Operating instructions





Power source

Titan XQ 350 puls D Titan XQ 400 puls D Titan XQ 500 puls D Titan XQ 600 puls D

099-005560-EW501

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23.08.2019

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General instructions

MARNING



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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1 Contents

| 1 | Cont | ents | | | 3 |
|---|-------|----------------------------|-------------|---|----|
| 2 | For v | our safet | V | | |
| | 2.1 | | | of these operating instructions | |
| | 2.2 | | | ns | |
| | 2.3 | | | te documentation | |
| | 2.4 | | • | | |
| | 2.5 | | | allation | |
| 3 | Inten | ded use. | | | 13 |
| _ | 3.1 | | | solely with the following machines | |
| | 3.2 | | | | |
| | 3.3 | | | also apply | |
| | | 3.3.1 | Warranty | / | 14 |
| | | 3.3.2 | | on of Conformity | |
| | | 3.3.3 | | in environments with increased electrical hazards | |
| | | 3.3.4 | | documents (spare parts and circuit diagrams) | |
| | | 3.3.5 | | on/Validation | |
| 4 | Mach | ine desc | ription – c | quick overview | 15 |
| | 4.1 | | | tion | |
| | 4.2 | | | iew from the right | |
| | 4.3 | | | ew from left | |
| 5 | Desig | gn and fu | nction | | 20 |
| | 5.1 | Transpo | | allation | |
| | | 5.1.1 | | crane | |
| | | | | Craning principle | |
| | | 5.1.2 | | conditions | |
| | | | 5.1.2.1 | In operation | |
| | | E 4 0 | 5.1.2.2 | Transport and storage | |
| | | 5.1.3 5.1.4 | | coolingee lead, general | |
| | | 5.1. 4 5.1.5 | | torch cooling system | |
| | | 5.1.5 | 5.1.5.1 | Functional characteristics | |
| | | | 5.1.5.1 | Permitted torch coolant | |
| | | | 5.1.5.3 | Maximal hose package length | |
| | | | 5.1.5.4 | Adding coolant | |
| | | 5.1.6 | | the installation of welding current leads | |
| | | 5.1.7 | | Iding currents | |
| | | 5.1.8 | Connecti | ing the intermediate hose package to the power source | 27 |
| | | 5.1.9 | Intermed | liate hose package strain relief | |
| | | | 5.1.9.1 | Possible attachment points | |
| | | | 5.1.9.2 | Locking the strain relief | |
| | | 5.1.10 | | g gas supply (shielding gas cylinder for welding machine) | |
| | | F 4 44 | | Pressure regulator connection | |
| | | 5.1.11 | | onnection | |
| | | | | Visual inspection of the set mains voltage | |
| | | | | Adjusting the power source to the mains voltage | |
| | | | | Mains configuration | |
| | 5.2 | Switchin | | system diagnosis | |
| | J.2 | 5.2.1 | | us bar - display of operating status | |
| | 5.3 | | | Iding machine control | |
| | 5.4 | | | | |
| | | 5.4.1 | | on for workpiece lead | |
| | | 5.4.2 | | task selection | |
| | | 5.4.3 | | ne shielding gas volume (gas test)/rinse hose package | |
| | 5.5 | TIG weld | ling | | 36 |
| | | 5.5.1 | Connecti | ion for workpiece lead | 36 |
| | | 5.5.2 | | task selection | |
| | 5.6 | MMA we | lding | | 37 |



| | | 5.6.1 | Connecting the electrode holder and workpiece lead | |
|----|------|-----------|---|----|
| | | 5.6.2 | Welding task selection | |
| | 5.7 | Remote | control | 37 |
| | 5.8 | Interface | es for automation | 38 |
| | | 5.8.1 | Automation interface | 38 |
| | | 5.8.2 | RINT X12 robot interface | 38 |
| | | 5.8.3 | BUSINT X11 Industrial bus interface | 39 |
| | 5.9 | PC interf | face | 39 |
| | 5.10 | Compon | ent identification | 39 |
| 6 | Main | • | care and disposal | |
| ٠ | 6.1 | | | |
| | 6.2 | | tion of icons | |
| | 6.3 | | ance schedule | |
| | 0.0 | 6.3.1 | Dirt filter | |
| | | 6.3.2 | Coolant error | |
| | | 6.3.3 | Heat exchanger (torch cooling) | |
| | | 6.3.4 | Power source (inverter) | |
| | | 6.3.5 | Annual test (inspection and testing during operation) | |
| | 6.4 | | g of equipment | 42 |
| _ | | • | • | |
| 1 | | | lts | |
| | 7.1 | | essages (power source) | |
| | 7.2 | _ | S | |
| | 7.3 | | t for rectifying faults | |
| | 7.4 | | plant circuit | |
| | 7.5 | • | e pump shaft (coolant circuit) | |
| 8 | | | a | |
| | 8.1 | | ons and weighte | |
| | 8.2 | | torch cooling system | |
| | 8.3 | Performa | ance data | |
| | | 8.3.1 | Titan XQ 350 puls D | |
| | | 8.3.2 | Titan XQ 400 puls D | 59 |
| | | 8.3.3 | Titan XQ 500 puls D | |
| | | 8.3.4 | Titan XQ 600 puls D | 61 |
| 9 | Acce | ssories | | 62 |
| | 9.1 | General | accessories | 62 |
| | 9.2 | | | |
| | 9.3 | | emote control | |
| | | 9.3.1 | Extension cable | |
| | 9.4 | | remote control | |
| | | 9.4.1 | Connection cables | |
| | | 9.4.2 | Extension cable | |
| | 9.5 | - | er communication | |
| | | 9.5.1 | Welding torch cooling system | |
| 40 | Anna | | voiding to on occoming dyoton | |
| ıU | | | | |
| | 10.1 | Scarcilli | ng for a dealer | |



2 For your safety

2.1 Notes on the use of these operating instructions

△ DANGER

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

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

△ WARNING

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

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

▲ CAUTION

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

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

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

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

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



Explanation of icons 2.2

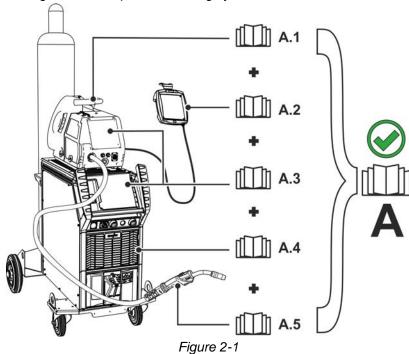
| Symbol | Description | Symbol | Description |
|------------|---|--------|----------------------------------|
| R | Indicates technical aspects which the user must observe. | | Activate and release / Tap / Tip |
| | Switch off machine | | Release |
| | Switch on machine | | Press and hold |
| | | (I) | Switch |
| (X) | Incorrect / Invalid | 97 | Turn |
| | Correct / Valid | | Numerical value – adjustable |
| | Input | | Signal light lights up in green |
| • | Navigation | •••• | Signal light flashes green |
| | Output | -`\. | Signal light lights up in red |
| 45. | Time representation (e.g.: wait 4 s / actuate) | •①• | Signal light flashes red |
| -//- | Interruption in the menu display (other setting options possible) | | |
| * | Tool not required/do not use | | |
| Î | Tool required/use | | |



Part of the complete documentation 2.3

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.



The illustration shows a general example of a welding system.

| Item | Documentation |
|------|------------------------|
| A.1 | Wire feeder |
| A.2 | Remote adjuster |
| A.3 | Controller |
| A.4 | Power source |
| A.5 | Welding torch |
| Α | 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!
- 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 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 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!

8 099-005560-EW501 23.08.2019









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!



A CAUTION



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

((نیا))

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).



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.

099-005560-EW501 23.08.2019





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.

2.5 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.



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.

For your safety

Transport and installation



B

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!

B

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.

图

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





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 Use and operation solely with the following machines

A suitable wire feed unit (system component) is required in order to operate the welding machine! The following system components can be combined with this machine:

| | Titan XQ 350-600 puls D |
|----------|-------------------------|
| Drive XQ | ⊘ |

3.2 Applications

Device control of multi-process welding machines for arc welding covering the following welding procedures:

| Machine series | Main procedure for MIG/MAG welding Secondary process | rocess | | | | | | | | | | |
|-----------------|--|-------------|------------|------------|------------------|------------------|-----------------|-----------------|---------------|------------------------|-------------|----------|
| | Stan | dard a | arc | | Pulse | ed arc | ; | | | | | |
| | MIG/MAG XQ | forceArc XQ | rootArc XQ | coldArc XQ | MIG/MAG pulse XQ | forceArc puls XQ | rootArc puls XQ | coldArc puls XQ | acArc puls XQ | TIG welding (lift arc) | MMA welding | Gouging |
| Titan XQ / XQ C | ② | ② | ② | ② | ② | ② | ② | ② | * | ② | ② | ② |
| Titan XQ AC | Θ | Θ | Θ | Θ | Θ | Θ | Θ | Θ | ② | Θ | Θ | ② |

099-005560-EW501 23.08.2019



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



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

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

3.3.3 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 product was tested with calibrated measuring equipment according to the applicable standards IEC/EN 60974, ISO/EN 17662, EN 50504 and complies with the permissible tolerances. Recommended calibration interval: 12 months.



