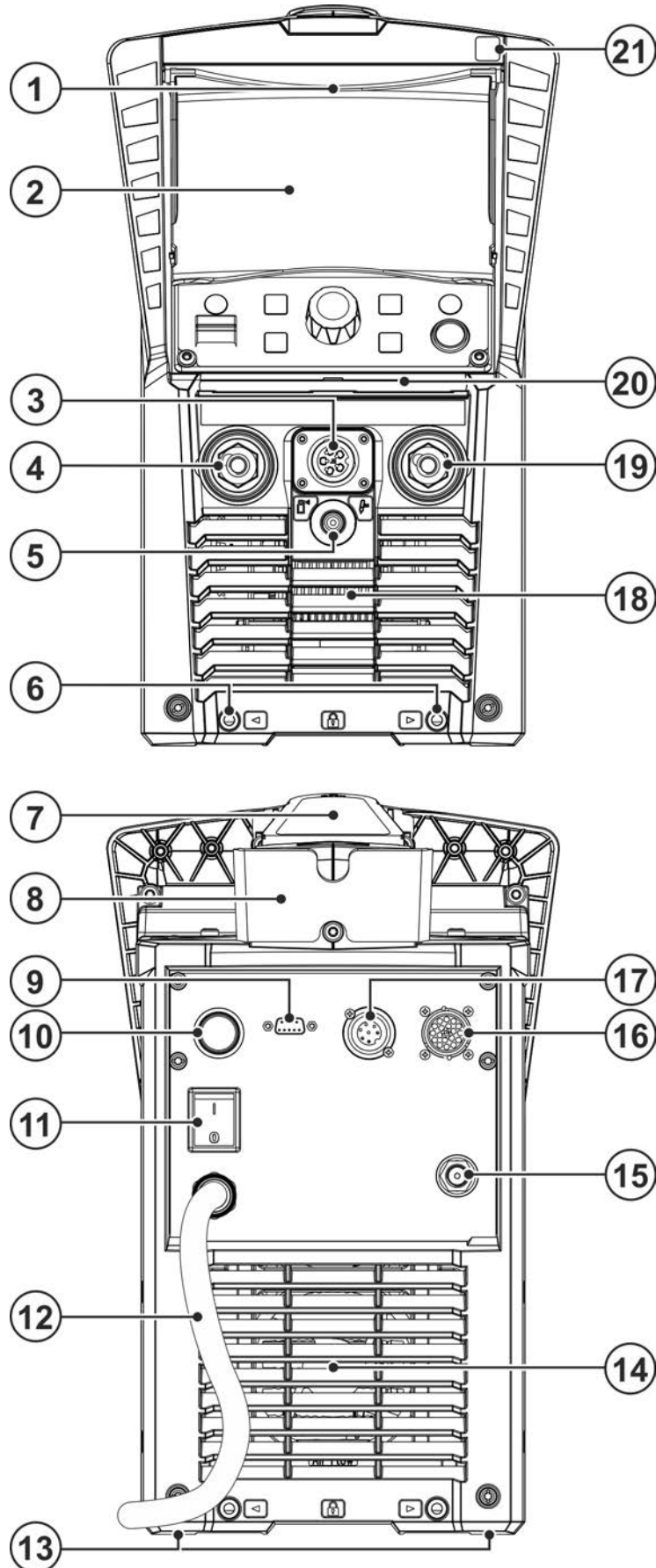











Figure 4-1

Item	Symbol	Description
1		Protective cap > see 5.1.11 chapter
2		Machine control (see the relevant control operating instructions)
3		Connection socket (welding torch control cable) > see 5.2.1.1 chapter
4		Connection socket, “+” welding current How to connect the accessories depends on the welding procedure. Please observe the connection description for the corresponding welding procedure > see 5 chapter.
5		Connection thread - G$\frac{1}{4}$" Shielding gas connection (outlet)
6		Holder for the module connector Screw connection for module fastening of system components
7		Transport handle with additional integrated functions <ul style="list-style-type: none"> • Wear part compartment > see 5.1.12 chapter • Transport belt > see 5.1.4 chapter
8		Cable holder - Option > see 9.5 chapter
9		Connection socket (9-pole) - D-Sub PC interface > see 5.6 chapter
10		Connection socket - RJ45 - Option Network connection > see 5.7 chapter
11		Main Switch Switching the machine on or off.
12		Mains connection cable > see 5.1.9 chapter
13		Machine feet
14		Cooling air inlet
15		Connection thread - G$\frac{1}{4}$" Shielding gas connection (inlet)
16		Connection socket, 19-pole Remote control connection
17		7-pole connection socket (digital) For connecting digital accessory components
18		Cooling air outlet
19		Connection socket, “-” welding current How to connect the accessories depends on the welding procedure. Please observe the connection description for the corresponding welding procedure > see 5 chapter.
20		LED status bar - display of operating status The operating status is indicated by a light guide > see 5.1.10 chapter.
21		QR code Link to manufacturer’s website for more product information

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 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.

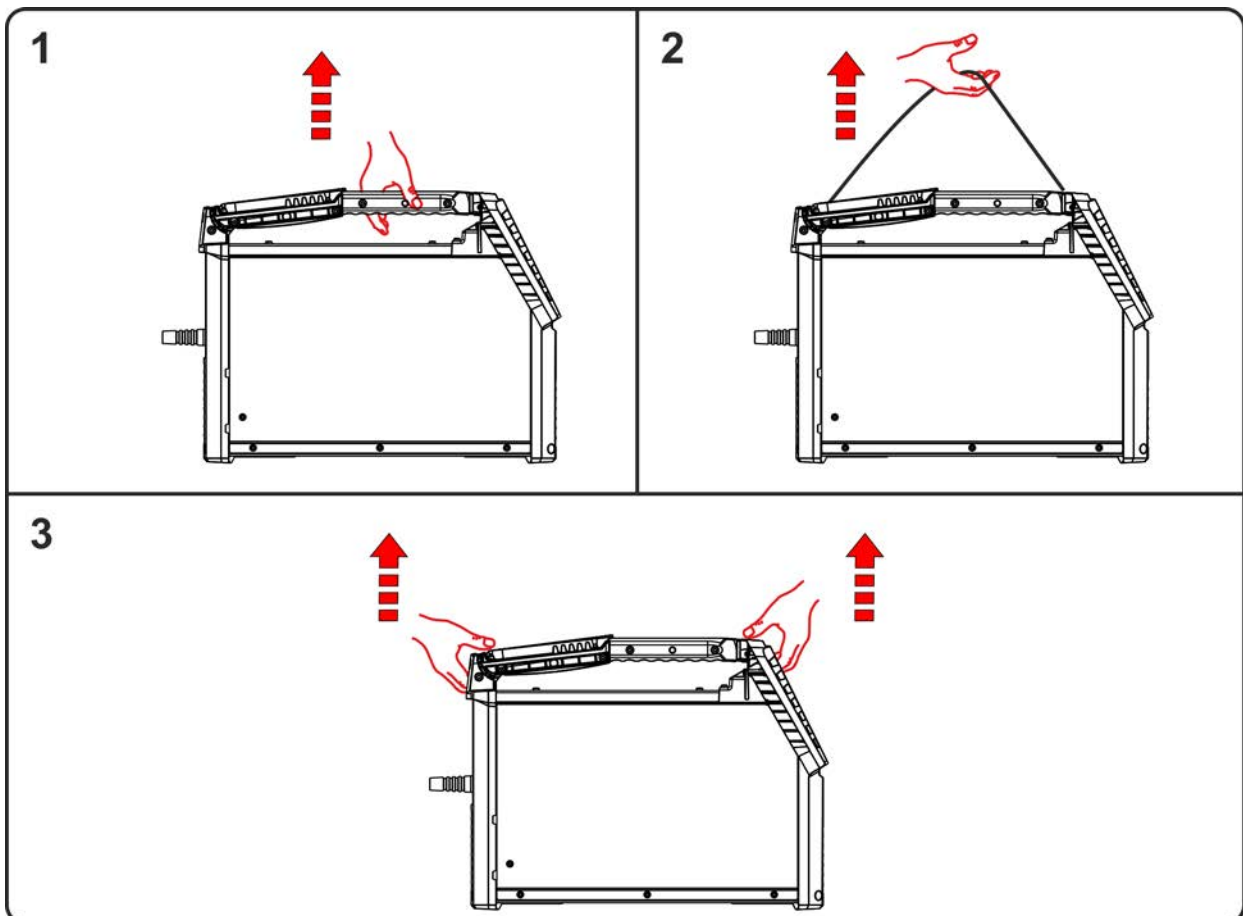




Figure 5-1

The machine can either be carried by the transport handle in the middle (1), the transport belt (2) or the handle at each end (3).

5.1.1 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 6.3 chapter).
- **Avoid large amounts of smoke, steam, oily fumes, grinding dust and corrosive ambient air!**

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)

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

5.1.2 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!**

5.1.3 Workpiece lead, general

CAUTION



Risk of burning due to incorrect welding current connection!

If the welding current plugs (machine connections) are not locked or if the workpiece connection is contaminated (paint, corrosion), these connections and leads can heat up and cause burns when touched!

- Check welding current connections on a daily basis and lock by turning to the right when necessary.
- Clean workpiece connection thoroughly and secure properly. Do not use structural parts of the workpiece as welding current return lead!

5.1.4 Transport belt

5.1.4.1 Adjusting the length of the carrying strap

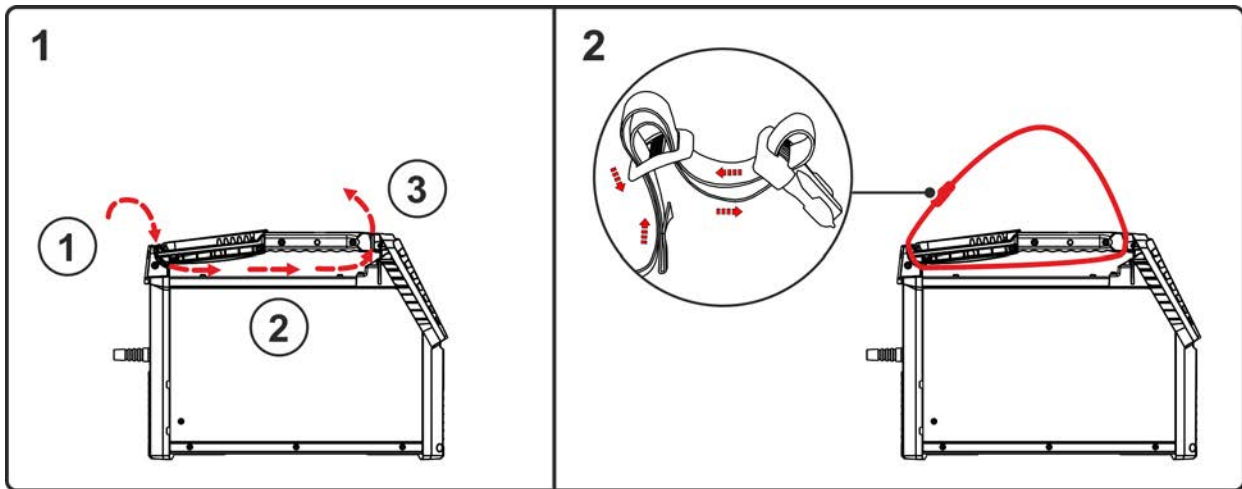


Figure 5-2

5.1.5 Dirt filter

These accessory components can be retrofitted as an option > see 9.5 chapter.

When using a dirt filter, the cooling air throughput is reduced and the duty cycle of the machine is reduced as a result. The duty cycle decreases with the increasing contamination of the filter. The dirt filter must be removed at regular intervals and cleaned by blowing out with compressed air (depending on the level of soiling).

5.1.6 Welding torch cooling system

WARNING



Risk of accidents due to improperly connected modules!

Improperly installed modules may come loose and cause severe injuries.

- Remove impurities from the connection points before installation!
- All plug and screw connections must be carried out properly and completely!

The modular design allows the power source to be retrofitted with a cooling unit for liquid torch cooling. For information about connection and installation, see the documentation for the cooling unit.

