

Voltage divider

voltConverter 230/400

099-008800-EW501

Observe additional system documents!

18.11.2019

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# General instructions

## **WARNING**



### **Read the operating instructions!**

**The operating instructions provide an introduction to the safe use of the products.**

- Read and observe the operating instructions for all system components, especially the safety instructions and warning notices!
- Observe the accident prevention regulations and any regional regulations!
- The operating instructions must be kept at the location where the machine is operated.
- Safety and warning labels on the machine indicate any possible risks. Keep these labels clean and legible at all times.
- The machine has been constructed to state-of-the-art standards in line with any applicable regulations and industrial standards. Only trained personnel may operate, service and repair the machine.
- Technical changes due to further development in machine technology may lead to a differing welding behaviour.

**In the event of queries on installation, commissioning, operation or special conditions at the installation site, or on usage, please contact your sales partner or our customer service department on +49 2680 181-0.**

**A list of authorised sales partners can be found at [www.ewm-group.com/en/specialist-dealers](http://www.ewm-group.com/en/specialist-dealers).**

Liability relating to the operation of this equipment is restricted solely to the function of the equipment. No other form of liability, regardless of type, shall be accepted. This exclusion of liability shall be deemed accepted by the user on commissioning the equipment.

The manufacturer is unable to monitor whether or not these instructions or the conditions and methods are observed during installation, operation, usage and maintenance of the equipment.

An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

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

# 1 Contents

<b>1</b>	<b>Contents</b> .....	<b>3</b>
<b>2</b>	<b>For your safety</b> .....	<b>4</b>
2.1	Notes on the use of these operating instructions .....	4
2.2	Explanation of icons.....	5
2.3	Part of the complete documentation .....	6
<b>3</b>	<b>Intended use</b> .....	<b>7</b>
3.1	Applications.....	7
3.1.1	For operation only with the following equipment .....	7
3.2	Documents which also apply .....	7
3.2.1	Warranty .....	7
3.2.2	Declaration of Conformity.....	7
3.2.3	Service documents (spare parts and circuit diagrams).....	7
<b>4</b>	<b>Machine description – quick overview</b> .....	<b>8</b>
4.1	Front view / rear view.....	8
<b>5</b>	<b>Design and function</b> .....	<b>10</b>
5.1	Assembly/disassembly .....	10
5.1.1	Power source connection .....	11
5.2	Transport and installation .....	11
5.2.1	Mains connection.....	12
5.2.1.1	Mains configuration .....	12
5.2.2	Ambient conditions .....	12
5.2.2.1	In operation .....	13
5.2.2.2	Transport and storage.....	13
5.2.3	Machine cooling.....	13
5.3	Functional characteristics .....	13
<b>6</b>	<b>Maintenance, care and disposal</b> .....	<b>14</b>
6.1	General .....	14
6.1.1	Cleaning .....	14
6.1.2	Dirt filter .....	14
6.2	Maintenance work, intervals .....	15
6.2.1	Daily maintenance tasks .....	15
6.2.2	Monthly maintenance tasks.....	15
6.2.3	Annual test (inspection and testing during operation).....	15
6.3	Disposing of equipment .....	16
<b>7</b>	<b>Rectifying faults</b> .....	<b>17</b>
7.1	Checklist for rectifying faults .....	17
<b>8</b>	<b>Technical data</b> .....	<b>18</b>
8.1	voltConverter 230/400 .....	18
<b>9</b>	<b>Accessories</b> .....	<b>19</b>
9.1	Transport systems .....	19
<b>10</b>	<b>Appendix</b> .....	<b>20</b>
10.1	Searching for a dealer .....	20

## 2 For your safety

### 2.1 Notes on the use of these operating instructions

#### **DANGER**

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

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

#### **WARNING**

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

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

#### **CAUTION**

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

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



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

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

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

## 2.2 Explanation of icons

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

## 2.3 Part of the complete documentation

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

The illustration shows a general example of a welding system.