4 Machine description – quick overview

4.1 Machine configuration

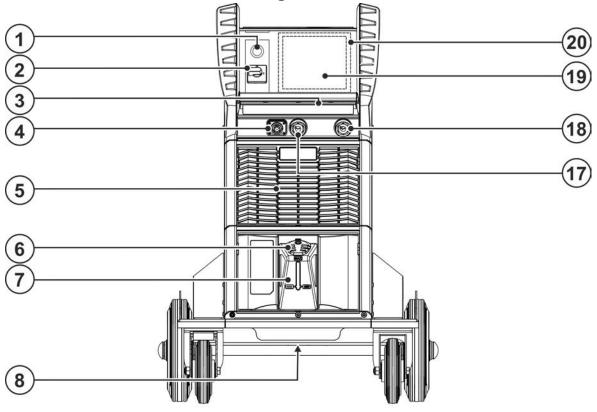
The following table shows the different design variants (development stages) of the device series Titan XQ:

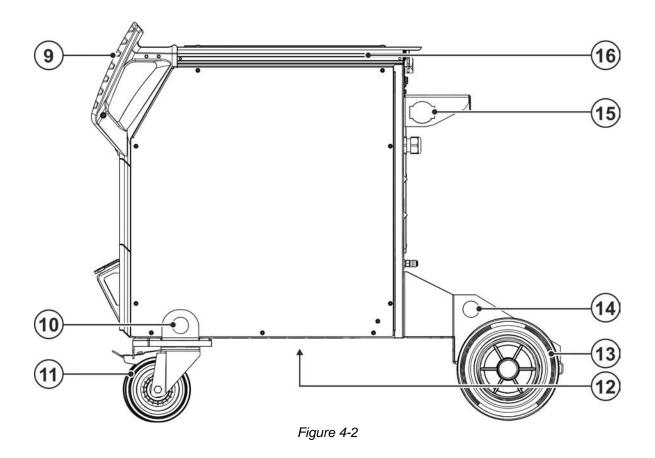
| Type Figure | | | | Transport properties | | | | Torch cooling | | |
|-------------|----|-----|-----|---|--|---|---------------------------------------|---------------|-----------------|----------------------------------|
| | | | | Wheel kit, narrow track, without cylinder bracket | Pallet bottom, without cylinder bracket | Wheel kit, single cylinder bra- cket | Wheel kit, double cylinder bracket | Gas | Water (coolant) | Water (coolant), reinforced pump |
| F06 | R1 | G | | * | * | Θ | * | Θ | * | * |
| F06 | R1 | w | | * | * | ② | * | * | ② | * |
| F06 | R1 | WRF | 3 | * | * | ② | * | * | * | ② |
| F06 | R2 | G | | * | * | * | ② | ② | * | * |
| F06 | R2 | w | | * | * | * | ② | * | ② | * |
| F06 | R2 | WRF | 3 | * | * | * | ② | * | * | ② |
| F06 | RS | G | | ② | * | * | * | ② | * | ※ |
| F06 | RS | w | | ② | * | * | * | * | ② | * |
| F06 | RS | WRF | 3 0 | Θ | * | * | * | * | * | ② |
| F06 | Р | G | | * | Θ | * | * | ② | * | ※ |
| F06 | Р | w | | * | Θ | * | * | * | ② | ※ |
| F06 | Р | WRF | | * | ② | * | * | * | * | ② |

Figure 4-1

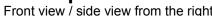


Front view / side view from the right 4.2









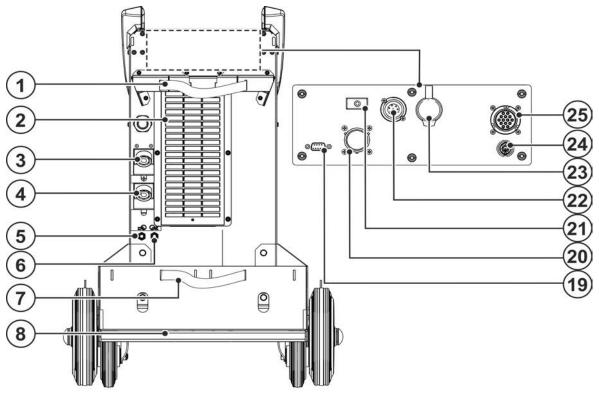


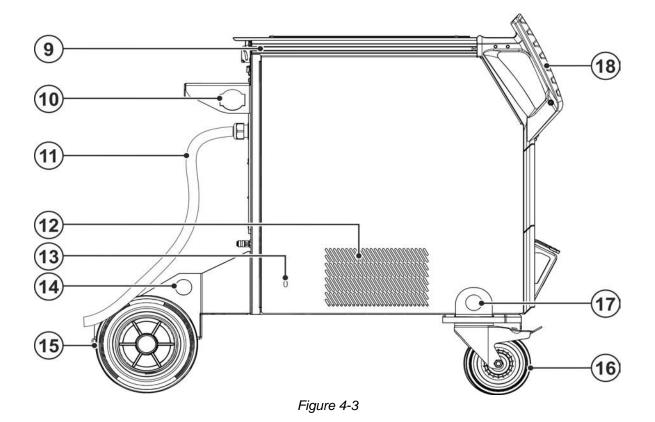
| Item | Symbol | Description |
|------|--------|---|
| 1 | | WiFi antenna |
| | | Factory-fit option, (version OW Expert XQ 2.0 WLG) |
| 2 | | Main switch, machine on/off |
| 3 | | LED status bar - display of operating status |
| | | The operating status is indicated by a light guide > see 5.2.1 chapter. |
| 4 | | 7-pole connection socket (digital) |
| | ~ | For connecting digital accessory components |
| 5 | | Cooling air outlet |
| 6 | | Coolant tank cap |
| 7 | | Coolant tank > see 5.1.5 chapter |
| 8 | | Coolant drain plug > see 6.3.2 chapter |
| 9 | | Carrying handle |
| 10 | | Lifting lug > see 5.1.1 chapter |
| 11 | | Wheel |
| | | The machine can be secured against rolling away on a wheel with a foot lock. |
| 12 | | Inlet opening for cooling air (torch cooling) |
| | | Dirt filter can be retrofitted |
| 13 | | Wheels, fixed castors |
| 14 | | Lifting lug > see 5.1.1 chapter |
| 15 | | Intermediate hose package strain relief > see 5.1.8 chapter |
| 16 | | Aluminium continuous casting profile flexFit |
| | | Individual mounting option for accessories and options |
| 17 | | 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. |
| 18 | | 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. |
| 19 | | Machine control, see the relevant control operating instructions |
| 20 | | Protective cap > see 5.3 chapter |

099-005560-EW501 23.08.2019



4.3 Rear view / side view from left











| Item | Symbol | Description |
|------|----------|---|
| 1 | | Securing elements for shielding gas cylinder (strap/chain) |
| 2 | | Cooling air inlet |
| | | Dirt filter optional > see 6.3.1 chapter |
| 3 | | 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. |
| 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 | Red | Quick connect coupling (red) coolant return |
| 6 | Blue | Quick connect coupling (blue) coolant supply |
| 7 | | Securing elements for shielding gas cylinder (strap/chain) |
| 8 | | Bracket for shielding gas cylinder |
| 9 | | Aluminium continuous casting profile flexFit |
| | | Individual mounting option for accessories and options |
| 10 | | Intermediate hose package strain relief > see 5.1.8 chapter |
| 11 | | Mains connection cable > see 5.1.11 chapter |
| 12 | | Outlet opening cooling air (torch cooling) |
| 13 | | Service opening for coolant pump > see 7.5 chapter |
| 14 | | Lifting lug > see 5.1.1 chapter |
| 15 | | Wheels, fixed castors |
| 16 | | Wheels, guide castors |
| 17 | | Lifting lug > see 5.1.1 chapter |
| 18 | | Carrying handle |
| 19 | COM | PC interface, serial (D-Sub connection socket, 9-pole) |
| 20 | analog | Interface for automated welding 19-pin (analogue) Optional > see 5.8.1 chapter |
| 21 | 8/3 | Key button, Automatic cutout Wire feed motor supply voltage fuse (press to reset a triggered fuse) |
| 22 | ♦ | 7-pole connection socket (digital) For connecting digital accessory components |
| 23 | 묢 | RJ45 connection socket, mains connection Optional |
| 24 | | Connection socket, hand scanner Component identification Xnet - optional - > see 5.10 chapter |
| 25 | B DV1 | 14-pole connection socket Wire feeder control cable connection |



5 Design and function

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!

▲ WARNING

· 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

5.1.1 Lifting by crane

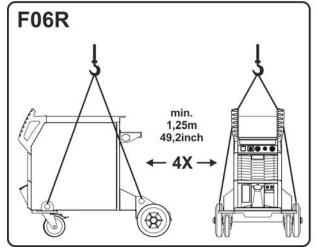


WARNING

Risk of injury during lifting by crane! When lifting the machine by crane, persons may be severely injured by falling machines or mount-on components.

- Simultaneous lifting of system components such as power source, wire feeder or cooling unit without suitable crane components is not allowed. Each system component has to be lifted separately!
- Remove any supply leads and accessories before lifting by crane (e.g. hose package, wire spool, shielding gas cylinder, toolbox, wire feeder, remote control, etc.)!
- Properly close and lock all casing covers and protective caps before lifting by crane!
- Use the correct number of hoisting equipment of the right size in the correct position! Observe craning principle > see 5.1.1.1 chapter!
- Devices with lifting eyes: Always lift all lifting eyes simultaneously!
- Devices with pallet bottom (feet): Pull the straps through the openings of the feet (hooking hoisting equipment in the openings is not sufficient).
- When using retrofitted craning frames etc.: always use at least two lifting points positioned as far apart as possible observe option description.
- Avoid any jerky movements!
- Ensure that the load is distributed evenly! Use chain hoists and chain slings of the same length only!
- Stay outside the danger zone underneath the machine!
- Observe the regulations regarding occupational safety and accident prevention for the respective country.

5.1.1.1 Craning principle



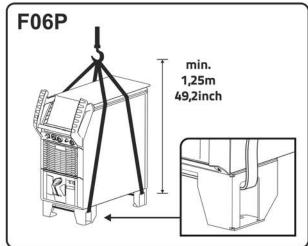


Figure 5-1

099-005560-EW501 23.08.2019

Design and function





5.1.2 Ambient conditions



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

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

REST

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!

5.1.2.1 In operation

Temperature range of the ambient air:

-25 °C to +40 °C (-13 °F to 104 °F) [1]

Relative humidity:

- up to 50 % at 40 °C (104 °F)
- up to 90 % at 20 °C (68 °F)

5.1.2.2 Transport and storage

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

-30 °C to +70 °C (-22 °F to 158 °F) [1]

Relative humidity

up to 90 % at 20 °C (68 °F)

5.1.3 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!

5.1.4 Workpiece lead, general



A 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!