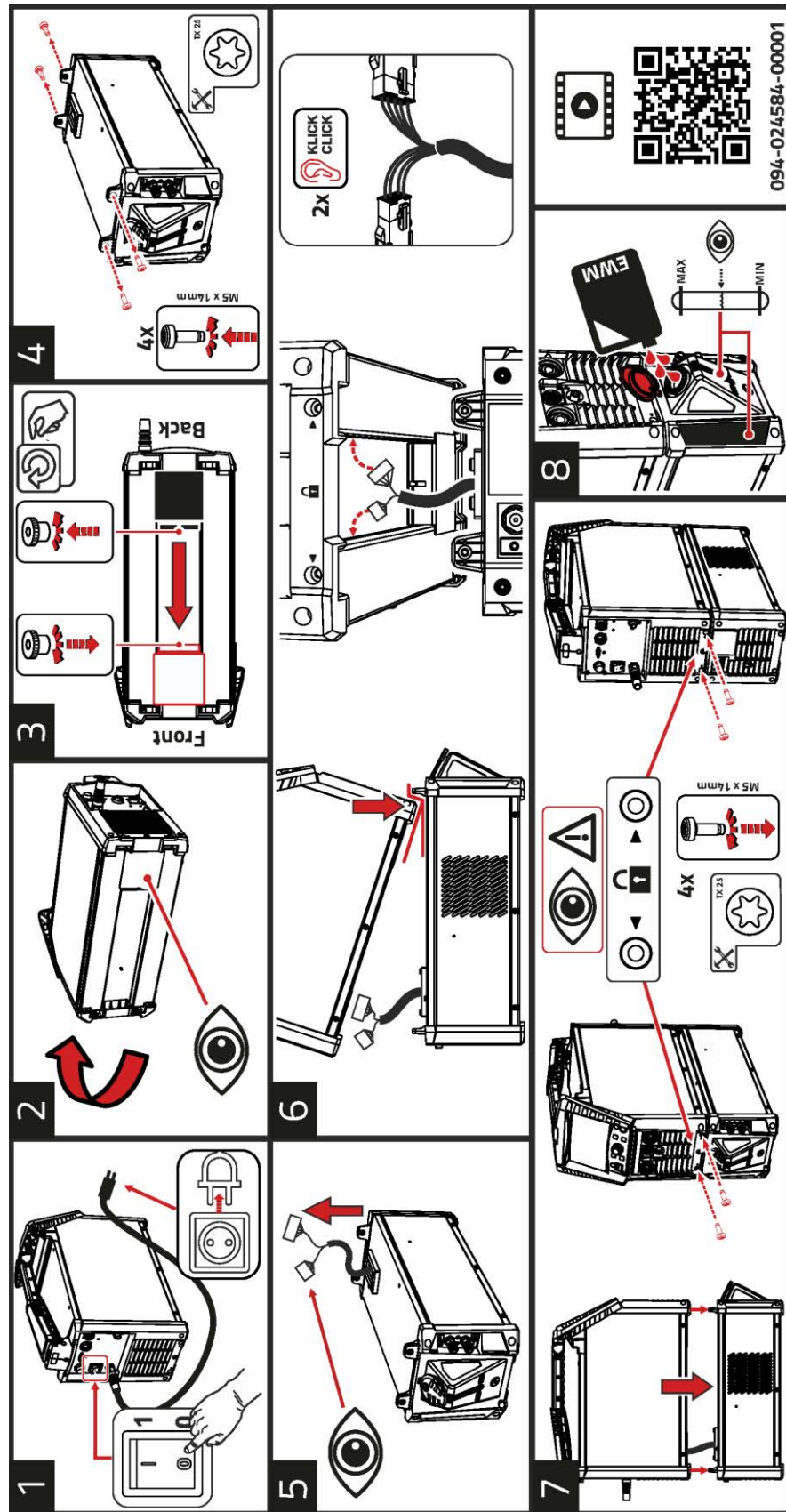


Figure 5-3

- 1 Switch off the power source and disconnect the mains plug.
- 2 Place the power source to the side.

- 3 Loosen the screws on the lower cover. Move the cover to the park position towards the front. Screw the cover back on.
- 4 Undo all four Torx screws from the module connectors of the cooling unit.
- 5 Route the supply lines through the cable duct of the cooling unit.
- 6 Place the power source with the front feet ahead of the front module connector of the cooling unit. Lift the power source at the rear and plug both connectors of the cooling unit's supply lines into the corresponding sockets of the power source (the connectors must engage).
- 7 Place the power source precisely with the connector receptacles in the module connectors provided on the cooling unit. Secure the cooling unit and power source with all four Torx screws M5 x 14 mm.
- 8 Fill in the coolant > see 5.1.6 chapter.

For further information on installing the machine (video), scan the QR code on the information sticker if necessary.

5.1.7 Notes on the installation of welding current leads

- Incorrectly installed welding current leads can cause faults in the arc (flickering).
- Lay the workpiece lead and hose package of power sources without HF igniter (MIG/MAG) for as long and as close as possible in parallel.
- Lay the workpiece lead and hose package of power sources with HF igniter (TIG) for as long as possible in parallel with a distance of 20 cm to avoid HF sparkover.
- Always keep a distance of at least 20 cm to leads of other power sources to avoid interferences
- Always keep leads as short as possible! For optimum welding results max. 30 m (welding lead + intermediate hose package + torch lead).

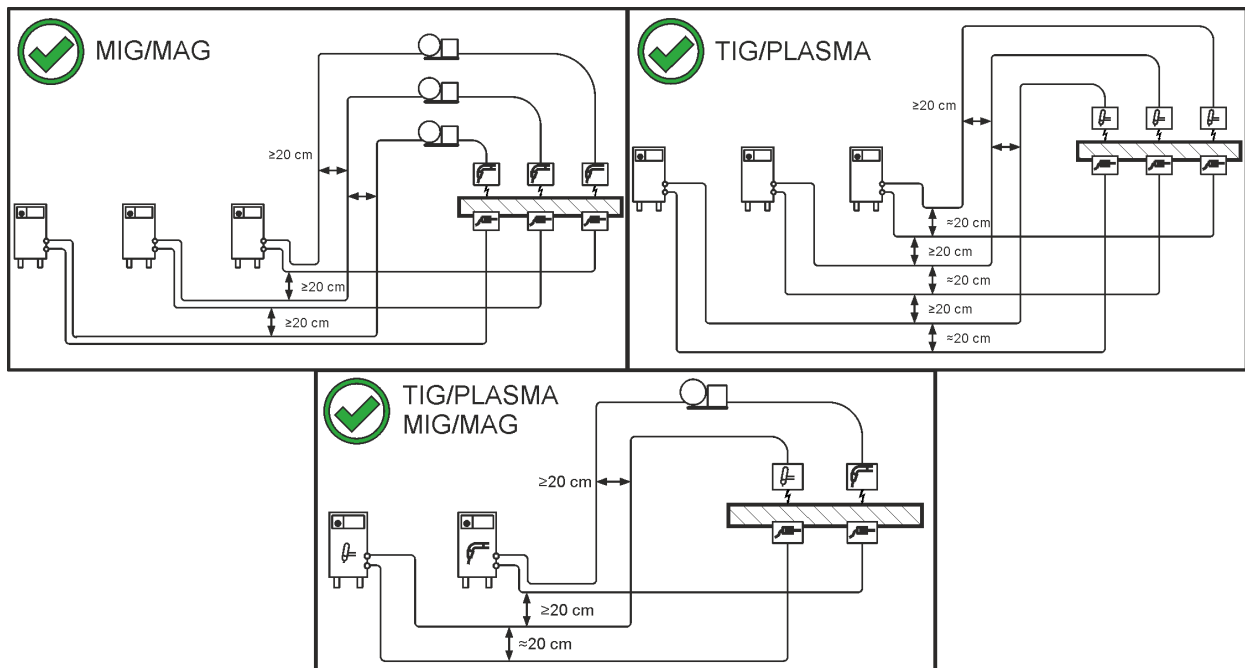


Figure 5-4

- Use an individual welding lead to the workpiece for each welding machine!

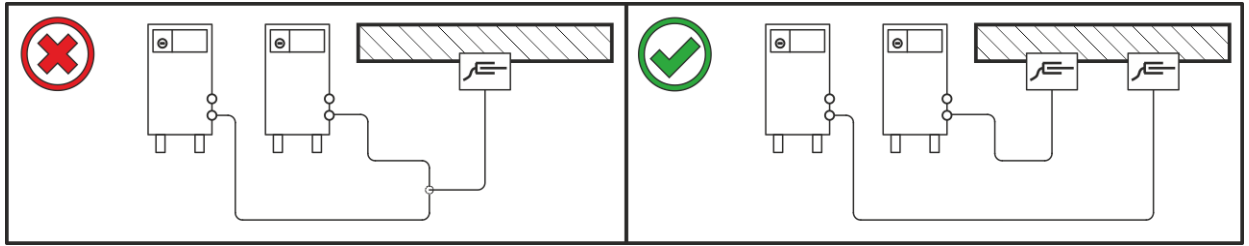


Figure 5-5

- Fully unroll welding current leads, torch hose packages and intermediate hose packages. Avoid loops!
- Always keep leads as short as possible!

Lay any excess cable lengths in meanders.

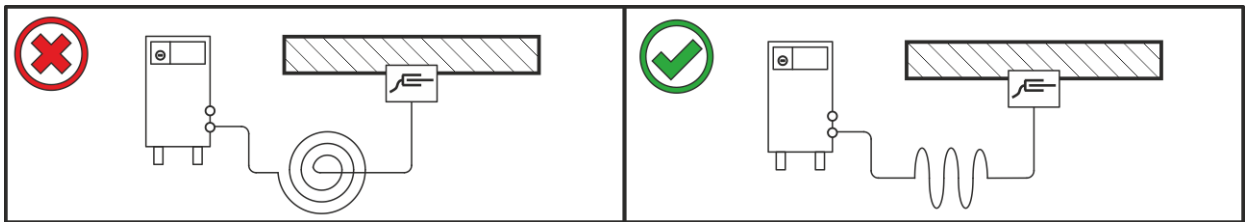


Figure 5-6

5.1.8 Stray welding currents

⚠ WARNING



Risk of injury due to stray welding currents!

Stray welding currents can destroy protective earth conductors, damage machines and electronic devices and cause overheating of components, leading to fire.

- Check that all welding current connections are firmly secured and electrical connections are in perfect condition.
- Set up, attach or suspend all conductive power source components such as casing, transport vehicles and crane frames so they are insulated.
- Do not place any other electronic devices such as drills or angle grinders on the power source, transport vehicle or crane frames unless they are insulated.
- Always put welding torches and electrode holders on an insulated surface when they are not in use.

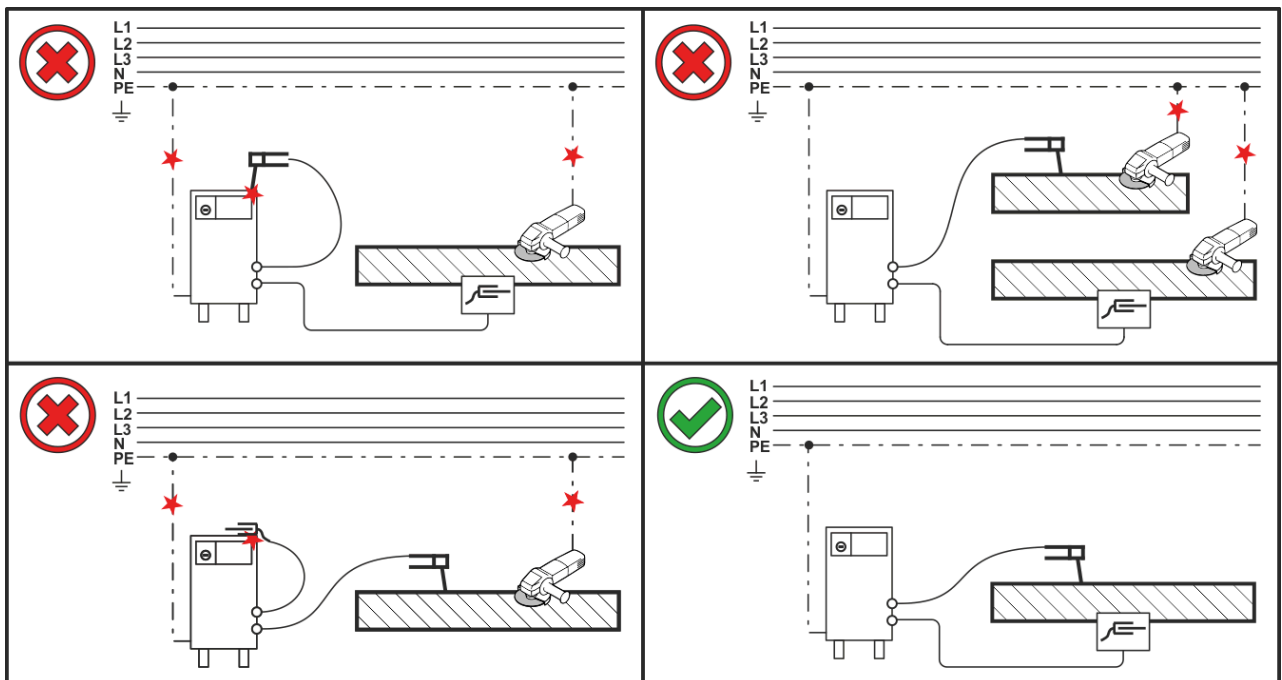


Figure 5-7

5.1.9 Mains connection

DANGER



Hazards caused by improper mains connection!