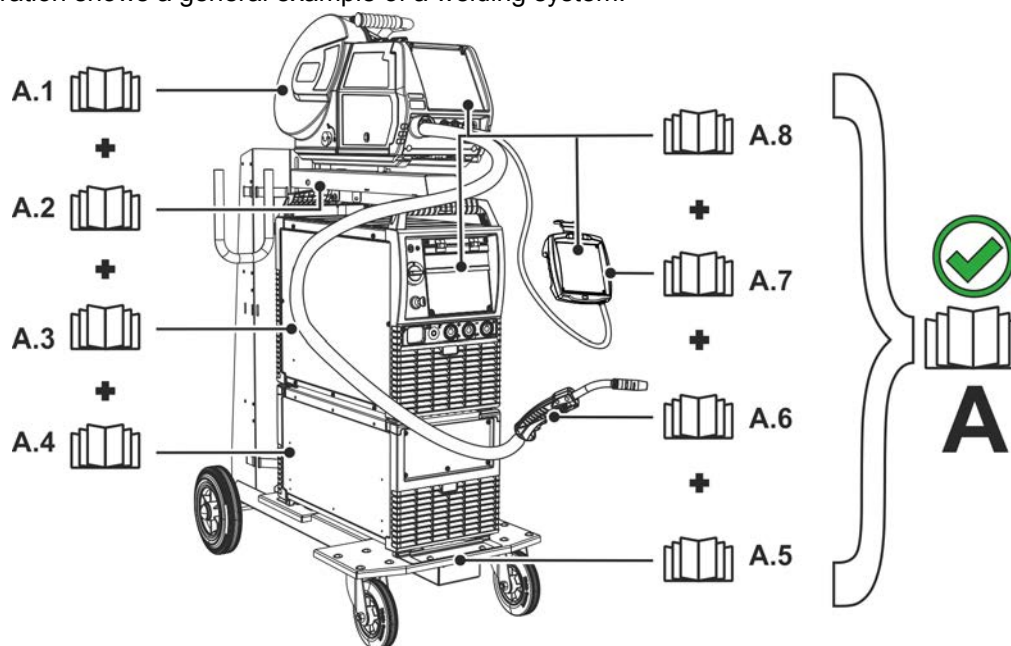


Figure 2-1

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

### 3 Intended use

#### WARNING



##### Hazards due to improper usage!

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

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

### 3.1 Applications

To operate welding machines with a mains voltage of 400 V in a 3 x 230 V network.

#### 3.1.1 For operation only with the following equipment

##### Power source

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

##### Transport vehicle

- Trolly 55-5

### 3.2 Documents which also apply

#### 3.2.1 Warranty

For more information refer to the "Warranty registration" brochure supplied and our information regarding warranty, maintenance and testing at [www.ewm-group.com](http://www.ewm-group.com)!

#### 3.2.2 Declaration of Conformity

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



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

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

#### 3.2.3 Service documents (spare parts and circuit diagrams)

#### WARNING



##### Do not carry out any unauthorised repairs or modifications!

To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!

The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

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

Spare parts can be obtained from the relevant authorised dealer.

