



EN

Welding machine

Phoenix 355-505 Progress puls MM TDM

Phoenix 355-505 Progress puls MM VRD TDM

099-005320-EW501

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15.12.2016

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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.

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2 For your safety

2.1 Notes on the use of these operating instructions

DANGER

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

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

WARNING

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

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

CAUTION

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

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



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 |
|--------|---|
| | Indicates technical aspects which the user must observe. |
| | Switch off machine |
| | Switch on machine |
| | Wrong |
| | Correct |
| | Menu entry |
| | Navigating the menu |
| | Exit menu |
| | Time representation (e.g.: wait 4 s/activate) |
| | Interruption in the menu display (other setting options possible) |
| | Tool not required/do not use |
| | Tool required/use |

| Symbol | Description |
|--------|---------------------------------|
| | Activate and release/tap/tip |
| | Release |
| | Press and keep pressed |
| | Switch |
| | Turn |
| | Numerical value – adjustable |
| | Signal light lights up in green |
| | Signal light flashes green |
| | Signal light lights up in red |
| | Signal light flashes red |
| | |
| | |
| | |

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.

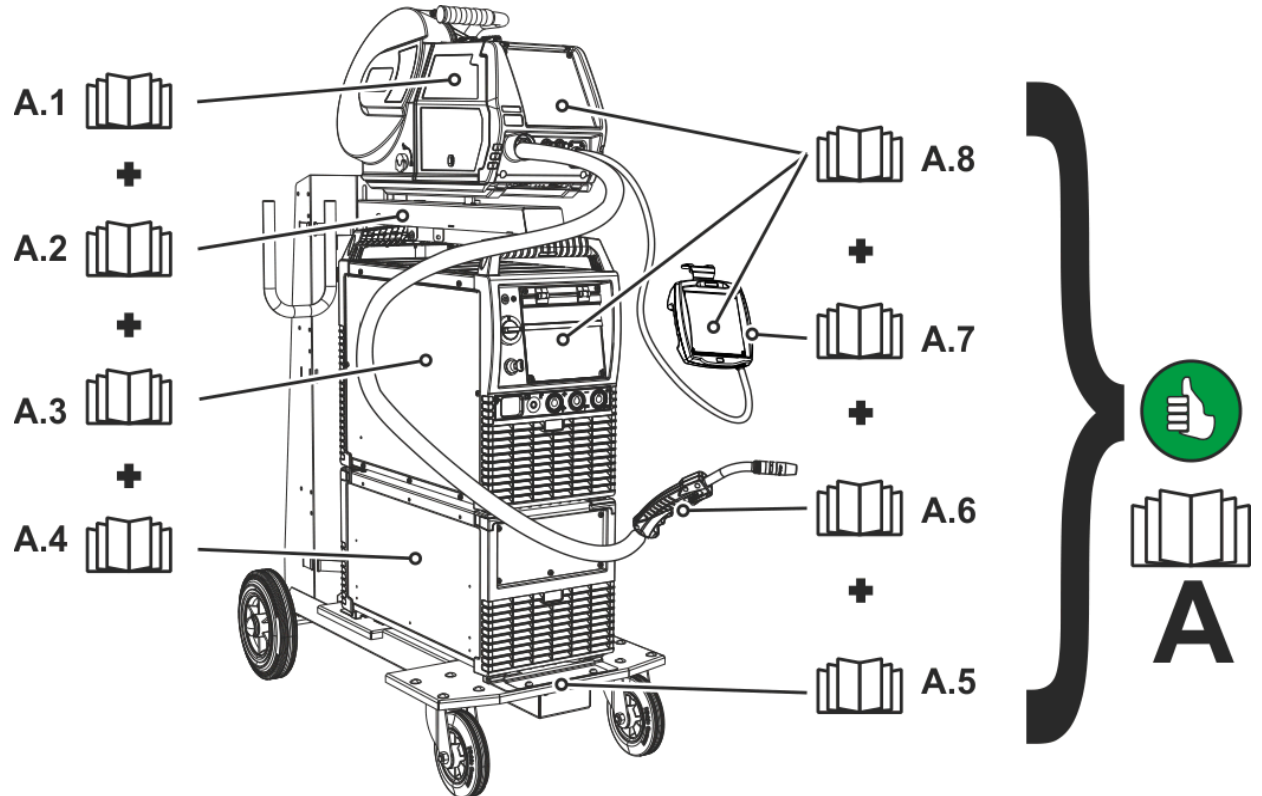


Figure 2-1

| 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 |

2.4 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!



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 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.



Risk of injury due to radiation or heat!

Arc radiation results in injury to skin and eyes.

Contact with hot workpieces and sparks results in burns.

- Use welding shield or welding helmet with the appropriate safety level (depending on the application)!
- Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the relevant regulations in the country in question!
- Protect persons not involved in the work against arc beams and the risk of glare using safety curtains!



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!

⚠ WARNING**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!

**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.

CAUTION



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!
- 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).



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):

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

2.5 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.



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 standard and pulsed gas-shielded metal-arc welding with TIG welding and lift arc (touch starting) or 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



A suitable wire feed unit (system component) is required in order to operate the welding machine!

Wire feed unit

- drive 4X LP
- drive 4X LP MMA
- drive 4X HP
- drive 4X HP MMA
- drive 4X IC LP
- drive 4X IC HP

Transport vehicle

- Trolly 55-5

Cooling unit

- cool50-2 U40

Remote control

- R40 7POL
- R50 7POL

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



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.

3.3.3 Welding in environments with increased electrical hazards



In compliance with IEC / DIN EN 60974, VDE 0544 the machines can be used in environments with an increased electrical hazard.

3.3.4 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.

3.3.5 Calibration/Validation

We hereby confirm that this machine has been tested using calibrated measuring equipment, as stipulated in IEC/EN 60974, ISO/EN 17662, EN 50504, and complies with the admissible tolerances.
Recommended calibration interval: 12 months

