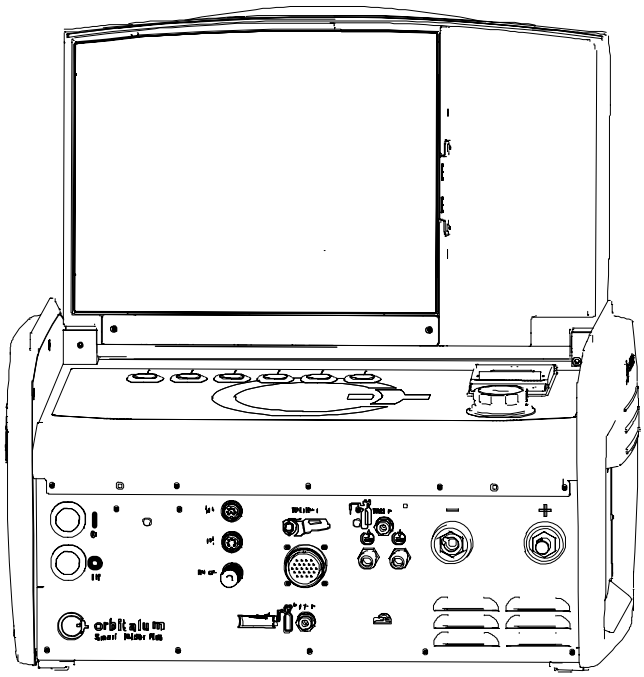
# Smart Welder Plus

**en Orbital Welding Power Supply**

Translation of original operating instructions and spare parts list



850 060 201 REV 00 | 2610

orbitalum

*An ITW Company*

# Table of Contents


1 About these instructions ..... 4
1.1 Warning messages ..... 4
1.2 Further icons and displays ..... 4
1.3 Legend ..... 5
1.4 Further applicable documents ..... 5
2 Information and safety instructions for the owner ..... 6
2.1 Requirements for the owner-operator ..... 6
2.2 Using the machine ..... 8
2.2.1 Intended use ..... 8
2.2.2 Machine constraints ..... 8
2.2.3 Welding in environments with increased electrical hazards ..... 9
2.2.4 Device cooling ..... 9
2.3 Environmental protection and disposal ..... 10
2.3.1 Information regarding the Ecodesign Directive 2009/125/EG ..... 10
2.3.2 REACh ..... 11
2.3.3 Coolant ..... 11
2.3.4 Electric tools and accessories ..... 12
2.4 Personnel qualification ..... 12
2.5 Fundamental information on operational safety ..... 13
2.6 Personal protective equipment ..... 13
2.7 Remaining risks ..... 13
2.7.1 Injury through high weight ..... 13
2.7.2 Burns and danger of fire through high temperatures ..... 15
2.7.3 Tripping over wires and cables ..... 15
2.7.4 Long-lasting physical damage through wrong posture ..... 16
2.7.5 Electric shock ..... 16
2.7.6 Danger from incorrect handling of shielding gas bottles ..... 16
2.7.7 Damage to eyes through radiation ..... 16
2.7.8 Dangers through electromagnetic fields ..... 17
2.7.9 Risk of suffocation from an excessive amount of argon in the air ..... 17
2.7.10 Health problems ..... 17
2.7.11 Danger of system tipping over ..... 17
2.7.12 Danger of explosion and fire ..... 17
2.7.13 General injuries through tools ..... 18
3 Description ..... 19
3.1 Warning signs ..... 22
4 Scope of application ..... 23
5 Technical specifications ..... 24
6 Transport and shipping ..... 26
6.1 Gross weight ..... 26
6.2 Shipping ..... 26
6.3 Transport ..... 26
6.3.1 Transport in optional transport case ..... 27
7 Setup and commissioning ..... 28
7.1 Unpack the power source ..... 28
7.2 Scope of delivery ..... 28
7.3 Setting up the power supply ..... 28
7.4 Connecting the weld head/manual welding torch ..... 29
7.5 Welding and forming gas supply ..... 30
7.6 Power grid connection ..... 31
7.7 Operation of the power source at different mains voltages ..... 31
7.8 Connect the power cord ..... 31
7.9 Turn on the power source ..... 32
7.10 Activation ..... 32
7.11 User levels ..... 33
7.11.1 Administration level ..... 33
7.11.2 User level ..... 33
7.12 Sign in ..... 34
7.13 Reset password ..... 34
7.14 Change password ..... 34
7.14.1 Change admin password ..... 35
7.14.2 Change user password ..... 35
7.15 Operating concept ..... 36
7.15.1 Set system and documentation language ..... 36
7.15.2 Input devices and control elements ..... 39
7.15.2.1 Softkey buttons ..... 40
7.15.2.2 Touchscreen ..... 40
7.15.2.3 Rotary actuator ..... 41
7.15.2.4 USB mouse ..... 44
7.15.2.5 USB keyboard ..... 45
7.15.2.6 USB code scanner ..... 47
7.16 Set system and documentation language ..... 48

7.17 Set units of measurement ..... 49

**8 Operation ..... 50**

8.1 Main menu ..... 52
8.1.1 Program Manager ..... 57
8.1.1.1 Loading the welding procedure ..... 58
8.1.1.2 Saving the welding procedure ..... 59
8.1.1.3 Creating a folder ..... 59
8.1.1.4 Managing welding procedures ..... 60
8.1.1.5 Removing share ..... 66
8.1.2 Protocol Manager ..... 67
8.1.3 Auto programming ..... 69
8.1.3.1 Using auto programming ..... 69
8.1.4 Adjusting the program ..... 72
8.1.4.1 Adjusting level segments ..... 72
8.1.4.2 Adjusting parameters ..... 74
8.1.5 Settings ..... 90
8.1.5.1 System adjustments ..... 90
8.1.5.2 Program settings ..... 95
8.1.5.3 Documentation settings ..... 99
8.1.5.4 System data ..... 102
8.1.5.5 Network environment ..... 104
8.1.5.6 Service ..... 109
8.1.5.7 Setting the language and keyboard ..... 116

8.2 Weld mode ..... 118
8.2.1 "Gas/Coolant" softkey ..... 121
8.2.1.1 "Gas On" softkey ..... 122
8.2.1.2 Gas overview ..... 122
8.2.1.3 "Permanent Gas" softkey ..... 125
8.2.1.4 "Back" softkey ..... 125
8.2.2 Motor control ..... 125
8.2.2.1 "Motor" softkey ..... 125
8.2.2.2 "Wire" softkey ..... 125
8.2.2.3 "Global Change" softkey ..... 126
8.2.2.4 "Menu" softkey ..... 126

8.3 Testing ..... 127

8.4 Welding process ..... 129

**9 Storage and decommissioning ..... 132**

**10 Special commands ..... 133**

10.1 Keyboard entry of special commands ..... 133

10.2 "Special Commands" softkey ..... 133

**11 Service and maintenance ..... 134**

11.1 Service screen ..... 134

11.2 Software information ..... 134

11.3 Status-LED ..... 134

11.4 Cooling unit ..... 134
11.4.1 Coolant ..... 134
11.4.2 Fill coolant tank ..... 135
11.4.3 Drain coolant ..... 135

11.5 Motor calibration ..... 137

11.6 Printer ..... 139
11.6.1 Replacing the roll of paper ..... 139

11.7 Service and customer support ..... 139
11.7.1 Customer support ..... 139
11.7.2 Technical support & application engineering ..... 139
11.7.3 Operator and service training ..... 140

11.8 Maintenance and care ..... 141
11.8.1 Maintenance schedule ..... 141

**12 Upgrade options ..... 142**

**13 External interface X13 ..... 143**

**14 Accessories ..... 144**

**15 Consumables ..... 145**

**16 ERSATZTEILLISTE / SPARE PARTS LIST ..... 147**

16.1 Maschine | Machine ..... 147

16.2 Gehäuse | Housing ..... 149

16.3 Gehäuseoberteil | Housing top ..... 153

16.4 Deckel | Cover ..... 155

16.5 Frontplatte | Front panel ..... 159

16.6 Rückwand | Back panel ..... 163

16.7 Seitenwand, rechts | Side panel, right ..... 165

16.8 Seitenwand, Tank | Side panel, tank ..... 167

16.9 Platine | Circuit board ..... 169

16.10 Proportional Ventil | Proportional valve ..... 171

16.11 Pumpe | Pump ..... 173

16.12 Tank | Tank ..... 175

16.13 Verbindungskabel | Connection cables ..... 177

16.14 Zubehör & Verbrauchsmaterial | Accessories & consumables ..... 181

16.15 Service, Kundendienst | Servicing, customer service ..... 182

**17 DECLARATION OF CONFORMITY ..... 183**

# 1 About these instructions

## 1.1 Warning messages

The warnings used in these instructions warn you of injuries or damage to property.

Always read and observe these warnings!



This is a warning icon. It warns against dangers of injury. In order to avoid injuries or death observe the measures marked with a safety sign.

| | WARNING LEVEL | MEANING |
|---|---|---|
| ⚠ | **DANGER** | Imminently hazardous situation that results in death or serious injuries if the safety measures are not observed. |
| ⚠ | **WARNING** | Potentially hazardous situation that may result in death or serious injuries if the safety measures are not observed. |
| ⚠ | **CAUTION** | Potentially hazardous situation that may result in slight injuries if the safety measures are not observed. |
| ❗ | *NOTE!* | Potentially hazardous situation that may result in material damage if the safety measures are not observed. |

## 1.2 Further icons and displays

| SYMBOL | MEANING |
|---|---|
| ℹ | Important information for comprehension. |
| 1.<br>2.<br>3.<br>… | Request for action in a sequence of actions: Action is required here. |
| ► | Single request for action: Action is required here. |

## 1.3 Legend

| Term/SYMBOL | MEANING |
|---|---|
| PW | Power Welder |
| ORBIMAT 300 SW | |
| SW | Smart Welder |
| ORBIMAT 180 SW | |
| SW+ | Smart Welder Plus |
| MW | Mobile Welder |
| orbital weld head | Open/closed orbital weld head |
|  | Function requires UPGRADE Connectivity LAN/IoT/VNC*. |
|  | Function requires UPGRADE ORBICOOL MW* (only applies to Mobile Welder). |
|  | Function requires UPGRADE Software MW Plus* (only applies to Mobile Welder). |

**See chapter.* Upgrade options [▶ 142]

## 1.4 Further applicable documents

The following documents apply to this operating manual:

- Declaration of conformity
- Calibration certificate
- Operating instructions for weld head/manual torch
- When using the External Interface X13: Interface Control Document

# 2 Information and safety instructions for the owner

## 2.1 Requirements for the owner-operator

**Workshop/outdoor/field use:** The owner is responsible for safety in the danger zone around the machine, and should allow only qualified personnel to enter the zone or operate the machine in the danger zone.

**Employee safety:** The operator has to observe the safety regulations described in this chapter as well as has to work safety-consciously and with all prescribed safety equipment.

The employer undertakes to give the employees clear notice of the dangers arising that are specified in the EMF directives and to evaluate the workplace correspondingly.

**Requirements for special EMF evaluations with regard to general activities, working materials and workplaces*:**

| TYPE OF WORKPLACE OR WORK EQUIPMENT | EVALUATION REQUIRED FOR: | | |
|---|---|---|---|
| | Employees without special risks | Employees at particular risk (with the exception of those with active implants) | Employees with active implants |
| | (1) | (2) | (3) |
| Manual arc welding, including<br>• MIG (Metal Inert Gas)<br>• MAG (Metal Active Gas)<br>• TIG (Tungsten Inert Gas)<br>Under observance of established procedures and without physical contact with the conductor | No | No | Yes |

* To Directive 2013/35/EU

# EMF DATA SHEET
# ARC WELDING POWER SOURCE

**Product/Apparatus Identification**

| Product | Stock Number |
|---|---|
| Smart Welder Plus | 850 000 010 |
| Mobile Welder * | 854 000 001 |
| (* inclose, equal inverter, all variants) | |

**Compliance Information Summary**

Applicable regulation: Directive 2014/35/EU

Reference limits: Directive 2013/35/EU, Recommendation 1999/519/EC

Applicable standards: IEC 62822-1:2016, IEC 62822-2:2016

Intended use: ☒ for occupational use ☐ for use by laymen

Non-thermal effects need to be considered for workplace assessment: ☒ YES ☐ NO

Thermal effects need to be considered for workplace assessment: ☐ YES ☒ NO

☐ Data is based on maximum power source capability (valid unless firmware/hardware is changed)

☒ Data is based on worst case setting/program (only valid until setting options/welding programs are changed)

☐ Data is based on multiple settings/programs (only valid until setting options/welding programs are changed)

Occupational exposure is below the Exposure Limit Values (ELVs) for health effects at the standardized configurations: ☒ YES ☐ NO (if NO, specific required minimum distances apply)

Occupational exposure is below the Exposure Limit Values (ELVs) for sensory effects at the standardized configurations: ☐ n.a ☒ YES ☐ NO (if applicable and NO, specific measures are needed)

Occupational exposure is below the Action Levels (ALs) at the standardized configurations: ☐ n.a ☒ YES ☐ NO (if applicable and NO, specific signage is needed)

**EMF Data for Non-thermal Effects**

Exposure Indices (EIs) and distances to welding circuit (for each operation mode, as applicable)

| | Head | | Trunk | Limb (hand) | Limb (thigh) |
|---|---|---|---|---|---|
| | Sensory Effects | Health Effects | | | |
| Standardized distance | 10 cm | 10 cm | 10 cm | 3 cm | 3 cm |
| ELV EI @ standardized distance | 0,08 | 0,07 | 0,11 | 0,06 | 0,14 |
| Required minimum distance | 1 cm | 1 cm | 1 cm | 1 cm | 1 cm |

Distance where all occupational ELV Exposure Indices fall below 0.20 (20%): 3 cm

Distance where all general public ELV Exposure Indices fall below 1.00 (100%): 85 cm

Tested by: J. Jaeckle

Date tested: 2020-11-04
Date reworked: 2022-06-09

220609_EMF Data_OM180SW_MW

# 2.2 Using the machine

## 2.2.1 Intended use

| | | |
|---|---|---|
| **WARNING** |  | **Dangers result from improper use!**<br>The device has been manufactured according to the state of the art and the recognized safety regulations and standards for use in industry and trade. It is intended only for the welding processes specified in these operating instructions. If the device is not used as intended, it may pose a risk to persons, animals and property. No liability is assumed for any resulting damage.<br>► Only use the unit for TIG DC welding with Liftarc (contact ignition) or HF ignition (non-contact). Accessory components can extend the range of functions if necessary (*see the chapter* Accessories). |

**The orbital welding power supply is intended solely for the following utilization:**

- Utilization in combination with an orbital weld head or manual welding torch of the company Orbitalum Tools GmbH or with a compatible third-part device in combination with a weld head adapter of the company Orbitalum Tools GmbH.
- TIG welding of materials that are suitable for the TIG welding process.
- Empty unpressurized tubes that are free of contaminations, explosive atmospheres or liquids.