## 4 Machine description – quick overview

### 4.1 Front view / rear view

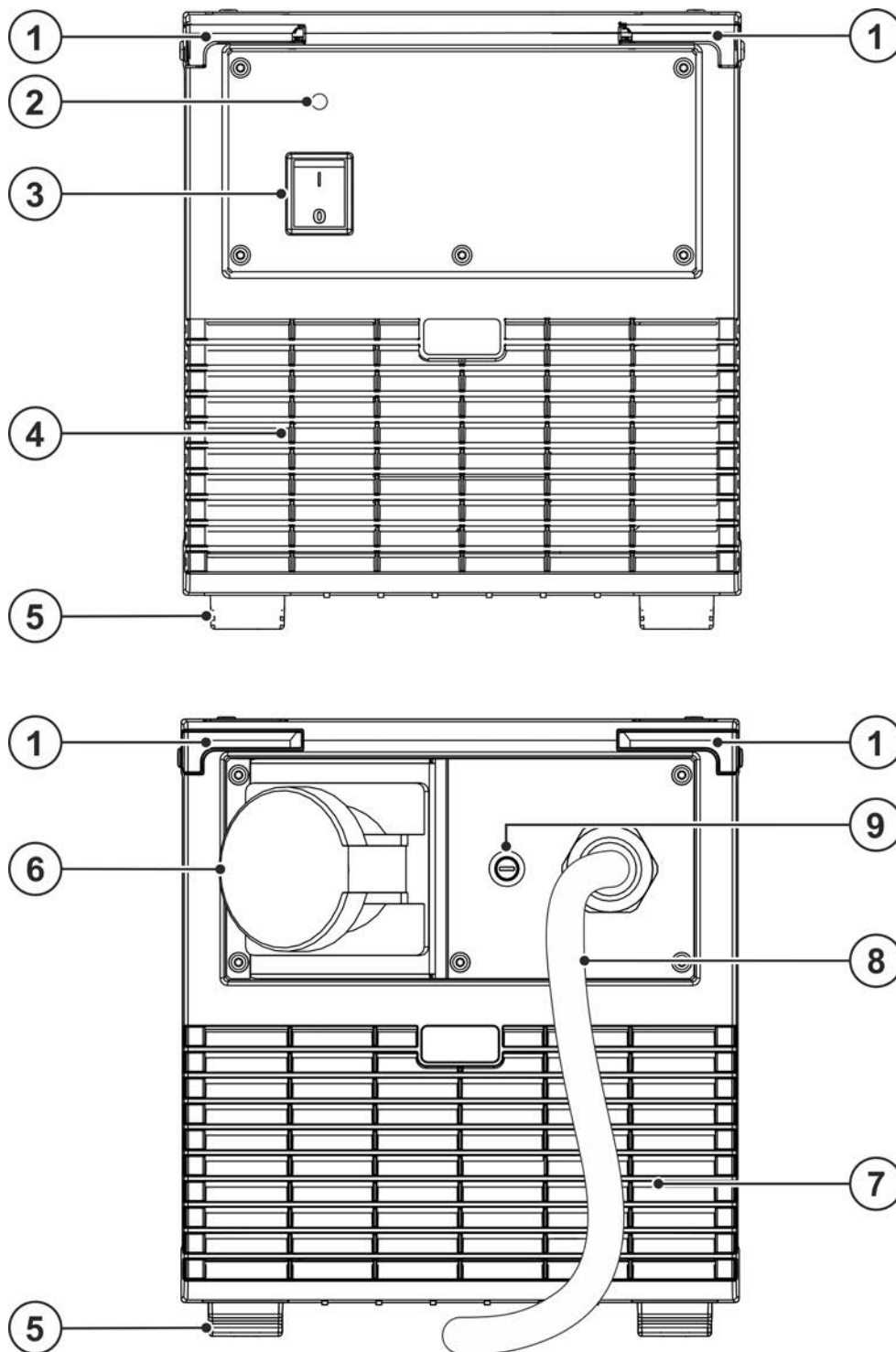





Figure 4-1



Item	Symbol	Description
1		<b>Screw connector</b>
2		<b>Excess temperature signal light</b> In case of excess temperature, temperature monitors de-activate the power unit, and the excess temperature control lamp comes on. Once the machine has cooled down, welding can continue without any further measures.
3		<b>Main switch, machine on/off</b>
4		<b>Cooling air inlet</b>
5		<b>Machine feet</b>
6		<b>Welding machine mains connection socket – 400 V CEE</b>
7		<b>Cooling air outlet</b>
8		<b>Mains connection cable</b>
9		<b>Machine fuse (1A)</b>

## 5 Design and function

### ⚠ WARNING



**Risk of injury from electrical voltage!**

**Contact with live parts, e.g. power connections, can be fatal!**

- Observe the safety information on the first pages of the operating instructions!
- Commissioning must be carried out by persons who are specifically trained in handling power sources!
- Connect connection or power cables while the machine is switched off!

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

### 5.1 Assembly/disassembly

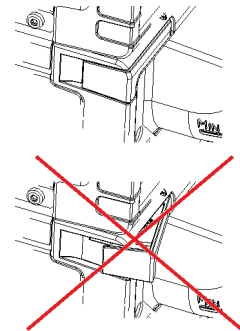
### ⚠ WARNING



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

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

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



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

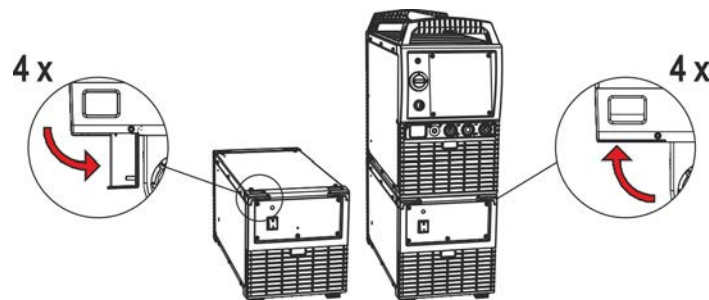


Figure 5-1

- Fold all four twist-off fasteners outwards until they will go no further.
- Fit welding machine with feet precisely into the designated twist-off fastener openings.
- Fold all four twist-off fasteners back into place until they will go no further.