4 Machine description – quick overview

4.1 Front view

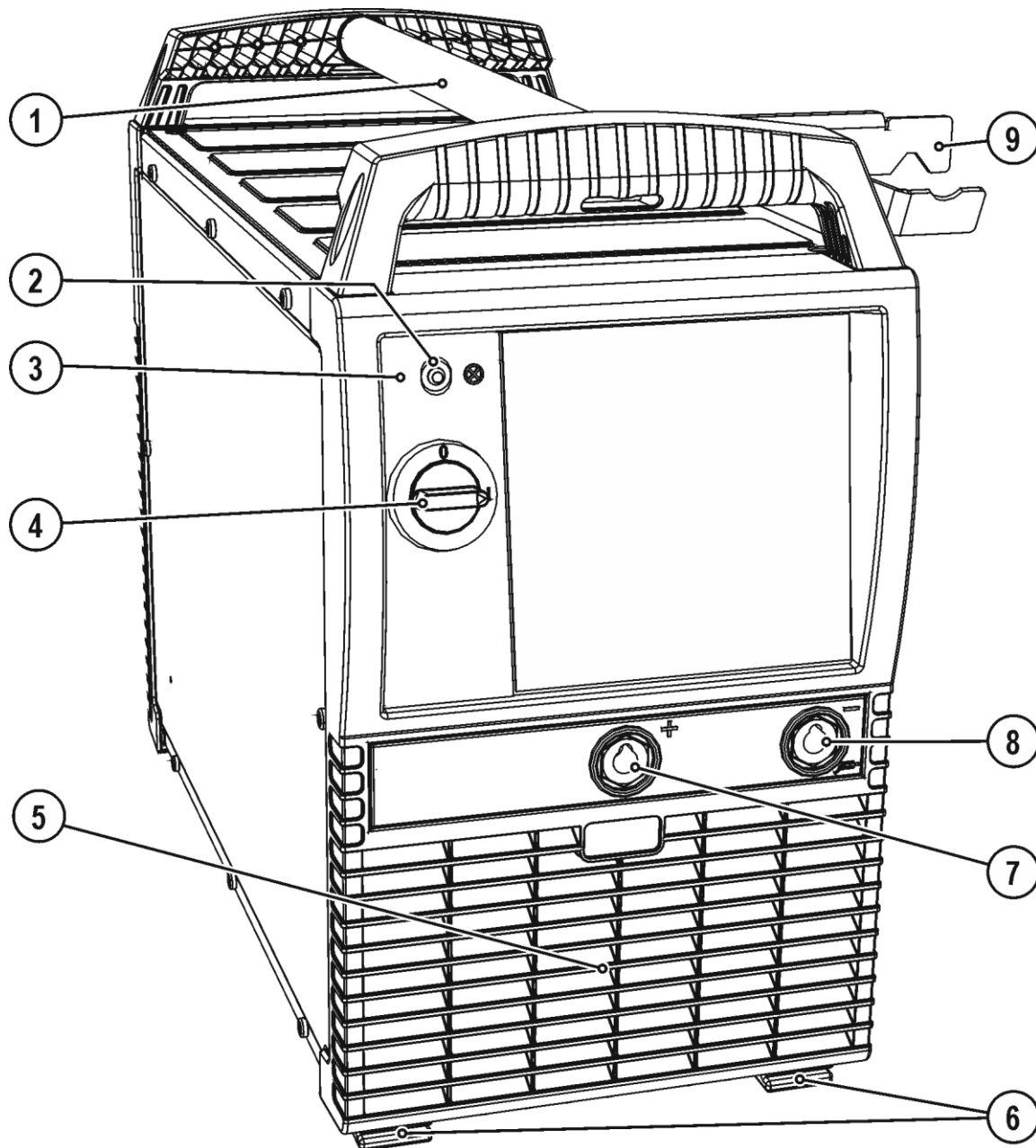






Figure 4-1

| Item | Symbol | Description |
|------|---|---|
| 1 | | Carrying handle |
| 2 |  | Ready for operation signal light Signal light on when the machine is switched on and ready for operation |
| 3 | VRD | Voltage reduction device (VRD) signal light The VRD signal light is illuminated when the voltage reduction device is operating without fault and the output voltage is reduced to a value specified in the relevant standard (see technical data). The voltage reduction device is only active on VRD machine versions. |
| 4 |  | Main switch, machine on/off |
| 5 | | Cooling air inlet |
| 6 | | Machine feet |
| 7 |  | Connection socket, "+" welding current <ul style="list-style-type: none"> •----- MIG/MAG cored wire welding: Workpiece connection •----- TIG welding: Workpiece connection •----- MMA welding: Workpiece connection |
| 8 |  | "-" welding current connection socket <ul style="list-style-type: none"> • MIG/MAG welding: Workpiece connection • MMA welding: electrode holder connection |
| 9 | | Torch holder |

4.2 Rear view

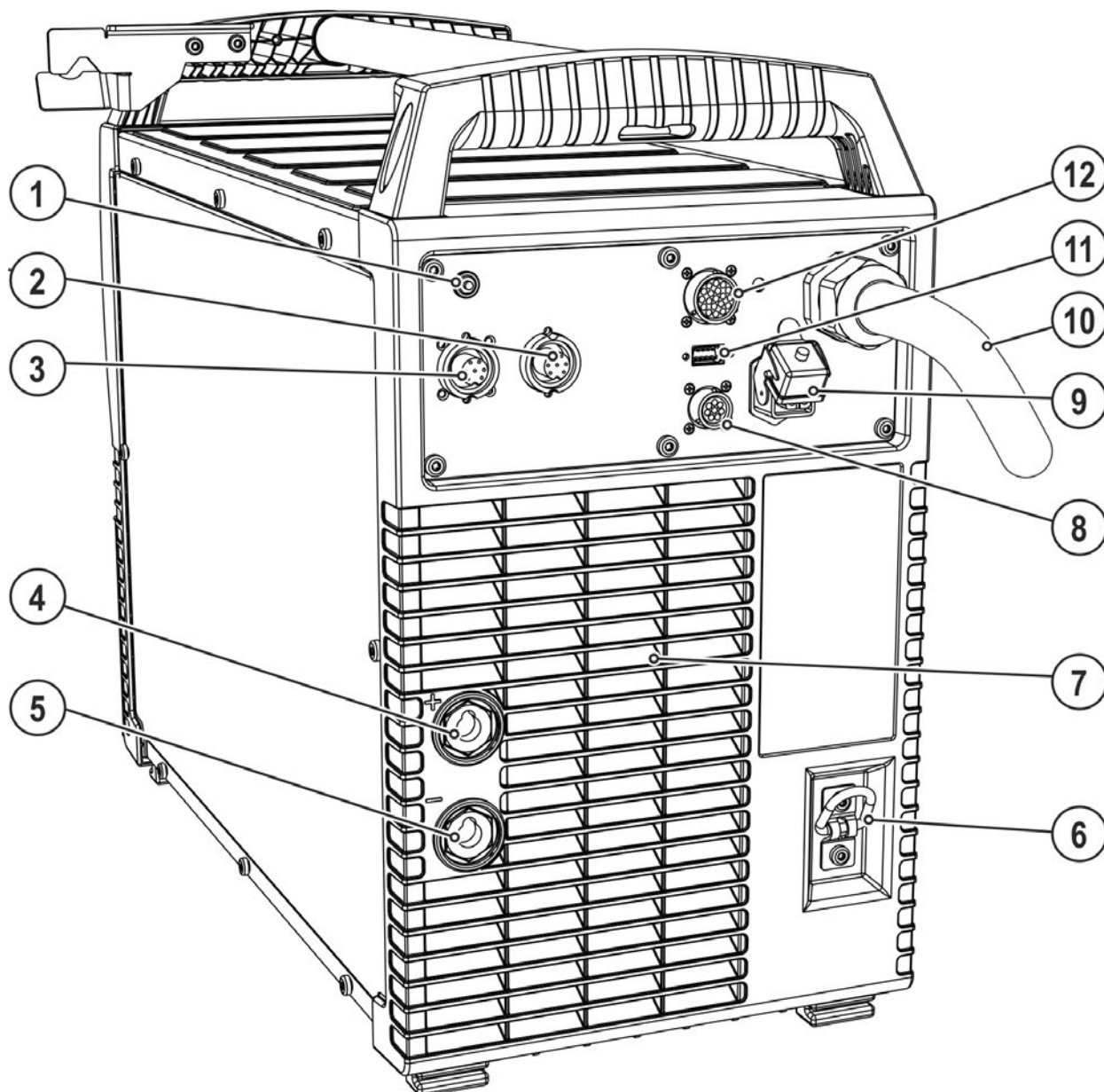






Figure 4-2

| Item | Symbol | Description |
|------|--------|---|
| 1 | | Key button, Automatic cutout Wire feed motor supply voltage fuse (press to reset a triggered fuse) |
| 2 | | Connection socket, 7-pole Connection for peripheral devices with digital interface |
| 3 | | 7-pole connection socket (digital) Wire feed unit connection |
| 4 | | Connection socket, "+" welding current • Standard MIG/MAG welding (intermediate hose package) |
| 5 | | Connection socket, "-" welding current Connection for welding current plug from intermediate hose package • MIG/MAG flux cored wire welding • TIG welding |

| Item | Symbol | Description |
|------|---|--|
| 6 | | Stirrup Intermediate hose package strain relief |
| 7 | | Cooling air outlet |
| 8 |  | 8-pole connection socket Cooling unit control lead |
| 9 |  | 4-pole connection socket Cooling unit voltage supply |
| 10 | | Mains connection cable |
| 11 |  COM | PC interface, serial (D-Sub connection socket, 9-pole) |
| 12 |  analog | 19-pole mechanised welding interface (analogue) |

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!

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.
- Depending on machine type, equipment for lifting by crane or use while suspended is available as a retrofitting option .

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.***



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)!***

5.1.1.1 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

5.1.1.2 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

5.1.2 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 Welding torch cooling system

5.1.4.1 Cooling module connection



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

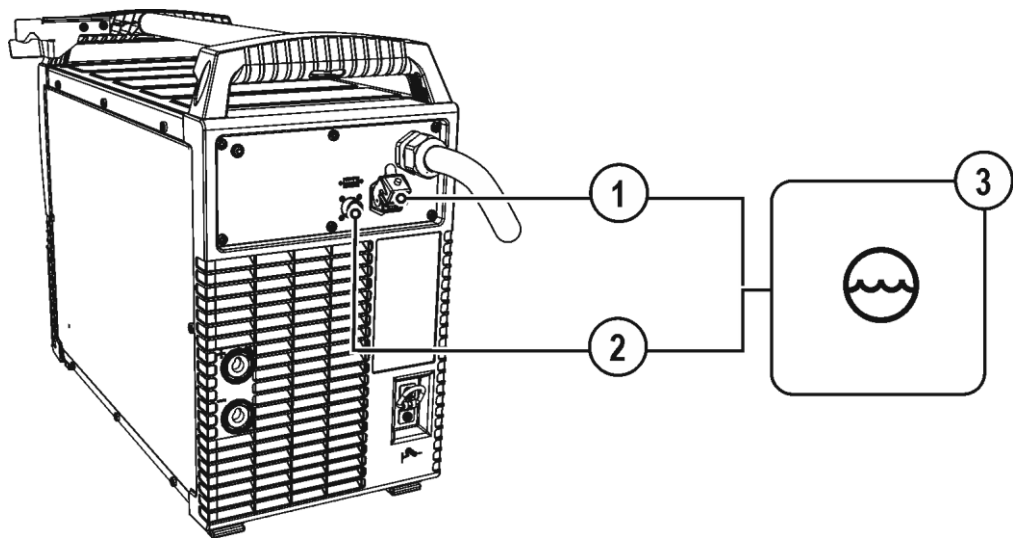


Figure 5-1

| Item | Symbol | Description |
|------|--------|--|
| 1 | | 4-pole connection socket Cooling unit voltage supply |
| 2 | | 8-pole connection socket Cooling unit control lead |
| 3 | | Cooling module |

- Insert and lock the 4-pole supply plug on the cooling unit into the 4-pole connection socket on the welding machine.
- Insert and lock the 8-pole control lead plug on the cooling unit into the 8-pole connection socket on the welding machine.