An improper mains connection can cause injuries or damage property!

- The connection (mains plug or cable), the repair or voltage adjustment of the device must be carried out by a qualified electrician in accordance with the respective local laws or national regulations!
- The mains voltage indicated on the rating plate must match the supply voltage.
- Only operate machine using a socket that has correctly fitted protective earth.
- Mains plug, socket and lead must be checked by a qualified electrician on a regular basis!
- When operating the generator, always ensure it is earthed as stipulated in the operating instructions. The network created must be suitable for operating machines according to protection class I.

5.1.9.1 Mains configuration



The machine may only be connected to a one-phase system with two conductors and an earthed neutral conductor.

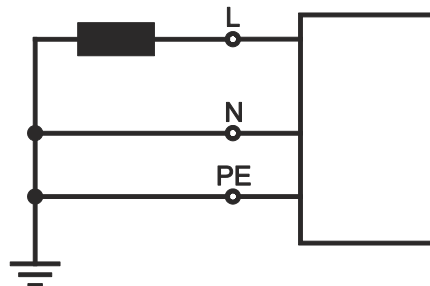


Figure 5-8

Legend

Item	Designation	Colour code
L	Outer conductor	brown
N	Neutral conductor	blue
PE	Protective conductor	green-yellow

- Insert mains plug of the switched-off machine into the appropriate socket.

5.1.10 LED status bar - display of operating status

A light guide on the front of the housing (LED status bar) shows the user the current operating status of the device.

Colour of the LED status bar	Operating status
white (change: light/dark)	Booting (switching on up to welding readiness)
blue	Ready for welding
blue (change: light/dark)	Power-saving mode Standby
green	Welding
yellow	Warning > see 7.2 chapter
red	Error > see 7.3 chapter

5.1.11 Protective flap, welding machine control

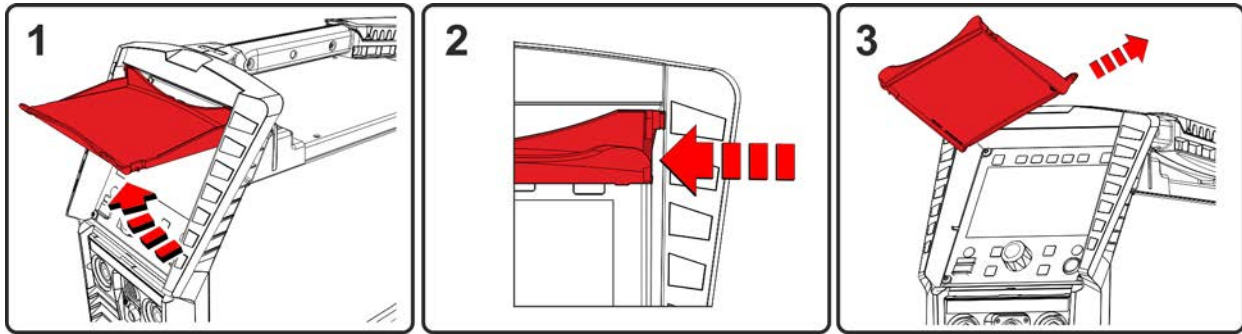


Figure 5-9

- Open the protective cap.
- Apply slight pressure on the left connecting bridge (figure) until the flap's fastening pin can be removed to the left, from top.

5.1.12 Wear part compartment

The transport handles in this machine series have a wear part compartment for stowing typical wear parts, such as gas nozzles and electrodes. The compartment closes with a transparent plastic flap.

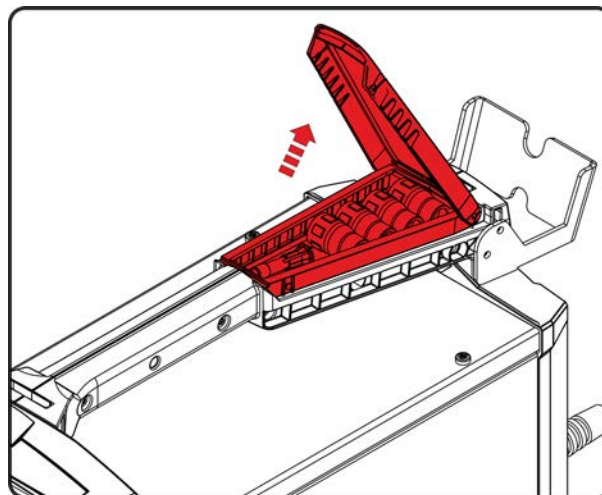


Figure 5-10

5.2 TIG welding

5.2.1 Welding torch and workpiece line connection

Prepare welding torch according to the welding task in hand (see operating instructions for the torch).

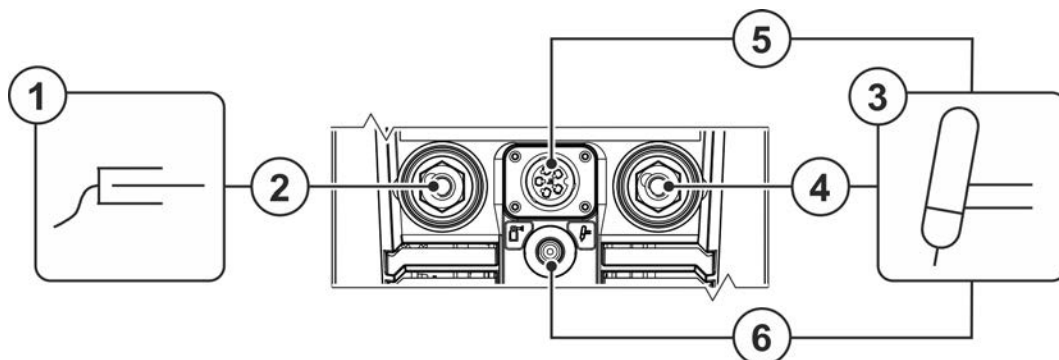


Figure 5-11

Item	Symbol	Description
1		Workpiece

Item	Symbol	Description
2		Connection socket for "+" welding current Workpiece lead connection
3		Welding torch
4		"-" Welding current connection socket TIG welding torch welding current lead connection
5		Welding torch control cable > see 5.2.1.1 chapter
6		Shielding gas hose

- Insert the cable plug on the work piece lead into the "+" welding current connection socket and lock by turning to the right.
- Insert the welding current plug on the welding torch into the welding current connection socket and lock by turning to the right.
- Remove yellow protective cap on G $\frac{1}{4}$ connecting nipple.
- Screw welding torch shielding gas connection tightly onto the G $\frac{1}{4}$ " connection nipple.
- Plug the welding torch control cable plug into the welding torch control cable connection socket and secure.
- With water cooled welding torches, the coolant lines are connected on the cooling module or reverse cooling unit.

5.2.1.1 Control lead connection

All standard 5- and 8-pin TIG welding torches can be connected to this machine and operated (except for 8-pin potentiometer torches). 5-pin EWM function torches with X-TECHNOLOGIE are also supposed.

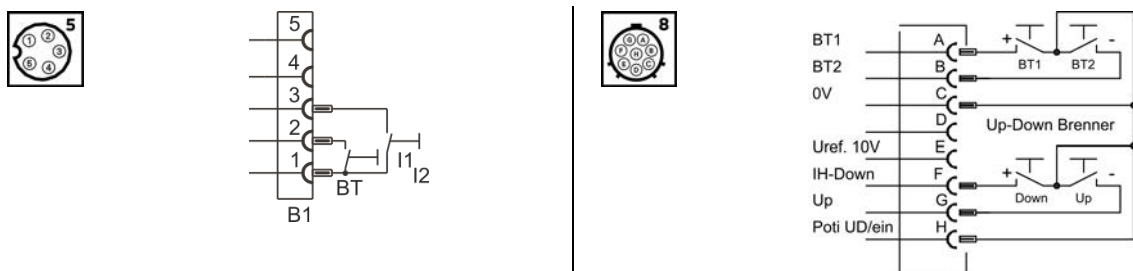


Figure 5-12

5.2.2 Shielding gas supply (shielding gas cylinder for welding machine)

WARNING



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

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

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



An unhindered shielding gas supply from the shielding gas cylinder to the welding torch is a fundamental requirement for optimum welding results. In addition, a blocked shielding gas supply may result in the welding torch being destroyed.

- **Always re-fit the yellow protective cap when not using the shielding gas connection.**
- **All shielding gas connections must be gas tight.**

5.2.2.1 Pressure regulator connection

- Place shielding gas cylinder in the corresponding cylinder bracket and use securing equipment (belt/chain) to secure it against falling over.

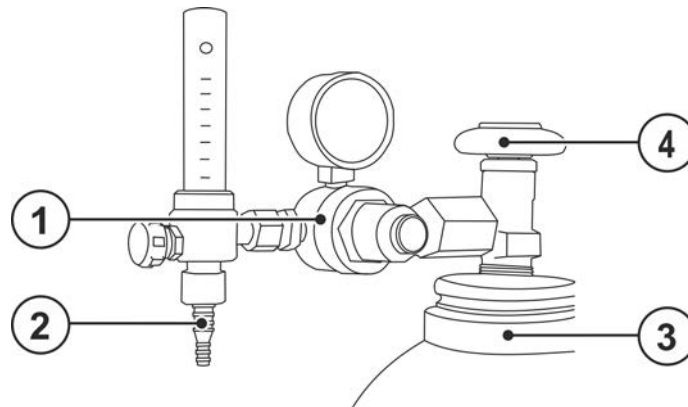


Figure 5-13

Item	Symbol	Description
1		Pressure regulator
2		Output side of the pressure regulator
3		Shielding gas cylinder
4		Cylinder valve

- Before connecting the pressure regulator to the gas cylinder, open the cylinder valve briefly to blow out any dirt.
- Tighten the pressure regulator screw connection on the gas bottle valve to be gas-tight.
- Screw the gas hose connection to the outlet side of the pressure regulator gas-tight.

5.2.2.2 Shielding gas hose connection

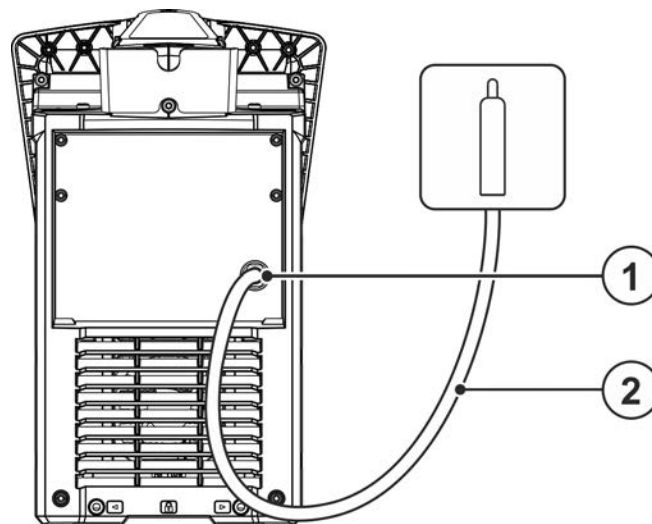


Figure 5-14

Item	Symbol	Description
1		Connection thread - G $\frac{1}{4}$ " Shielding gas connection (inlet)
2		Shielding gas hose

- Screw the gas hose connection to the shielding gas connection (inlet) on the machine gas-tight.