## 5.1.1 Power source connection

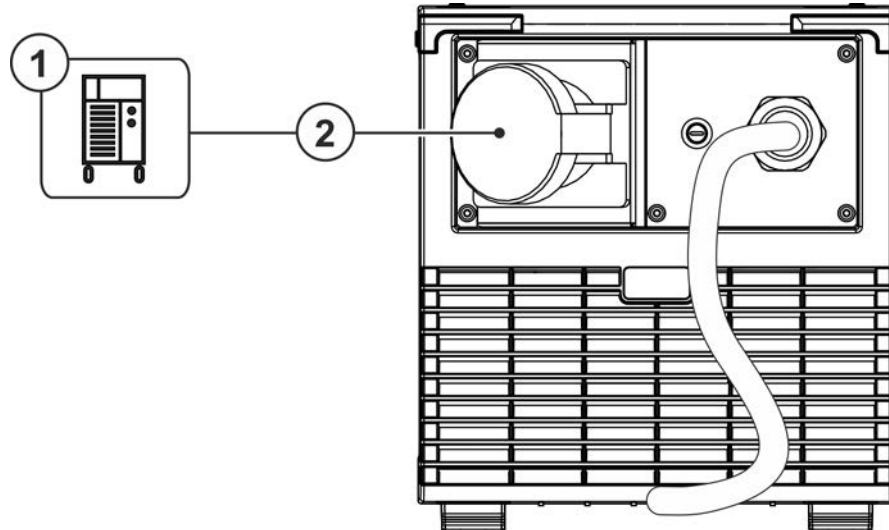


Figure 5-2

Item	Symbol	Description
1		<b>Power source</b>
2		<b>Main connection socket</b> Power supply for welding machine

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

## 5.2 Transport and installation

### **WARNING**



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

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

## 5.2.1 Mains connection

### ⚠ DANGER



#### Hazards caused by improper mains connection!

**An improper mains connection can cause injuries or damage property!**

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

### 5.2.1.1 Mains configuration

The machine may be connected to:

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

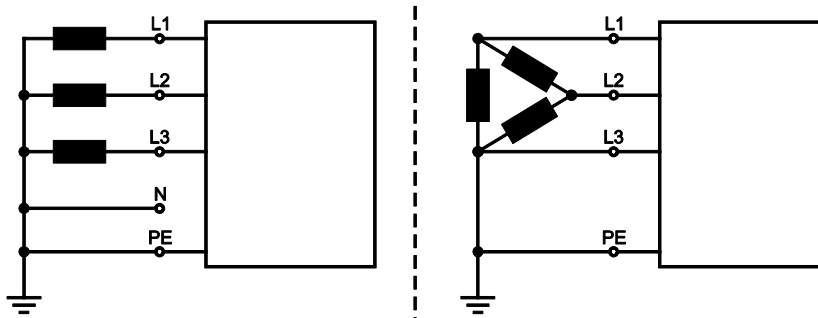


Figure 5-3

#### 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.

## 5.2.2 Ambient conditions



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

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



**Equipment damage due to contamination!**

**Unusually high amounts of dust, acids, corrosive gases or substances can damage the machine (observe maintenance intervals > see 6 chapter).**

- **Avoid large amounts of smoke, steam, oily fumes, grinding dust and corrosive ambient air!**

### 5.2.2.1 In operation

**Temperature range of the ambient air:**

- -25 °C to +40 °C (-13 °F to 104 °F) <sup>[1]</sup>

**Relative humidity:**

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

### 5.2.2.2 Transport and storage

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

- -30 °C to +70 °C (-22 °F to 158 °F) <sup>[1]</sup>

**Relative humidity**

- up to 90 % at 20 °C (68 °F)

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<sup>[1]</sup> Ambient temperature dependent on coolant! Observe the coolant temperature range of the torch cooling

## 5.2.3 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!***

## 5.3 Functional characteristics

The voltage converter enables the operation of arc welding equipment (power sources) with 400 V connection voltage in the 230 V power supply system. Use the main switch to turn the voltage converter and connected power source on or off.