**Proper use also includes the following points:**

- Permanent supervision of the machine during operation. The operator must always be able to stop the process.
- Observing all safety and warning information in these operating instructions.
- Observing of the further applicable documents.
- Complying with all inspection and maintenance work.
- Use of the machine solely in its original state.
- Usage solely of original accessories as well as original spare parts and operating materials.
- Usage solely of protective gases that are classified for TIG welding process in accordance with EN ISO 14175.
- Usage solely of coolant OCL-30 of the company Orbitalum Tools GmbH
- Checking of all the safety-relevant items and functions before commissioning.
- Processing of those materials named in the operating instructions.
- Proper usage of all components involved in the welding processes as well as of all further factors that have an influence on the welding process.
- Solely commercial usage.

## 2.2.2 Machine constraints

- The workplace can be in the tube preparation, in plant construction or in the plant itself.
- The device is operated by one person.
- The device may only be set up and operated on a stable, level and non-slip surface.
- A space of about 2 m for people to move around the unit must be provided.
- Work lighting: min. 300 Lux.

- Ambient conditions during operation:
  Ambient temperature: –10 °C to +40 °C
  Relative humidity: < 90% at +20 °C, < 50 % at +40 °C
- Ambient conditions during storage and transport:
  Ambient temperature: –20 °C to +55 °C
  Relative humidity: < 90% at +20 °C, < 50 % at +40 °C
- The device may only be installed and operated in a dry environment according to IP 23 (not in fog, rain, thunderstorms, etc.). If appropriate, use a welding tent.
- Cooling is only ensured with a full coolant tank.
- Smoke, steam, oil vapors and grinding dust must be avoided.
- Avoid salty ambient air (sea air).

### 2.2.3 Welding in environments with increased electrical hazards

The power supply can be used in environments with increased electrical hazards.
It complies with the regulations and standards IEC/DIN EN 60974 and VDE0544.

### 2.2.4 Device cooling

Insufficient ventilation leads to reduced performance and equipment damage.

► Observe the limits of the machine.

► Keep inlet and outlet openings of the cooling air unobstructed.

► Keep a minimum distance of 0.5 m from obstacles.

# 2.3 Environmental protection and disposal

## 2.3.1 Information regarding the Ecodesign Directive 2009/125/EG

| MODEL | MAINS INPUT | MINIMUM EFFICIENCY OF THE POWER SOURCE | MAXIMUM POWER CONSUMPTION WHEN IDLE |
|---|---|---|---|
| Mobile Welder (OC/Plus) | 1 x 110 - 230 VAC | 81 | 38 |
| Smart Welder Plus | 1-phase + PE | 83 | 43 |
| Power Welder | 400 - 480 VAC | 86 | 48.8 W |
| | 3-phase + PE | | |



- Do not dispose of the product (if applicable) with general waste.
- Reuse or recycle waste electrical and electronic equipment (WEEE) by disposing of it at a designated collection point.
- For more information, contact your local recycling office or your local dealer. Critical raw materials that may be present in indicative quantities of more than 1 gram at the component level.

*(according to Directive 2012/19/EU)*

**Critical raw materials that may be present in indicative quantities of more than 1 gram at the component level.**

| COMPONENT | CRITICAL RAW MATERIAL |
|---|---|
| Circuit boards | Baryte, bismuth, cobalt, gallium, germanium, hafnium, indium, heavy rare earths, light rare earths, Niobium, Platinum group metals, Scandium, Silicon metal, Tantalum, Vanadium |
| Plastic components | Antimony, barite |
| Electrical and electronic components | Antimony, beryllium, magnesium |
| Metal components | Beryllium, cobalt, magnesium, tungsten, vanadium |
| Cables and cable assemblies | Borate, antimony, barite, beryllium, magnesium |
| Displays | Gallium, indium, heavy rare earths, light rare earths, niobium, platinum group metals, scandium |
| Batteries | Fluorspar, heavy rare earths, light rare earths, magnesium |

## 2.3.2 REACh

The regulation (EC) 1907/2006 of the European Parliaments and of the Council concerning the registration, evaluation, authorization and restriction of chemicals (REACh) regulates the production, placing on the market and use of chemical substances and the mixtures produced from these.

Our products are "products" in the sense of the REACh regulation. In accordance with Article 33 of the REACh regulation, suppliers of products must inform their customers if the supplied product contains a substance specified in the REACh SVHC candidate list exceeding 0.1 percent by mass of the object. On June 27, 2018 lead (CAS: 7439-92-1 / EINECS: 231-100-4) was included in the SVHC candidate list. This inclusion activates an obligation to inform along the chain of delivery.

We herewith inform you that individual partial components of our products contain lead in quantities exceeding 0.1 % by mass of the object as an alloy component in steel, aluminum and copper alloys as well as in solders and capacitors of electronic components. The lead content lies within the exceptions specified in the RoHS Directive.

Since lead as an alloy component is firmly bound and therefore no exposure is to be expected in the case of proper use, no additional specification of its safe use are required.

## 2.3.3 Coolant

Dispose of coolant in accordance with the local statutory regulations.



*(as per RL 2012/19/EU)*

### 2.3.4 Electric tools and accessories

Used-up power tools and accessories contain a large amount of valuable raw materials and plastics which can be recycled:

- Used electronic devices marked with the adjacent icon may not be disposed of with household waste in accordance with EU directives.
- By actively using the offered return and collection systems, you are doing your part to reuse and recycle used electronic devices.
- Used electronic devices contain parts that must be handled selectively according to the EU directive. Separate collection and selective treatment are the basis for environmentally responsible disposal and protection of human health.
- We will properly dispose of devices and machines from Orbitalum Tools GmbH purchased after August 13th, 2005 if they are sent to us postage-paid.
- In the case of used electronic devices which may represent a risk to human health or safety due to contamination during use, we have the option of refusing return.
- **Important for Germany:** Devices and machines of Orbitalum Tools GmbH must not be disposed of at municipal collection points, as they are only used in the commercial sector.



(as per RL 2012/19/EU)

## 2.4 Personnel qualification

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | The weld head/manual welding torch may only be used by instructed personnel. |

- Only assign personnel who comply with the occupational and age-specific regulations in effect at the work site.
- **None. No** physical or mental impairments.
- Persons whose reaction time is impaired by drugs, alcohol, or medication are not permitted to operate the machine.
- Minors may operate the machine only under the supervision of an authorized supervisor.
- A basic understanding of the WIG welding process is required.

## 2.5 Fundamental information on operational safety

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | Risk of injury due to monotonous work and exhausting work in places that are difficult to access and performing overhead work!<br>Discomfort, tiredness and malfunctions in the motor system, restricted ability to react and cramping. |

- ► Increase break times.
- ► Perform "loosening-up" exercises.
- ► Assume an upright, fatigue-free and comfortable body position during operation.
- ► Ensure a varied range of activities.

## 2.6 Personal protective equipment

Always personal protective equipment (PPE) when welding. This protects the welder from exposure to radiation, burns and welding fumes, among other things.

The following personal protective equipment must be worn when welding with the power supply:

- ► Safety gloves 1/1/1/1 in accordance with EN 388 or 1/2/1/1 EN 407.
- ► Safety gloves DIN 12477, Type A for welding operation and DIN 388, Class 4 for mounting the electrode.
- ► Safety shoes to EN ISO 20345, Class SB.
- ► Eye protection to EN 170 and skin-covering safety clothing
- ► Leather apron
- ► Head covering for overhead work
- ► When connecting and using a weld head observe the respective safety instructions and warning messages of the weld head.
- ► Observe the remaining risks.

## 2.7 Remaining risks

### 2.7.1 Injury through high weight

The power sources weigh

15.6 kg (34.39 lbs) – Mobile Welder (Plus)

- 21.0 kg (46.30 lbs) – Mobile Welder (OC/OC Plus)

26 kg (57.32 lbs) – Smart Welder Plus

35.4 kg (78.04 lbs) – Power Welder

Lifting poses a major health risk.

There is a risk of impact and crushing in the following situations:

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | The power source may fall during transport or setup. |
| ⚠ | **CAUTION!** | The power source may fall due to improper storage. |

- ► When lifting the power source, do not exceed the permissible load limit of 25 kg for men and 15 kg for women.
- ► Use a suitable transport medium to transport the power source.
- ► Only two people should lift and remove the power source from its packaging.

- ► Place the power source on a stable surface.
- ► Wear safety shoes.
- ► Do not transport the device by crane. Use handles, straps, or brackets exclusively for manual transport.
- ► Before each transport, check that the fastening screws between the power source and the cooling unit (optional) are secure and tighten them if necessary.

## 2.7.2 Burns and danger of fire through high temperatures

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | The orbital welding head or hand torch is hot after welding. Very high temperatures are generated, especially after several welding operations in succession. When working on the orbital welding head or hand torch (e.g., re-clamping or mounting/dismounting the electrode), there is a risk of burns or damage to the contact points. Thermally unstable materials (e.g., foam inlay of the transport packaging) can be damaged upon contact with the hot orbital welding head or hand torch. |

- ► Wear protective gloves.
- ► Before working on the orbital welding head and hand torch or before packing them into the transport packaging, wait until the surfaces have cooled to below 50 °C.

| | | |
|---|---|---|
| ⚠ | **WARNING!** | There is a risk of fire if the forming system is positioned incorrectly or if unsuitable materials are used in the welding area. Observe general fire safety measures on site. |

- ► Position the forming system correctly.
- ► Only use approved materials in the welding area.

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Risk of scalding due to hot, escaping liquids and hot plug connections during heavy operation. |

- ► Observe the safety measures of the supervisor/safety officer.

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Risk of burns from hot hand torch heads and flying sparks and splashes. |

- ► Wear personal protective equipment.

| | | |
|---|---|---|
| ⚠ | **Warning!** | Risk of burns from hot hand torch head and flying sparks and splashes. |

- ► Wear personal protective equipment.

## 2.7.3 Tripping over wires and cables

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | If the power cable, gas line or control cable are under tension, there is the danger that persons may trip over them and be injured. |

- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Do **not** put lines or cables under tension.
- ► Place the weld head in the transport case after dismantling.
- ► Ensure that the hose package is connected properly and that the strain relief is attached.

## 2.7.4 Long-lasting physical damage through wrong posture

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | Long-lasting physical damage due to incorrect posture.<br>Risk of discomfort, tiredness and malfunctions in the motor system, restricted ability to react and cramping. |

- ► Increase break times.
- ► Perform "loosening-up" exercises.
- ► Assume an upright, fatigue-free and comfortable body position during operation.
- ► Ensure a varied range of activities.

## 2.7.5 Electric shock

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Electrical hazards through contact. |

- ► Do not touch energized parts (workpiece), especially when igniting the arc.
- ► From the start of the welding process avoid contact with the tube and the housing of the orbital weld head.
- ► Wear dry safety shoes, dry metal-free (grommet-free) leather gloves and dry safety clothing to minimize the electrical hazard.
- ► Work on a dry surface.

| | | |
|---|---|---|
| ⚠ | **DANGER!** | Risk of death for people with heart problems or cardiac pacemakers. |

- ► Do not allow persons with increased sensitivity to electrical hazards (e.g. cardiac pacemakers) to work with the machine.

| | | |
|---|---|---|
| ⚠ | **DANGER!** | Danger of an electric shock in the case of improperly reaching into and opening of the machine. |

- ► Service and repairs may only be carried out by a qualified electrician.

| | | |
|---|---|---|
| ⚠ | **DANGER!** | The danger of an electric shock exists through non-compatible or damaged connectors. |

- ► Do not use adapter plugs together with protectively grounded power tools.
- ► Ensure that the connecting plugs of the machine fit into the outlet.
- ► When connecting use a residual-current circuit breaker 30 mA.

## 2.7.6 Danger from incorrect handling of shielding gas bottles

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Various injuries and damage to property. |

- ► Heed safety regulations for shielding gas bottles.
- ► Heed safety data sheets for shielding gas bottles.

## 2.7.7 Damage to eyes through radiation

| | | |
|---|---|---|
| ⚠ | **WARNING!** | During the welding process infrared, glaring and ultraviolet rays arise that can seriously damage the eyes. |

- ► During operation, wear eye protection to EN 170 and skin-covering safety clothing.
- ► At closed weld heads ensure proper working order of the eye protection.
- ► Shield the welding area to protect other people.

## 2.7.8 Dangers through electromagnetic fields

| | | |
|---|---|---|
| ⚠ | **DANGER!** | During the welding process, electromagnetic fields are generated that can be fatal to people with heart problems or pacemakers. |

- ► People with heart problems or pacemakers may not operate the welding system.
- ► The owner has to ensure safe design of the workplace in accordance with the EMF Directive 2013/35/EU.
- ► Use only electrical devices with protective insulation in the working area of the welding system.
- ► Observe electromagnetically-sensitive devices when igniting the system.