5.3 MMA welding

5.3.1 Connecting the electrode holder and workpiece lead

⚠ CAUTION



Risk of crushing and burns!

When changing stick electrodes there is a risk of crushing and burns!

- Wear appropriate and dry protective gloves.
- Use an insulated pair of tongs to remove the used stick electrode or to move welded workpieces.

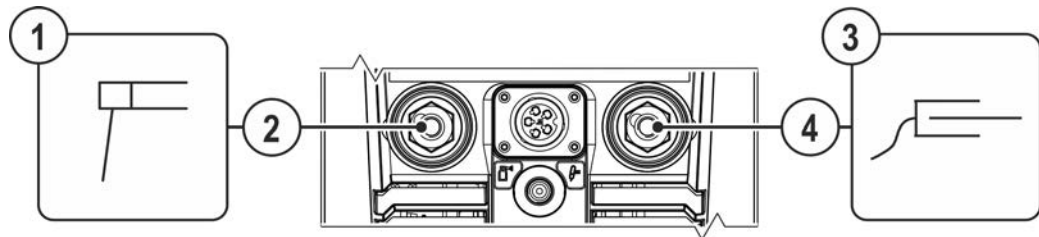


Figure 5-15

Item	Symbol	Description
1		Electrode holder
2		Welding current lead
3		Workpiece
4		Workpiece lead

- Insert the electrode holder plug and workpiece lead into the welding current socket depending on application and lock in place by turning to the right. The corresponding polarity will be based on the information of the electrode manufacturer on the electrode packaging.

5.4 Remote control

The remote controls are operated on the 19-pole remote control connection socket (analogue).

5.4.1 RT1 19POL



Functions

- Infinitely adjustable welding current (0% to 100%) depending on the preselected main current on the welding machine.

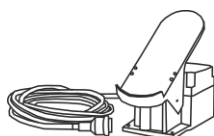
5.4.2 RTG1 19POL



Functions

- Infinite setting of the welding current (0% to 100%) depending on the main current preselected at the welding machine

5.4.3 RTF1 19POL

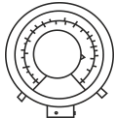


Functions

- Infinitely adjustable welding current (0% to 100%) depending on the preselected main current on the welding machine.
- Start/stop welding operation (TIG)

activArc welding is not possible in combination with the foot-operated remote control.

5.4.4 RT PWS1 19POL



Functions

- Infinitely adjustable welding current (0% to 100%) depending on the preselected main current at the welding machine
- Pole reversing switch, suitable for machines with PWS function

5.5 Interfaces for automation



Damage to the machine due to improper connection!

Unsuitable control leads or incorrect connection of input and output signals can cause damage to the machine.

- **Only use shielded control leads!**
- **If the machine is to be operated with control voltages connection via suitable isolation amplifiers is required!**
- **To control the main or secondary current via control voltages, the relevant inputs must be enabled (see specification for activation of control voltage).**

5.5.1 Remote control connection socket, 19-pole

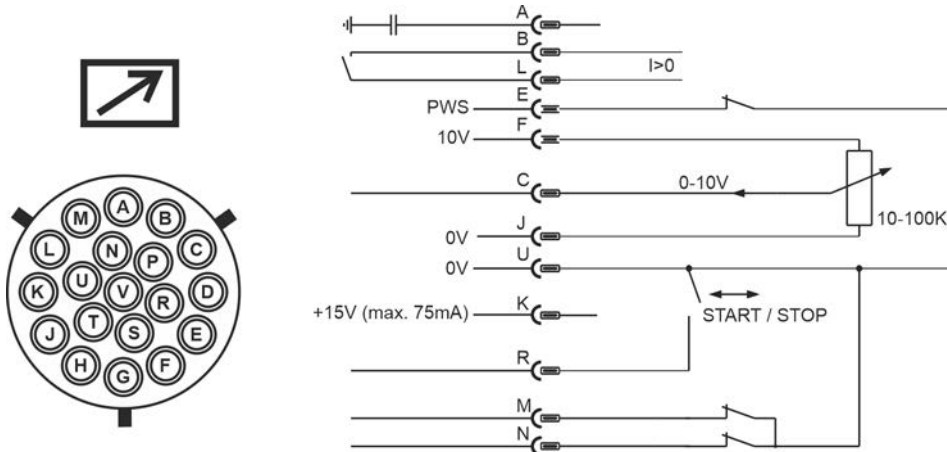


Figure 5-16

Pin	Signal form	Designation
A	Output	Connection for cable shielding (PE)
B/L	Output	Current flow signal I>0, potential-free (max. +- 15 V / 100 mA)
E	Input	Switching of welding current potential (PWS) only for AC machines (reference potential 0 V)
F	Output	Reference voltage for potentiometer 10 V (max 10 mA)
C	Input	Reference voltage specification for main current 0-10 V (0V = I _{min} / 10 V = I _{max})
J/U	Output	Reference potential 0 V
K	Output	Power supply +15 V, max 75 mA
R	Input	Welding current start/stop
M/N	Input	Control voltage specification activation To activate the external control voltage specification for the main and secondary current, the signals M and N must be set to reference potential 0 V.

5.6 PC interface

Welding parameter software

Set all welding parameters on the PC and simply transfer to one or more welding machines (accessory, set consisting of software, interface, connection leads)

- Data exchange between power source and PC
- Welding task administration (JOBS)
- Online-data exchange
- Default settings for welding data monitoring
- Update function for new welding parameters

5.6.1 Connection



Equipment damage or faults may occur if the PC is connected incorrectly!

Not using the SECINT X10USB interface results in equipment damage or faults in signal transmission. The PC may be destroyed due to high frequency ignition pulses.

- **Interface SECINT X10USB must be connected between the PC and the welding machine!**
- **The connection must only be made using the cables supplied (do not use any additional extension cables)!**

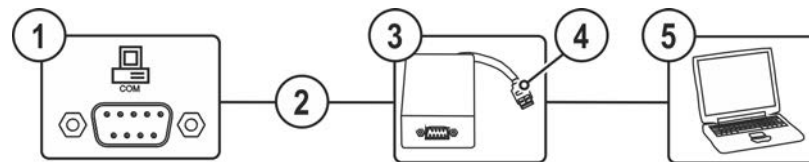



Figure 5-17

Item	Symbol	Description
1		Connection socket (9-pole) - D-Sub PC interface
2		Connection cable, 9-pole, serial
3		SECINT X10 USB
4		USB connection Connecting a Windows PC to SECINT X10 USB
5		Windows PC

5.7 Network connection

This accessory component is only available as a “factory-fit option”.

The network connection allows the integration of the product into an existing network and exchanging data using the quality-management software Xnet. Some features of the software:

- Real-time display of the welding parameters
- Recording / documentation
- Monitoring of welding parameters
- Maintenance
- Calculations
- WPS management
- Welder management
- xButton management
- Component management

The functionality of the software is in constant development (see the documentation for Xnet).

As standard, welding machines are supplied with a fixed IP address.

Depending on the machine version, the IP address is displayed in the device control or shown on a sticker either below the rating plate or near the control.

The gateway and the server / computer must be in the same network or IP address range to allow the configuration of the gateway.

6 Maintenance, care and disposal

6.1 General

WARNING



Improper maintenance, testing and repairs!

Maintenance, testing and repair of the machine may only be carried out by skilled and qualified personnel (authorised service personnel). A competent person is someone who, based on training, knowledge and experience, can recognize the hazards and possible consequential damage that may occur when testing power sources and can take the necessary safety precautions.

- Follow the maintenance instructions > see 6.3 chapter.
- If any of the test requirements below are not met, the unit must not be put back into operation until it has been repaired and tested again.

As a rule, contact your specialised dealer, i.e. the supplier of the machine, with respect to all servicing matters. Any return deliveries in the case of warranty claims can be made via your specialised dealer only.

Only use original spare parts to replace any part. When ordering a spare part, always specify the type, serial number and article number of the machine, and the type designation and article 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 Explanation of icons

Personnel

	Welder / operator
---	-------------------

	Qualified person (authorised service personnel)
---	---

Tests

	Visual inspection
---	-------------------

	Functional test
---	-----------------


Period, interval


	One-shift operation
---	---------------------

	Multi-shift operation
---	-----------------------


	Every 8 hours
---	---------------

	Daily
---	-------

	Weekly
--	--------

	Monthly
---	---------

	Every 6 months
---	----------------

	Annually
---	----------

6.3 Maintenance schedule

Inspector	Type of inspection	8h	24h	Maintenance step	Repairer
				<p>! Only personnel designated as inspectors or repairers due to their training are allowed to carry out the relevant work step! Inapplicable checkpoints are omitted.</p> <ul style="list-style-type: none"> • Check and clean the welding torch. Deposits in the welding torch may cause short circuits, impair the welding result and lead to welding torch damage! • Connections of the welding current leads (check for tight and locked seating). • Is shielding gas cylinder with gas cylinder securing elements (chain/belt) secured? • Strain relief: Are hose packages secured with strain relief? 	
				<ul style="list-style-type: none"> • Checking all supply lines and their connections (pipes, hoses, hose packages) for damage or leaks. • Checking the welding system for damage to the housing. • Transport elements (strap, lifting eyes, handle, wheels, parking brake) corresponding safety elements (if necessary fuse caps) are present and flawless? 	
				<ul style="list-style-type: none"> • Cleaning connections of coolant pipes (quick connect coupling, connections) from impurities and install protective caps when not in use. • Gas test that the solenoid valve opens and closes properly. • Checking operating, signalling and indicator lights, protective devices and actuators. 	
				<ul style="list-style-type: none"> • Cleaning dirt filter (if applicable) > see 6.3.2 chapter 	
				<ul style="list-style-type: none"> • Clean external surfaces with a damp cloth (do not use aggressive cleaning agents). 	
				<ul style="list-style-type: none"> • Cleaning the power source (inverter) > see 6.3.3 chapter 	
				<ul style="list-style-type: none"> • Cleaning heat exchanger (torch cooling) > see 6.3.4 chapter 	
				<ul style="list-style-type: none"> • Coolant change (torch cooling) > see 6.3.1 chapter 	
				<ul style="list-style-type: none"> • Periodic inspection and testing > see 6.3.5 chapter 	
				<ul style="list-style-type: none"> • The coolant must be checked using the appropriate frost protection tester TYP 1 (KF) or FSP (blueCool) for sufficient frost protection and replaced if necessary (accessories). 	

6.3.1 Coolant error

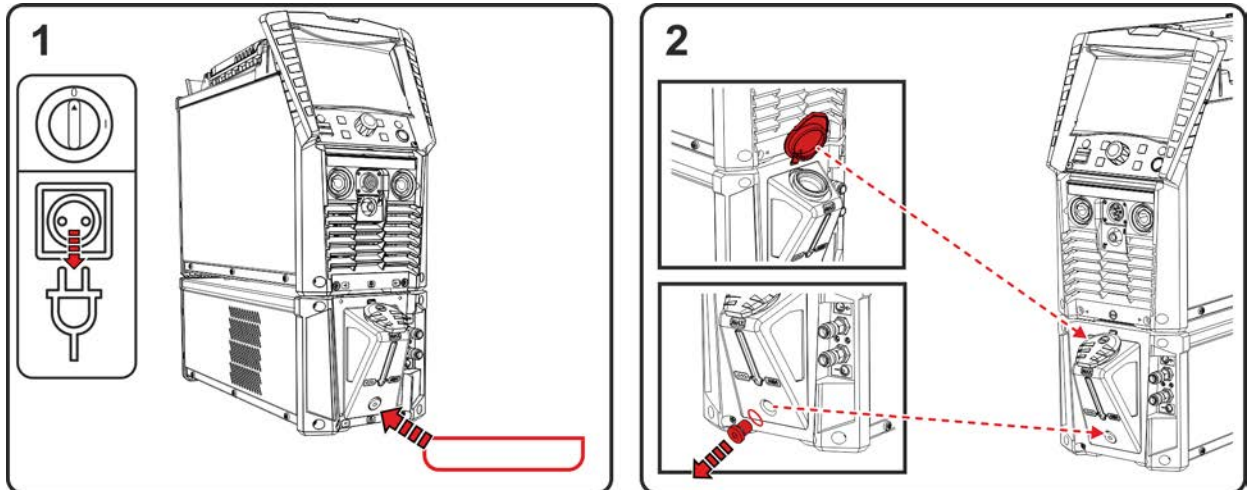


Figure 6-1

- Switch off the machine and disconnect the mains plug. Position a suitable collecting container under the drain plug of the coolant tank.
- Unscrew the drain plug of the coolant tank (remove the tank cap to ventilate).