^[1] Ambient temperature dependent on coolant! Observe the coolant temperature range of the torch cooling



5.1.5 Welding torch cooling system

5.1.5.1 Functional characteristics

The cooling system of this machine series is designed to optimise the operating conditions and is temperature- and flow-monitored to protect against damage. Limit values > see 8.2 chapterfor warnings and errors in the machine (adjustable depending on control system) are stored for monitoring and control of the cooling system. If the cooling system is faulty or overloaded, an error message appears and the welding process is switched off in a controlled manner.

Insufficient frost protection in the welding torch coolant!

Depending on the ambient conditions, different liquids are used for cooling the welding torch > see 5.1.5.2 chapter.

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

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

Coolant mixtures!

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

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

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

5.1.5.2 Permitted torch coolant

| Coolant | Temperature range |
|-------------------|-------------------------------------|
| KF 23E (Standard) | -10 °C to +40 °C (14 °F to +104 °F) |
| KF 37E | -20 °C to +30 °C (-4 °F to +86 °F) |

099-005560-EW501 23.08.2019



5.1.5.3 Maximal hose package length

All information relates to the total hose package length of the complete welding system and presents exemplary configurations (of components of the EWM product portfolio with standard lengths). A straight kink-free installation is to be ensured, taking into account the max. delivery height.

Pump: Pmax = 3.5 bar (0.35 MPa)

| Power source | Hose package | Wire feeder | miniDrive | Welding torch | Max. |
|--------------|-----------------|-------------|-----------------|----------------|--------|
| Compact | * | ③ | (25 m / 82 ft.) | (5 m / 16 ft.) | |
| Compact | (20 m / 65 ft.) | ⊗ | * | (5 m / 16 ft.) | 30 m |
| Decempest | (25 m / 82 ft.) | ⊗ | * | (5 m / 16 ft.) | 98 ft. |
| Decompact | (15 m / 49 ft.) | ⊗ | (10 m / 32 ft.) | (5 m / 16 ft.) | |

Pump: Pmax = 4.5 bar (0.45 MPa)

| Power source | Hose package | Wire feeder | miniDrive | Welding torch | Max. |
|--------------|------------------|-------------|-----------------|----------------|-----------------|
| Compact | * | ③ | (25 m / 82 ft.) | (5 m / 16 ft.) | 30 m 98 ft. |
| Compact | (30 m / 98 ft.) | ⊗ | * | (5 m / 16 ft.) | 40 m 131 ft. |
| December | (40 m / 131 ft.) | ⊗ | * | (5 m / 16 ft.) | 45 m 147 ft. |
| Decompact | (40 m / 131 ft.) | ⊗ | (25 m / 82 ft.) | (5 m / 16 ft.) | 70 m 229 ft. |

5.1.5.4 Adding coolant

After switching on the machine, the coolant pump runs for a maximum of 2 min. (Filling hose package). If the machine does not detect a sufficient coolant flow during this time, the coolant pump is switched off (protection against damage in dry run). At the same time, the welding data display signals the coolant error. If there is a sufficient coolant flow, the coolant pump is switched off already 2 min. before the end (ready for operation).

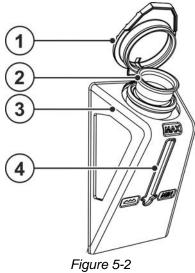
If there is less coolant in the coolant tank than the minimum required you may need to vent the coolant circuit. In this case the welding machine will automatically shut down the coolant pump and signal an error, > see 7.4 chapter.

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



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





| Item | Symbol | Description | |
|------|--------|---|--|
| 1 | | Coolant tank cap | |
| 2 | | Coolant filter sieve | |
| 3 | | Coolant tank > see 5.1.5 chapter | |
| 4 | | Filling level display MIN minimum coolant level MAX maximum coolant level | |

- · Pull off the coolant tank sealing cover.
- Check filter sieve for cleanliness, clean if necessary and reinsert.
- Top up coolant up to the upper filling level gauge "MAX" and push sealing cover back on.
- Switch on the power source at the main switch.



5.1.6 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).

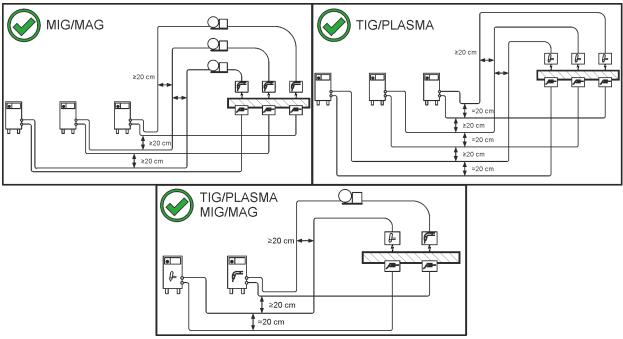


Figure 5-3

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

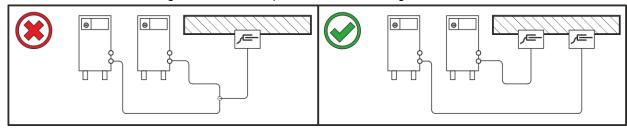


Figure 5-4

- · 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.

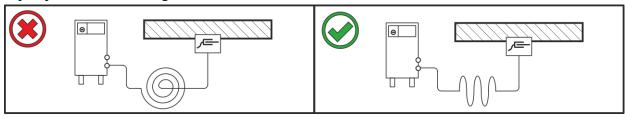


Figure 5-5



5.1.7 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.

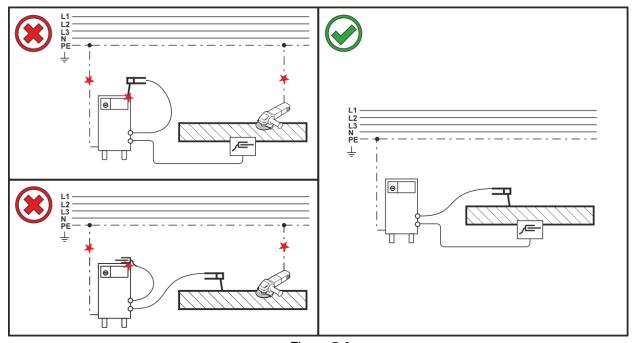


Figure 5-6



Connecting the intermediate hose package to the power source 5.1.8

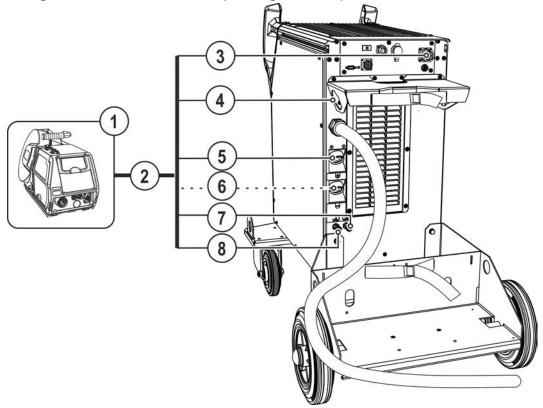


Figure 5-7

| Item | Symbol | Description | | |
|------|----------|---|--|--|
| 1 | ф | Wire feed unit | | |
| 2 | | Intermediate hose package | | |
| 3 | B DV1 | 14-pole connection socket Wire feeder control cable connection | | |
| 4 | | Intermediate hose package strain relief > see 5.1.8 chapter | | |
| 5 | + | Connection socket, "+" welding current • Standard MIG/MAG welding (intermediate hose package) | | |
| 6 | | Connection socket, "-" welding current Connection for welding current plug from intermediate hose package • MIG/MAG flux cored wire welding • TIG welding | | |
| 7 | Blue | Quick connect coupling (blue) coolant supply | | |
| 8 | Red | Quick connect coupling (red) coolant return | | |



- Insert the hose package end of the intermediate hose package from the outside through the strain relief of intermediate hose package and then lock by turning to the right.
- Insert the control cable through the recess in the gas cylinder bracket, insert the cable plug into the into the connection socket (14-pole) and secure with crown nut (the plug can only be inserted into the connection socket in one position).
- Insert the plug on the welding current lead into the welding current connection socket "+" and lock.
- Lock connecting nipples of the cooling water tubes into the corresponding quick connect couplings:
 Return line red to quick connect coupling, red (coolant return) and
 supply line blue to quick connect coupling, blue (coolant supply).

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!

5.1.9 Intermediate hose package strain relief

Property damage due to strain relief not installed or not installed correctly!

The strain relief absorbs tensile forces on cables, plugs and sockets.

If strain reliefs are not installed or not installed correctly, the connector plugs or sockets may be damaged.

- The attachment must always take place on both sides of the intermediate hose package!
- The connections of the hose package must be locked properly!

5.1.9.1 Possible attachment points

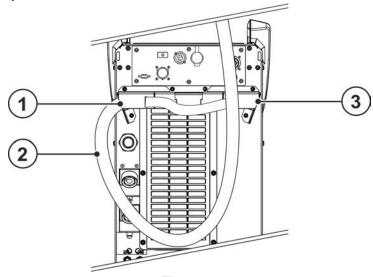


Figure 5-8

| Item | Symbol | Description | |
|------|--------|---|--|
| 1 | DV1 | Intermediate hose package strain relief | |
| | | For wire feeder 1 | |
| 2 | | Intermediate hose package | |
| 3 | DV2 | Intermediate hose package strain relief | |
| | | For wire feeder 2 | |

099-005560-EW501 23.08.2019



5.1.9.2 Locking the strain relief EWM intermediate hose package

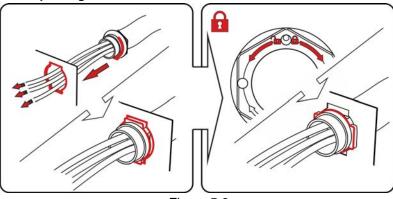


Figure 5-9

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

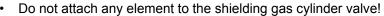


B

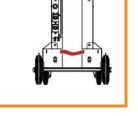
▲ WARNING

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!
- Lift the shielding gas cylinder onto the receptacle of the shielding gas
 cylinder and secure with both safety belts provided on the device as
 standard! Belts must be tight.



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.

· All shielding gas connections must be gas tight.