## 2.7.9 Risk of suffocation from an excessive amount of argon in the air

| | | |
|---|---|---|
| ⚠ | **DANGER!** | When leaks in the gas supply occur, there is a danger of suffocation due to the high argon content in the ambient air. Irreversible damage or deadly hazard due to suffocation may be the result. |

- ► Replace defective parts immediately and check daily for proper functioning.
- ► Check machine daily for externally visible damage and defects and have them remedied by a professional if necessary.
- ► Keep the lines and hoses away from heat, oil, sharp edges or moving device parts.
- ► Use only in well ventilated areas.
- ► Monitor oxygen, if necessary.

## 2.7.10 Health problems

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Poisonous vapors and substances during the welding process and handling of the electrodes! |

- ► Use extraction devices in accordance with the professional association regulations (e.g. BGI: 7006-1).
- ► Extra caution is required with chrome, nickel and manganese.
- ► Do not use electrodes containing thorium.

## 2.7.11 Danger of system tipping over

| | | |
|---|---|---|
| ⚠ | **WARNING!** | Various injuries and damage to property from tipping over of the system through the application of force from the outside. |

- ► Set up the machine so that it stands securely against external influences.
- ► Keep moving masses at least 2 meter away from the machine.

## 2.7.12 Danger of explosion and fire

| | | |
|---|---|---|
| ⚠ | **DANGER!** | Danger of explosion and fire through flammable materials near the welding zone or solvent in the room air. |

- ► Do not weld near solvents (for example where degreasing, painting is being carried out) or explosive substances.
- ► Do not use flammable substances as a base in the welding area.
- ► Ensure that no flammable materials or soiling is located near the machine.

## 2.7.13 General injuries through tools

| | | |
|---|---|---|
| ⚠ | **CAUTION!** | Injuries can occur during dismantling for the proper disposal of the orbital welding power supply through uncertainties in handling tools. |

► In case of uncertainties send the orbital welding power supply to Orbitalum Tools – proper disposal is carried out here.

# 3 Description





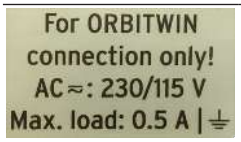

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Space for keyboard | The optional keyboard can be placed in front of the soft keys. |
| 2 | Pushbutton switches (softkeys) | Operating the welding power source, *see chapter* Softkey buttons |
| 3 | Color touch display | Operating the welding power source, *see section* Softkey buttons |
| 4 | Foldable cover | Protects the controls |
| 5 | USB connection socket, front | Connection option for USB devices (2x) |
| 6 | Integrated system printer | For printing actual values and welding data logs |
| 7 | Carrying handles | Transporting the welding power source |
| 8 | Rotary actuator | Operating the welding power source, *see section* Rotary actuator |
| 9 | Welding current socket | Connection Welding head |
| 10 | Ventilation slots | Vent welding power source |
| 11 | Welding current plug | Welding head connection |
| 12 | Eyelet, strain relief | Strain relief Welding head to power source |
| 13 | Connection socket "Weld head" | Connection for welding head signal cable |
| 14 | Remote connection socket | Connection option for external remote control (optional) or dummy plug |
| 15 | "ORBmax" connection socket | Connection option for "ORBmax" residual oxygen meter (optional) |
| 16 | "BUP" connection socket | Connection option for "BUP Control Box" forming gas pressure regulator (optional) |
| 17 | Power button (red) | Switch off welding power source; lights up red during operation and in "standby" mode. |
| 18 | Main switch (green) | Switch on welding power source; lights up green during operation. |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 19 | Coolant connection, blue | Connection for coolant supply |
| 20 | "Weld Gas" connection socket | Connection for gas hose to weld head |
| 21 | Coolant connection, red | Connection for coolant return line. |
| 22 | "LAN" connection socket, rear | Connection option for LAN cable |
| 23 | USB connection socket, rear | Connection option for USB devices (2x) |
| 24 | HDMI connector, rear | Connection option for HDMI cables |
| 25 | LED display | Displays operating status and coolant flow |
| 26 | Tank opening with cover | Holds up to 2.2 liters of coolant for cooling the connected welding heads. |
| 27 | Coolant level indicator | Shows the coolant level in the tank |
| 28 | Mains input socket | Connection for power cord |
| 29 | "ORBITWIN" connection socket | Connection for ORBITWIN switchover device |
| 30 | “Welding Gas Input” | Welding gas inlet |
| 31 | Type plate | Display of machine data |
| 32 | Connection socket "External cooling" | Connection for external cooling unit signal cable |
| 33 | Connection socket | Connection option for higher-level control system, *see section* External interface X13 [▶ 143] |
| 34 | Connection socket | Connection option for CAN-compatible components |
| 35 | “Purge Gas Input” | Purge gas inlet |
| 36 | "Purge Gas" connection socket | Connection for purge gas hose to weld head |

## 3.1 Warning signs

The warning and safety instructions affixed to the machine must be observed.

The warning labels are part of the machine. They must not be removed or altered. Missing or illegible warning labels must be replaced immediately.

| IMAGE | POSITION ON THE MACHINE | MEANING | CODE |
|---|---|---|---|
|  | Inside of front cover  | Read the safety instructions! | 871 001 057 |
|   | Rear Panel  | Before opening the device | 850 060 025 |
|   |   | For ORBITWIN connection only! | 850 060 034 |
|   | Left side panel  | Caution: Use only Orbitalum cooling liquid! | 884 001 001 |

# 4 Scope of application

The is characterized by the following application options and functions:

- For welding using the Tungsten Inert Gas (TIG) process
- Can be used for all materials that are fundamentally suitable for the TIG welding process
- Operation via multifunction rotary actuator or touchscreen
- DC current welding source
- WIDE RANGE input voltages for safe operation of power sets or voltage networks with extreme fluctuations in voltage
- Flow Force function to reduce the gas pre-flow and post-flow time
- Permanent gas function
- Digital regulation of the weld gas quantity
- Monitoring of coolant and weld gas
- Control option for cold wire feed
- Possibility of connecting an external remote control
- Constant or pulsed wire feed motion and rotation
- 12.4" swivel monitor
- Graphically-supported operating interface and multilingual menu navigation via color display
- Metric and imperial measuring units
- Process-oriented, stable and real-time operating system without power-down sequence
- Automatic weld head recognition and resulting parameter modification
- Motor current monitoring of the drive motors
- Memory capacity for over 5,000 welding programs enables systematic and clear program management by creating folder structures
- Welding data logging and printout of actual values
- Integrated system printer
- Possibility of connecting a monitor or printer (through HMDI/USB/LAN)
- Integrated carrier handles
- Option to program up to 99 sectors
- Power and motor slope adjustment between the individual sectors
- Integrated liquid cooling system for cooling the connected welding heads, hand torches, and machine torches.
- Can only be used in combination with a separately available liquid cooling system

# 5 Technical specifications

| PARAMETERS | UNIT | VALUE | COMMENTS |
|---|---|---|---|
| Code | | 850 000 010 | |
| Type of welding system | Welding rectifier (inverter) | | |
| **Input (mains)** | | | |
| Mains system | | 1-phase + PE | |
| Mains input voltage | [V (AV)] | 1 x 110-230 | |
| Permissible voltage tolerance | [%] | +/–10 | |
| Mains frequency | [Hz] | 50/60 | – |
| Input continuous current @ 110 A | [A (AC)] | 7.9 | |
| Input continuous power @ 110 A | [kVA] | 1.9 | |
| Current consumption, max. @ 180 A | [A (AC)] | 15.9 | |
| Connected load, max. @ 180 A | [kVA] | 3.6 | |
| Power factor @ 180 A | [cos ϕ] | 1 | |
| **Output (welding circuit)** | | | |
| Welding current adjustment range | [A (DC)] | 3 - 180 | in increments of 0.1 A |
| Reproducibility of welding current | [%] | +/– 0.5 | |
| Nominal current at 100% duty cycle | [A (DC)] | 110 | |
| Nominal current at 60% duty cycle | [A (DC)] | 140 | |
| Nominal current at 30% duty cycle | [A (DC)] | 180 | |
| Welding voltage, min. | [V (DC)] | 10 | |
| Welding voltage, max. | [V (DC)] | 20 | |
| No-load voltage, max. | [V (DC)] | 70 | |
| Ignition energy, max. | [joules] | 0.3 | |
| Ignition voltage, max. | [kV] | 10 | |
| **Output (control)** | | | |
| Motor voltage rotation, max. | [V (DC)] | 24 | PWM signal |
| Motor voltage Wire feed, max. | [V (DC)] | 24 | PWM signal |
| Motor current Rotation | [A (DC)] | 1.5 | |
| Motor current Wire feed, max. | [A (DC)] | 1.5 | |
| Tacho voltage rotation | [V (DC)] | 0 | Actual value rotation |
| **Other** | | | |
| Protection class | | IP 23 S | |
| Cooling type | | AF recirculating air | |
| Insulation class | | F | |
| Dimensions (WxDxH) | [mm | 600 x 400 x 320 | |
| | [inch] | 23.6 x 15.7 x 12.6 | |
| Weight | [kg] | 26.0 | without coolant |
| | [lbs] | 57.32 | |
| Gas inlet pressure | [bar] | 3 – 10 | via pressure reducer |
| Recommended gas inlet pressure | [bar] | 4 | Via pressure reducer |
| Coolant volume | [l] | 2.2 | |

| PARAMETERS | UNIT | VALUE | COMMENTS |
|---|---|---|---|
| Coolant pressure, max. | [psi] | 4 | |
| Sound level, max. | [dB (A)] | 70 | |

# 6 Transport and shipping

**WARNING**



**Improper transport**

Permanent damage to the welding power supply.

► Transport the power source only in a suitable, all-round protective and shock-proof outer packaging.

**WARNING**



**Risk of injury from incorrect handling of shielding gas bottles**

Incorrect handling and inadequate fastening of shielding gas bottles can lead to serious injuries.

► Follow the instructions of the gas manufacturers and the compressed gas regulations.

► There must be nothing attached to the valve on the shielding gas bottle.

► Avoid heating the shielding gas bottle.

**CAUTION**



**Risk of tipping**

When moving and setting up the device, it may tip over and be damaged or injure people. Tipping resistance is guaranteed up to an angle of 10° (to IEC 60974-1).

► Set up or transport the device on a level, solid surface.

► Use suitable means to secure the attachment parts.

**CAUTION**



**Risk of accidents from falling and tripping hazards**

During transport, supply lines that are not disconnected can cause hazards, such as connected devices tipping over and causing injury to people.

► Disconnect all supply lines before transport.

## 6.1 Gross weight

| ITEM | WEIGHT* | UNIT |
|---|---|---|
| Mobile Welder Plus incl. scope of delivery* | 40.0 | kg |
| | 88.185 | lbs |

** incl. original Orbitalum shipping carton*

## 6.2 Shipping

Only transport the power source in suitable, fully protected, and shock-resistant outer packaging, such as the original Orbitalum shipping carton or the optionally available "Smart Welder transport case" (850030020).

Some modes of transport require equipment to be shipped without liquids.

In this case, completely empty the coolant tank before transporting the power source, *see chapter* Drain coolant [▶ 135].

## 6.3 Transport

**WARNING**



**Risk of accident due to the device falling. Handles and eyelets are only suitable for manual transport.**

The device may fall and injure people.

► Crane lifting and suspension of the device is not permitted.

**WARNING**

**Risk of injury due to the heavy weight of the orbital welding power source!**
**The orbital welding power source weighs 26.0 kg (57.320 lbs).**

- ► Always lift the orbital welding power source with two people or use a suitable transport medium.
- ► When lifting the machine, **do not** exceed the permissible total weight of 25 kg for men and 15 kg for women.
- ► Wear safety shoes in accordance with EN ISO 20345 class SB.

## 6.3.1 Transport in optional transport case

Transport case*, see chapter* Accessories [▶ 144]

Transport the weld head in the transport case, either by

- Pull the latch (1) on the underside of the transport case outward and pull out the telescopic handle (2).

► Push the latch (1) on the underside of the transport case outwards and pull out the telescopic handle (2).







or

Carry using the carrying handles (3) and (4) integrated into the case.



# 7 Setup and commissioning

## 7.1 Unpack the power source

1. Remove the cardboard lid insert from the box.
2. Remove the cardboard corner protectors (4 pcs.) from the box.
3. Lift the power source out of the box using the handles integrated into the side frames and place it upright on a stable, non-slip surface.
4. Check the power source and accessories for transport damage.

***NOTICE!***



► Report any damage to your supplier immediately.

## 7.2 Scope of delivery

| ARTICLE | CODE | QUANTITY | UNIT |
|---|---|---|---|
| Smart Welder Plus | 850 000 010 | 1 | ST |
| Power cord DE SW | 850 040 001 | 1 | ST |
| Adapter Right/left-handed pressure reducer | 875 030 019 | 1 | ST |
| Hose connection set SW/PW US (US version) | 850 050 021 | 1 | ST |
| Blanking plug for remote control socket | 850 050 004 | 1 | ST |
| USB keyboard | 875 012 057 | 1 | ST |
| Welding current connection adapter set for socket & plug | 850 030 004 | 1 | ST |
| Coolant OCL-30 3.5 l/118.3 fl oz | 850 030 010 | 1 | ST |
| Operating instructions with spare parts list<br>Download link:<br>https://www.orbitalum.com/de/download.html | 850 060 201 | Unlimited<br>PDF | ST |
| QuickStart Guide Smart Welder / Power Welder DE/EN | 850 060 020 | 1 | ST |
| General safety instructions Welding power sources | 854 060 101 | 1 | ST |
| Calibration certificate | - | 1 | ST |

*Subject to change without notice.*

► Check delivery for completeness and transport damage.