5.1.5 Connecting the intermediate hose package to the power source

5.1.5.1 Intermediate hose package strain relief



Missing or incorrectly fitted strain relief!

Connection sockets or connection plugs on the machine, or the intermediate tube package, may be damaged if the strain relief is missing or incorrectly fitted. The strain relief takes the strain from cables, plugs and sockets.

- Check the strain relief function by pulling in all directions. Cables and hoses must have sufficient play when the relief cord is fully stretched!

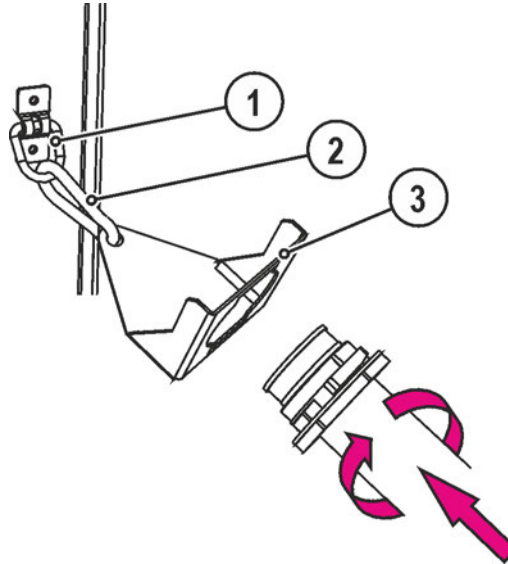


Figure 5-2

| Item | Symbol | Description |
|------|--------|---|
| 1 | | Stirrup Intermediate hose package strain relief |
| 2 | | Snap hooks |
| 3 | | Intermediate hose package strain relief |

- Insert the end of the hose package through the strain relief of the hose package and lock by turning to the right.

Some wire electrodes (e.g. self-shielding cored wire) are welded using negative polarity. In this case, the welding current lead should be connected to the "-" welding current socket, and the workpiece lead should be connected to the "+" welding current socket. Observe the information from the electrode manufacturer!

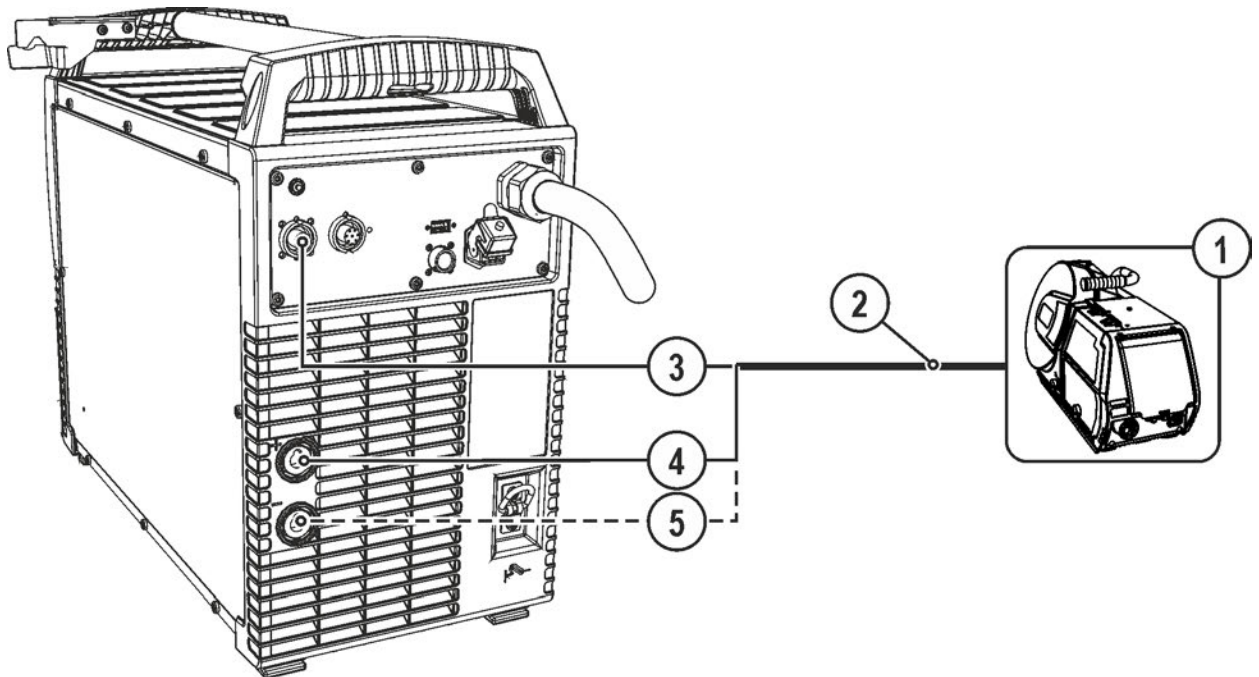


Figure 5-3

| Item | Symbol | Description |
|------|--------|---|
| 1 | | Wire feed unit |
| 2 | | Intermediate hose package |
| 3 | | 7-pole connection socket (digital) Wire feed unit connection |
| 4 | | Connection socket, "+" welding current • Standard MIG/MAG welding (intermediate hose package) |
| 5 | | Connection socket, "-" welding current Connection for welding current plug from intermediate hose package • MIG/MAG flux cored wire welding • TIG welding |

- Insert the end of the hose package through the strain relief of the hose package and lock by turning to the right.
- Insert the plug of the welding current lead into the welding current connection socket and lock in place by turning to the right.
- Insert cable plug on the control lead into the 7-pole connection socket and secure with crown nut (the plug can only be inserted into the connection socket in one position).

5.1.6 Welding torch holder

The item described in the following is part of the machine's scope of delivery.

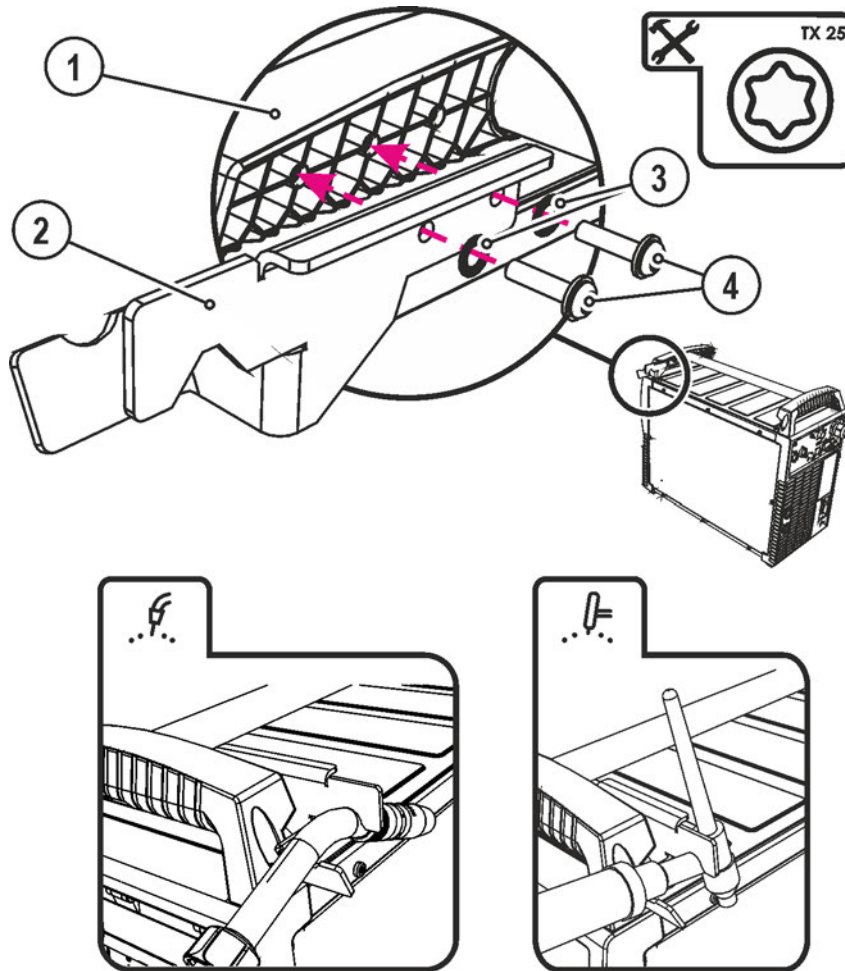


Figure 5-4

| Item | Symbol | Description |
|------|--------|-------------------------------------|
| 1 | | Crossmember of the transport handle |
| 2 | | Torch holder |
| 3 | | Fan-type lock washers |
| 4 | | Fixing screws (x 4) |

- Use the mounting screws to screw the torch holder onto the crossmember of the transport handle.
- Insert the welding torch into the welding torch holder as shown.

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).