5.1.10.1 Pressure regulator connection

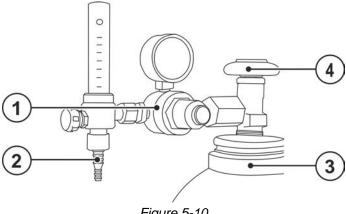


Figure 5-10

| 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 gas hose connection crown nut onto the output side of the pressure regulator.



5.1.11 Mains connection

A 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.



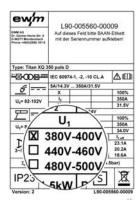
The welding power source is equipped with an internal clamp device for multiple mains voltages. The currently set mains voltage of the power source must match the supply voltage! The following steps have to be carried out:

- Visual inspection comparison between the currently set mains voltage at the power source and the supply voltage > see 5.1.11.1 chapter
- Adaptation and marking of the mains voltage > see 5.1.11.2 chapter
- Carry out a safety check after intervention in the machine > see 5.1.11.3 chapter!

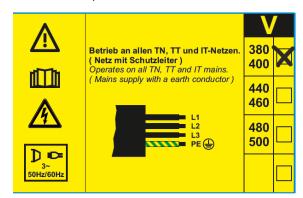
5.1.11.1 Visual inspection of the set mains voltage

The set mains voltage is marked on the rating plate and the label on the mains connection cable by a marking. If the marked mains voltage range coincides with the supply voltage, further commissioning may take place. If the specifications for mains and supply voltage do not match, the mains voltage in the machine must be reconnected to the supply voltage > see 5.1.11.2 chapter.

Removed or not clearly identifiable adhesive labels must be replaced!



Example of rating plate



Adhesive label of mains connection cable

Figure 5-11



5.1.11.2 Adjusting the power source to the mains voltage

The mains voltage is adapted by replugging the operating voltage plug on the printed circuit board VB xx0 into the power source.

The machine can be reconnected between three possible voltage ranges:

- 1. 380 V to 400 V (ex works)
- 2. 440 V to 460 V
- 3. 480 V to 500 V

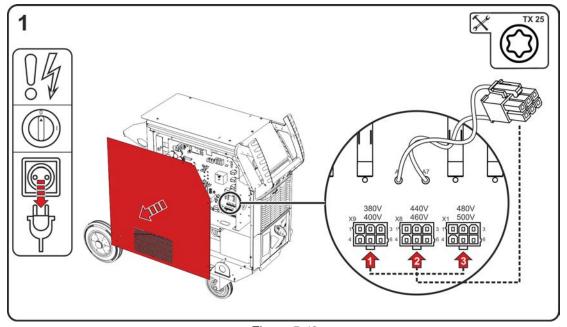


Figure 5-12

- Switch off machine at the main switch.
- · Disconnect mains plug.
- Loosen the fastening screws from the housing cover. Open the housing cover at the side and lift it up.
- Reconnect operating voltage plug (printed circuit board VB xx0) to the corresponding voltage range of the supply voltage (380V/400V ex works).
- Hook housing cover from above into the aluminium continuous casting profile flexFit and secure with fastening screws.
- Install a mains plug which is permissible for the selected mains voltage to the mains cable. Identify the selected mains voltage on the rating plate and on the adhesive label of mains connection cable.

5.1.11.3 Re-commissioning



WARNING

Dangers resulting from failure to perform test after conversion!

Before reconnection, "Inspection and Testing during Operation" according to IEC/BS EN 60974-4 "Arc welding systems – Inspection and Testing during Operation" has to be performed!

· Perform test to IEC / DIN EN 60974-4!

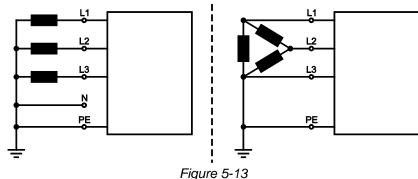


5.1.11.4 Mains configuration

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



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.

5.2 Switching on and system diagnosis

Each time the system is switched on, the entire welding system runs data synchronization and the system diagnostics of the individual components. The duration of the start time (switching on up to welding readiness) depends on the number of connected system components and the information to be exchanged under these devices. This time can take from several seconds to several minutes (e.g. for the system components interconnected for the first time). During this start phase, the system components will display the controller type and, if applicable, software information in the welding data display (if available). This start phase is terminated by display of the nominal valuesfor current, voltage or wire feed speed.

Operation of machine fan and coolant pump

The machine fan and coolant pump in this machine series are temperature- and state-controlled. This ensures that subsystems of the welding machine run only when they are needed. After each switching on, the machine fans run at full power for approx. 2 s, e.g. to blow out dust deposits.

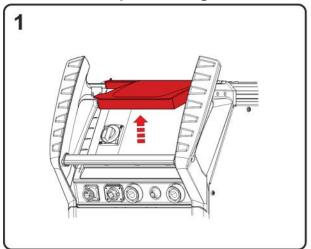
5.2.1 LED status bar - display of operating status

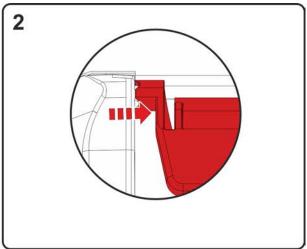
A light guide on the front of the housing (LED status bar) shows the user the current operating status of the device.

| 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 7.1 chapter |



5.3 Protective flap, welding machine control





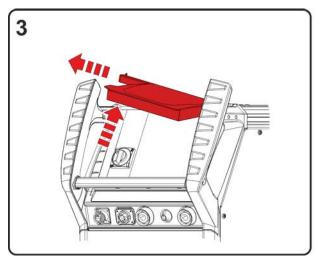


Figure 5-14

- 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.



5.4 MIG/MAG welding

5.4.1 Connection for workpiece lead

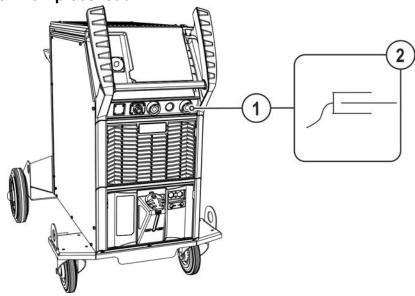


Figure 5-15

| Item | Symbol | Description |
|------|--------|--|
| 1 | | Connection socket, "-" welding current |
| | | Workpiece lead connection |
| 2 | | Workpiece |

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

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!

5.4.2 Welding task selection

For selection of the welding task and for general operation see the relevant Control operating instructions.



5.4.3 Setting the shielding gas volume (gas test)/rinse hose package

- Shielding gas supply as described in chapter Transport and positioning > see 5.1 chapter.
- Slowly open the gas cylinder valve.
- · Open the pressure regulator.
- Switch on the power source at the main switch.
- Set the relevant gas quantity for the application on the pressure regulator.
- You can activate the gas test on the machine control (see Control operating instructions) or by pressing the "Gas test/rinse hose package "" push-button briefly (welding voltage and wire feed motor remain switched off no unintentional ignition of the arc). Some welding systems have several push-buttons to set the shielding gas. The push-button is generally found near a wire feeder.

Shielding gas flows for around 25 seconds or until the button is pressed again.

If the shielding gas setting is too low or too high, this can introduce air to the weld pool and may cause pores to form. Adjust the shielding gas quantity to suit the welding task!

| Welding process | Recommended shielding gas quantity |
|-------------------------|--|
| MAG welding | Wire diameter x 11.5 = I/min |
| MIG brazing | Wire diameter x 11.5 = I/min |
| MIG welding (aluminium) | Wire diameter x 13.5 = I/min (100 % argon) |

Helium-rich gas mixtures require a higher gas volume!

The table below can be used to correct the gas volume calculated where necessary:

| Shielding gas | Factor |
|---------------|--------|
| 75% Ar/25% He | 1.14 |
| 50% Ar/50% He | 1.35 |
| 25% Ar/75% He | 1.75 |
| 100% He | 3.16 |

5.5 TIG welding

5.5.1 Connection for workpiece lead

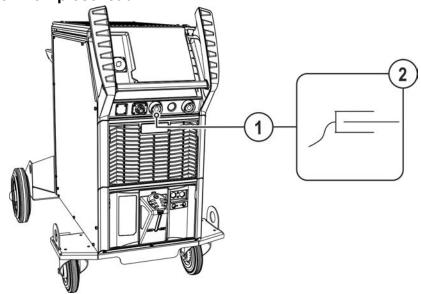


Figure 5-16

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

36 099-005560-EW501



• Insert the cable plug on the work piece lead into the "+" welding current connection socket and lock by turning to the right.

5.5.2 Welding task selection

For selection of the welding task and for general operation see the relevant Control operating instructions.

5.6 MMA welding



▲ 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.

5.6.1 Connecting the electrode holder and workpiece lead

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

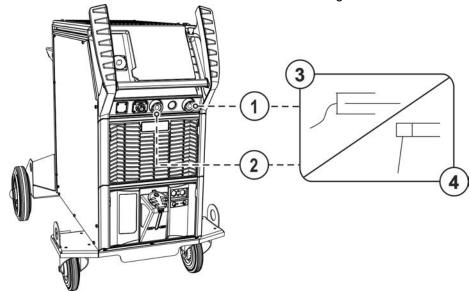


Figure 5-17

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

- 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.

5.6.2 Welding task selection

For selection of the welding task and for general operation see the relevant Control operating instructions.

5.7 Remote control

The remote controls are operated via the 19-pole remote control connection socket (analogue) or the 7-pole remote control connection socket (digital), depending on the model.

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



5.8 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.

5.8.1 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 corresponding control board (to be done only by qualified service personnel)!

These accessory components can be retrofitted as an option > see 9 chapter.

| Pin | Input / Output | Designation | Figure |
|-----|----------------------------|---|--|
| Α | Output | PE Connection for cable screen | |
| D | Output (open collector) | IGRO Current flows signal I>0 (maximum load 20 mA / 15 V) 0 V = welding current flows | PE A REGaus B |
| E/R | Input | Not-Aus - Emergency stop for higher level shut-down of the power source. | SYN_E C |
| F | Output | 0VReference potential | Not/Aus E |
| G/P | Output | IGRO Current relay contact to the user, potential-free (max. +/-15 V / 100 mA) | IGRO G |
| Н | Output | UistWelding voltage, measured on pin F, 0-10 V (0 V = 0 V, 10 V = 100 V) | VSchweiss J SYN_A K |
| L | Input | STA/STP Start = 15 V / Stop = 0 V [1] | STA/STP L |
| М | Output | +15 V Power supply (max. 75 mA) | +15V M |
| N | Output | -15 VPower supply (max. 25 mA) | IGR0 P |
| S | Output | 0 VReference potential | Not/Aus R |
| Т | Output | list Welding current, measured on pin F 0-10V (0V = 0A, 10V = 1000A) | OV S C I I I I I I I I I I I I I I I I I I |

The operating mode is specified by the wire feeder (the start / stop function corresponds to the operation of the torch trigger and is used, for instance, in mechanized applications).