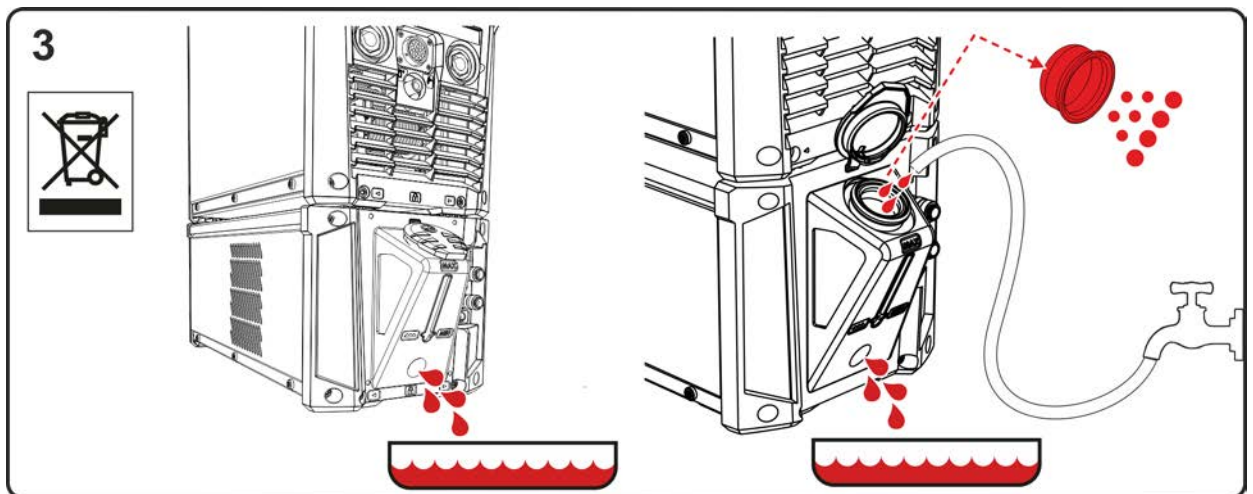


Figure 6-2

- Wait until the coolant has run out of the tank into the collection container.
- Remove the filter screen from the filler neck and clean.
- Then rinse the dirt out of the tank with water.

Follow official regulations on disposal!

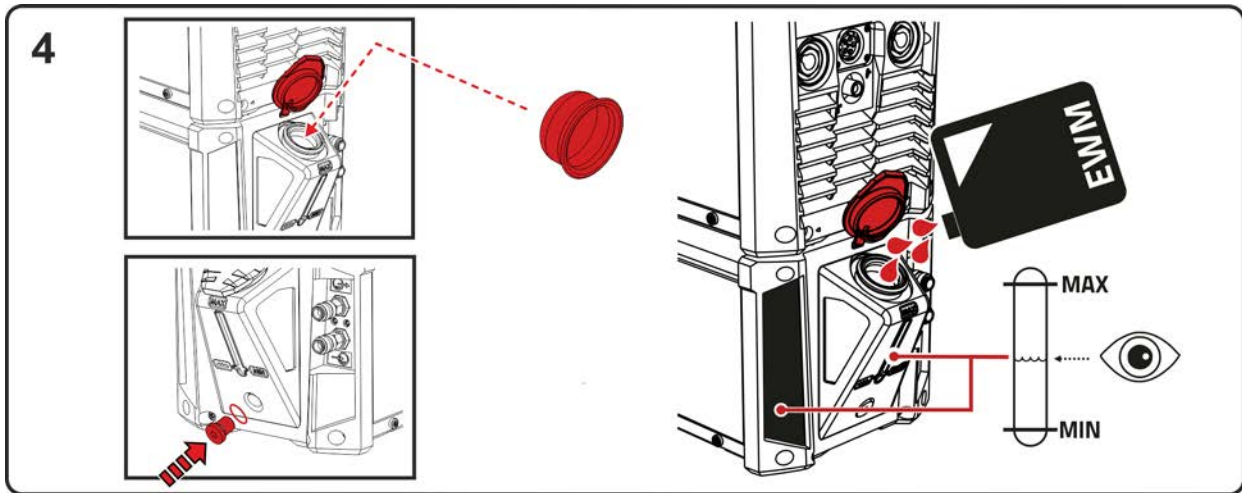


Figure 6-3

- Insert the cleaned filter screen into the filler neck and screw the drain plug with seal back into the tank.
- Fill the tank with original EWM coolant up to the maximum level. After filling, refit the tank cap and vent the coolant circuit > see 7.4 chapter.

6.3.2 Dirt filter

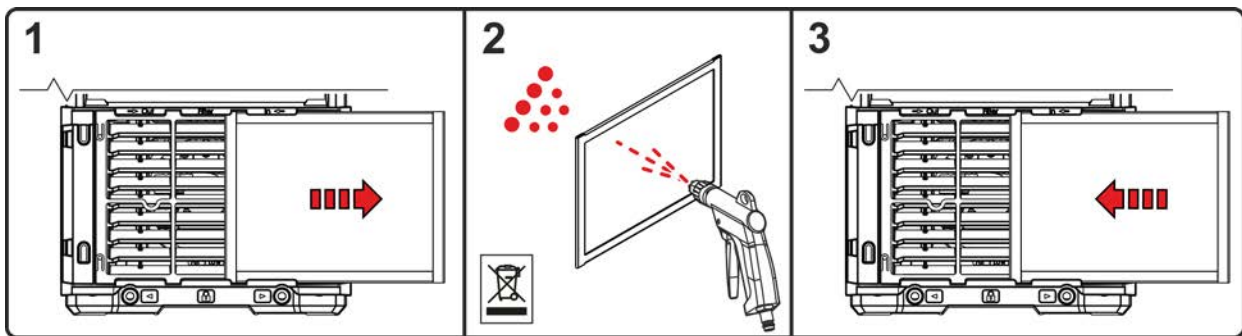


Figure 6-4

- Remove the dirt filter and blow out with compressed air free of oil and water.
- After cleaning, reassemble in reverse order.

Follow the official regulations for the disposal of dirt residues!

6.3.3 Power source (inverter)

⚠ WARNING



Risk of injury due to insufficient training!

Appropriate training is required for the following maintenance steps to prevent injuries.

- Only authorised service personnel may carry out this maintenance step.
- Note the warnings and maintenance instructions at the beginning of this chapter!

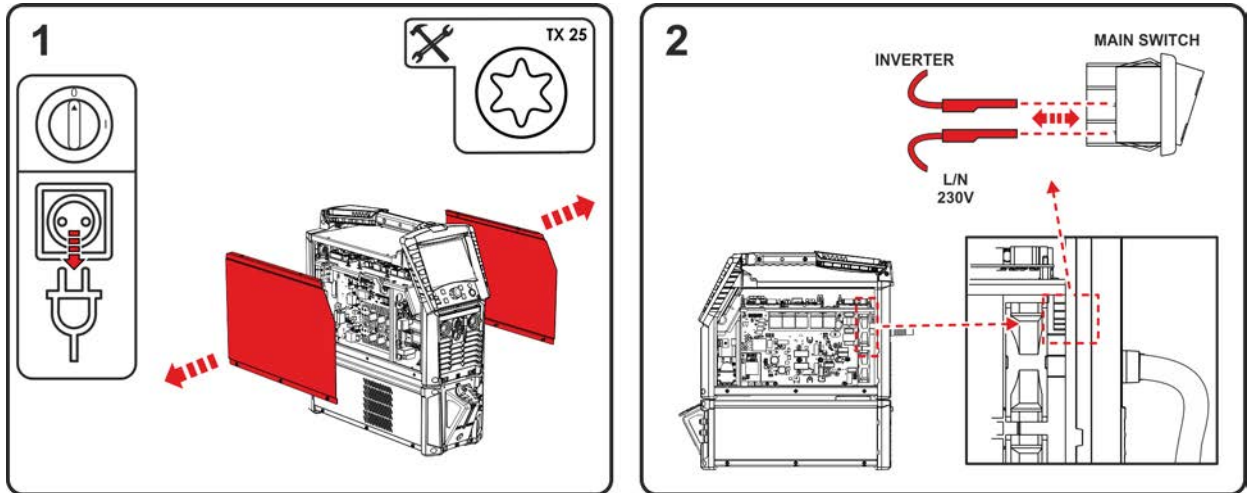


Figure 6-5

- Switch off the machine and disconnect the mains plug. Remove the screws of the side panels. Remove side panels (fold out sideways at the bottom and pull out downwards).
- Disconnect all four mains leads (6.3 mm flat pin terminals) from the main switch.

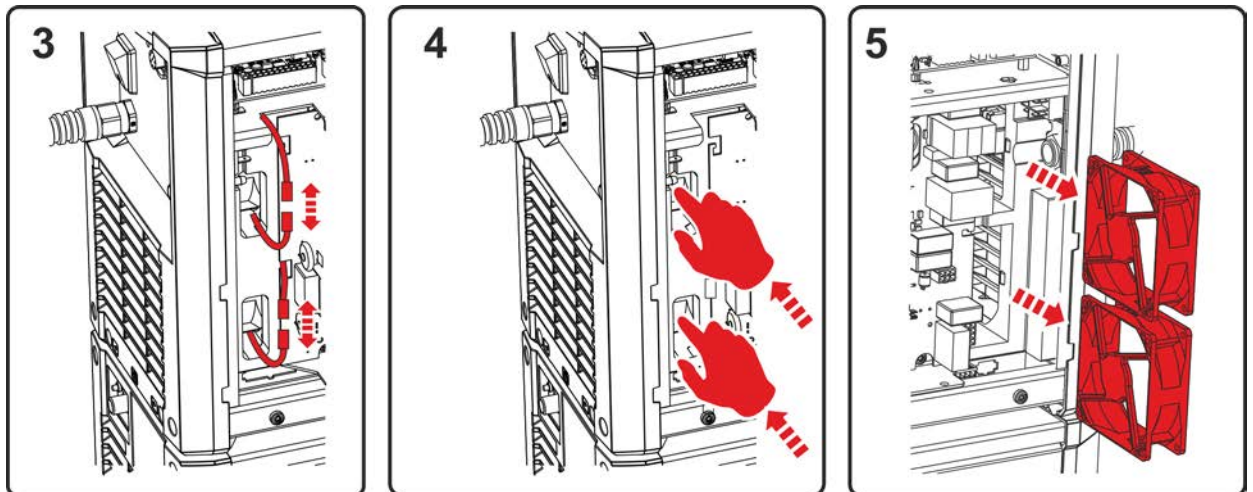


Figure 6-6

- Disconnect the plugs of the supply lines to the machine fan.
- Press the fan with your finger through the corresponding openings towards the opposite side.
- Pull out the machine fan.