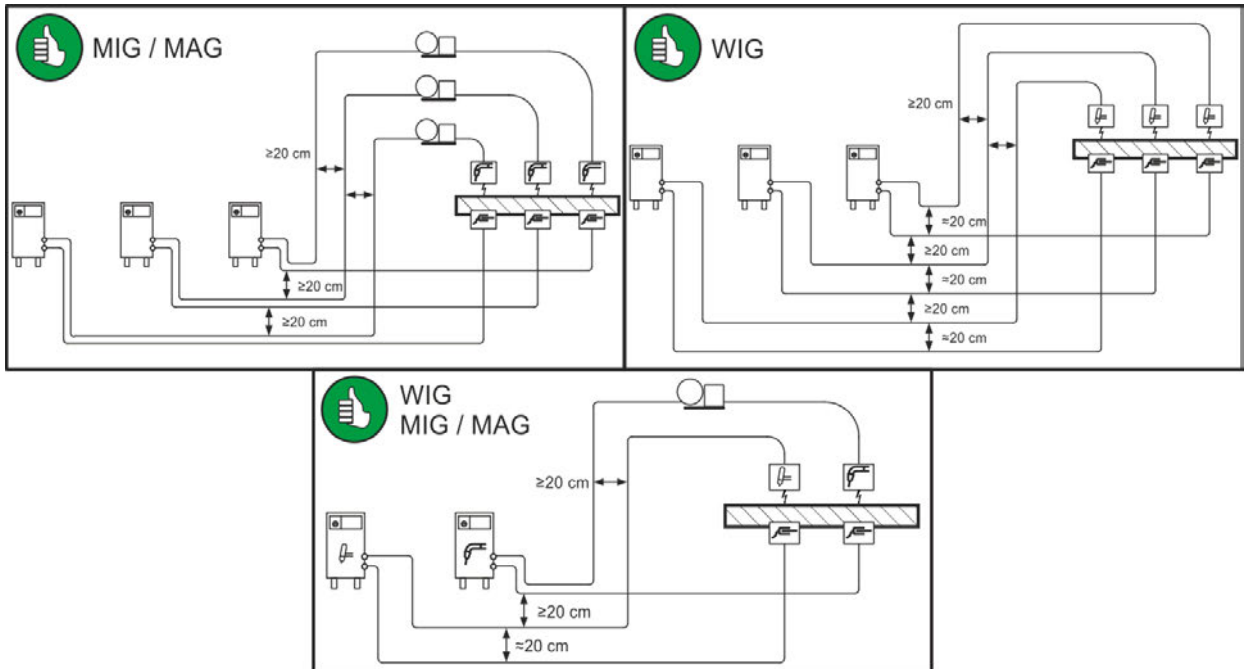


Figure 5-5

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

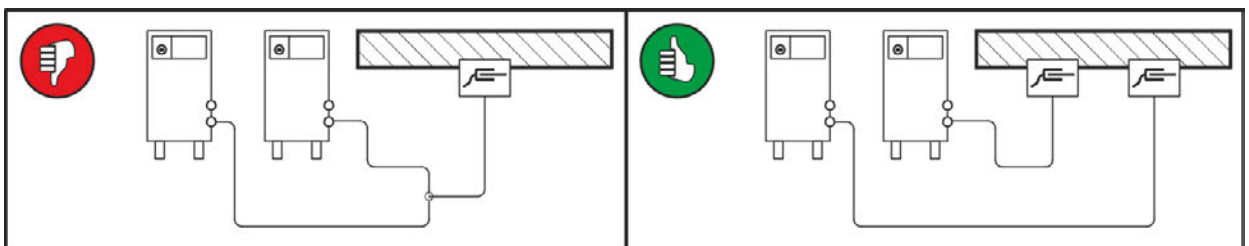


Figure 5-6

- 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.**

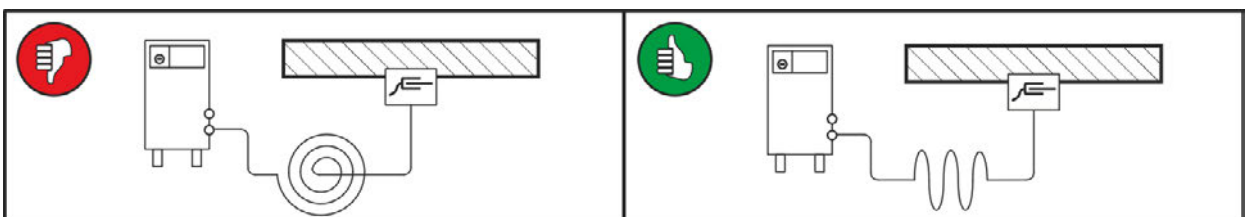


Figure 5-7

5.1.7.1 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.

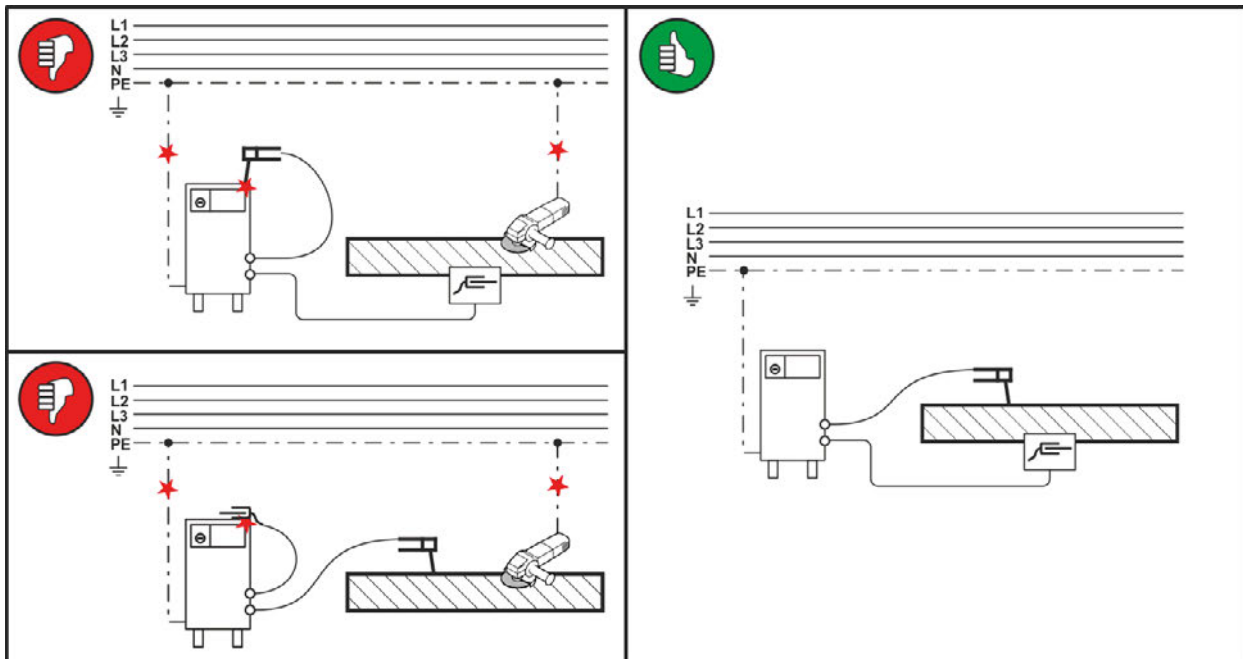


Figure 5-8

5.1.8 Mains connection

⚠ DANGER



Hazards caused by improper mains connection!

An improper mains connection can cause injuries or damage property!

- Only operate machine using a socket that has correctly fitted protective earth.
- The mains voltage indicated on the rating plate must match the supply voltage.
- If a new mains plug must be fitted, only an electrician may do so as per the relevant national legislation or regulations.
- Mains plug, socket and lead must be checked by an 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.

5.1.8.1 Mains configuration



The machine may be connected to:

- a three-phase system with four conductors and an earthed neutral conductor
- a three-phase system with three conductors of which any one can be earthed, e.g. the outer conductor

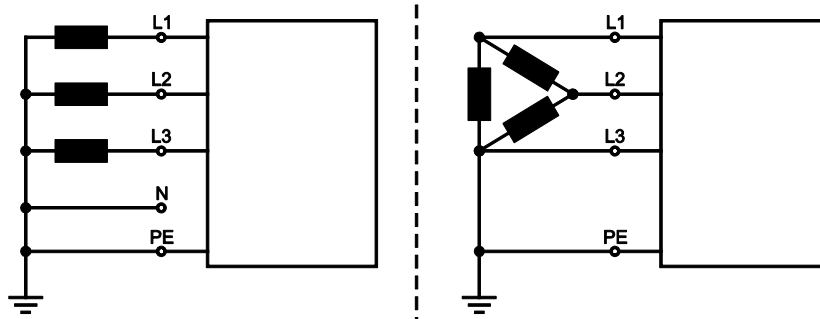


Figure 5-9

Legend

| Item | Designation | Colour code |
|------|----------------------|--------------|
| L1 | Outer conductor 1 | brown |
| L2 | Outer conductor 2 | black |
| L3 | Outer conductor 3 | grey |
| N | Neutral conductor | blue |
| PE | Protective conductor | green-yellow |

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

5.1.9 Aligning the cable resistance

The resistance value of cables can either be set directly or it can be aligned using the power source. The factory setting of the power sources is 8 mΩ. This value corresponds to a 5 m earth cable, a 1.5 m intermediate hose package and a 3 m water-cooled welding torch. With other hose package lengths, it is necessary to carry out a +/- voltage correction to optimise welding properties. The voltage correction value can be set close to zero by means of realigning the cable resistance. It is recommended to align the electric cable resistance after replacing accessories such as torches or intermediate hose packages.