► Report missing parts or transport damage to your supplier immediately.

## 7.3 Setting up the power supply

**CAUTION**



**Risk of tipping**

When moving and setting up the device, it may tip over and be damaged or injure people. Tipping resistance is guaranteed up to an angle of 10° (to IEC 60974-1).

► Set up or transport the device on a level, solid surface.

► Use suitable means to secure the attachment parts.

- ► Plug in and lock accessory components in the designated connection sockets only when the power supply is switched off.
  The accessory components are automatically detected by the power supply after power-up.
- ► Detailed information on accessory components can be found in their operating instructions.
- ► Place power supply upright on a stable, level, non-slip and non-combustible surface.
- ► Operate the power supply only in an upright position!
  Operation in non-approved positions may cause damage.
- ► Position the power supply for connection so that its front and rear sides are easily accessible. A space of about 2 m for people to move around the unit must be provided.
- ► Set up only in a dry environment.
- ► Ambient conditions during operation:

  Ambient temperature: -10 °C to +40 °C

  Relative humidity < 90 % to +20 °C, < 50 % to +40 °C.
- ► Work lighting: min. 300 Lux.

## 7.4 Connecting the weld head/manual welding torch

**CAUTION**



**Danger of burns from improper welding current connection!**

Unsecured welding current plugs or dirty workpiece connections (dust, corrosion) can heat up and cause burns if touched.

- ► Check welding current connections daily and ensure cable socket latch is engaged.
- ► Clean the workpiece connection point thoroughly and fasten it securely!
- ► Do not use structural parts of the workpiece as welding current return line!

**WARNING**



**Risk of burns, blindness and fire due to arcs**

An arc may develop by releasing the welding contacts during operation. This can result in burns and blindness, in the worst case a fire can be started.

- ► Connect and disconnect the weld head only when the power supply is shut down.
- ► Lay the lines and cables so that they are **not** under tension.
- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Attach the strain relief.
- ► Check that hose package connections fit firmly in place when connecting or before activating the power supply.
- ► Do not work near highly flammable substances.
- ► Operate only on non-combustible surfaces.

**CAUTION**



**Coolant leakage during weld head change**

Irritation of skin, eyes and respiratory tract possible on contact with coolant.

- ► When changing the weld head, switch off the coolant pump and power supply.

► For procedure, see operating instructions of weld head/manual welding torch.

## 7.5 Welding and forming gas supply

**WARNING**



**Risk of injury from incorrect handling of shielding gas bottles**

Incorrect handling and inadequate fastening of shielding gas bottles can lead to serious injuries.

- ► Follow the instructions of the gas manufacturer and those for the pressurized gas supply!
- ► There must be nothing attached to the valve on the shielding gas bottle!
- ► Avoid heating the shielding gas bottle!

- The shielding gas flow of the torch is regulated and monitored by the digital gas flow control of the power source.
- The desired volume flow of welding gas at the torch is set in the power supply software.

***NOTICE!***



**To utilize the full functional range of the digital gas control, we recommend setting the inlet volume flow coming from the pressure regulator higher than the welding gas volume actually required at the torch at the pressure regulator.**

Recommended inlet volume flows: Welding gas 30 l/min

- The welding gas displaces oxygen outside the pipe in the welding area to prevent oxidation of the base material and is supplied via the welding torch.
- The forming gas displaces oxygen inside the pipe and is usually introduced into the pipe interior via forming gas plugs.

***NOTICE!***



**Do not exceed max. 10 bar (145 psi), otherwise damage may occur.**

### Purge Gas Channel

The purge gas channel allows control of the gas for internal pipe purging. This function helps reduce the oxygen content inside the pipe during the welding process, preventing oxidation of the weld seam.

### Settings

**No additional settings in the power source software are required** for using the purge gas channel. Control is automatic and linked to the welding process.

### Functionality

- The purge gas flow is always switched in parallel with the welding gas flow.
- Start of purge gas flow: When the welding process starts.
- End of purge gas flow: When the welding process ends.

### Manual Start of Purge Gas Flow

To start the purge gas flow manually, use the **“Gas/Coolant”** softkey.
For more details, refer to **Chapter 8.2.1 Softkey “Gas/Coolant”**.

### Scope of Delivery

The appropriate **gas connection plug and hose for the purge gas channel** are included in the scope of delivery of the power source.

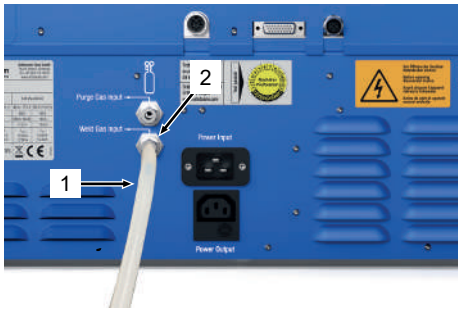
### Recommendation

For pipe purging, we recommend the **Purge Plug Set 881000001 ORBIPURGE**, suitable for internal diameters **ID 12–110 mm**.

Procedure:

1. Check the stability of the gas bottle.
2. Secure the gas bottle against falling over.
3. Attach the gas hoses included in the scope of delivery to the pressure reducer.
4. Mount the pressure reducer on the gas bottle.
5. Set the desired volume rate on the pressure reducer.
6. Insert the gas hose (1) into the gas inlet socket (2) on the rear of the power source.

⇨ The gas hose is secured against slipping out by the locking mechanism of the gas inlet socket.




## 7.6 Power grid connection

For detailed information on the mains input voltage, *see chapter* Technical specifications [▶ 24]

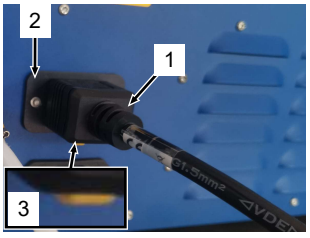
- ► Ensure that the mains supply provided at the place of use complies with local regulations.
- ► Ensure that a suitable power cord is used for the mains connection.
- ► Ensure that the mains socket is properly designed and earthed.
- ► Check the power cord and power plug for damage before use.
- ► To increase safety, a residual current device (RCD) in accordance with IEC standard with a rated residual current of max. 0.03 A or a protective isolation transformer is required on the mains side.

## 7.7 Operation of the power source at different mains voltages

At an input voltage of < 200 V AC, the welding current is limited to a maximum of 120 A due to the higher input currents. Welding programs with current values > 120 A cannot be started in this case.

## 7.8 Connect the power cord

1. Plug the cable socket of the power cable (1) included in the scope of delivery into the mains input socket (2) on the rear of the power supply.
2. Ensure that the yellow cable socket latch (3) is engaged.
3. Connect the power plug to the mains.



## 7.9 Turn on the power source

► Press the ON switch (green) (1).

⇨ The ON switch (green) (1) and OFF switch (red) (2) light up, the operating system starts, and the main menu (3) appears on the display.



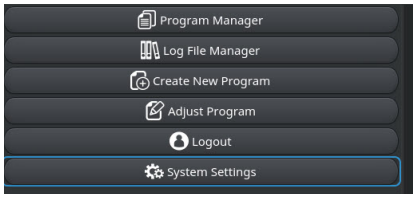

## 7.10 Activation

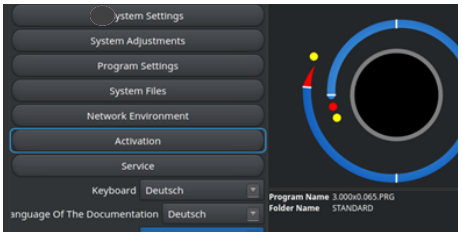
***NOTICE!*** **Operation of the power source, see chapter Operating concept [▶ 36]**

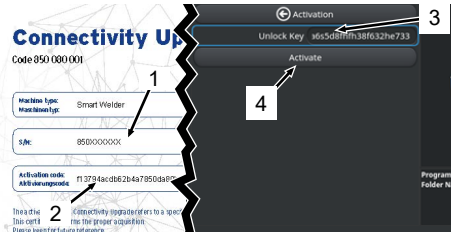
Under the “Activation” menu item in the main menu, optionally purchased software upgrades such as “UPGRADE Connectivity LAN/IoT/VNC” can be activated via an activation key in the power source software

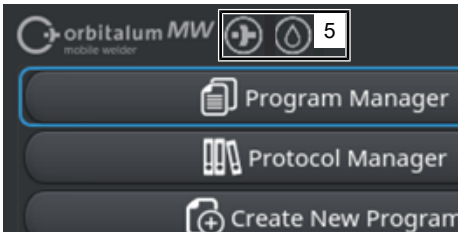
Procedure:

► From the main menu of the power supply, navigate to "System Settings" > "Activation”.




1. Enter the activation key (2) in the text input field (3).
2. Confirm the entry by pressing the "Activation" button (4).

⇨ Successful activation is indicated by a network symbol (5) in the menu header.

*See chapter* Main menu [▶ 52]

| POS. | DESCRIPTION | FUNCTION |
|---|---|---|
| 3 | Activation key text input field | Text input field for entry of the activation key.<br>The activation key is entered via the keyboard.<br>**NOTICE! The activation keys are coupled with a power supply serial number. Activation can therefore only take place on the associated power supply! You will find the activation key and the corresponding power source serial number on the purchased activation documents.** |
| 4 | Activation button | Button for confirming the entered activation key.<br>After successful confirmation, the purchased additional functions are available in the power source software.<br>*See also chapter* Main menu [▶ 52] |

| | | |
|---|---|---|
| ***NOTICE!*** |  | **If an error message is displayed:**<br>► Check whether the entered activation key matches the activation key specified in the documents.<br>► Check whether the serial number specified in the activation documentation matches the serial number of the power supply. |

## 7.11 User levels

The power source supports two user levels:

1. Administration level - full range of functions
2. User level - limited range of functions

The distinction between the levels is made via the login password.

### 7.11.1 Administration level

At the administration level, the full range of functions of the power source is enabled.

Any system and program settings can be made and welding parameters can be adjusted.

Machine-preset administrator password: **12345**

At this level, a limit for the correction factor of the user level can also be defined.

*See chapter* Limit Adjustments [▶ 97]

### 7.11.2 User level

When logging in at user level, only functions relevant to welding are accessible. The scope of the software is tailored purely to the user role.

Machine-preset user password: **54321**

Accessible functions:

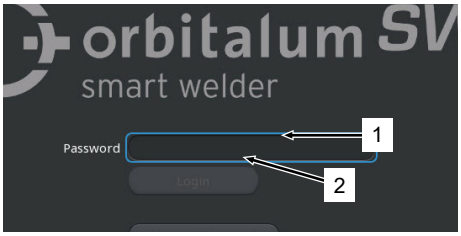
- Load welding programs
- Display welding logs
- Change the system language and units of measurement

- Comment on welds
- Cross-sector welding current adjustment via "correction factor"
- Test mode
- welding

Locked functions:

- Create welding programs
- Adjust welding parameters
- Deleting/renaming/copying/moving welding programs
- Delete/copy/move welding logs
- Change system settings
- Change program settings
- Locked functions and menu entries are hidden or grayed out.

## 7.12 Sign in




Perform the following steps on the login screen:

1. Enter the password in the "Password" input field (1).
2. Confirm the entry by pressing the "Login" button (2).

Initial passwords see chapter Administration level [▶ 33] and User level [▶ 33].

## 7.13 Reset password

All passwords can be reset using the super password.

The "super password" can be found on the power source data sheet supplied with the power source.

To reset the password, perform the following steps:

1. Press the "Change Password" button on the login screen.
2. Press the "Change Admin Password" or "Change User Password" button.
3. Enter the super password in the "Old Password" field.
4. Enter the new admin password in the "New Password" field.
5. Re-enter the new admin password in the "Confirm Password" field.

## 7.14 Change password

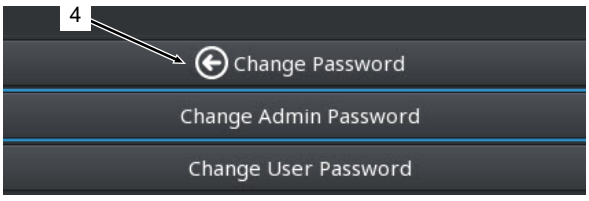
The "Change Password" button (3) can be used to change the user level passwords for users and administrators.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **The user password can only be changed by entering the admin. password.** |




*Illustration: Login screen*

## 7.14.1 Change admin password

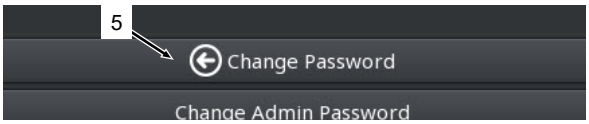



To change the admin password, perform the following steps:

1. Press the "Change Password" button (4) on the login screen.
2. Press the "Change Admin Password" button.
3. Enter the current admin password in the "Old Password" input field.
4. Enter the new admin password in the "New Password" input field.
5. Enter the new admin password again in the "Confirm Password" input field.

⇨ The admin password has been changed.

## 7.14.2 Change user password




To change the user password, perform the following steps:

1. Press the "Change Password" button on the login screen.
2. Press the "Change User Password" button (5).
3. Enter the admin password in the "Admin Password" input field.
4. Enter the new user password in the "New Password" input field.

5. Enter the new user password again in the "Confirm Password" input field.

⇨ The user password has been changed.