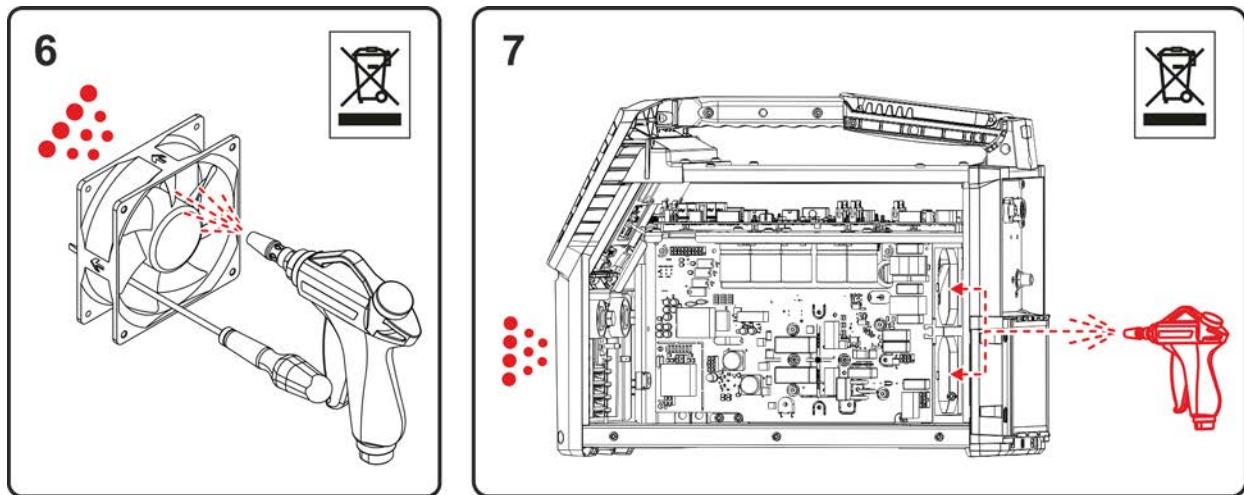


Figure 6-7

- Clean the machine fan with compressed air free of oil and water.

Block the fan wheel of the machine fan mechanically (the machine fan may over-rotate due to the compressed air and be damaged as a result)!

- Blow out the inverter through both fan openings from the back to the front with compressed air free of oil and water. Do not blow directly towards external electronic components.

Follow the official regulations for the disposal of dirt residues!

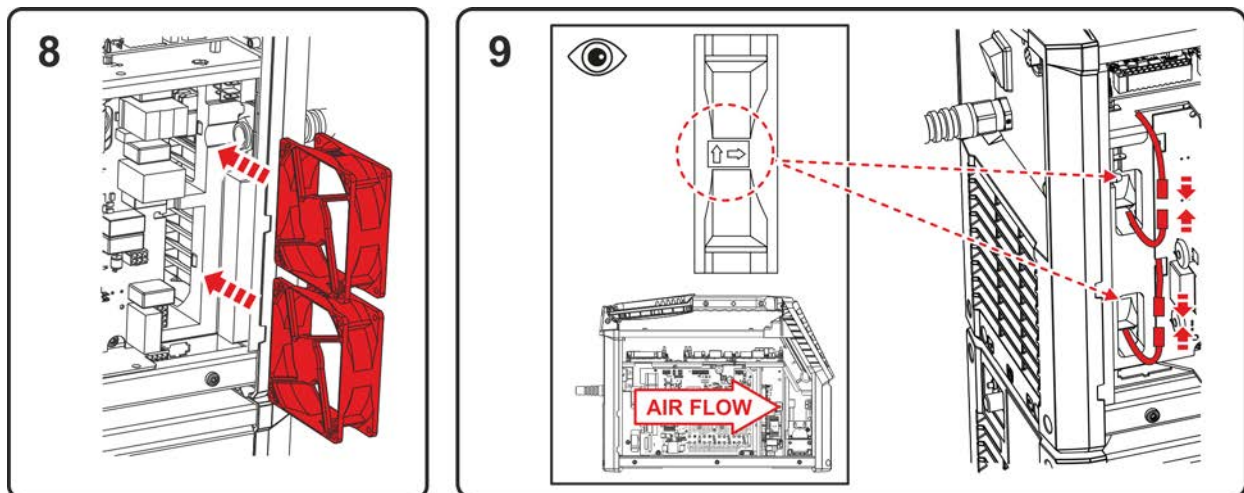


Figure 6-8

- Push the machine fan back in (note the installation direction).
- Reconnect the plugs of the supply lines to the machine fan.

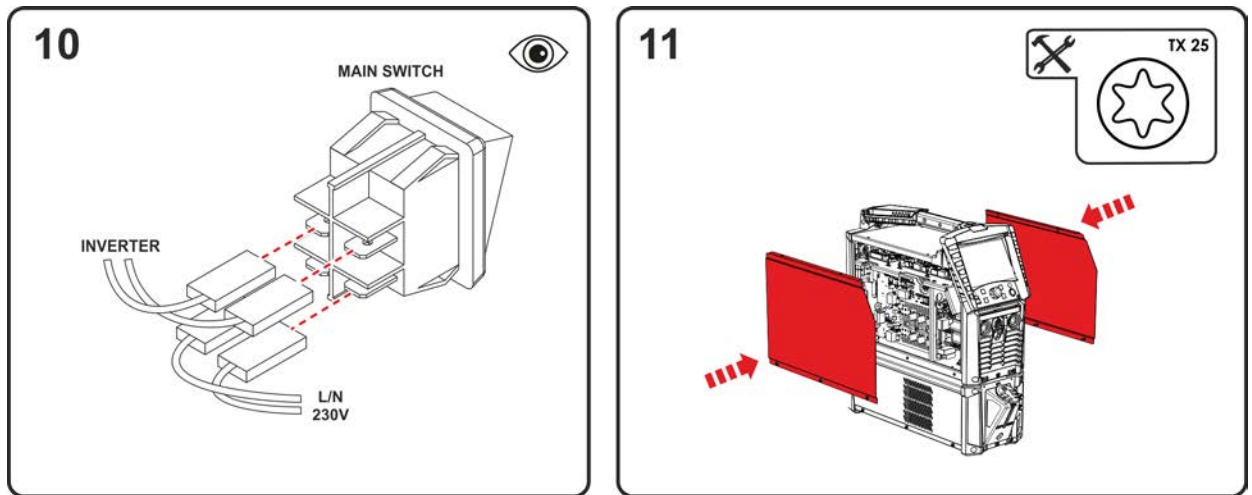


Figure 6-9

- Reconnect all four power lines to the main switch (note inputs / outputs).
- Reinstall the side panels and secure with the screws.
- Check the machine according to applicable regulations.

6.3.4 Heat exchanger (torch cooling)

WARNING



Risk of injury due to insufficient training!

Appropriate training is required for the following maintenance steps to prevent injuries.

- Only authorised service personnel may carry out this maintenance step.
- Note the warnings and maintenance instructions at the beginning of this chapter!

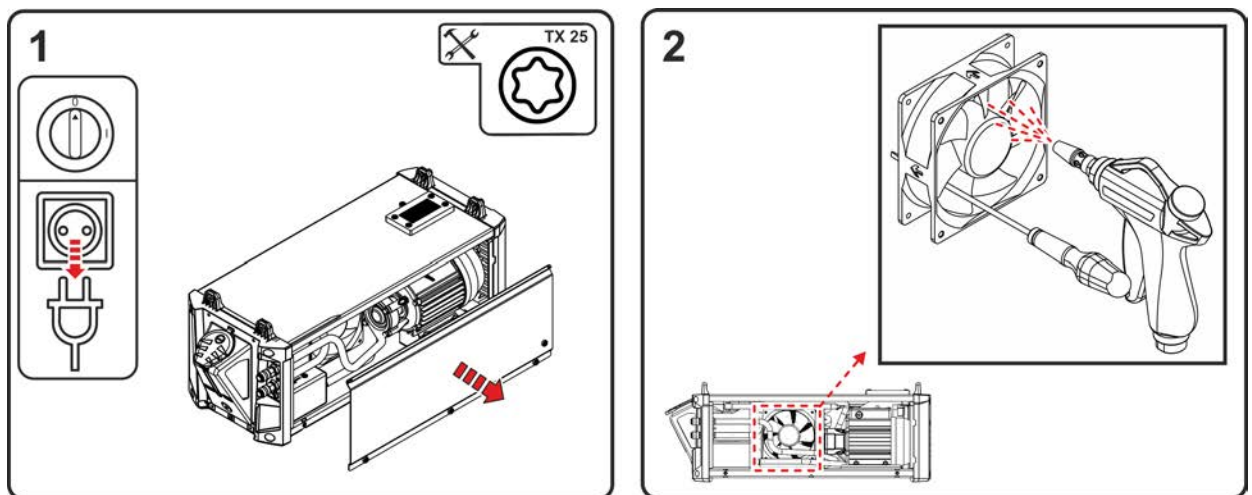


Figure 6-10

- Switch off the machine and disconnect the mains plug. Remove the screws of the side panels. Remove side panels (fold out sideways at the bottom and pull out downwards).
- Clean the machine fan with compressed air free of oil and water.

Block the fan wheel of the machine fan mechanically (the machine fan may over-rotate due to the compressed air and be damaged as a result)!

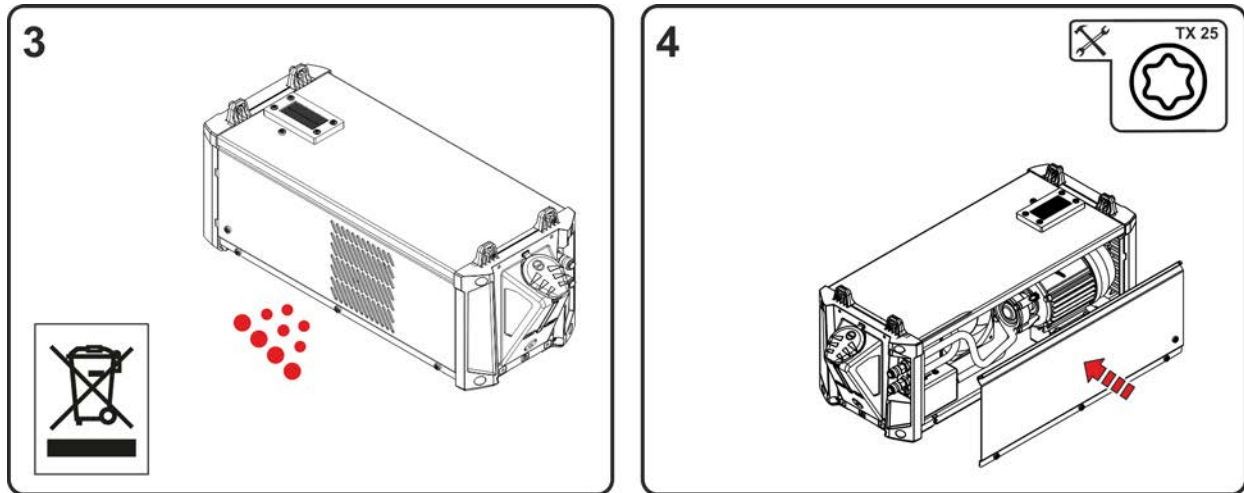


Figure 6-11

Follow official regulations on disposal!

- After cleaning, remove any mechanical blockages from the fans, close the machine in reverse order and check according to applicable regulations.

6.3.5 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 (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 electrical 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.

The deletion of personal data is the responsibility of the end user.

Lamps, batteries or accumulators must be removed and disposed of separately before disposing of the device. The type of battery or accumulator and its composition is marked on the top (type CR2032 or SR44). The following EWM products may contain batteries or accumulators:

- Welding helmets
Batteries or accumulators are easy to remove from the LED cassette.
- Device controls
Batteries or accumulators are located on the back of these in corresponding sockets on the circuit board and are easy to remove. The controls can be removed using standard tools.

Information on returning used equipment or collections can be obtained from the respective municipal administration office. Devices can also be returned to EWM sales partners across Europe.

Further information on the topic of the disposal of electrical and electronic equipment can be found on our website at: <https://www.ewm-group.com/de/nachhaltigkeit.html>.

7 Rectifying faults

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

7.1 Checklist for rectifying faults

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

Legend	Symbol	Description
	↗	Fault/Cause
	✘	Remedy

Mains fuse triggers

- ↗ Mains fuse triggers - unsuitable mains fuse
- ✘ Set up recommended mains fuse > see 8 chapter.

Functional errors

- ↗ Insufficient coolant flow
 - ✘ Check coolant level and refill if necessary
 - ✘ Eliminate kinks in conduit system (hose packages)
 - ✘ Reset automatic cutout of the coolant pump by activating
- ↗ Air in the coolant circuit
 - ✘ Vent coolant circuit > see 7.4 chapter
- ↗ Several parameters cannot be set (machines with access block)
 - ✘ Entry level is blocked, disable access lock
- ↗ All machine control signal lights are illuminated after switching on
- ↗ No machine control signal light is illuminated after switching on
- ↗ No welding power
 - ✘ Phase failure > check mains connection (fuses)
- ↗ Connection problems
 - ✘ Make control lead connections and check that they are fitted correctly.