In case a second wire feeder is used the (rL2) parameter has to be aligned. For all other configurations it is sufficient to align the (rL1) parameter.

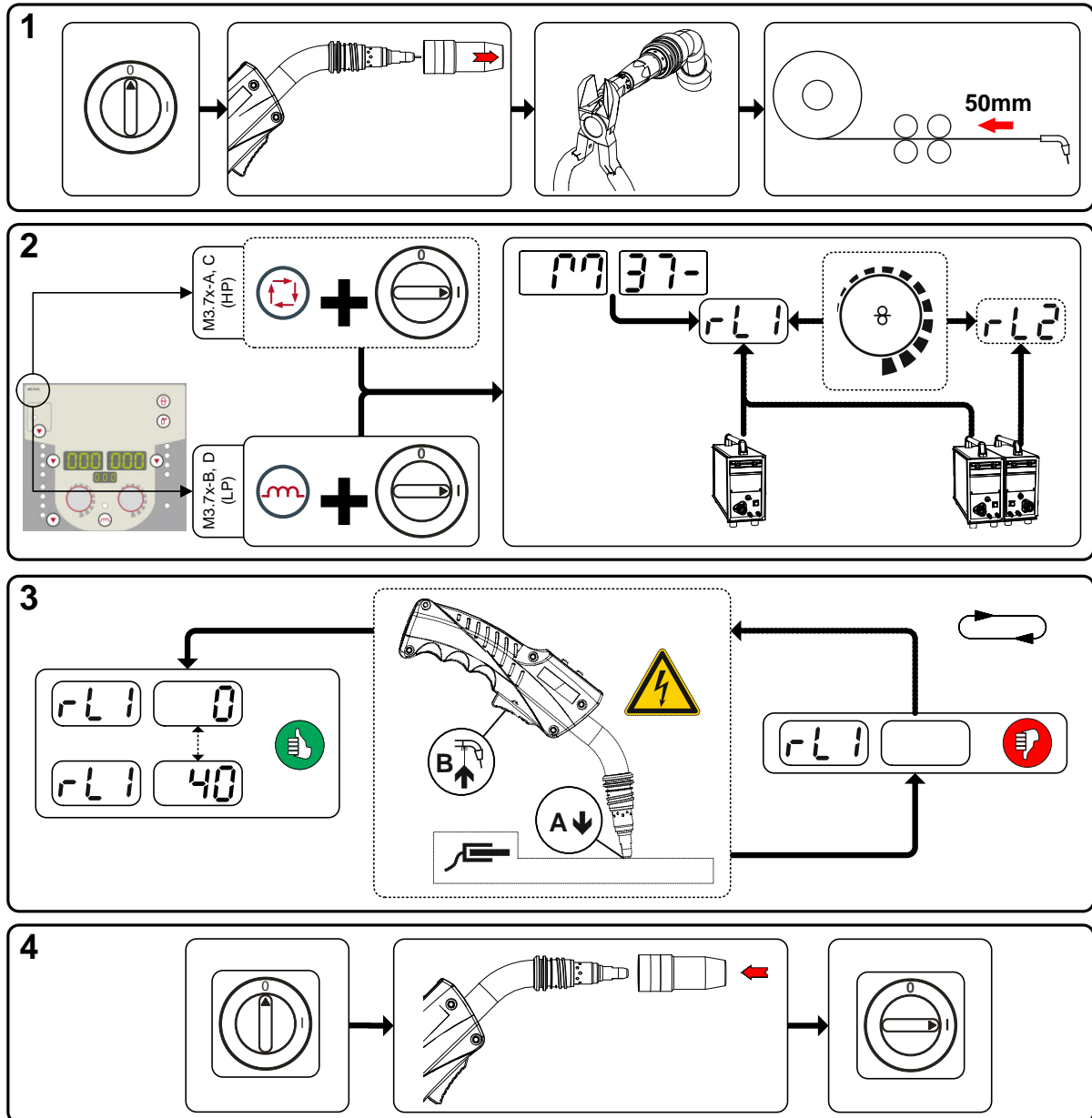


Figure 5-10

1 Preparation

- Switch off the welding machine.
- Unscrew the gas nozzle from the welding torch.
- Trim the welding wire, so that it is flush with the contact tip.
- Retract the welding wire a little (approx. 50 mm) on the wire feeder. There should now be no more welding wire in the contact tip.

2 Configuration

- Press the "welding parameter or choke effect" push-button while simultaneously switching on the welding machine. Release push-button.
 - "Welding parameter" push-button on the M3.7x-A and M3.7x-C control.
 - "Choke effect" push-button on the M3.7x-B and M3.7x-D control.
- The required parameter can now be selected using the 'Welding parameter setting' rotary knob. Parameter rL1 must be aligned for all machine combinations. In case of welding systems with a second power circuit – if two wire feeders are to be operated from a single power source, for example – a second alignment with parameter rL2 must be performed.

3 Alignment/measurement

- Applying slight pressure, put the welding torch in place with the contact tip on a clean, purged location on the workpiece and then press the torch trigger for approx. 2 seconds. A short-circuit current will flow briefly, which is used to determine and display the cable resistance. The value can be between 0 mΩ and 40 mΩ. The new value is immediately saved without requiring further confirmation. If no value is shown on the right-hand display, then measurement failed. The measurement must be repeated.

4 Restoring welding standby mode

- Switch off the welding machine.
- Screw the gas nozzle onto the welding torch.
- Switch on the welding machine
- Insert the welding wire.

5.2 MIG/MAG welding

5.2.1 Connection for workpiece lead



Some wire electrodes (e.g. self-shielding cored wire) are welded using negative polarity. In this case, the welding current lead should be connected to the "-" welding current socket, and the workpiece lead should be connected to the "+" welding current socket. Observe the information from the electrode manufacturer!

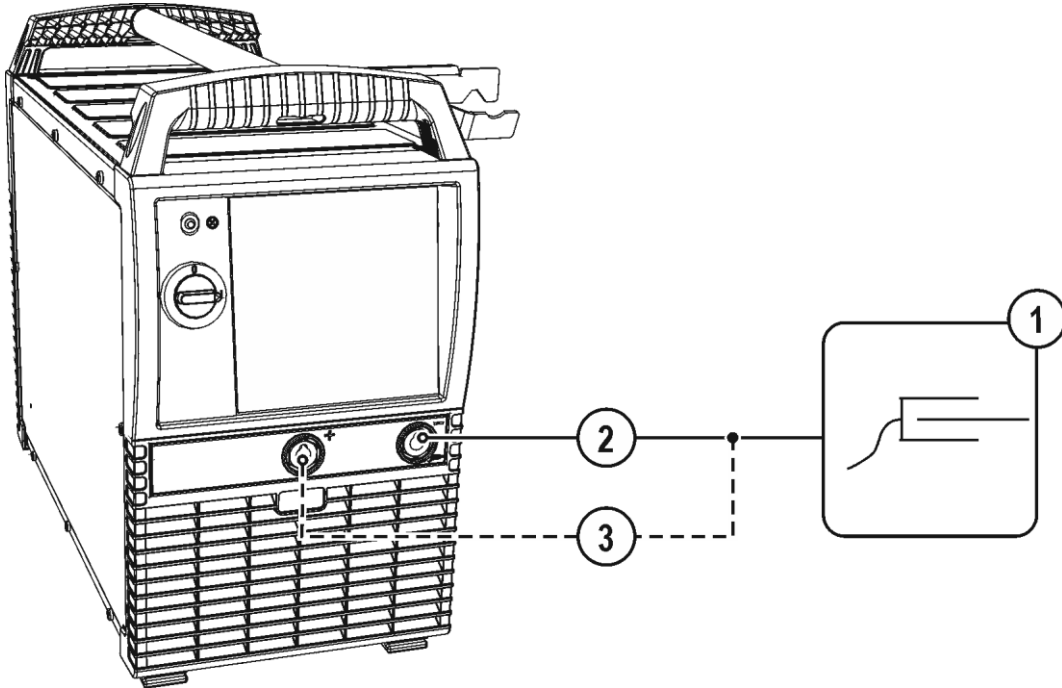


Figure 5-11

| Item | Symbol | Description |
|------|--------|--|
| 1 | | Workpiece |
| 2 | | "-" welding current connection socket • ----- MIG/MAG welding: Workpiece connection |
| 3 | | Connection socket, "+" welding current • ----- MIG/MAG cored wire welding: Workpiece connection |

- Insert the plug on the workpiece lead into the "-" welding current connection socket and lock.

5.3 TIG welding

5.3.1 Welding torch connection

- ☞ *The welding torch is connected to the wire feeder.*
Observe the operating instructions for the wire feeder (system component)!