# 7.15 Operating concept

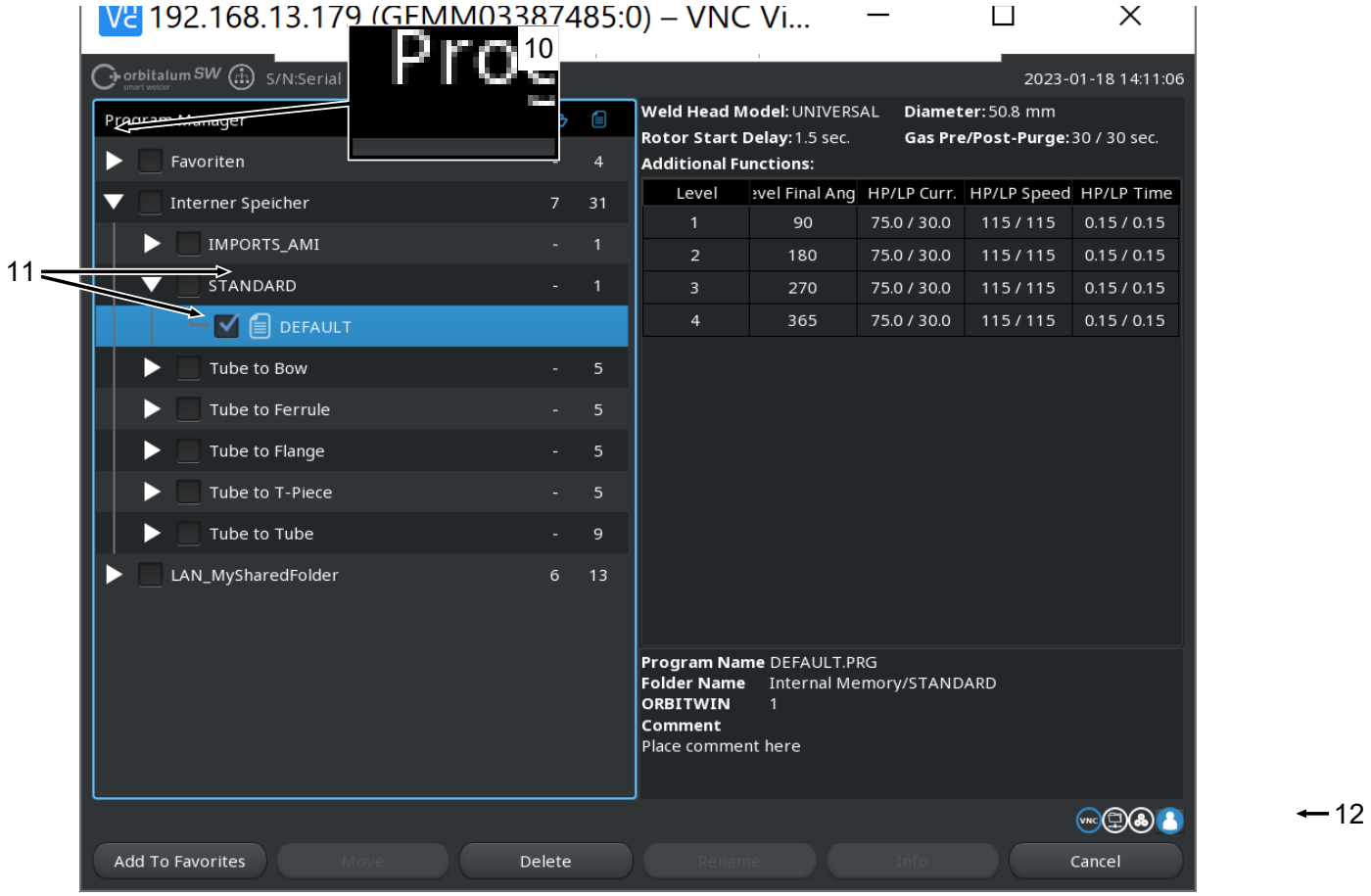
## 7.15.1 Set system and documentation language



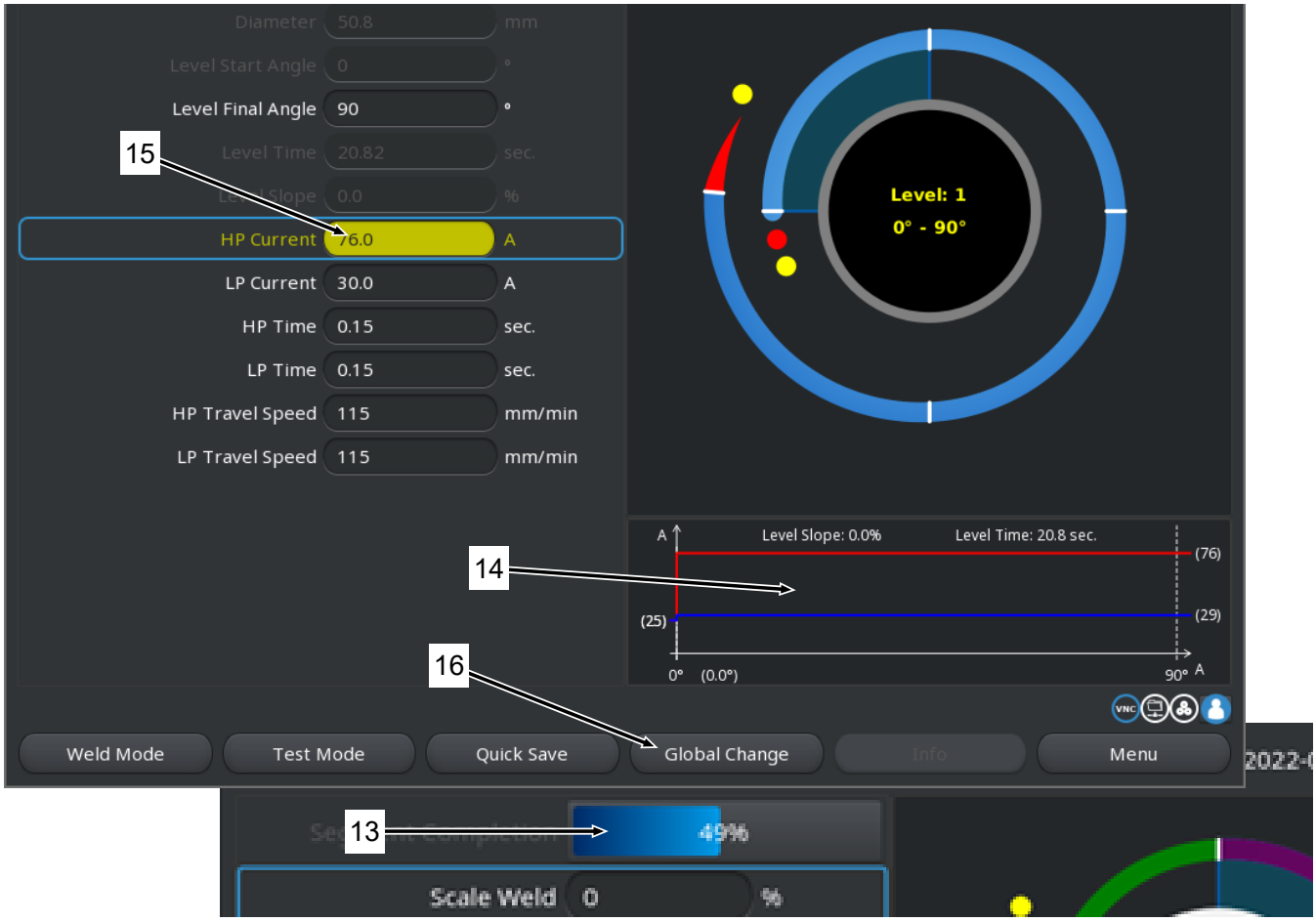

| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Menu cursor | Marks the current editing position |
| 2 | Menu button | Control element to execute assigned function. |
| 3 | Slide controls | Control element to enable (ON) or disable (OFF) assigned function.<br>Activated slider buttons are highlighted in blue. |
| 4 | Dropdown list | Control element to open a selection list and select a given value or function. |
| 5 | Number input field | Input element to enter numerical values.<br>Activated fields are highlighted in blue. |
| 6 | Touch-actuated softkey button | Variable control element to execute functions that change depending on the menu. |




| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 7 | Text input field | Input element to enter text values.<br>Activated text input fields are highlighted in blue. |
| 8 | Information field | Information element that displays various information. |
| 9 | Touch-actuated action field | Touch-actuated control element to execute assigned function. |




| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 10 | Menu tree element | Element to open/expand or close a menu tree. |
| 11 | Checkbox | Control element for making a selection. Selected checkboxes are marked with a check mark. |
| 12 | Status icons | Display the system status of various functions. |




| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 13 | Progress bar | Displays the progress of the currently active program segment. |
| 14 | Interaction graphic | Provides graphical feedback to the user when parameters are changed. |
| 15 | Input field - highlighted in yellow | Input fields highlighted in yellow mark all values currently changed in the welding procedure that deviate from the current memory value.<br>By saving the welding procedure again, the changed values are applied and highlighted in gray.<br>**NOTICE! The function serves as an orientation aid for the user when creating and adjusting the welding procedure.** |
| 16 | Softkey “Apply” | If the "Gobal Change" softkey is pressed, the parameter value currently marked with the menu cursor is applied in all subsequent weld procedure sectors and existing values are overwritten. |

## 7.15.2Input devices and control elements

Primary control elements:

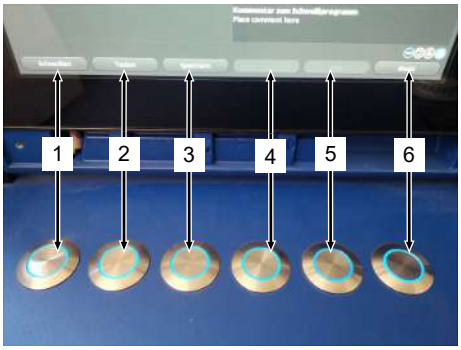
- 6 Optional input devices:
- Touchscreen
- Optional input devices:

Optional input devices:

- USB keyboard
- USB code scanner
- USB mouse

### 7.15.2.1 Softkey buttons

The functions assigned to the 6 softkeys (1 - 6) depend on the currently selected menu. The current function of the button is indicated by the label on the softkey buttons above it on the touchscreen and can be executed by pressing the physical or virtual softkey buttons.




**Examples:**

- The softkey button (6) is usually assigned to the "Menu" function, meaning pressing it brings you directly to the main menu, regardless of which sub-menu currently appears in the display.
- The softkey button (3) is assigned to the "Save" function in the "Program Manager" sub-menu, i.e. by pressing it, a program change can be saved directly.

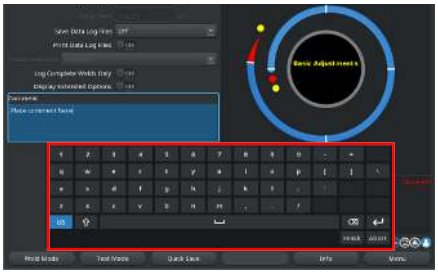
### 7.15.2.2 Touchscreen

The touchscreen is operated by touching it with the fingertip.

Tapping or swiping activates or executes the field on which the menu cursor is located.

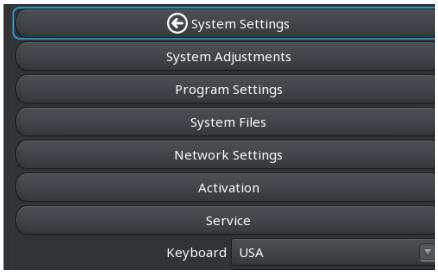
**Virtual keyboard**

Numeric and alphanumeric values can be entered via a virtual touch keyboard. It appears automatically when a corresponding input field is touched.



**Menu buttons**

Touching the desired slide control executes the function.




**Slide control**

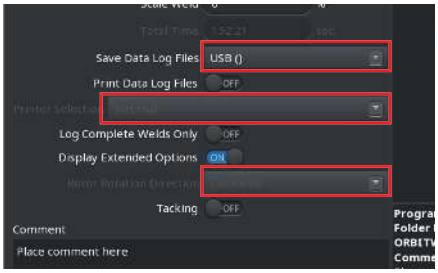
Touching the desired slide control activates (ON) or deactivates (OFF) the function.



**Dropdown list fields**

Touching the dropdown list field opens the list. Touching the desired parameter again selects it.

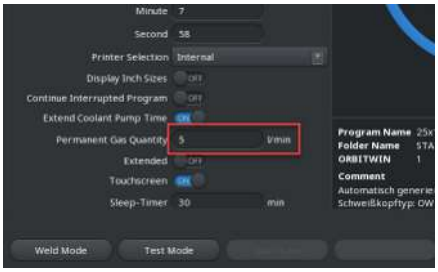
Touching the dropdown list field again closes the list.



**Number input field**

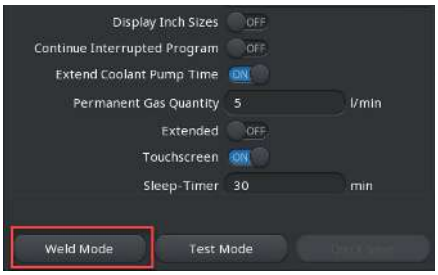
By touching an input field, the virtual numeric touch-actuated keyboard appears for input.

The entry can be confirmed by means of the "Finished" button or canceled using the "Cancel" field




**Touch-actuated softkey buttons**

Touching a softkey button executes the stored function.




**Text input fields**

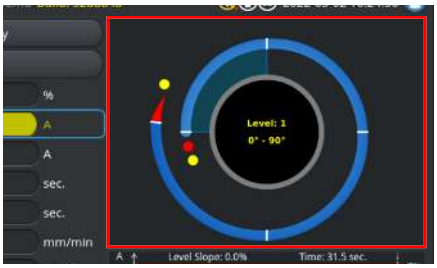
By touching a text input field, the virtual alphanu- meric touch-actuated keyboard appears for input.

The entry can be confirmed by means of the "Finished" button or canceled using the "Cancel" field.