5.8.2 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.



5.8.3 BUSINT X11 Industrial bus interface

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

- Profinet/Profibus
- EnthernetIP/DeviceNet
- EtherCAT

etc.

5.9 PC interface



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

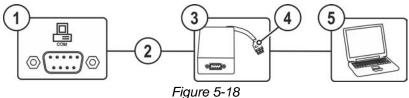
Not using the SECINT X10USB interface results in equipment damage or faults in signal transmission. The PC may be destroyed due to high frequency ignition pulses.

- 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)!

PC300.Net 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)

- Manage up to 510 JOBs
- · Exchange JOBs with the welding machine
- · Online data communication
- Default settings for welding data monitoring
- Always up-to-date thanks to standard update function for new welding parameters
- · Data backup by easy communication between power source and PC



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

5.10 Component identification

These accessory components can be retrofitted as an option > see 9 chapter.

Bar codes predefined in ewm Xnet are recorded with a manual scanner. Component data are retrieved and displayed in the control.



6 Maintenance, care and disposal

6.1 General

▲ WARNING



Incorrect maintenance, testing and repair!

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

Observe the maintenance instructions > see 6.3 chapter.

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

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**

| Person | |
|--------------|--|
| | Welder / operator |
| | Service staff / expert, qualified person |
| Test | |
| | Visual inspection |
| | Functional check |
| Period, inte | rval |
| 8h | One-shift operation |
| 24h | Multi-shift operation |
| 8h | every 8 hours |
| D | Daily |
| W | Weekly |
| M | Monthly |
| H/Y | Every 6 months |
| Y | Annually |



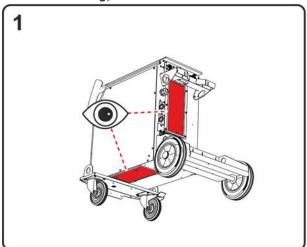
6.3 **Maintenance schedule**

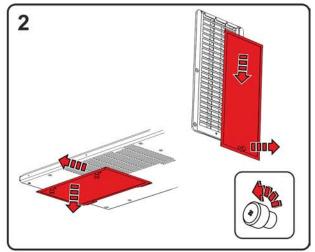
| | | | | Maintenance step | |
|-----------------|--------------|------|-----------|--|----------|
| Examiner | Type of test | (ah) | (24h) | Only people certified as inspectors or repairers may carry out the relevant work step due to their training! Non-applicable checkpoints are omitted. | Repairer |
| | • | \$D | О-О 8h | 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 welding torch! Check wire drive, welding torches, and liner elements for application-related equipment and setting. Clean the wire feed rolls on a regular basis (depending on the degree of soiling). Replace worn wire feed rolls. Connections of welding current leads (check that they are fitted correctly and secured). Is shielding gas cylinder with gas cylinder securing elements (chain/belt) secured? Strain relief: Are hose packages secured with strain relief? | |
| | • | ٩ | 8h | 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? | G |
| | E 400 | Ď | 8h | Cleaning connections of coolant pipes (quick connect coupling, connections) from soil and install protective caps if not used. Gas test solenoid valve opens and closes properly. Checking operating, signalling and indicator lights, protective devices and actuators. | D |
| | 2 | M | W | Check wire feed roll holder (wire feed rolls must be firmly seated on their holders and must not have any play) Cleaning dirt filter (if applicable) > see 6.3.1 chapter | |
| | 2 | ٥ | 8h | Checking correct mounting of the wire spool. | |
| | 2 | Y | H/Y | Cleaning the outer surfaces with a damp cloth (no aggressive cleaning agents). | |
| | 2 | | | Cleaning power source (inverter) > see 6.3.4 chapter | |
| | | | | Cleaning heat exchanger (torch cooling) > see 6.3.3 chapter | |
| | 2 | | | Coolant change (welding torch cooling) > see 6.3.2 chapter | |
| | 2 | | | Periodic inspection and testing > see 6.3.5 chapter | |



6.3.1 Dirt filter

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





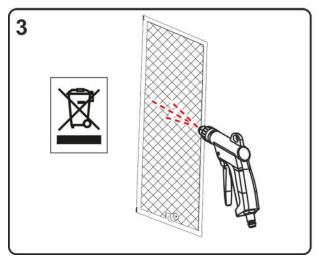


Figure 6-1

- 1. Two dirt filters (option for retrofitting) can be installed on the device. One at the air inlet of the power unit (inverter) and one at the air inlet of the heat exchanger (torch cooling).
- 2. Loosen the locking screws of the filters.
 - Pull filter power unit down / back.
 - Pull filter heat exchanger down / sidewards.
- 3. Blow out dirt filter using compressed air that is free of oil and water.

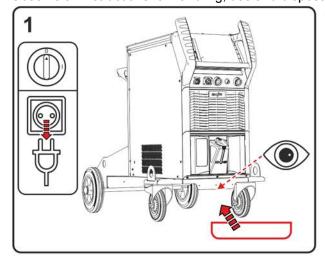
Observe local regulations on disposal!

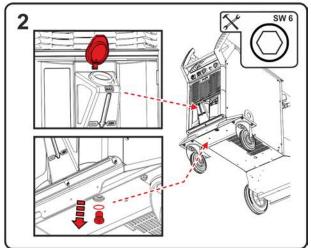
· After cleaning, refit the filters in reverse order.

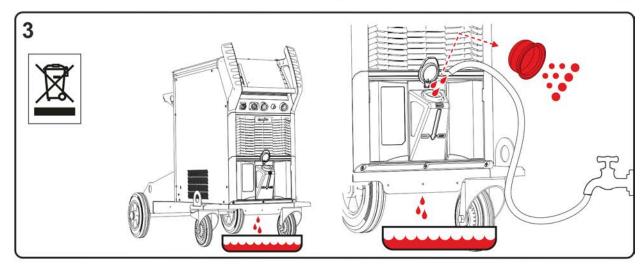


6.3.2 **Coolant error**

Observe all instructions for handling, use and disposal of torch coolant > see 5.1.5 chapter.







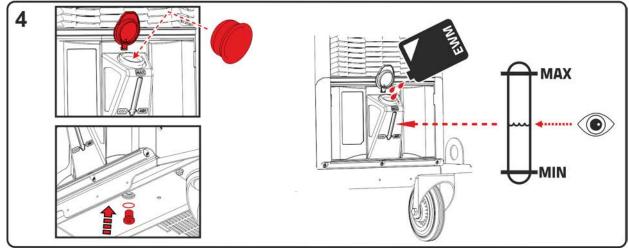


Figure 6-2

Maintenance, care and disposal





- 1. Switch off the machine and pull out the mains plug. Position a suitable collecting container (approx. 8 l) under the drain plug.
- 2. Open tank screw plug for ventilation. Unscrew the drain plug with tank seal downwards. The coolant is now flowing out.
- 3. Wait until the coolant has been completely drained from the tank into the container, then remove and clean the filter screen from the filler neck. Then rinse out the tank with water (empty the collecting container, if necessary).

Observe local regulations on disposal!

4. Screw the drain plug with seal back into the tank from bottom (tightly), insert the cleaned filter screen into the filler neck. Fill tank with original -EWM- coolant. (For type and item no.: see sticker near filler). After filling, close the tank screw plug and vent the coolant circuit > see 7.4 chapter.



6.3.3 Heat exchanger (torch cooling)

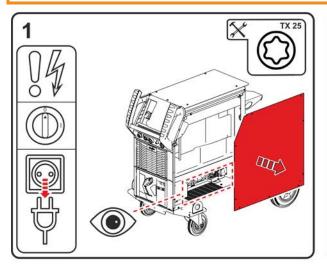
▲ WARNING

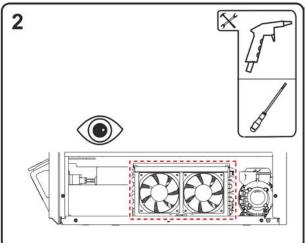


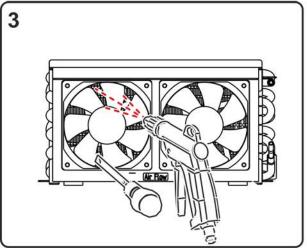
Risk of injury due to insufficient training!

An appropriate training is necessary for the following maintenance steps to avoid injuries.

- This maintenance step may only be carried out by trained and authorized specialist staff.
- · Observe warnings and maintenance instructions at the beginning of this chapter!







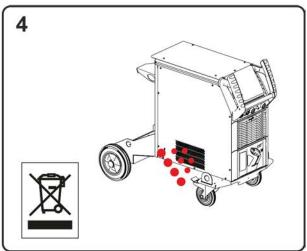


Figure 6-3

- Switch off the machine and pull out the mains plug.
 Remove the screws of the side panel. Remove the side panel from the system (lift up and sidewards).
- 2. Use only oil and water-free compressed air. Do not blow on electronic components directly. The machine fans can be overturned by to the compressed air and thus be damaged. Therefore mechanically block the machine fan with a screwdriver. Please note: The strips of the heat exchanger behind the machine fans must not be damaged by the screwdriver.
- 3. Blow out heat exchanger by the fan over the entire area.
- 4. The impurities escape through the openings in the side panel.

Observe local regulations on disposal!

 After cleaning, remove mechanical locks on the fans and close the unit in the reverse order and check according to applicable regulations.