5.3.2 Connection for workpiece lead

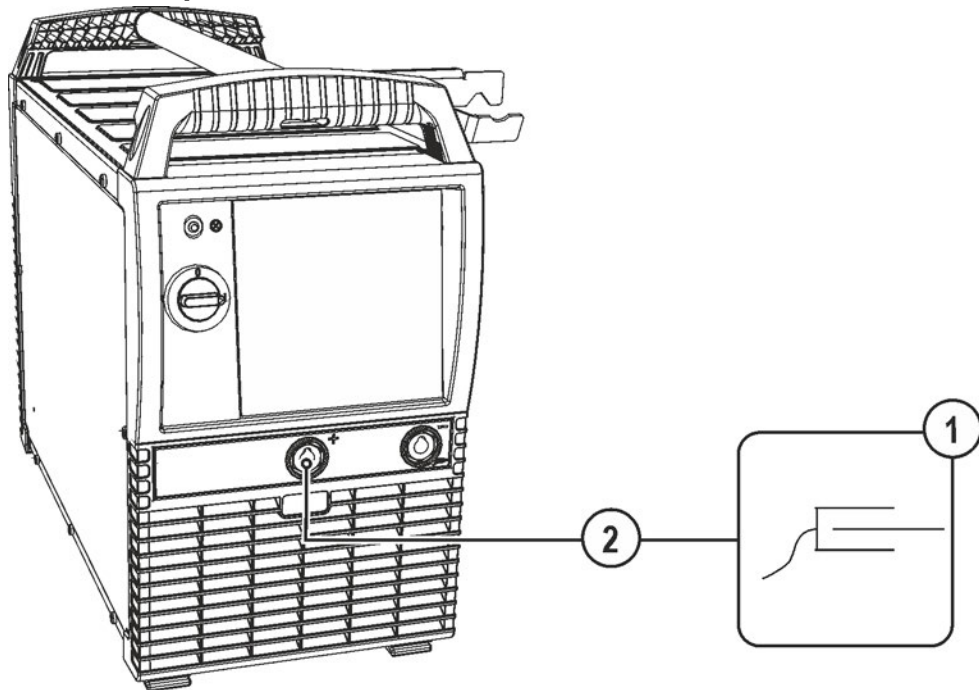


Figure 5-12

| Item | Symbol | Description |
|------|--------|--|
| 1 | | Workpiece |
| 2 | | Connection socket, "+" welding current • TIG welding: Workpiece connection |

- Insert the plug on the welding current lead into the welding current connection socket "+" and lock.

5.4 MMA welding

⚠ CAUTION



Risk of being crushed or burnt.

When replacing spent or new stick electrodes

- Switch off machine at the main switch
- Wear appropriate safety gloves
- Use insulated tongs to remove spent stick electrodes or to move welded workpieces and
- Always put the electrode holder down on an insulated surface.

5.4.1 Connecting the electrode holder and workpiece lead

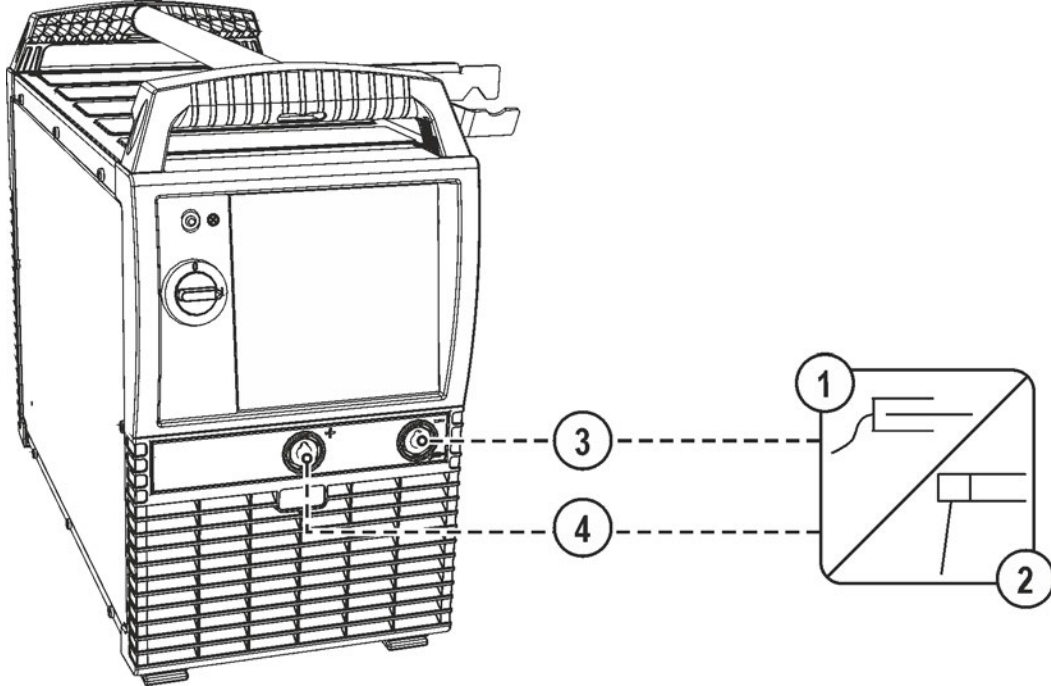


Figure 5-13

| Item | Symbol | Description |
|------|--------|--|
| 1 | | Workpiece |
| 2 | | Electrode holder |
| 3 | | Connection socket, "-" welding current |
| 4 | | Connection socket, "+" welding current |

- Insert cable plug of the electrode holder into either the "+" or "-" welding current connection socket and lock by turning to the right.
- Insert cable plug of the workpiece lead into either the "+" or "-" welding current connection socket and lock by turning to the right.



Polarity depends on the instructions from the electrode manufacturer given on the electrode packaging.

5.5 Voltage reducing device

The voltage reducing device is a requirement in some countries and in many internal company safety guidelines for power sources.

The voltage reduction device is only active on VRD/AUS/RU machine versions.

To increase safety, particularly in hazardous environments (like shipbuilding, pipe construction or mining), the machine is equipped with the VRD (Voltage-reducing device) voltage reduction device.

The VRD signal light is illuminated, when the voltage reduction device is operating without fault and the output voltage is reduced to a value specified in the relevant standard (see technical data).

5.6 Remote control

The remote controls are operated on the 7-pole remote control connection socket (digital).

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

5.7 Interfaces for automation

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)!

Unsuitable control cables or incorrect input/output signal assignment can cause damage to the machine. Use shielded control cables only.

5.7.1 Automation interface

| Pin | Input / output | Description | Diagram |
|-------------|-------------------------|---|---------|
| A | Output | PE Connection for cable shielding | |
| D | Output (open collector) | IGRO Current flows signal I>0 (maximum load 20 mA / 15 V) 0 V = welding current flows | |
| E + R | Input | Not/Aus Emergency stop for higher level shut-down of the power source. To use this function, jumper 1 must be unplugged on PCB M320/1 in the welding machine. Contact open = welding current off | |
| F | Output | 0 V Reference potential | |
| G/P | Output | I>0 Power relay contact, galvanically isolated (max. +/-15 V / 100 mA) | |
| H | Output | Uist Welding voltage, measured against pin F, 0-10 V (0 V = 0 V; 10 V = 100 V) | |
| L | Input | Str/Stp Start = 15 V / Stop = 0 V ¹⁾ | |
| M | Output | +15 V Voltage supply (max. 75 mA) | |
| N | Output | -15 V Voltage supply (max. 25 mA) | |
| S | Output | 0 V Reference potential | |
| T | Output | list Welding current, measured on pin F; 0-10 V (0 V = 0 A, 10 V = 1000 A) | |

¹⁾ The operating mode is given by the wire feed unit (the start / stop function equates to pressing the torch trigger and is used in mechanised applications, for example).

5.7.2 RINT X12 robot interface

The standard digital interface for mechanised applications

Functions and signals:

- Digital inputs: start/stop, operating modes, JOB and program selection, inching, gas test
- Analogue inputs: control voltages, e.g. for welding performance, welding current, etc.
- Relay outputs: process signal, ready for welding, system composite fault, etc.

5.7.3 BUSINT X11 Industrial bus interface

The solution for easy integration with automated production with e.g.

- Profinet/Profibus
- EnthernetIP/DeviceNet
- EtherCAT

etc.

5.8 PC interface



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.***



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)!***

PC 300 welding parameter software

Create all welding parameters quickly on the PC and easily transfer them to one or more welding machines (accessories: set consisting of software, interface, connection leads).

Q-DOC 9000 welding data documentation software

(Accessories: set consisting of software, interface, connection leads)

The ideal tool for welding data documentation of, for example: welding voltage and current, wire speed and motor current.

WELDQAS welding data monitoring and documentation system

Network-compatible welding data monitoring and documentation system for digital machines

6 Maintenance, care and disposal

6.1 General

DANGER



Incorrect maintenance and testing!

The machine may be cleaned, repaired and tested by skilled and qualified personnel only. A qualified person is one who, due to their training, knowledge and experience, can detect any hazards and possible consequential damage when checking the machine, and can take the necessary safety measures.

- Observe the maintenance instructions > see 6.3 chapter!
- The machine may only be put into operation again once the testing has been successful.