Welding torch overheated

- ↗ Loose welding current connections
 - ✘ Tighten power connections on the torch and/or on the workpiece
- ↗ Overload
 - ✘ Check and correct welding current setting
 - ✘ Use a more powerful welding torch

No arc ignition

- ↗ Incorrect ignition type setting.
 - ✘ Ignition type: Select "HF start". Depending on the machine, the setting is defined by the change-over switch for ignition types or the I_{HF} parameter in one of the machine menus (see the "Control operating instructions", if applicable).

Bad arc ignition

- ↗ Material inclusions in the tungsten electrode due to contact with filler material or workpiece
 - ✘ Regrind or replace the tungsten electrode
- ↗ Bad current transfer on ignition
 - ✘ Check the setting on the "Tungsten electrode diameter/Ignition optimisation" rotary dial and increase if necessary (higher ignition energy).

Unstable arc


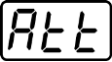
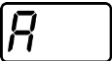
- ✓ Material inclusions in the tungsten electrode due to contact with filler material or workpiece
 - ✘ Regrind or replace the tungsten electrode
- ✓ Incompatible parameter settings
 - ✘ Check settings and correct if necessary

Pore formation

- ✓ Inadequate or missing gas shielding
 - ✘ Check shielding gas setting and replace shielding gas cylinder if necessary
 - ✘ Shield welding site with protective screens (draughts affect the welding result)
 - ✘ Use gas lens for aluminium applications and high-alloy steels
- ✓ Unsuitable or worn welding torch equipment
 - ✘ Check size of gas nozzle and replace if necessary
- ✓ Condensation in the gas tube
 - ✘ Purge hose package with gas or replace

7.2 Warnings

Depending on the display options of the machine display, a warning message is displayed as follows:

Display type - machine control	Display
Graphic display	
two 7-segment displays	
one 7-segment display	

The cause of the warning is indicated by a corresponding warning number (see table).

- In case of multiple warnings, these are displayed in sequence.
- Document machine warning and inform service personnel, if required.

Warning	Potential cause / remedy
1 Excess temperature	A shutdown is imminent due to excess temperature.
2 Half-wave failures	Check process parameters.
3 Torch cooling warning	Check coolant level and top up if necessary.
4 Shielding gas	Check shielding gas supply.
5 Coolant flow	Check min. flow rate. ^[2]
6 Wire reserve	Only a small amount of wire is left on the spool.
7 CAN bus failure	Wire feeder not connected; automatic circuit-breaker of wire feed motor (reset the tripped automatic circuit-breaker by actuating).
8 Welding circuit	The inductance of the welding circuit is too high for the selected welding task.
9 WF configuration	Check WF configuration.
10 Partial inverter	One of several partial inverters is not supplying welding current.
11 Excess temperature of the coolant ^[1]	Check temperature and switching thresholds. ^[2]
12 Welding monitoring	The actual value of a welding parameter is outside the specified tolerance field.

Warning	Potential cause / remedy
13 Contact error	The resistance in the welding circuit is too high. Check earth connection.
14 Alignment error	Switch the machine off and on. If the error persists, notify Service.
15 Mains fuse	The power limit of the mains fuse is reached and the welding power is reduced. Check the fuse setting.
16 Shielding gas warning	Check the gas supply.
17 Plasma gas warning	Check the gas supply.
18 Forming gas warning	Check the gas supply.
19 Gas warning 4	reserved
20 Coolant temperature warning	Check coolant level and top up if necessary.
21 Excess temperature 2	reserved
22 Excess temperature 3	reserved
23 Excess temperature 4	reserved
24 Coolant flow warning	Check coolant supply. Check coolant level and top up if necessary. Check flow and switching thresholds. ^[2]
25 Flow 2	reserved
26 Flow 3	reserved
27 Flow 4	reserved
28 Wire stock warning	Check wire feeding.
29 Low wire 2	reserved
30 Low wire 3	reserved
31 Low wire 4	reserved
32 Tacho error	Fault of wire feeder - permanent overload of the wire drive.
33 Excess current on the wire feed motor	Excess current detected on wire feed motor.
34 JOB unknown	JOB selection was not carried out because the JOB number is unknown.
35 Excess current on the wire feed motor slave	Excess current detected on wire feed motor slave (push/push system or intermediate drive).
36 Slave tacho error	Fault of wire feeder - permanent overload of the wire drive (push/push system or intermediate drive).
37 FAST bus failure	Wire feeder not connected (reset by actuating the automatic circuit-breaker of the wire feed motor).
38 Incomplete component information	Check the XNET component management.
39 Mains half-wave failure	Check supply voltage.
40 Weak power grid	Check supply voltage.
41 Cooling unit not recognised	Check the cooling unit connection.
47 Battery (remote control, type BT)	Battery level is low (replace battery)


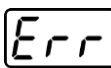
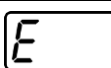
^[1] only for the XQ machine series

^[2] See technical data for values and other switching thresholds > see 8 chapter.

7.3 Error messages (power source)

The possible error numbers displayed depend on the machine series and version!

Depending on the options of the machine display, a fault is shown as follows:

Display type - machine control	Display
Graphic display	
two 7-segment displays	
one 7-segment display	

The possible cause of the fault is signalled by a corresponding fault number (see table). In the case of an error, the power unit shuts down.

- Document machine errors and inform service staff as necessary.
- If multiple errors occur, these are displayed in succession.

Reset error (category legend)

^A The error message disappears when the error is eliminated.

^B The error message can be reset by pressing a push-button ◀.

All other error messages can only be reset by switching the machine off and on again.

Error 3: Tacho error

Category A, B

- ✓ Fault in the wire feeder.
 - ✘ Check the electrical connections (connectors, lines).
- ✓ Permanent overload of the wire drive.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for ease of movement.

Error 4: Excess temperature

Category A

- ✓ The power source is overheating.
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.

Error 5: Mains overvoltage

- ✓ Mains voltage is too high.
 - ✘ Check the mains voltages and compare them with the connection voltages of the power source.

Error 6: Mains undervoltage

- ✓ Mains voltage is too low.
 - ✘ Check the mains voltages and compare them with the connection voltages of the power source.

Error 7: Low coolant level

Category B

- ✓ Low flow rate.
 - ✗ Fill with coolant.
 - ✗ Check coolant flow - remove kinks in the hose package.
 - ✗ Adjust the flow threshold ^[1].
 - ✗ Clean the cooler.
- ✓ Pump does not turn.
 - ✗ Turn the pump shaft.
- ✓ Air in the coolant circuit.
 - ✗ Vent the coolant circuit.
- ✓ The hose package is not filled with coolant.
 - ✗ Switch the machine off and on > pump running > filling process.
- ✓ Operation with a gas-cooled welding torch.
 - ✗ Deactivate the torch cooling.
 - ✗ Connect the coolant feed and return with a hose bridge.

Error 8: Shielding gas error

Category A, B

- ✓ No gas.
 - ✗ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✗ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 9: Overvoltage on secondary

- ✓ Overvoltage at the output: Inverter error.
 - ✗ Request service.

Error 10: Earth fault (PE error)

- ✓ Connection between welding wire and machine casing.
 - ✗ Remove the electrical connection.
- ✓ Connection between welding circuit and machine casing.
 - ✗ Check the connection and routing of the earth wire / welding torch.

Error 11: Fast shutdown

Category A, B

- ✓ Remove the logical signal "Robot ready" during the process.
 - ✗ Eliminate errors on the higher-level control.

Error 16: Pilot-arc power source - collective error

Category A

- ✓ The external emergency stop circuit has been interrupted.
 - ✘ Check the emergency stop circuit and eliminate the cause of the error.
- ✓ The emergency stop circuit of the power source has been activated (internally configurable).
 - ✘ Deactivate the emergency stop circuit.
- ✓ The power source is overheating.
 - ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✘ Check the air inlet and outlet.
- ✓ Short circuit on welding torch.
 - ✘ Check the welding torch.
 - ✘ Request service.

Error 17: Cold wire error

Category B

- ✓ Fault in the wire feeder.
 - ✘ Check the electrical connections (connectors, lines).
- ✓ Permanent overload of the wire drive.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for smooth movement.

Error 18: Plasma gas error

Category B

- ✓ No gas.
 - ✘ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 19: Shielding gas error

Category B

- ✓ No gas.
 - ✘ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✘ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 20: Low coolant level

Category B

- ✓ Low flow rate.
 - ✗ Fill with coolant.
 - ✗ Check coolant flow - remove kinks in the hose package.
 - ✗ Adjust the flow threshold ^[1].
 - ✗ Clean the cooler.
- ✓ Pump does not turn.
 - ✗ Turn the pump shaft.
- ✓ Air in the coolant circuit.
 - ✗ Vent the coolant circuit.
- ✓ The hose package is not filled with coolant.
 - ✗ Switch the machine off and on > pump running > filling process.
- ✓ Operation with a gas-cooled welding torch.
 - ✗ Deactivate the torch cooling.
 - ✗ Connect the coolant feed and return with a hose bridge.

Error 22: Excess coolant temperature

Category B

- ✓ Coolant is overheating ^[1].
 - ✗ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✗ Check, clean or replace the fan.
- ✓ Air inlet or outlet is blocked.
 - ✗ Check the air inlet and outlet.

Error 23: Excess temperature of the HF choke

Category A

- ✓ External XF ignition unit is overheating.
 - ✗ Allow the switched-on machine to cool.

Error 24: Pilot-arc ignition error

Category B

- ✓ The pilot arc cannot ignite.
 - ✗ Check the welding torch equipment.

Error 25: Forming gas error

Category B

- ✓ No gas.
 - ✗ Check the gas supply.
- ✓ The pre-pressure is too low.
 - ✗ Remove kinks in the hose package (nominal value: 4-6 bar pre-pressure).

Error 26: Excess temperature of the pilot arc module

Category A

- ✓ The power source is overheating.
 - ✗ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
 - ✗ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
 - ✗ Check the air inlet and outlet.

Error 32: Error I>0

- ✓ Current recording is faulty.
- ✘ Request service.

Error 33: Error UIST

- ✓ Voltage recording is faulty.
- ✘ Eliminate the short circuit in the welding circuit.
- ✘ Remove the external sensor voltage.
- ✘ Request service.

Error 34: Electronics error

- ✓ A/D channel error
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 35: Electronics error

- ✓ Slope error
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 36: [S] errors

- ✓ [S] conditions violated.
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 37: Electronics error

- ✓ The power source is overheating.
- ✘ Allow the switched-on machine to cool.
- ✓ Fan is blocked, dirty or defective.
- ✘ Check the fan and clean or replace.
- ✓ Air inlet or outlet is blocked.
- ✘ Check the air inlet and outlet.

Error 38: Error IIST

- ✓ Short circuit in the welding circuit before welding.
- ✘ Eliminate the short circuit in the welding circuit.
- ✘ Request service.

Error 39: Electronics error

- ✓ Overvoltage on secondary
- ✘ Switch the machine off and on.
- ✘ Request service.

Error 40: Electronics error

- ✓ Error I>0
- ✘ Request service.

Error 47: Error in the data interface with radio transmission

Category B

- ✓ Connection error between welding machine and peripheral unit.
- ✘ Note the documentation for the data interface with radio transmission.

Error 48: Ignition error

Category B

- ✓ No ignition at process start (automated machines).
 - ✘ Check the wire feeding
 - ✘ Check the load cable connections in the welding circuit.
 - ✘ Clean corroded surfaces on the workpiece before welding if necessary.

Error 49: Arc interruption

Category B

- ✓ An arc interruption occurred during welding with an automated system.
 - ✘ Check the wire feeding.
 - ✘ Adjust the welding speed.

Error 50: Program number

Category B

- ✓ Internal error.
 - ✘ Request service.

Error 51: Emergency stop

Category A

- ✓ The external emergency stop circuit has been interrupted.
 - ✘ Check the emergency stop circuit and eliminate the cause of the error.
- ✓ The emergency stop circuit of the power source has been activated (internally configurable).
 - ✘ Deactivate the emergency stop circuit.