**Touch-actuated action fields**

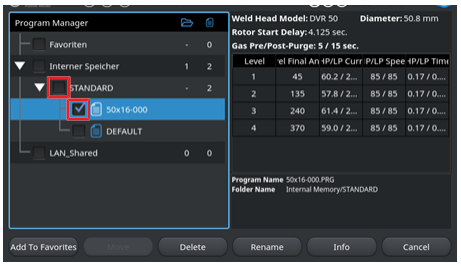
Touching an action field executes the stored function.




**Checkboxes**

Touching a selected checkbox will places a check mark in it.

Touching it again removes the check mark.




## 7.15.2.3 Rotary actuator

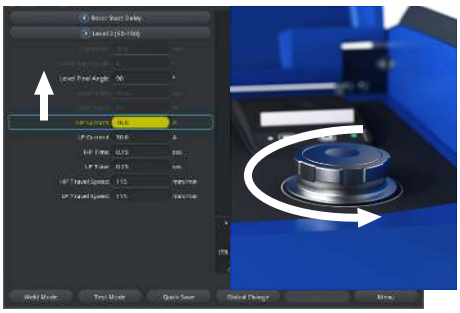
The rotary actuator is operated by turning and pressing it.

Rotate it to select the desired software control element or field. The control element or field on which the menu cursor is located is outlined in blue. The function is activated or executed by pressing the rotary actuator.

Clockwise rotation => The menu cursor moves down



Counterclockwise rotation => The menu cursor moves up



Pressing and holding the rotary actuator for a long time (> 2 seconds) returns you to the higher menu level.




**Menu buttons**

By briefly pressing the rotary actuator (< 2 seconds) executes the function of the highlighted menu button.




**Slide control**

Pressing the rotary actuator activates (ON) or de- activates (OFF) the function of the highlighted slider.

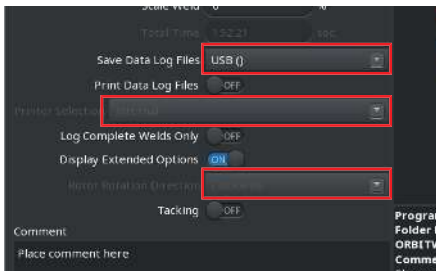


### Dropdown list fields

Pressing the rotary actuator opens the highlighted dropdown list field. The desired parameter can be highlighted by turning and selected by pressing again.

By pressing longer (> 2 sec.), the input can be can- celed and the list can be closed.

This is also possible by pressing the dropdown list field again.



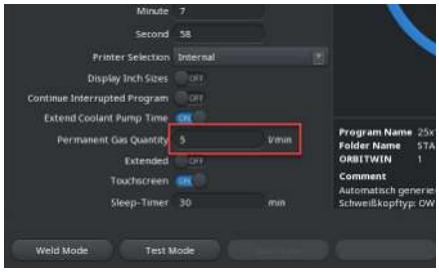

### Number input field

Pressing the rotary actuator opens the highlighted number input field.

The desired numerical value can be selected by turning the rotary actuator and confirmed by pressing it again.

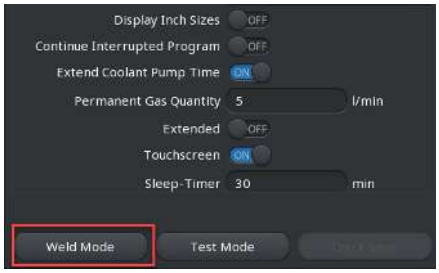
Depending on the direction of rotation, the input value increases or de- creases.

The entry can be canceled by pressing and holding longer (> 2 seconds).




### Touch-actuated softkey buttons

Operation via rotary actuator not possible.



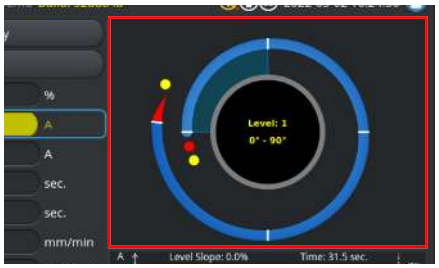

### Text input fields

Operation via rotary actuator not possible.




### Touch-actuated action fields

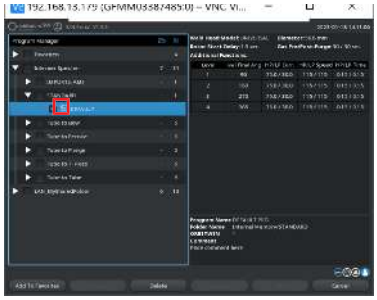
Operation via rotary actuator not possible.




### Checkboxes

Pressing the rotary actuator selects the highlighted checkbox and places a check mark in it.

Pressing it again removes the check mark.



### 7.15.2.4 USB mouse

The mouse is operated using the mouse buttons and scroll wheel.

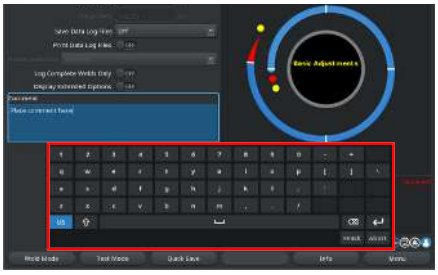
Left-clicking activates or executes the field where the mouse cursor is positioned.

You can scroll through the menu areas by turning the scroll wheel up or down.

The mouse cursor is hidden if there has been no movement with the mouse for approx. 2 seconds or as soon as an operation is registered via the touch function of the screen.
The mouse cursor reappears as soon as any movement of the mouse is detected.

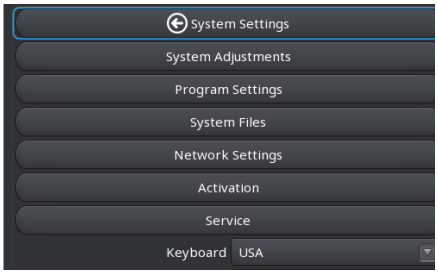
**Virtual keyboard**

Numeric and alphanumeric values can be entered using a virtual touch keyboard. It appears automatically when you click in the corresponding input field.



**Menü-Buttons**

Clicking on the desired menu button opens the stored menu.




**Slide control**

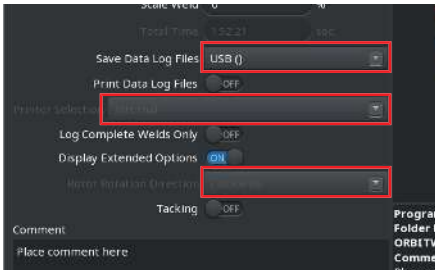
Clicking on the desired slider activates (ON) or deactivates (OFF) the function.



**Dropdown list fields**

Clicking on the drop-down list field opens the list. Clicking again on the desired parameter selects it.

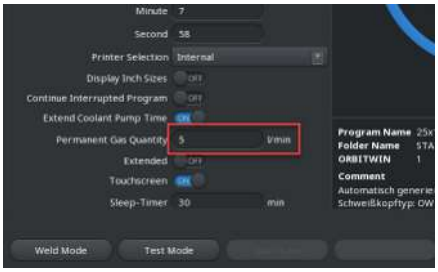
Clicking on the drop-down list field again closes the list.




**Number input field**

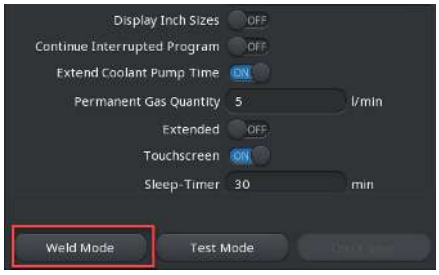
When you click in an input field, the virtual numeric key-board appears for input via mouse click.

The entry can be confirmed by means of the "Finished" button or canceled using the "Cancel" field.



**Touch-Softkey-Buttons**

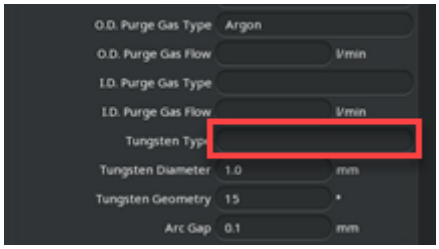
Clicking on a softkey button executes the stored function.




**Text input fields**

When you click in a text input field, the virtual alphanumeric touch keyboard appears for input via mouse click.

The entry can be confirmed by pressing the "Finished" button or canceled by pressing the "Cancel" button.




**Touch-actuated action fields**

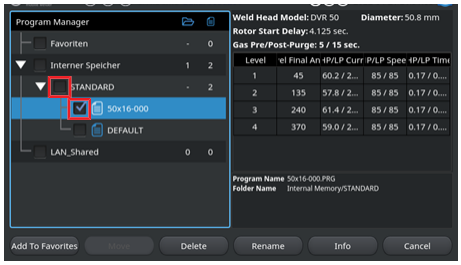
Clicking on an action field executes the stored function.




**Checkboxes**

Clicking on a marked checkbox will check it.

Clicking again removes the check mark.




## 7.15.2.5 USB keyboard

The primary navigation elements of the keyboard are the arrow keys, the "ENTER" key, the "ESC" key and the "F1 to F6" keys, as well as the numeric and alphanumeric keyboard.

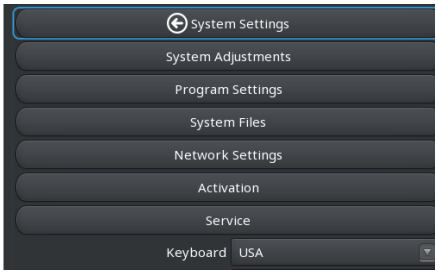


| KEY/KEY COMBINATION | FUNCTION |
|---|---|
| Arrow | Use the right arrow key to move to the next menu and the left arrow key to move to the previous menu.<br>The desired control element or field can be selected with the menu cursor using the "up" and "down" arrow keys.<br>The control element or field on which the menu cursor is located is highlighted in blue. |
| Enter | The function is activated or executed by pressing the "ENTER" key. |
| Esc | By pressing the "ESC" key, you can revoke the entry or switch back from the current menu to the higher menu level. |

| KEY/KEY COMBINATION | FUNCTION |
|---|---|
| Letters and numbers | Numeric and alphanumeric values can be entered using the corresponding keys. |
| F1 – F6 | Execute the functions of softkeys 1 - 6. |
| Tab | Use the menu cursor to move to the next control or input field. |
| Tap in input field | Discard all unsaved changes in the current field and move the menu cursor to the next item. |
| Shift + Tap | Use the menu cursor to move to the previous control or input field. |
| Shift + Tab in Input field | Discard all unsaved changes in the current field and move the menu cursor to the previous item. |

### Menu buttons

Pressing the "ENTER" key executes the function of the menu button marked with the menu cursor.



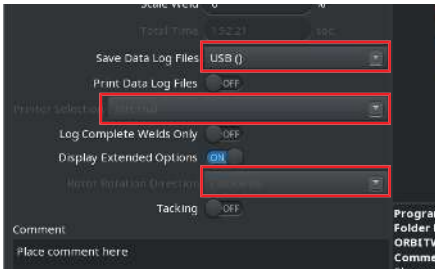

### Slide controls

Pressing the "ENTER" key activates (ON) or deactivates (OFF) the function of the selected slider.



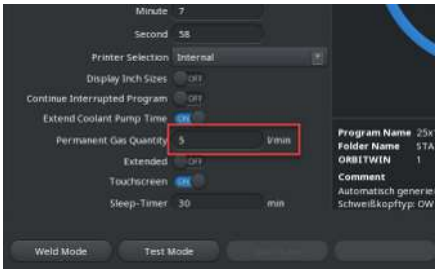
### Dropdown list fields

Pressing the “ENTER” key opens the selected drop-down list field.
The desired parameter can be selected using the "up" and "down" arrow keys and confirmed with the "ENTER" key.
The selection can be canceled using the "ESC" key.
Selecting again using the arrow keys and confirming with the "ENTER" key closes the drop-down list again.

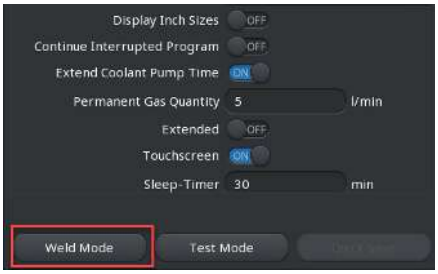



### Number input fields

Pressing the "ENTER" key activates the selected number input field.
The numerical keys can be used to enter the numerical value, which can then be confirmed with the "ENTER" key.
Pressing the "ESC" key will cancel the entry.



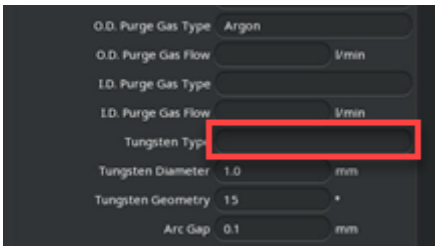
### Softkey-Buttons




The functions of the 6 softkey buttons are executed by pressing the corresponding keys "F1-F6".

Taste F1 = Softkey 1
Taste F2 = Softkey 2
Taste F3 = Softkey 3
Taste F4 = Softkey 4
Taste F5 = Softkey 5
Taste F6 = Softkey 6

### Text input fields




Pressing the "ENTER" key activates the selected text input field.

Text can be entered using the alphanumeric keys and confirmed with the "ENTER" key.

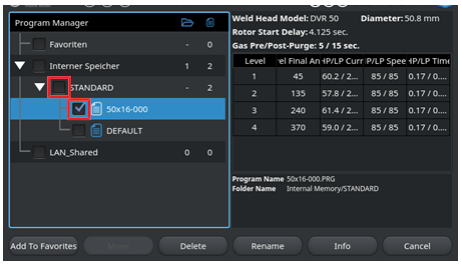
Pressing the "ESC" key will cancel the entry.

### Touch action fields




Operation via USB keyboard not possible.

### Checkboxes




Pressing the "ENTER" key activates the selected checkbox and marks it with a check mark.

The check mark can be removed by pressing again.