6.3.4 Power source (inverter)

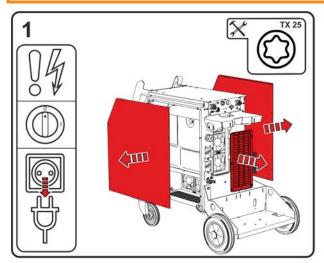
△ WARNING

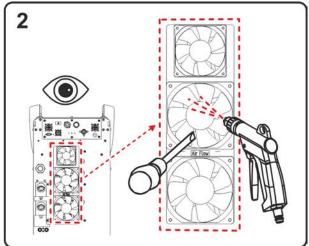


Risk of injury due to insufficient training!

An appropriate training is necessary for the following maintenance steps to avoid injuries.

- This maintenance step may only be carried out by trained and authorized specialist staff.
- Observe warnings and maintenance instructions at the beginning of this chapter!





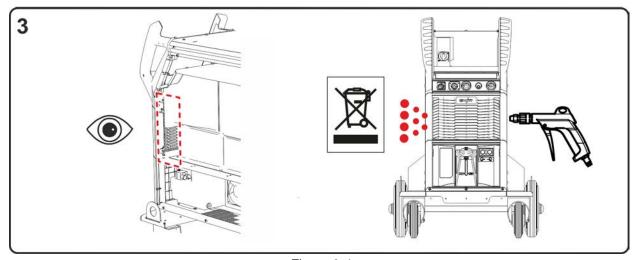


Figure 6-4

- Switch off the machine and pull out the mains plug. Remove the screws of the side panels and the grille at the rear. Remove side panels (lift upwards and sidewards). Remove grille (lift downwards and backwards).
- Use only oil and water-free compressed air. Do not blow on electronic components directly. The machine fans can be overturned by to the compressed air and thus be damaged. Therefore mechanically block the machine fan with a screwdriver.
- 3. Blow out the areas in front of the inverter side.

Observe local regulations on disposal!

 After cleaning, remove mechanical locks on the fans and close the unit in the 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!

Maintenance, care and disposal

Disposing of equipment



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 electric and electronic equipment (ElektroG)), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.
- Information about returning used equipment or about collections can be obtained from the respective municipal administration office.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.

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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 Error messages (power source)

A welding machine error will be signalled by an error code (see table) on the control display. In the event of an error, the power unit shuts down.

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

- · Document machine warning and inform service personnel, if required.
- If there are several errors in a control system, the error with the lowest error number (Err) is displayed. If this error is corrected, the next higher error number appears. This process is repeated until all errors have been resolved.

Categories legend (resetting the error)

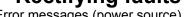
- a) The error message will disappear once the error has been rectified.
- b) The error message can be reset by pressing a push-button **◄**:
- c) The error message can only be reset by switching the machine off and on again.

| Err | Category | | Category Error | | Possible cause | Remedy | |
|-----|---|---|---|---|--|--|--|
| | a) | b) | c) | | | | |
| 3 | ⊘ | ③ | * | Tacho error | Error of wire feeder | Check connections (connections, pipes) | |
| | | | | | Permanent overload of the wire drive | Do not place the liner in tight radii; check wire core for smooth movement | |
| 4 | 4 Excess temperature Power source overheated | | Allow the power source to cool down (mains switch to "1") | | | | |
| | | | | | Fan blocked, dirty or defective | Check fan and clean or replace | |
| | | | | | Air inlet or outlet blocked | Check air inlet and outlet | |
| 5 | ※ | ※ | Θ | Mains overvol- tage | Mains voltage is too high | Check the mains voltages and compare with the power | |
| 6 | ※ | ® | \odot | Mains under- voltage | Mains voltage is too low | source connection voltages | |
| 7 | * | ③ | * | Low coolant level Flow rate too low (< = 0.7 l/m / (< = 0.18 gal/min) [1] [3] | | Check coolant flow, clean water block, remove kinks in hose package, adjust flow threshold | |
| | Coolant v | | Coolant volume too low | Fill coolant | | | |
| | | | | Pump does not run | Turn the pump shaft | | |
| | | | | Air in the coolant circuit | Vent coolant circuit | | |
| | | Hose package not completely filled with coolant | | Switch machine off / on (pump runs for 2 min) | | | |
| | | | | | Operation with gas-cooled welding torch | Connect coolant feed and coolant return (insert hose bridge); deactivate water block | |
| | | | | | Failure of automatic circuit- breaker [4] | Press to reset automatic circuit-breaker | |
| 8 | (| (| * | Shielding gas | No shielding gas | Check shielding gas supply | |
| | error [2] Pre-pressure too low Remo | | Remove kinks in the hose package; nominal value: 4-6 bar primary pressure | | | | |



| Err | Category | | ategory Error | | Possible cause | Remedy | |
|-----|----------|----------|---------------|--------------------------------|---|--|--|
| | a) | b) | c) | | | | |
| 9 | * | * | \odot | Sec. overvolta- ge | Overvoltage at output: Inverter error | Inform Service | |
| 10 | * | * | ② | Earth fault (PE error) | Connection between welding wire and machine casing Remove electrical connection | | |
| 11 | ③ | ③ | * | Quick shut- down | Removing the logical signal "robot ready" during the process | Eliminate errors on the higher- level control | |
| 22 | ② | ※ | * | Coolant excess temperature [3] | Coolant is overheating (>=70°C / >=158°F) [1] measured in the coolant return line Fan blocked, dirty or defective Air inlet or outlet blocked | Allow the power source to cool down (mains switch to "1") Check fan, clean or replace Check air inlet and outlet | |
| 32 | * | * | ⊘ | Error I>0 [3] | 7 iii iiiiot oi oddot blockod | Inform Service | |
| 33 | 8 | 8 | ③ | Error UIST [3] | Short circuit in welding circuit before welding | Eliminate short circuit in welding circuit; remove external sensor voltage | |
| 38 | * | * | ③ | Error IIST [3] | Short circuit in welding circuit before welding | Eliminate short circuit in welding circuit | |
| 48 | ③ | ② | * | Ignition error | No ignition occurred during a process start with automated machines | Check the wire feeding, check the connections of the load cables in the welding circuit, clean corroded surfaces on the workpiece before welding if applicable | |
| 49 | * | ⊗ | * | Arc interruption | An arc interruption occurred during welding with an automated system | Check wire feeding; adjust welding speed. | |
| 51 | \odot | ※ | * | Emergency stop | The emergency stop circuit of the power source has been activated. | Disable the activation of the emergency stop circuit (release protective circuit) | |
| 52 | * | * | ③ | No wire feeder | After switching on the automated system, no wire feeder was detected | Check or connect control cables of 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) | |
| 53 | * | ② | * | No wire feeder 2 | Wire feeder 2 not detected | Check or connect the control lines of the wire feeders | |
| 54 | * | ※ | \odot | VRD error ^[2] | Open circuit voltage reduction error | if necessary, disconnect ex- ternal machine from the welding circuit; inform Service | |
| 55 | * | ③ | * | WF excess current | Overcurrent detection on wire feeder | Do not place the liner in tight radii; check wire core for smooth movement | |
| 56 | * | * | Θ | Mains phase failure | One phase of the mains voltage has failed | Check mains connection, mains plug and mains fuses | |
| 57 | * | ② | * | Slave tacho error | Wire feeder fault (slave drive) | Check connectors, cables, connections | |
| | | | | | Permanent overload of the wire drive (slave drive) | Do not place the liner in tight radii; check wire core for smooth movement | |







| Err | Category | | у | Error | Possible cause | Remedy |
|-----|----------|----------|----------|-----------------------|--|--|
| | a) b) c) | | c) | | | |
| 58 | * | ③ | * | Short circuit | Check welding circuit for short circuit | Check welding circuit; isolate welding torch before depositing |
| 59 | * | * | ② | Incompatible machine | A machine connected to the system is not compatible | Please disconnect the incompatible machine from the system |
| 60 | * | * | ② | Incompatible software | A machine's software is not compatible. | Inform Service |
| 61 | * | ⊘ | * | Welding monitor | The actual value of a welding parameter is outside the specified tolerance field | Observe tolerance fields; adjust welding parameters |
| 62 | * | * | ② | System component [3] | System component not found | Inform Service |

^[1] factory setting

^[2] option

^[3] only machine series Titan

^[4] not machine series Titan



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 | \triangle |
| two 7-segment displays | ALL |
| one 7-segment display | R |

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.

| No. | Warning | Possible cause |
|-----|---------------------------------|---|
| 1 | Excess temperature | A shutdown is imminent due to excess temperature. |
| 4 | Shielding gas [2] | Check shielding gas supply. |
| 5 | Coolant flow [3] | Flow rate (<= 0.7l/min / <= 0.18 gal./min) [1] |
| 6 | low wire | 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 welding circuit inductance is too high for the selected welding task. |
| 10 | Partial inverter | One of several partial inverters is not supplying welding current. |
| 11 | Excess temperature, coolant [3] | Coolant (>= 65°C / >= 149°F) [1] |
| 12 | Welding monitor | The actual value of a welding parameter is outside the specified tolerance field. |
| 13 | Contact error | The resistance in the welding circuit is too high. Check earth connection. |
| 32 | Tacho error | Fault of wire feeder, permanent overload of the wire drive. |
| 33 | WF excess current | Overcurrent detection of the main WF drive. |
| 34 | JOB unknown | JOB selection was not performed because the JOB number is unknown. |
| 35 | WF excess current slave | Overload of the slave WF drive (front drive push/push system or intermediate drive). |
| 36 | Slave tacho error | Fault of wire feeder, permanent overload of the slave WF drive (front drive push/push system or intermediate drive). |
| 37 | FST bus failure | Wire feeder not connected, automatic circuit-breaker of wire feed motor (reset the tripped automatic circuit-breaker by actuating). |

^[1] factory setting

^[2] option

^[3] only machine series Titan XQ



7.3 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 |
|--------|----------|-------------|
| | <i>N</i> | Fault/Cause |
| | * | Remedy |

Functional errors

- Mains fuse triggers unsuitable mains fuse
 - Set up recommended mains fuse > see 8 chapter.
- - Connect the control cable of the wire feeder.
- ✓ 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)
- Machine restarts continuously
- ✓ Wire feeder without function
- ✓ System does not start up
 - 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

Collective interference signal light illuminates

- ✓ Excess temperature, welding machine
 - Allow the machine to cool down whilst still switched on
- ✓ Welding current monitoring device triggered (stray welding currents flowing across the protective earth). The error must be reset by switching the machine off and on again.
 - Welding wire is touching electrically conductive casing parts (check wire guide, has the welding wire sprung off the wire spool?).
 - Check for a correct mounting of the welding lead. Fit the feeder clamp of the welding lead as close as possible to the arc.