Risk of injury due to electrical voltage after switching off!

Working on an open machine can lead to fatal injuries!

Capacitors are loaded with electrical voltage during operation. Voltage remains present for up to four minutes after the mains plug is removed.

1. Switch off machine.
2. Remove the mains plug.
3. Wait for at least 4 minutes until the capacitors have discharged!

WARNING



Cleaning, testing and repair!

Cleaning, testing and repairing of the welding machine may only be carried out by competent, 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.

- In the event of failure of any one of the following tests, 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.

6.3 Maintenance work, intervals

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.

6.3.1 Daily maintenance tasks

6.3.1.1 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

6.3.1.2 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

6.3.2.1 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

6.3.2.2 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)



The welding machine may only be tested by competent, capable persons! A capable person is one who, because of his 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.



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

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.

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!***



6.4.1 Manufacturer's declaration to the end user

- According to European provisions (guideline 2012/19/EU of the European Parliament and the Council of July, 4th 2012), 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!

| Legend | Symbol | Description |
|--------|--------|-------------|
| | ↗ | Fault/Cause |
| | ✘ | Remedy |

Coolant error/no coolant flowing

- ↗ Insufficient coolant flow
 - ✘ Check coolant level and refill if necessary
- ↗ Air in the coolant circuit
 - ✘ Vent coolant circuit


Wire feed problems

- ↗ Contact tip blocked
 - ✘ Clean, spray with anti-spatter spray and replace if necessary
- ↗ Setting the spool brake
 - ✘ Check settings and correct if necessary
- ↗ Setting pressure units
 - ✘ Check settings and correct if necessary
- ↗ Worn wire rolls
 - ✘ Check and replace if necessary
- ↗ Wire feed motor without supply voltage (automatic cutout triggered by overloading)
 - ✘ Reset triggered fuse (rear of the power source) by pressing the key button
- ↗ Kinked hose packages
 - ✘ Extend and lay out the torch hose package
- ↗ Wire guide core or spiral is dirty or worn
 - ✘ Clean core or spiral; replace kinked or worn cores

Functional errors

- ↗ 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)
- ↗ Several parameters cannot be set (machines with access block)
 - ✘ Entry level is blocked, disable access lock
- ↗ Connection problems
 - ✘ Make control lead connections and check that they are fitted correctly.
- ↗ Loose welding current connections
 - ✘ Tighten power connections on the torch and/or on the workpiece
 - ✘ Tighten contact tip correctly

7.2 Error messages (power source)

 **A welding machine error is indicated by an error code being displayed (see table) on the display on the machine control.**

In the event of a machine error, the power unit is shut down.

 **The display of possible error numbers depends on the machine version (interfaces/functions).**

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

| Error (Err) | Category | | | Possible cause | Remedy |
|-------------|----------|----|----|--|--|
| | a) | b) | c) | | |
| 1 | - | - | x | Mains overvoltage | Check the mains voltages and compare with the welding machine connection voltages |
| 2 | - | - | x | Mains undervoltage | |
| 3 | x | - | - | Welding machine excess temperature | Allow the machine to cool down (mains switch to "1") |
| 4 | x | x | - | Low coolant level | Top up the coolant Leak in the coolant circuit > repair the leak and top up the coolant Coolant pump is not working > check excess current trigger on air cooling unit |
| 5 | x | - | - | Wire feeder/tachometer error | Check the wire feeder Speedometer is not emitting a signal, M3.51 defective > inform Service. |
| 6 | x | - | - | Shielding gas error | Check shielding gas supply (for machines with shielding gas monitoring) |
| 7 | - | - | x | Secondary overvoltage | Inverter error > inform Service |
| 8 | - | - | x | Earth fault between welding wire and earth line | Separate the connection between welding wire and casing or an earthed object |
| 9 | x | - | - | Fast cut-out Triggered by BUSINT X11 or RINT X12 | Rectify error on robot |
| 10 | - | x | - | Arc interruption Triggered by BUSINT X11 or RINT X12 | Check wire feeding |
| 11 | - | x | - | Ignition error after 5 s Triggered by BUSINT X11 or RINT X12 | Check wire feeding |
| 13 | x | - | - | Emergency stop deactivation | Check the emergency stop circuit at the interface for automated welding |
| 14 | - | x | - | Wire feeder not detected. Control cable not connected. | Check cable connections. |
| | | | | Incorrect ID numbers assigned during operation with multiple wire feeders. | Check ID number assignment |
| 15 | - | x | - | Wire feeder 2 not detected. Control cable not connected. | Check cable connections. |
| 16 | - | - | x | VRD (open circuit voltage reduction error). | Inform Service. |
| 17 | - | x | x | Excess current detection on wire feeder | Check wire feeding |
| 18 | - | x | x | No speedometer signal from second wire feeder (slave drive) | Check the connection and particularly the speedometer for the second wire feeder (slave drive). |
| 56 | - | - | x | Mains phase failure | Check mains voltages |
| 59 | - | - | x | Machine incompatible | Check machine used |

| Error (Err) | Category | | | Possible cause | Remedy |
|-------------|----------|----|----|--------------------------|-----------------|
| | a) | b) | c) | | |
| 60 | - | - | x | Software update required | Inform Service. |

Legend for categories (reset error)

a) The error message will disappear once the error has been rectified.

b) The error message can be reset by pressing a push-button:

| Welding machine control | Push-button |
|--|--------------|
| RC1 / RC2 | |
| Expert | |
| Expert 2.0 | |
| CarExpert / Progress (M3.11) | |
| alpha Q / Concept / Basic / Basic S / Synergic / Synergic S / Progress (M3.71) / Picomig 305 | not possible |

c) The error message can only be reset by switching the machine off and on again.

The shielding gas error (Err 6) can be reset by pressing the "Welding parameters" key button.

7.3 General operating problems

7.3.1 Automation interface

WARNING





No function of the external interrupt equipment (emergency stop switch)!

If the emergency stop circuit has been set up using an external interrupt equipment connected to the interface for automated welding, the machine must be configured for this setup. If this is not observed, the power source will ignore the external interrupt equipment and will not shut down!

- Remove jumper 1 on the T320/1, M320/1 or M321 PCB!

7.4 Vent coolant circuit

-  **Coolant tank and quick connect coupling of coolant supply and return are only fitted in machines with water cooling.**
-  **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)!**