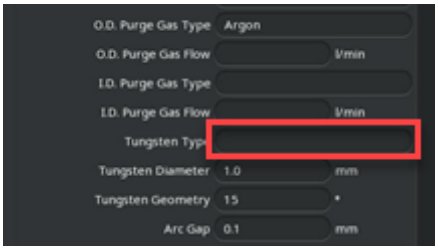
## 7.15.2.6 USB code scanner



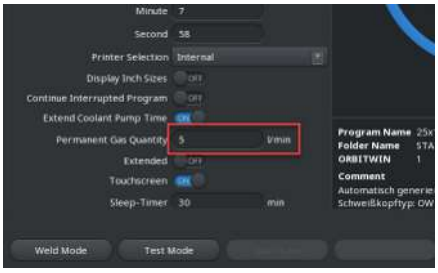

The USB code scanner can only be used to enter text or numbers into corresponding input fields.

Bar codes and QR codes can be read.

**Text input fields**




**Number input fields**




**Transferring text and numbers**

Procedure:

1. Select the desired input field by means of an input device.
2. Align the scanner with the code to be read and press the "Scanner key".
   ⇨ The input field is now activated.
3. Press the "Scanner key" again.

⇨ The code content is read in.

# 7.16 Set system and documentation language

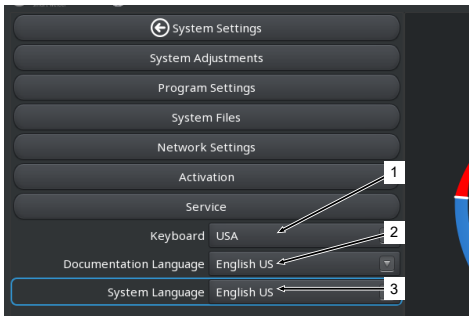
***NOTICE!***

**The factory setting of the system language is "German".**

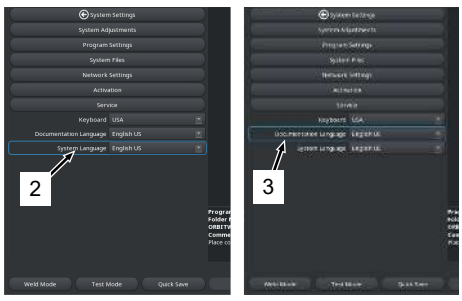
► If a language incomprehensible to the operator has been set, the dropdown list of languages can be accessed from the main menu by selecting the last menu item (Settings > Language).

Changing system/documentation language, from the main menu:

► Select menu button “Settings” (1).




1. Highlight the dropdown list field “System language” (2) or “Documentation language” (3).
2. Select the desired language.



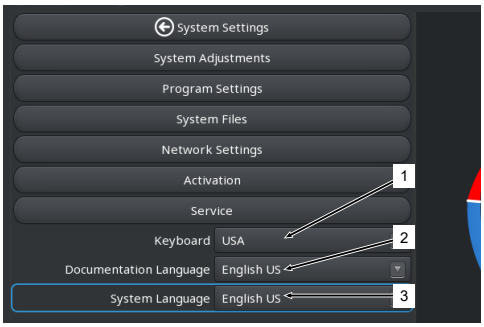
# 7.17 Set units of measurement

The power supply supports metric and imperial units of measure.

***NOTICE!*** **The factory setting for the units of measure is metric (English units of measure - OFF).**

Changing the units of measure, from the main menu:

► Select the "Settings" (1) menu item.




► Select menu item “System settings” (2).




► Select the slider button “English units” (3) and make the desired setting:
“ON”: Display of imperial units enabled.
“OFF”: Display of metric units disabled.
*See chapter.* System adjustments [▶ 90]



# 8 Operation

**DANGER**



**Danger to life from electromagnetic fields**

During the welding process, electromagnetic fields are generated which can be fatal for people with heart problems or pacemakers.

- ► People with heart problems or pacemakers must not operate the welding system.
- ► The plant operator must realize the workplaces in accordance with the EMF Directive 2013/35/EU in such a manner that no danger whatsoever exists for the operator or persons in the vicinity of the welding system.

**WARNING**



**Risk of electric shock from faulty or damaged insulation.**

Normally protected parts of the power supply (e.g. housing) may be live. If touched, death or severe injuries can result.

- ► Connect only to an electricity supply with a protective conductor PE.

**WARNING**



**Electric shock due to short circuit**

- ► Set up only in a dry environment!

**WARNING**



**Risk of burns, blindness and fire due to arcs**

An arc may develop by releasing the welding contacts during operation. This can result in burns and blindness, in the worst case a fire can be started.

- ► Connect and disconnect the weld head only when the power supply is shut down.
- ► Lay the lines and cables so that they are **not** under tension.
- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Attach the strain relief.
- ► Check that hose package connections fit firmly in place when connecting or before activating the power supply.
- ► Do not work near highly flammable substances.
- ► Operate only on non-combustible surfaces.

**WARNING**



**Danger of fire**

- ► Follow general fire prevention measures!
- ► Do **not** work near flammable substances.
- ► Do **not** use flammable substances as a base in the welding area.
- ► Do **not** weld near solvents (for example where degreasing, painting is being carried out) or explosive substances.
- ► Do **not** use flammable gases.
- ► Ensure that **no** flammable materials or soiling is located near the machine.

**WARNING**



**Danger of suffocation!**

If the level of shielding gas in the ambient air rises, lasting damage or risk of death can arise as the result of suffocation.

- ► Use only in well ventilated areas.
- ► Monitor oxygen, if necessary.

**WARNING**



**Damage to health from toxic emissions in the ambient air**

- ► No welding of coated workpieces and - of pressurized / media-containing pipes / objects.
- ► Clean workpieces before welding.
- ► Weld only materials suitable for the TIG welding process (TIG DC).

**WARNING**



**Health hazard from inhalation of radioactive particles**

- ► Do not use electrodes containing thorium.
- ► Do not weld radioactive workpieces.

**CAUTION**



**The rotor may start unexpectedly while setting up the electrode.**

Risk of crushing hands and fingers!

- ► Before mounting the electrode: Turn off the power source.
- ► To move the rotor to the home position: Close the clamping cassette or clamping unit and the flip cover.

**CAUTION**



**General danger**

- ► In case of danger, unplug the mains plug!
- ► Accessibility to the mains plug must always be assured in order to permit disconnecting the power supply from the mains.

# 8.1 Main menu

All functions of the power source can be accessed via the main menu. It also provides information about the currently loaded welding program and the status of system-relevant functions.

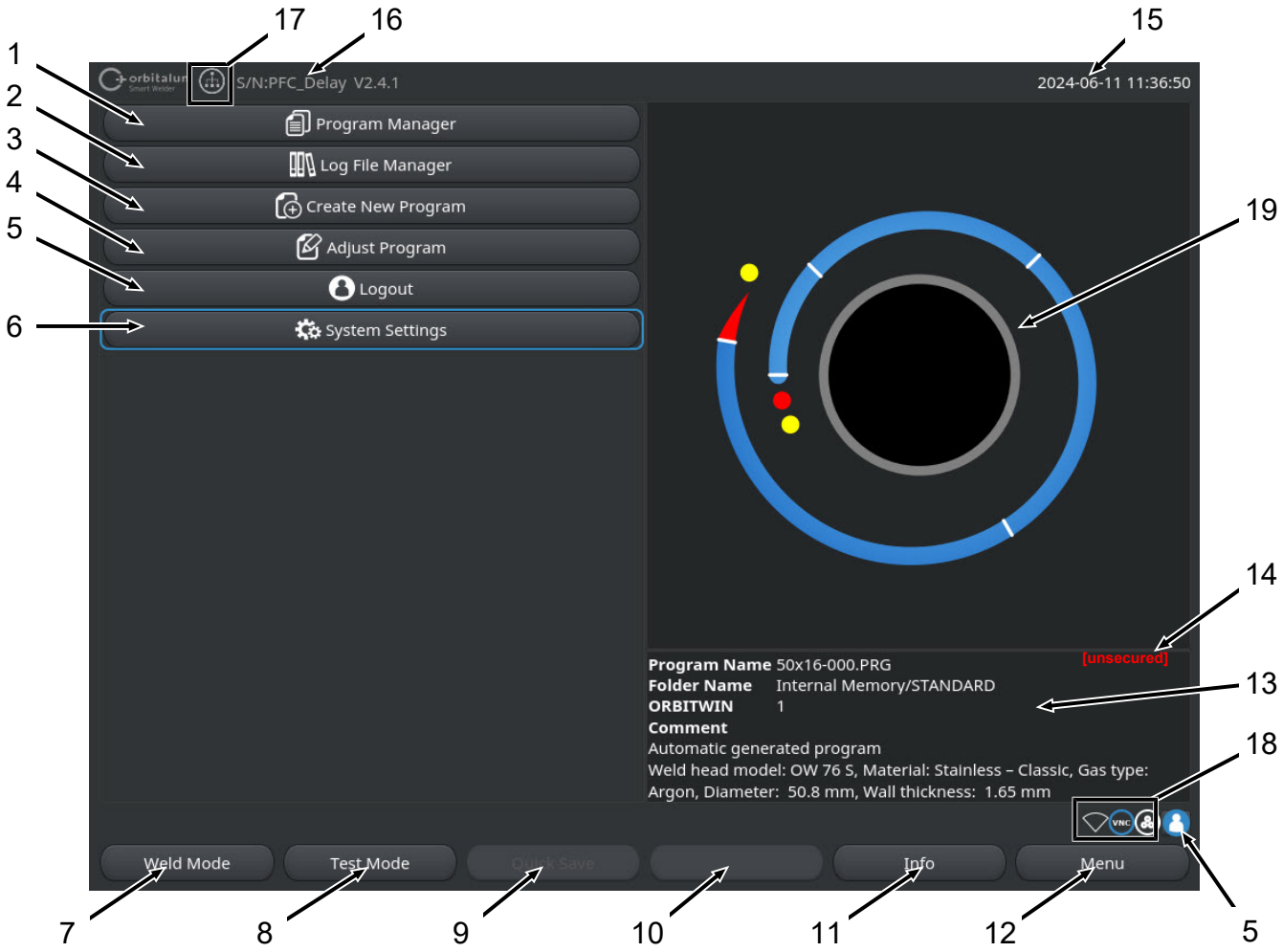



*Illustration: Main menu*

### Overview and function descriptions Main menu

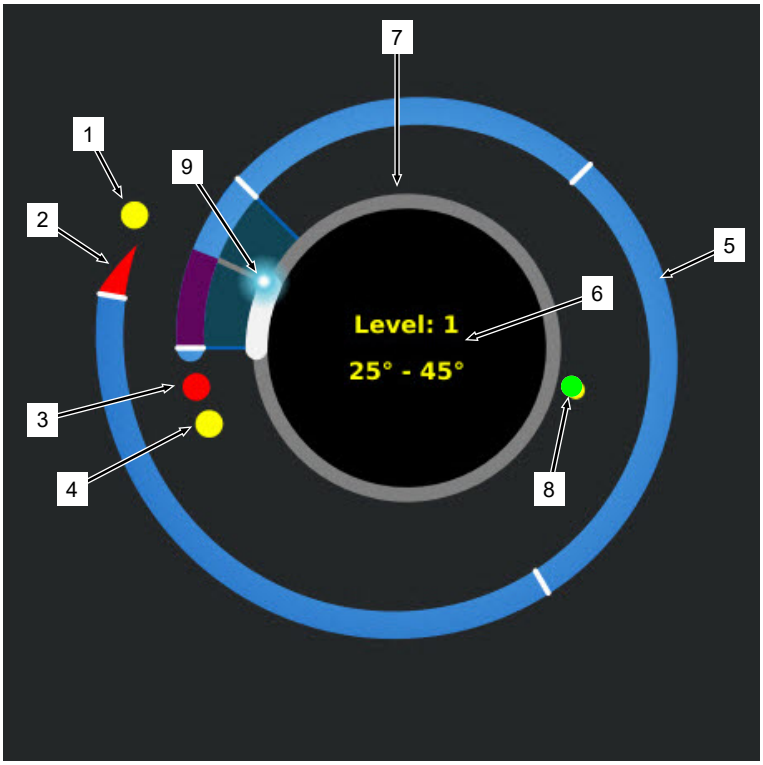
| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Menu button "Program Manager" | Opens the "Program Manager" menu, where welding programs can be loaded and managed.<br>*For detailed information, see chapter* Program Manager [▶ 57] |
| 2 | Menu button "Log Manager" | Opens the "Log Manager" menu, where welding logs can be displayed, printed, and managed.<br>*For detailed information, see chapter* Protocol Manager [▶ 67] |
| 3 | Menu button "Auto Programming" | Opens the "Auto Programming" menu, where welding programs can be created with system support.<br>*For detailed information, see chapter* Auto programming [▶ 69] |
| 4 | Menu button "Manual Programming" | Opens the "Manual Programming" menu, in which welding parameters and sectors of the currently loaded welding program can be adjusted.<br>*For detailed information, see chapter* Adjusting the program [▶ 72] |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 5 | "Logout" menu button | Leads to the login screen, where you can switch between user levels and change passwords.<br>*For detailed information, see chapter* Sign in [▶ 34] |
| 6 | "Settings" menu button | Opens the "Settings" menu, where you can configure system, service, and program-related settings and view system-related information. You can also perform system updates and activate optional software.<br>*For detailed information, see chapter* Settings [▶ 90] |
| 7 | "Welding" softkey | Opens the "Welding" menu, where you can control the welding torch, adjust welding parameters, and start the welding process.<br>*For detailed information, see chapter* welding [▶ 118] |
| 8 | "Test" softkey | Opens the "Test" menu, where you can manually control the welding torch, adjust welding parameters, and start a simulation run without arc ignition in order to test all process-relevant functions before starting welding.<br>*For detailed information, see chapter* Testing [▶ 127] |
| 9 | "Save" softkey | Saves newly created or modified welding programs. If no welding parameters of the currently active welding program have been changed, the "Save" menu button is inactive and grayed out.<br>Welding programs newly created using "Auto Programming" are stored in the "Internal Memory" in the "STANDARD" folder.<br>Alternatively, welding programs can also be saved selectively.<br>*For detailed information, see chapter* Saving the welding procedure [▶ 59] |
| 10 | Softkey "Print last log" | The "Print last prot." softkey can be used to print out the welding data log of the last weld, regardless of the log settings in the welding program.<br>This function must be activated in the "System settings."<br>*For detailed information, see chapter* System adjustments [▶ 90] |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 11 | "Info" softkey | <br>The "Info" softkey button can be used to display any system messages that have occurred.<br>New system messages are indicated by a blue circle on the left edge of the softkey button. The number indicates the number of system messages that have occurred.<br>Pressing the softkey button opens a window with a detailed, chronological list of system messages.<br>Press and hold the "Info" softkey button to reset the warning messages.<br>If there are no messages, the softkey button is grayed out and cannot be pressed. |
| 12 | "Menu" softkey | Leads directly to the main menu. |
| 13 | Welding program information | The "Welding program information" field displays information about the currently loaded welding program.<br>**Program name**<br>Displays the file name of the loaded welding program.<br>**Folder name**<br>Displays the folder name of the storage location of the loaded welding program. |
| 14 | Storage status of welding program "[unsaved]" | The memory status "[unsaved]" indicates that changes have been made to the currently loaded welding program and these have not yet been saved.<br>For a newly created welding program, it indicates that the welding program itself has not yet been saved. |
| 15 | Date and time | The information field displays the system date and time set in the power source.<br>The date and time can be set in the system settings.<br>*For detailed information, see chapter* System adjustments [▶ 90] |
| 16 | Power source type and serial number | The information field displays the manufacturer, power source type, and serial number. |
| 17 | Software status icons | The software status icons symbolize the currently activated functionality and scope of the software.<br>Extensions can be purchased and activated as options.<br>*For detailed information, see chapter* Upgrade options [▶ 142] |
| | **SYMBOL** | **STATUS** |
| |  | Connectivity functions LAN/IoT/VNC activated.<br>*For detailed information, see chapter* Activation [▶ 32] |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 18 | System status icons | The system status icons indicate the current status of system-relevant functions. |
| | **SYMBOL/BUTTON** | **STATUS** |
| |  | Logged in at user level<br>Button function: Log out / Activate the login screen |
| |  | Status: Logged in at the administration level<br>Button function: Log out / Activate the login screen |
| |  | No communication<br>Power source <-> Inverter |
| |  | No communication<br>HMI <-> IO board |
| |  | A storage medium is connected |
| |  | Active access to the storage medium |
| |  | Multiple storage media connected |
| |  | Active access to a storage medium |
| |  | Network drive(s) connected |
| |  | Active access to network drive(s) |
| |  | Internal printer selected |
| |  | "Print logs" function active |
| |  | Wired printer selected |
| |  | "Print logs" function active |
| |  | Network printer selected |
| |  | "Print logs" function active |