Excess temperature signal light illuminates

- ✓ Excess temperature, welding machine
 - * Allow the machine to cool down whilst still switched on

Coolant error/no coolant flowing

- ✓ Insufficient coolant flow
 - ★ Check coolant level and refill if necessary
- Air in the coolant circuit
 - ★ Vent coolant circuit > see 7.4 chapter



Wire feed problems

- ✓ Wire feed roll holder is worn (wire feed rolls must be firmly seated on their holders and must not have any play)
 - Replace wire feed roll holder (092-002960-E0000))
- ✓ 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
- - 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

7.4 Vent coolant circuit

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

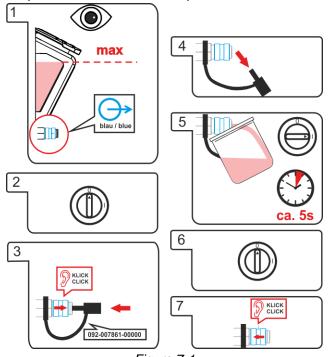


Figure 7-1



Fixing the pump shaft (coolant circuit) 7.5

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

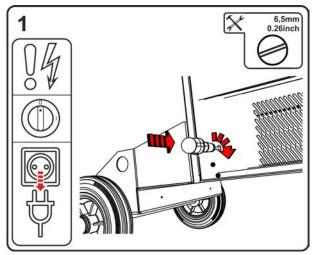


Figure 7-2

- Switch off machine at the main switch.
- Disconnect mains plug.
- Insert a plain slot screwdriver with a maximum tip width of 6.5 mm through the maintenance opening and place in the centre of the pump shaft. Turn the screwdriver clockwise until the pump shaft can be easily rotated again.
- Remove screwdriver.
- Insert mains plug of the switched-off machine into the appropriate socket.
- Switch on the power source at the main switch.



8 Technical data

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

8.1 Dimensions and weighte

| Housing ve | ersion | F06R1/R2 | | F06RS | | F06P | |
|------------|------------|------------------------------|-------|-------|--------------|---------|------------|
| Figure | | ↑ □ □ □ □ □ □ □ □ □ □ | | | ↓ L → | → H → B | L → |
| Dimension | าร | mm | inch | mm | inch | mm | inch |
| Н | | 976 | 38.4 | 976 | 38.4 | 881 | 34.7 |
| В | | 686 | 27.0 | 590 | 23.2 | 400 | 15.7 |
| L | | 1152 | 45.3 | 854 | 33.6 | 854 | 33.6 |
| Weight [1] | | kg | lb. | kg | lb. | kg | lb. |
| F06G | . ™ | 113.9 | 251.1 | 103.7 | 228.6 | 88.7 | 195.5 |
| F06W | Θ | 128.5 | 283.2 | 118.3 | 260.8 | 103.3 | 227.7 |
| F06WRF | Θ | 132.5 | 292.1 | 122.3 | 269.6 | 107.3 | 236.5 |

^[1] All weights refer to 5 m (16.4 ft.) machine versions Mains connection cable. For versions with longer mains connection cables, the weights increase.

¹⁰ m (32.8 ft.) = +2.5 kg (5.5 lb.)

¹⁵ m (49.2 ft.) = +5.0 kg (11.0 lb.)



8.2 Welding torch cooling system

| Torch cooling | F06W | F06WRF | |
|--|--|--------------------------|--|
| Cooling capacity at 1 l/min (+25°C/77°F) | 1.5 KW | | |
| Max. flow rate | 5 l/min 1.3 gal./min | 20 l/min 5.2 gal./min | |
| max. delivery height | 35 m 115 ft. | 45 m 148 ft. | |
| Max. pump pressure | 3.5 bar 0.35 MPa | 4.5 bar 0.45 MPa | |
| Pump | Centrifugal pump | | |
| Max. tank capacity | 8 I 2.1 gal. | | |
| Flow monitoring | | | |
| Error limit | 0.7 l/min 0.18 gal./min | | |
| Warning limit | Error limit +0.3 l/min Error limit +0.08 gal./min | | |
| Temperature monitoring | | | |
| Error limit | 70°C 158°F | | |
| Warning limit | Error limit -5°C Error limit -23°F | | |



8.3 Performance data

8.3.1 Titan XQ 350 puls D

| | MIG/MAG | MMA | TIG |
|--|--------------------------------------|---|------------------|
| Welding current (I ₂) | | 5 A to 350 A | |
| Welding voltage according to standard (U ₂) | 14,3 V to 31,5 V | 20,2 V to 34,0 V | 10,2 V to 24,0 V |
| Duty cycle DC at 40° C [1] | | 350 A (100%) | |
| Mains voltage [2] | 3 x 380-400 | V / 3 x 440-460 V / 3 | x 480-500 V |
| Frequency | | 50/60 Hz | |
| Tolerance / mains fuse [3] | | | |
| 380-400 V | -2 | 5 % to+20 % / 3 x 25 | 5 A |
| 440-460 V | -2 | 5 % to+15 % / 3 x 20 |) A |
| 460-500 V | -2 | 5 % to+10 % / 3 x 20 |) A |
| Open circuit voltage (U ₀) | | 82 V (380-400 V) 94 V (440-460 V) 102 V (460-500 V) | |
| max. Connected load (S ₁) | | | |
| gas cooled (F06G) | 14,3 kVA | 15,4 kVA | 10,9 kVA |
| water cooled (F06W) | 14,7 kVA | | 11,3 kVA |
| water cooled, Reinforced (F06WRF) | 14,9 kVA | | 11,5 kVA |
| Generator rating (Rec.) | 21 kVA | | |
| Power consumption P ₀ [4] | | 25 W | |
| Maximum mains impedance (@PCC) ^[5] | | 107 mOhm | |
| Cos φ / efficiency | | 0,99 / 88 % | |
| Protection class / Overvoltage category | | I / III | |
| Contamination level / Insulation class | | 3 / H | |
| protection classification / Residual current circuit breaker | IP 23 | 7 / Type B (recomme | nded) |
| Noise level [6] | | <70 dB(A) | |
| Ambient temperature [7] | | -25 °C to +40 °C | |
| Machine cooling / Torch cooling | | Fan (AF) / | |
| | | gas or water | |
| Mains connection cable | H07RN-F4G6 70 mm ² / A | | |
| Workpiece lead (min.) / EMC class | | | |
| Safety marking | | C € / S / EH [| |
| Standards used | See declaration | of conformity (applia | ince documents) |

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

099-005560-EW501 23.08.2019

 $^{^{[2]}}$ Multi-voltage device - Adjusting the power source to the mains voltage

^[3] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[4] Power in idle mode without wire feeder.

This welding equipment does not comply with IEC 61000-3-12. When connecting a welding machine to a public low-voltage supply system, the manufacturer or operator has to consult the electricity utilities to make sure the welding machine may be connected.

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

^[7] Ambient temperature dependent on coolant! Observe coolant temperature range!



8.3.2 Titan XQ 400 puls D

| | MIG/MAG | MMA | TIG |
|--|---|---|------------------|
| Welding current (I ₂) | | 5 A to 400 A | |
| Welding voltage according to standard (U ₂) | 14,3 V to 34 V | 20,2 V to 36,0 V | 10,2 V to 26,0 V |
| Duty cycle DC at 40° C [1] | 400 | A (80 %) / 370 A (10 | 00%) |
| Mains voltage [2] | 3 x 380-400 | V / 3 x 440-460 V / 3 | 3 x 480-500 V |
| Frequency | | 50/60 Hz | |
| Tolerance / mains fuse [3] | | | |
| 380-400 V | -2 | 5 % to+20 % / 3 x 25 | 5 A |
| 440-460 V | -2 | 5 % to+15 % / 3 x 25 | 5 A |
| 460-500 V | -2 | 5 % to+10 % / 3 x 20 |) A |
| Open circuit voltage (U ₀) | 82 V (380-400 V) 94 V (440-460 V) 102 V (460-500 V) | | |
| max. Connected load (S ₁) | | | |
| gas cooled (F06G) | 17,6 kVA | 18,6 kVA | 13,5 kVA |
| water cooled (F06W) | 18,0 kVA | | 13,9 kVA |
| water cooled, Reinforced (F06WRF) | 18,2 kVA | | 14,1 kVA |
| Generator rating (Rec.) | | 25 kVA | |
| Power consumption P ₀ [4] | | 25 W | |
| Maximum mains impedance (@PCC) ^[5] | | 120 mOhm | |
| Cos φ / efficiency | | 0,99 / 88 % | |
| Protection class / Overvoltage category | | I / III | |
| Contamination level / Insulation class | | 3 / H | |
| protection classification / Residual current circuit breaker | IP 23 | 3 / Type B (recomme | nded) |
| Noise level [6] | | <70 dB(A) | |
| Ambient temperature [7] | | -25 °C to +40 °C | |
| Machine cooling / Torch cooling | | Fan (AF) / | |
| | | gas or water | |
| Mains connection cable | | H07RN-F4G6 | |
| Workpiece lead (min.) / EMC class | | 70 mm ² / A | |
| Safety marking | | C € / S / E H I | |
| Standards used | See declaration | of conformity (applia | ance documents) |

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

^[2] Multi-voltage device - Adjusting the power source to the mains voltage

^[3] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[4] Power in idle mode without wire feeder.

This welding equipment does not comply with IEC 61000-3-12. When connecting a welding machine to a public low-voltage supply system, the manufacturer or operator has to consult the electricity utilities to make sure the welding machine may be connected.

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

^[7] Ambient temperature dependent on coolant! Observe coolant temperature range!