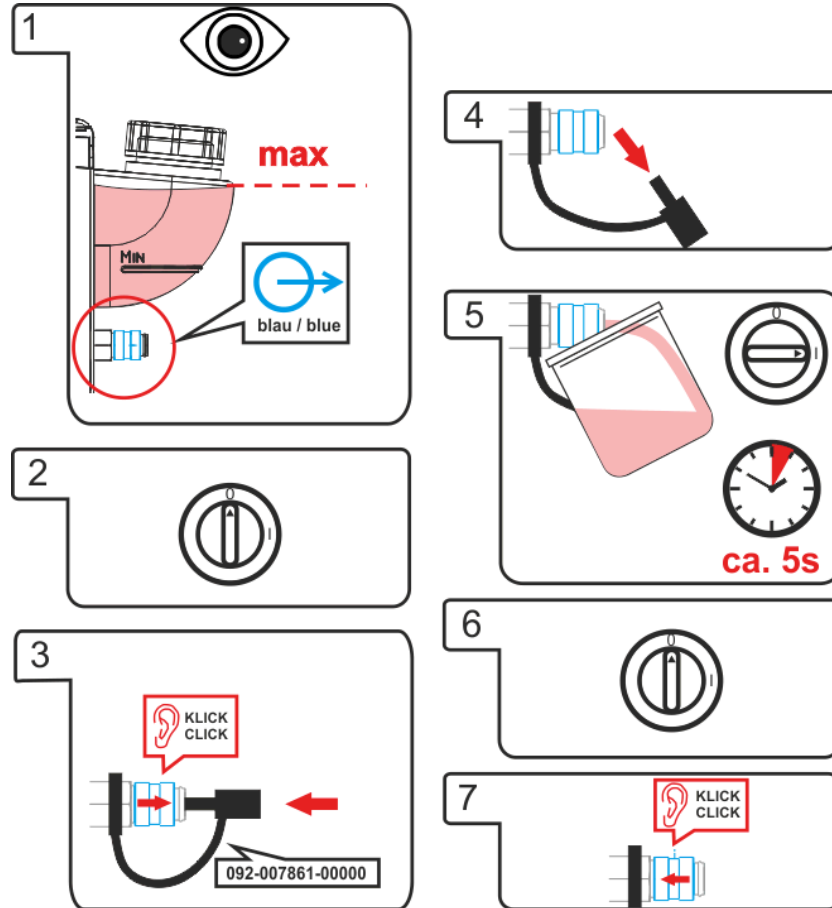



Figure 7-1

8 Technical data




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


8.1 Phoenix 355 TDM

| | TIG | MIG/MAG | MMA |
|--|--|---------------|---------------|
| Setting range for welding current | 5 A–350 A | | |
| Setting range for welding voltage | 10.2 V–24.0 V | 14.3 V–31.5 V | 20.2 V–34.0 V |
| Duty cycle | 40 °C | | |
| 60% | 350 A | | |
| 100% | 300 A | | |
| Load cycle | 10 min. (60% DC \triangleq 6 min. welding, 4 min. pause) | | |
| Open circuit voltage | 79 V | | |
| Open circuit voltage (VRD) | - | | 22 V |
| Mains voltage (tolerances) | 3 x 400 V (-25% to +20%) | | |
| Frequency | 50/60 Hz | | |
| Mains fuse (safety fuse, slow-blow) | 3 x 20 A | | |
| Mains connection lead | H07RN-F4G6 | | |
| Max. connected load | 10.6 kVA | 13.9 kVA | 15.0 kVA |
| Recommended generator rating | 20.3 kVA | | |
| cos ϕ /efficiency | 0.99/88% | | |
| Workpiece lead | 70 mm ² | | |
| Ambient temperature | -25 °C to +40 °C | | |
| Machine cooling/torch cooling | Fan (AF)/gas | | |
| Insulation class/protection classification | H/IP 23 | | |
| EMC class | A | | |
| Safety identification |  | | |
| Harmonised standards used | IEC 60974-1, -10 | | |
| Other standards used | AS 1674.2-2003 (VRD AUS) | | |
| Dimensions (L x W x H) | 625 x 298 x 531 mm | | |
| | 24.6 x 11.7 x 20.9 inch | | |
| Weight | 41 kg | | |
| | 90.4 lb | | |

8.2 Phoenix 405

| | TIG | MIG/MAG | MMA |
|---|---|---------------|---------------|
| Setting range for welding current | 5 A–400 A | | |
| Setting range for welding voltage | 10.2 V–26.0 V | 14.3 V–34.0 V | 20.2 V–36.0 V |
| Duty cycle | 40 °C | | |
| 100% | 400 A | | |
| Load cycle | 10 min. (60% DC \wedge 6 min. welding, 4 min. pause) | | |
| Open circuit voltage | 79 V | | |
| Open circuit voltage (VRD) | - | | 22 V |
| Mains voltage (tolerances) | 3 x 400 V (–25% to +20%) | | |
| Frequency | 50/60 Hz | | |
| Mains fuse (safety fuse, slow-blow) | 3 x 32 A | | |
| Mains connection lead | H07RN-F4G6 | | |
| Max. connected load | 13.2 kVA | 17.2 kVA | 18.2 kVA |
| Recommended generator rating | 24.6 kVA | | |
| cosϕ/efficiency | 0.99/90% | | |
| Workpiece lead | 70 mm ² | | |
| Ambient temperature | –25 °C to +40 °C | | |
| Machine cooling/torch cooling | Fan (AF)/gas | | |
| Insulation class/protection classification | H/IP 23 | | |
| EMC class | A | | |
| Safety identification |  | | |
| Harmonised standards used | IEC 60974-1, -10 | | |
| Other standards used | AS 1674.2-2003 (VRD AUS) | | |
| Dimensions (L x W x H) | 625 x 298 x 531 mm | | |
| | 24,6 x 11,7 x 20,9 inch | | |
| Weight | 41 kg | | |
| | 90.4 lb | | |

8.3 Phoenix 505

| | TIG | MIG/MAG | MMA |
|---|--|---------------|---------------|
| Setting range for welding current | 5 A–500 A | | |
| Setting range for welding voltage | 10.2 V–30.0 V | 14.3 V–39.0 V | 20.2 V–40.0 V |
| Duty cycle | 40 °C | | |
| 60% | 500 A | | |
| 100% | 430 A | | |
| Load cycle | 10 min. (60% DC \triangleq 6 min. welding, 4 min. pause) | | |
| Open circuit voltage | 79 V | | |
| Open circuit voltage (VRD) | - | | 22 V |
| Mains voltage (tolerances) | 3 x 400 V (-25% to +20%) | | |
| Frequency | 50/60 Hz | | |
| Mains fuse (safety fuse, slow-blow) | 3 x 32 A | | |
| Mains connection lead | H07RN-F4G6 | | |
| Max. connected load | 18.9 kVA | 24.6 kVA | 25.2 kVA |
| Recommended generator rating | 34.0 kVA | | |
| cosϕ/efficiency | 0.99/90% | | |
| Workpiece lead | 95 mm ² | | |
| Ambient temperature | -25 °C to +40 °C | | |
| Machine cooling/torch cooling | Fan (AF)/gas | | |
| Insulation class/protection classification | H/IP 23 | | |
| EMC class | A | | |
| Safety identification |  | | |
| Harmonised standards used | IEC 60974-1, -10 | | |
| Other standards used | AS 1674.2-2003 (VRD AUS) | | |
| Dimensions (L x W x H) | 625 x 298 x 531 mm | | |
| | 24.6 x 11.7 x 20.9 inch | | |
| Weight | 45 kg | | |
| | 99.2 lb | | |

9 Accessories



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

9.1 System components

| Type | Designation | Item no. |
|-----------------|--|------------------|
| drive 4X LP | Wire feeder, water-cooled, Euro torch connector | 090-005412-00502 |
| drive 4X LP MMA | Wire feeder, water-cooled, Euro torch connector with connection capability for electrode holder or gouging torch | 090-005412-51502 |
| drive 4X HP | Wire feeder, water-cooled, Euro torch connector | 090-005392-00502 |
| drive 4X HP MMA | Wire feeder, water-cooled, Euro torch connector with connection capability for electrode holder or gouging torch | 090-005392-51502 |
| drive 4X IC LP | Wire feeder, water-cooled, Euro torch connector | 090-005415-00502 |
| drive 4X IC HP | Wire feeder, water-cooled, Euro torch connector | 090-005414-00502 |

9.2 Options

| Type | Designation | Item no. |
|--------------------------------|--|------------------|
| ON Filter 355/405/505/50 | Contamination filter for air inlet | 092-002698-00000 |
| ON AIF D xx5 | Automation interface | 092-007891-00000 |
| ON FC CS 405/505 | Pedestal for transport with floor conveyors | 092-007896-00000 |
| ON WAK CS 405/505 | Wheel assembly kit for CS 505 | 092-007897-00000 |
| ON LG-EX | LAN gateway in external casing | 090-008789-00502 |
| ON WLG-EX | Wi-Fi gateway in external casing | 090-008790-00502 |
| ON SET KRAN HOR/VER 330 alphaQ | Option retrofit kit crane suspension horizontal/vertical | 092-002393-00000 |

9.2.1 Welding torch cooling system

| Type | Designation | Item no. |
|--------------|----------------|------------------|
| cool50-2 U40 | Cooling module | 090-008603-00502 |

9.3 Transport systems

| Type | Designation | Item no. |
|-----------------------------------|--|------------------|
| Trolley 55-5 | Transport cart, assembled | 090-008632-00000 |
| ON TR Trolley 55-5 | Cross arm and holder for wire feeder | 092-002700-00000 |
| ON PS Trolley 55.2-2 drive 4L | Pivot support for drive 4L on Trolley 55.2-2 | 092-002701-00000 |
| ON PS Trolley 55-5 drive 200/300C | Pivot support | 092-002634-00000 |
| ON CS D | Crane console, transport/ram protection Phoenix/Taurus 405/505 | 092-007895-00000 |

9.4 Remote control / connection cable

9.4.1 7-pole connection

| Type | Designation | Item no. |
|----------------|--|------------------|
| R40 7POL | Remote control, 10 programs | 090-008088-00000 |
| R50 7POL | Remote control, all welding machine functions can be set directly at the workplace | 090-008776-00000 |
| FRV 7POL 0.5 m | Extension/connecting cable | 092-000201-00004 |
| FRV 7POL 1 m | Extension/connecting cable | 092-000201-00002 |
| FRV 7POL 5 m | Extension/connecting cable | 092-000201-00003 |
| FRV 7POL 10 m | Extension/connecting cable | 092-000201-00000 |
| FRV 7POL 20 m | Extension/connecting cable | 092-000201-00001 |

| Type | Designation | Item no. |
|--------------|----------------------------|------------------|
| FRV 7POL 25M | Extension/connecting cable | 092-000201-00007 |

9.5 General accessories

| Type | Designation | Item no. |
|----------------------------|-----------------------------------|------------------|
| 5POLE/CEE/32A/M | Machine plug | 094-000207-00000 |
| DM 842 Ar/CO2 230bar 30l D | Pressure regulator with manometer | 394-002910-00030 |

9.6 Computer communication

| Type | Designation | Item no. |
|---------------|---|------------------|
| PC300.Net | PC300.Net welding parameter software kit incl. cable and SECINT X10 USB interface | 090-008777-00000 |
| FRV 7POL 5 m | Extension/connecting cable | 092-000201-00003 |
| FRV 7POL 10 m | Extension/connecting cable | 092-000201-00000 |
| FRV 7POL 20 m | Extension/connecting cable | 092-000201-00001 |
| QDOC9000 V2.0 | Set consisting of interface, documentation software, connection lead | 090-008713-00000 |

10 Appendix A

10.1 Overview of EWM branches

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 Plants

 Branches

 Liaison office

● More than 400 EWM sales partners worldwide