Error 52: No DV machine

- ✓ After switching on the automated system, no wire feeder (DV) was detected.
 - ✘ Check or connect the control cables of the wire feeders.
 - ✘ Check the identification number of the automated wire feeder (for 1DV: number 1, for 2DV: each a wire feeder with number 1 and a wire feeder with number 2).

Error 53: No wire feeder 2

Category B

- ✓ Wire feeder 2 was not detected.
 - ✘ Check the control cable connections.

Error 54: VRD errors

- ✓ Error in the open-circuit voltage reduction.
 - ✘ If necessary, disconnect the external machine from the welding circuit.
 - ✘ Request service.

Error 55: Excess current of the wire feeder

Category B

- ✓ Excess current detected in the wire feed mechanism.
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for ease of movement.

Error 56: Mains phase failure

- ✓ One phase of the mains voltage has failed.
 - ✘ Check mains connection, mains plug and mains fuses.

Error 57: Slave tachometer error

Category B

- ✓ Fault in the wire feeder (slave drive).
 - ✘ Check the connections (connectors, lines).
- ✓ Permanent overload of the wire drive (slave drive).
 - ✘ Do not lay the liner in tight radii.
 - ✘ Check the liner for smooth movement.

Error 58: Short circuit

Category B

- ✓ Short circuit in the welding circuit.
 - ✘ Eliminate the short circuit in the welding circuit.
 - ✘ Place the welding torch on an insulated surface.

Error 59: Incompatible machine

- ✓ A machine connected to the system is not compatible.
 - ✘ Disconnect the incompatible machine from the system.

Error 60: Incompatible software

- ✓ The software of a machine is not compatible.
 - ✘ Disconnect the incompatible machine from the system
 - ✘ Request service.

Error 61: Welding monitoring

- ✓ The actual value of a welding parameter is outside the specified tolerance range.
 - ✘ Maintain the tolerance ranges.
 - ✘ Adjust the welding parameters.

Error 62: System component

- ✓ The system component was not found.
 - ✘ Request service.

Error 63: Mains voltage error

- ✓ Operating and mains voltage are incompatible.
 - ✘ Check or adjust the operating and mains voltage.

[1] See technical data for values and other switching thresholds > see 8 chapter.

7.4 Vent coolant circuit

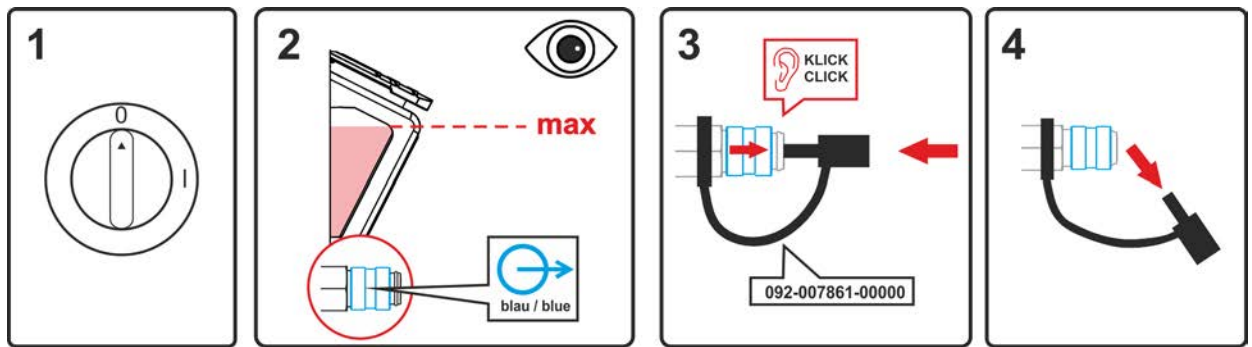


Figure 7-1

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

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

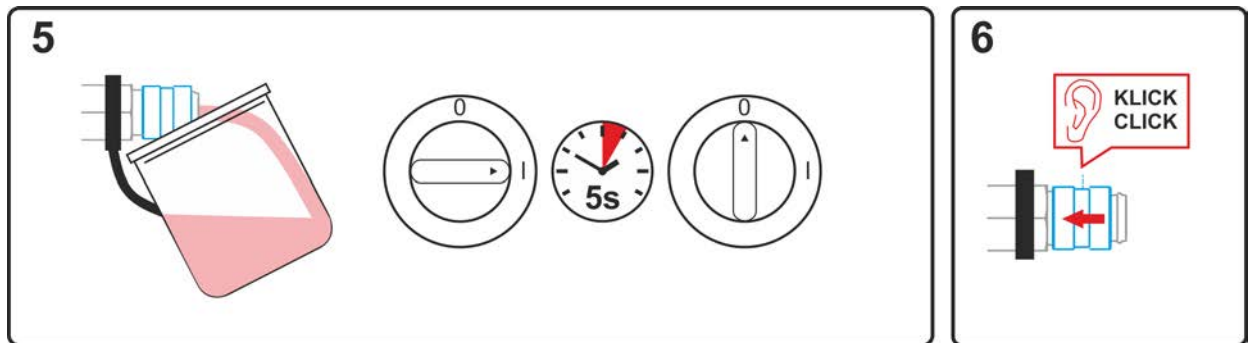



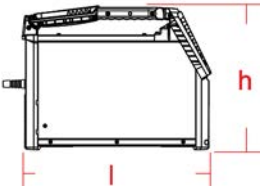
Figure 7-2

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

8 Technical data





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

8.1 Dimensions and weighte

	Tetrix XQ 230 puls DC		Tetrix XQ 230 puls AC/DC	
				
Dimensions (l x b x h)	mm		inch	
b1	257		10.1	
b2	224		8.8	
l	550		21.7	
h	415		16.3	
Weight	kg	lb.	kg	lb.
	17,5	38.6	19,2	42.3

8.2 Performance data

8.2.1 Tetrax XQ 230 puls DC

	TIG	MMA
Welding current (I ₂)	3 A to 230 A	5 A to 190 A
Welding voltage according to standard (U ₂)	10,1 V to 19,2 V	20,2 V to 27,6 V
Duty cycle DC at 40° C ^[1]		
35 %	-	190 A
45 %	230 A	-
60 %	205 A	155 A
100 %	170 A	125 A
Mains voltage (Tolerance)	1 x 230 V (-40 % to +15 %)	
Frequency	50/60 Hz	
mains fuse ^[2]	1 x 16 A	
Open circuit voltage (U ₀)	96 V	
Open circuit voltage (U _r) - vrd (AUS)	-	22 V
Open circuit voltage (U _r) - vrd (RUS)	-	11 V
max. Connected load (S ₁)	5,1 kVA	6,1 kVA
Generator rating (Rec.)	8,2 kVA	
Power consumption P _i ^[3]	28 W	
Cos φ / efficiency	0,99 / 87 %	
Protection class / Overvoltage category	I / III	
Contamination level	3	
Insulation class / protection classification	H / IP 23	
Residual current circuit breaker	Type B (recommended)	
Noise level ^[4]	<70 dB(A)	
Ambient temperature ^[5]	-25 °C to +40 °C	
Machine cooling / Torch cooling	Fan (AF) / gas	
Mains connection cable	H07RN-F3G2,5	
Workpiece lead (min.)	35 mm ²	
EMC class	A	
Test mark	 /  /  / 	
Standards used	See declaration of conformity (appliance documents)	

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





^[2] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[3] Power in idle mode without wire feeder.

^[4] Noise level during idle mode and operation under standard load according to IEC 60974-1 at the maximum operating point.

^[5] Ambient temperature dependent on coolant! Observe coolant temperature range!

8.2.2 Tetrax XQ 230 puls AC/DC

	TIG	MMA
Welding current (I ₂)	3 A to 230 A	5 A to 190 A
Welding voltage according to standard (U ₂)	10,1 V to 19,2 V	20,2 V to 27,6 V
Duty cycle DC at 40° C ^[1]		
35 %	-	190 A
40 %	230 A	-
60 %	200 A	150 A
100 %	170 A	120 A
Mains voltage (Tolerance)	1 x 230 V (-40 % to +15 %)	
Frequency	50/60 Hz	
mains fuse ^[2]	1 x 16 A	
Open circuit voltage (U ₀)	96 V	
Open circuit voltage (U _r) - vrd (AUS)	-	22 V
Open circuit voltage (U _r) - vrd (RUS)	-	11 V
max. Connected load (S ₁)	5,5 kVA	6,5 kVA
Generator rating (Rec.)	8,8 kVA	
Power consumption P _i ^[3]	31 W	
Cos φ / efficiency	0,99 / 83 %	
Protection class / Overvoltage category	I / III	
Contamination level	3	
Insulation class / protection classification	H / IP 23	
Residual current circuit breaker	Type B (recommended)	
Noise level ^[4]	<70 dB(A)	
Ambient temperature ^[5]	-25 °C to +40 °C	
Machine cooling / Torch cooling	Fan (AF) / gas	
Mains connection cable	H07RN-F3G2,5	
Workpiece lead (min.)	35 mm ²	
EMC class	A	
Test mark	 /  /  / 	
Standards used	See declaration of conformity (appliance documents)	

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

^[2] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[3] Power in idle mode without wire feeder.

^[4] Noise level during idle mode and operation under standard load according to IEC 60974-1 at the maximum operating point.

^[5] Ambient temperature dependent on coolant! Observe coolant temperature range!

9 Accessories

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

9.1 General accessories

Type	Designation	Item no.
GH 2X1/4" 2M	Gas hose	094-000010-00001
DM 842 Ar/CO2 230bar 30l D	Pressure regulator with manometer	394-002910-00030

9.2 Remote controls and accessories

9.2.1 19-pole connection

Type	Designation	Item no.
RTF1 19POL 5 M	Foot-operated remote control current with connection cable	094-006680-00000
RT1 19POL	Remote control current	090-008097-00000
RT PWS1 19POL	Remote control, vertical-down weld current, pole reversal	090-008199-00000
RTG1 19POL 5m	Remote control, current	090-008106-00000
RTG1 19POL 10m	Remote control, current	090-008106-00010
RA5 19POL 5M	Remote control e.g. connection cable	092-001470-00005
RA10 19POL 10m	Remote control e.g. connection cable	092-001470-00010
RA20 19POL 20m	Remote control e.g. connection cable	092-001470-00020
RV5M19 19POLE 5M	Extension cable	092-000857-00000

9.3 Welding torch cooling system

Type	Designation	Item no.
Cool XQ 40	Cooling unit	090-005632-00000
Cool XQ 40 MV	Cooling unit	090-005633-00000
ON Water Filter K.06	Optional water filter	092-004024-00000
HOSE BRIDGE UNI	Tube bridge	092-007843-00000

9.3.1 Coolant - type blueCool

Type	Designation	Item no.
blueCool -10 5 l	Coolant up to -10 °C (14 °F), 5 l	094-024141-00005
blueCool -10 25 l	Coolant up to -10 °C (14 °F), 25 l	094-024141-00025
blueCool -30 5 l	Coolant up to -30 °C (22 °F), 5 l	094-024142-00005
blueCool -30 25 l	Coolant up to -30 °C (22 °F), 25 l	094-024142-00025
FSP blueCool	Frost protection tester	094-026477-00000

9.3.2 Coolant - type KF

Type	Designation	Item no.
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
TYP1	Frost protection tester	094-014499-00000

9.4 Transport system

Type	Designation	Item no.
Trolley XQ 35-3	Transport cart (2 casters) for transporting a power source, cooling unit and shielding gas cylinder	090-008847-00000
Trolley XQ 55-3	Transport cart	090-008637-00000

9.5 Options

Type	Designation	Item no.
ON Filter TG.11/K.06	Dirt filter for air inlet	092-004056-00000
ON CC TG.11	Transparent cover cap for protection of control	092-004057-00000
ON PDM TG.11 Comfort 3.0	Transparent protective screen for device control Comfort 3.0	092-004279-00000
ON PDM TG.11 Expert 3.0	Transparent protective screen for device control Expert 3.0	092-004278-00000
ON TG TG.11	Carrying strap	092-004310-00000
ON TH TG.03/TG.04/TG.11 R	Torch holder, right	092-002699-00000
ON Holder TG.11	Holder for mains cable and gas hose	092-004275-00000

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"