8.3.3 Titan XQ 500 puls D

| | MIG/MAG | MMA | TIG |
|--|---|------------------------------------|------------------|
| Welding current (I ₂) | | 5 A to 500 A | |
| Welding voltage according to standard (U ₂) | 14,3 V to 39,0 V | 20,2 V to 40,0 V | 10,2 V to 30,0 V |
| Duty cycle DC at 40° C [1] | 500 | A (80 %) / 470 A (10 | 00%) |
| Mains voltage [2] | 3 x 380-400 | V / 3 x 440-460 V / 3 | x 480-500 V |
| Frequency | | 50/60 Hz | |
| Tolerance / mains fuse [3] | | | |
| 380-400 V | -2 | 5 % to+20 % / 3 x 35 | 5 A |
| 440-460 V | -2 | 5 % to+15 % / 3 x 32 | ? A |
| 460-500 V | -2 | 5 % to+10 % / 3 x 32 | ? A |
| Open circuit voltage (U ₀) | 82 V (380-400 V) 94 V (440-460 V) 102 V (460-500 V) | | |
| max. Connected load (S ₁) | | | |
| gas cooled (F06G) | 25,2 kVA | 25,8 kVA | 19,4 kVA |
| water cooled (F06W) | 25,6 kVA | | 19,8 kVA |
| water cooled, Reinforced (F06WRF) | 25,8 kVA | | 20,0 kVA |
| Generator rating (Rec.) | 35 kVA | | |
| Power consumption P ₀ [4] | | 27 W | |
| Maximum mains impedance (@PCC) ^[5] | | 80 mOhm | |
| Cos φ / efficiency | | 0,99 / 88 % | |
| Protection class / Overvoltage category | | I / III | |
| Contamination level / Insulation class | | 3 / H | |
| protection classification / Residual current circuit breaker | IP 23 | / Type B (recomme | nded) |
| Noise level [6] | | <70 dB(A) | |
| Ambient temperature [7] | | -25 °C to +40 °C | |
| Machine cooling / Torch cooling | | Fan (AF) / | |
| | | gas or water | |
| Mains connection cable | | H07RN-F4G6 | |
| Workpiece lead (min.) / EMC class | | 95 mm ² / A | |
| Safety marking | | C € / S / EHI | |
| Standards used | See declaration | of conformity (applia | ince documents) |

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

60

099-005560-EW501 23.08.2019

 $^{^{\}mbox{\scriptsize [2]}}$ Multi-voltage device - Adjusting the power source to the mains voltage

^[3] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[4] Power in idle mode without wire feeder.

This welding equipment does not comply with IEC 61000-3-12. When connecting a welding machine to a public low-voltage supply system, the manufacturer or operator has to consult the electricity utilities to make sure the welding machine may be connected.

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

Ambient temperature dependent on coolant! Observe coolant temperature range!



8.3.4 Titan XQ 600 puls D

| | MIG/MAG | MMA | TIG |
|--|-----------------------|---|------------------|
| Welding current (I ₂) | | 5 A to 600 A | |
| Welding voltage according to standard (U ₂) | 14,3 V to 44,0 V | 20,2 V to 44,0 V | 10,2 V to 34,0 V |
| Duty cycle DC at 40° C [1] | 600 A (40 % | %) / 550 A (60 %) / 47 | 70 A (100%) |
| Mains voltage [2] | 3 x 380-400 | V / 3 x 440-460 V / 3 | x 480-500 V |
| Frequency | | 50/60 Hz | |
| Tolerance / mains fuse [3] | | | |
| 380-400 V | -2 | 5 % to+20 % / 3 x 35 | 5 A |
| 440-460 V | -2 | 5 % to+15 % / 3 x 32 | 2 A |
| 460-500 V | -2 | 5 % to+10 % / 3 x 32 | 2 A |
| Open circuit voltage (U ₀) | | 82 V (380-400 V) 94 V (440-460 V) 102 V (460-500 V) | |
| max. Connected load (S ₁) | | | |
| gas cooled (F06G) | 34,1 kVA | 34,1 kVA | 25,4 kVA |
| water cooled (F06W) | 34,5 kVA | | 26,8 kVA |
| water cooled, Reinforced (F06WRF) | 34,7 kVA | | 27,0 kVA |
| Generator rating (Rec.) | 47 kVA | | |
| Power consumption P ₀ [4] | | 27 W | |
| Maximum mains impedance (@PCC) ^[5] | | 75 mOhm | |
| Cos φ / efficiency | | 0,99 / 88 % | |
| Protection class / Overvoltage category | | I / III | |
| Contamination level / Insulation class | | 3 / H | |
| protection classification / Residual current circuit breaker | IP 23 | / Type B (recomme | nded) |
| Noise level [6] | | <70 dB(A) | |
| Ambient temperature [7] | | -25 °C to +40 °C | _ |
| Machine cooling / Torch cooling | | Fan (AF) / | _ |
| | | gas or water | |
| Mains connection cable | | H07RN-F4G6 | |
| Workpiece lead (min.) / EMC class | | 95 mm ² / A | |
| Safety marking | C € / S / ER [| | |
| Standards used | See declaration | of conformity (applia | ince documents) |

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

^[2] Multi-voltage device - Adjusting the power source to the mains voltage

^[3] Safety fuses are recommended DIAZED xxA gG. When using automatic cutouts, the "C" trigger characteristic must be used.

^[4] Power in idle mode without wire feeder.

This welding equipment does not comply with IEC 61000-3-12. When connecting a welding machine to a public low-voltage supply system, the manufacturer or operator has to consult the electricity utilities to make sure the welding machine may be connected.

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

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

| Туре | Designation | Item no. |
|----------------------------|-----------------------------------|------------------|
| KLF-L1-L2-L3-PE | Label of mains cable | 094-023697-00000 |
| DM 842 Ar/CO2 230bar 30l D | Pressure regulator with manometer | 394-002910-00030 |
| 32A 5POLE/CEE | Machine plug | 094-000207-00000 |

9.2 Options

| Туре | Designation | Item no. |
|----------------------|---|------------------|
| ON PS F06 1D01 | Pivot support for a wire feeder | 092-003330-00000 |
| ON PS F06 1D02 | Pivot support for an IC wire feeder | 092-003332-00000 |
| ON 2DV | Transport support for two wire feeders | 092-003331-00000 |
| ON PS EXT D01 | Retrofit set: Extension turning mandrel, for holding a wire feeder with wheel kit ON WAK D01 | 092-002871-00000 |
| ON SHOCK PROTECT | Ram protection | 092-003334-00000 |
| ON FILTER | Dirt filter for air inlet | 092-003337-00000 |
| ON HS F06 | Holder for holding long hose packages and welding torch | 092-003333-00000 |
| ON TS F06 R | Torch holder, right | 092-003335-00000 |
| ON SH F06 L | Scanner holder, left | 092-003434-00000 |
| OU F06W | Conversion kit, water block | 092-003492-00000 |
| OU F06WRF | Conversion kit, water block with reinforced pump | 092-003493-00000 |
| OU F06R1/R2 | Conversion kit, single cylinder holder to double cylinder holder | 092-003494-00000 |
| OU Expert XQ 2.0 | Conversion kit, Expert XQ 2.0 | 092-003495-00000 |
| OU Expert XQ 2.0 WLG | Conversion kit, Expert XQ 2.0 with LAN/Wi-Fi gate- way including interface for barcode scanner | 092-003496-00000 |
| OU 2DV | Conversion kit for two wire feeders | 092-003497-00000 |
| OU AIF F06 | Conversion kit, 19-pole interface for automated welding | 092-003498-00000 |

9.3 7-pole remote control

| Туре | Designation | Item no. |
|-----------------------|------------------------------|------------------|
| RC XQ Expert 2.0 2 m | Expert XQ 2.0 remote control | 090-008824-00002 |
| RC XQ Expert 2.0 5 m | Expert XQ 2.0 remote control | 090-008824-00005 |
| RC XQ Expert 2.0 10 m | Expert XQ 2.0 remote control | 090-008824-00010 |
| RC XQ Expert 2.0 15 m | Expert XQ 2.0 remote control | 090-008824-00015 |

9.3.1 Extension cable

| Туре | Designation | Item no. |
|----------------|----------------------------|------------------|
| 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 15M | Extension/connecting cable | 092-000201-00005 |
| FRV 7POL 20 m | Extension/connecting cable | 092-000201-00001 |
| FRV 7POL 25M | Extension/connecting cable | 092-000201-00007 |



9.4 19-pole remote control

| Туре | Designation | Item no. |
|---------------|---|------------------|
| R10 19POL | Remote control | 090-008087-00000 |
| RG10 19POL 5M | Remote control to set the wire speed and welding voltage correction | 090-008108-00000 |
| R20 19POL | Program changeover remote control | 090-008263-00000 |

9.4.1 Connection cables

| Туре | Designation | Item no. |
|----------------|--------------------------------------|------------------|
| 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 |

9.4.2 Extension cable

| Туре | Designation | Item no. |
|------------------|-----------------|------------------|
| RV5M19 19POLE 5M | Extension cable | 092-000857-00000 |
| RV5M19 19POL 10M | Extension cable | 092-000857-00010 |
| RV5M19 19POL 15M | Extension cable | 092-000857-00015 |
| RV5M19 19POL 20M | Extension cable | 092-000857-00020 |

9.5 Computer communication

| Type | Designation | Item no. |
|-----------|---|------------------|
| PC300.Net | PC300.Net welding parameter software kit incl. cable and SECINT X10 USB interface | 090-008777-00000 |
| ON WLG-EX | Wi-Fi gateway in external casing | 090-008790-00502 |
| ON LG-EX | LAN gateway in external casing | 090-008789-00502 |

9.5.1 Welding torch cooling system

| Туре | Designation | Item no. |
|-----------------|-----------------------------------|------------------|
| KF 23E-5 | Coolant up to -10 °C (14 °F), 5 I | 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 I | 094-006256-00005 |
| KF 37E-200 | Coolant (-20 °C), 200 I | 094-006256-00001 |
| TYP 1 | Frost protection tester | 094-014499-00000 |
| HOSE BRIDGE UNI | Tube bridge | 092-007843-00000 |

099-005560-EW501 23.08.2019



Appendix 10

10.1 Searching for a dealer

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



"More than 400 EWM sales partners worldwide"