In case of an overload (excess temperature), the signal light Excess temperature comes on and the connected power source is turned off. Temperature-controlled fans return the machine to a safe operating state. After cooling down, the mains connection socket of the voltage converter is turned on again.

## 6 Maintenance, care and disposal

### 6.1 General

#### DANGER



**Risk of injury due to electrical voltage after switching off!**

**Working on an open machine can lead to fatal injuries!**

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

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

#### WARNING



**Incorrect maintenance, testing and repair!**

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

Observe the maintenance instructions > see 6.2 chapter.

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

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

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

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

#### 6.1.1 Cleaning

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

#### 6.1.2 Dirt filter

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

## 6.2 Maintenance work, intervals

### 6.2.1 Daily maintenance tasks

Visual inspection

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

Functional test

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

### 6.2.2 Monthly maintenance tasks

Visual inspection

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

Functional test

- Selector switches, command devices, emergency stop devices, voltage reducing devices, message and control lamps
- Check wire guide elements (wire feed roll holder, wire feed nipple, wire guide tube) for tight fit. Recommendation for replacing the wire feed roll holder (eFeed) after 2000 hours of operation, see replacement parts).
- Check coolant tubes and their connections for impurities
- Check and clean the welding torch. Deposits in the torch can cause short circuits and have a negative impact on the welding result, ultimately causing damage to the torch.

### 6.2.3 Annual test (inspection and testing during operation)

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

## 6.3 Disposing of equipment



### Proper disposal!

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

- **Do not dispose of in household waste!**
- **Observe the local regulations regarding disposal!**
- According to European provisions (Directive 2012/19/EU on Waste of Electrical and Electronic Equipment), used electric and electronic equipment may no longer be placed in unsorted municipal waste. It must be collected separately. The symbol depicting a waste container on wheels indicates that the equipment must be collected separately.  
This machine has to be disposed of, or recycled, in accordance with the waste separation systems in use.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG)), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.
- Information about returning used equipment or about collections can be obtained from the respective municipal administration office.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.



## 7 Rectifying faults

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

### 7.1 Checklist for rectifying faults

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

**Please observe the welding machine operating instructions.**

Legend	Symbol	Description
	↗	Fault/Cause
	✘	Remedy

#### Excess temperature signal light illuminates

- ↗ Excess temperature
- ✘ Allow the machine to cool down whilst still switched on

#### Functional errors

- ↗ All machine control signal lights are illuminated after switching on
- ↗ No machine control signal light is illuminated after switching on
- ↗ No welding power
  - ✘ Phase failure > check mains connection (fuses)
  - ✘ Check and replace if necessary
- ↗ Mains fuse triggers - unsuitable mains fuse
  - ✘ Set up recommended mains fuse.

## 8 Technical data

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

### 8.1 voltConverter 230/400

<b>Mains voltage (Tolerance)</b>	3 x 230 V (-25 % to +20 %)
<b>Frequency</b>	50/60 Hz
<b>mains fuse</b>	3 x 55 A
<b>Mains connection cable</b>	H07RN-F4G10
<b>Duty cycle DC at 40° C</b>	44 A (60 %)
<b>Output current <sup>[1]</sup></b>	32 A (100 %)
<b>Insulation class / protection classification</b>	H / IP 23
<b>Ambient temperature</b>	-25 °C to +40 °C
<b>Machine cooling</b>	Fan (AF)
<b>EMC class</b>	A
<b>Safety marking</b>	CE ENEC
<b>Standards used</b>	See declaration of conformity (appliance documents)
<b>Dimensions L / B / H</b>	610 x 300 x 330 mm 24.0 x 11.8 x 12.9 inch
<b>Weight</b>	64,5 kg 142.2 lb.

<sup>[1]</sup> Load cycle: 10 min. (60 % DC  $\triangleq$  6 min. welding, 4 min. pause)

## 9 Accessories

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

### 9.1 Transport systems

Type	Designation	Item no.
Trolley 55.2-2 II	Transport vehicle	090-008631-00000
Trolley 55-5	Transport cart, assembled	090-008632-00000
ON TR Trolley 55-5	Cross arm and holder for wire feeder	092-002700-00000
ON PS Trolley 55-5 / 55-6	Pivot support	092-002712-00000

## 10 Appendix

### 10.1 Searching for a dealer

Sales & service partners  
[www.ewm-group.com/en/specialist-dealers](http://www.ewm-group.com/en/specialist-dealers)



"More than 400 EWM sales partners worldwide"