| ITEM | DESCRIPTION | FUNCTION |
|---|---|---|
| 19 | Process graphic welding program | The process graphic in the main menu shows the structure of the currently loaded welding program and its progress in a clockwise direction.<br>It adapts dynamically depending on the number and length of sectors, as well as the welding parameters of the currently active welding program.<br>During the welding process, it is used to determine the position of the electrode and to display the current welding progress.<br>In the main menu, the process graphic is also a touch action field that can be used to call up the welding parameter levels of the various sectors in order to change their program parameters. To do this, touch the respective area on the monitor. |




*Process graphic*

| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Touch action field "Gas post-flow time" | Touching the touch action field takes you directly to the "Gas post-flow time" welding parameter level of the currently loaded welding program. |
| 2 | Touch action field "Weld end" | Touching the touch action field takes you directly to the "Weld seam end" welding parameter level of the currently loaded welding program. |
| 3 | Touch action field "Pool formation" | Touching the touch action field takes you directly to the "Weld pool formation" welding parameter level of the currently loaded welding program. |
| 4 | "Gas pre-flow" touch action field | Touching the touch action field takes you directly to the "Gas pre-flow" welding parameter level of the currently loaded welding program. |
| 5 | Touch action field "Sector X" | Touching the touch action field takes you directly to the welding parameter level of the respective sector of the currently loaded welding program. |
| 6 | "Basic settings" touch action field | Touching the "Basic settings" touch action field takes you directly to the "Basic settings" welding parameter level of the currently loaded welding program. |
| 7 | Pipe graphic | The pipe graphic represents the workpiece and is not an active element. It is for orientation purposes only. |
| 8 | Handpiece position display (only with OWX weld heads and the "Autoposition")<br>*See section* Basic adjustments [▶ 76] and the operating instructions for the weld head. | The dot shows the current position of the weld head handle in relation to the pipe axis. If the weld head is rotated around the pipe axis, the dot moves with it. Its color changes between red, yellow, and green depending on whether or not it is possible to start the welding process in the current position.<br>🔴 **Welding not possible.**<br>Pipe alignment deviates too much from the horizontal.<br>🟡 **Welding not possible.**<br>Weld head in motion.<br>🟢 **Welding possible.** |
| 9 | Animation graphic Welding position | Shows the current welding position. |

## 8.1.1 Program Manager

The program manager can be used to load and save welding programs and organize them across storage locations and folders.
It is possible to copy, rename, or delete welding programs and folders across drives.
The Program Manager also provides an overview of the welding programs located in the storage locations and a preview of the main welding parameters of the selected welding program file.
All storage locations, folders, and programs are displayed and structured in a file tree that can be expanded and collapsed.

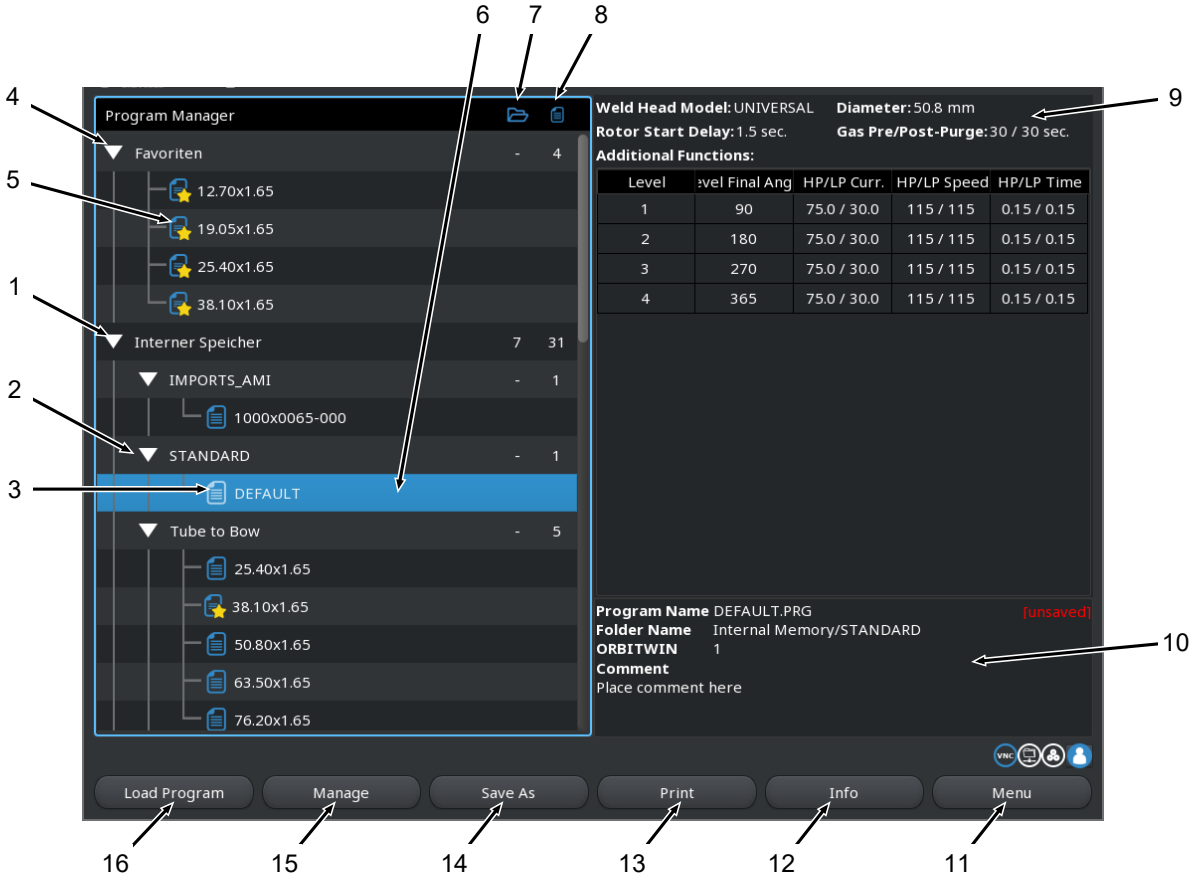



*Illustration: Softkey assignment "Program Manager" when welding program is selected*

| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Drive level | All active and connected drives are displayed at this level.<br>Drives can be:<br>• Internal storage<br>• External storage media connected via USB<br>• LAN network storage locations |
| 2 | Folder level | All welding program folders created in the parent storage location are displayed at this level. |
| 3 | Welding program level | All welding programs located in the folder are displayed at this level.<br>Welding programs are indicated by the blue file icon. |
| 4 | Favorites folder | This folder contains links to the welding programs marked as favorites for quick access. |
| 5 | Favorites icon | The star icon indicates that a folder has been added to the favorites. |
| 6 | Menu cursor | Drives, folders, or welding programs marked with the menu cursor are highlighted in blue in the program manager. |

| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 7 | Number of folders | Indicates the number of folders at the respective storage location level. |
| 8 | Number of programs | Indicates the number of programs at the respective storage location level. |
| 9 | Welding parameter preview | The Welding parameter preview information field shows a preview of the main welding parameters of the currently selected welding program. |
| 10 | Welding program information preview | The Welding Program Information Preview information field shows the welding program information for the currently selected welding program. |
| 11 | "Menu" softkey | The "Menu" softkey takes you directly back to the main menu. |
| 12 | "Info" soft key | The "Info" softkey displays any system messages that have occurred.<br>*For detailed information, see chapter* Main menu [▶ 52] |
| 13 | "Print" softkey | The "Print" softkey prints the welding program currently selected with the menu cursor using the printer specified in the system settings.<br>*For detailed information, see chapter* System adjustments [▶ 90] |
| 14 | "Save as" softkey | The "Save as" softkey can be used to save the currently active welding program to the desired storage location.<br>**NOTICE! The "Save as" softkey function is only displayed if a welding program is selected at the welding program level.**<br>*For detailed information, see chapter* Saving the welding procedure [▶ 59] |
| | "New Folder" softkey | The "New Folder" softkey can be used to create a new folder on the selected drive.<br>**NOTICE! The "New Folder" softkey function is only displayed if a drive is selected at the drive level.**<br>*For detailed information, see chapter* Creating a folder [▶ 59] |
| 15 | "Manage" softkey | The "Manage" softkey opens a softkey submenu that can be used to rename, delete, copy across drives, and mark welding programs and folders as favorites.<br>*For detailed information, see chapter* Managing welding procedures [▶ 60] |
| 16 | "Load" softkey | The "Load" softkey loads the welding program currently selected with the menu cursor.<br>*For detailed information, see chapter* Loading the welding procedure [▶ 58] |

### 8.1.1.1 Loading the welding procedure

To load a welding procedure, follow the steps below.

From the main menu

1. Select the "Program Manager" menu item.
2. At the drive level, select the desired drive.
3. At the folder level, select the desired folder.
4. Mark the desired welding procedure with the menu cursor.
5. Load the welding procedure via:
   - **Softkey**
     By pressing the touch or hardware softkey "Load Program”.
   - **Softkey**
     By pressing the touch or hardware softkey "Load Program”.

– **Rotary actuator**
  By pressing the rotary actuator.
– **Rotary actuator**
  By pressing the rotary actuator.
– **USB keyboard**
  By pressing the "ENTER’ key.
– **USB keyboard**
  By pressing the "ENTER’ key.

After successful entry, the power supply switches back to the main menu.
The newly loaded welding procedure is displayed in the "Welding procedure information" information field.

### 8.1.1.2 Saving the welding procedure

***NOTICE!*** **Welding procedures can only be saved in folders at the folder level.**
**It is not possible to save individual welding procedures at the drive level.**

To save a welding procedure, follow the steps below.

From the main menu

1. Select the "Program Manager" menu item.
2. At the drive level, select the desired drive.
3. At the folder level, select the desired destination folder.
4. Mark the desired welding procedure with the menu cursor.
5. Save the welding procedure via:

- **Softkey**
  By pressing the touch or hardware softkey "Save As”.
- **USB keyboard**
  By pressing the F3 key.

Alternatively, welding procedures can be saved via the "Save" softkey.
*For detailed information, see the chapter*

### 8.1.1.3 Creating a folder

Folders and subfolders can be created on the drives for structured storage of the welding procedures.

***NOTICE!*** **The "New Folder" softkey function can only be used at the drive level.**

To create a folder, follow the steps below.

From the main menu

1. Select the "Program Manager" menu item.
2. At the drive level, mark the desired drive with the menu cursor.
3. Press the "New Folder" softkey. A new folder is created, the folder name is highlighted in yellow and the software keyboard is displayed.
4. Rename the folder via:

- **Touchscreen**
  Enter folder name and confirm with the "Finished" keyboard button.

- **USB keyboard**
  Pressing a key on the external keyboard hides the software keyboard. Enter the folder name and confirm it with the "Enter" keyboard button.

### 8.1.1.4 Managing welding procedures

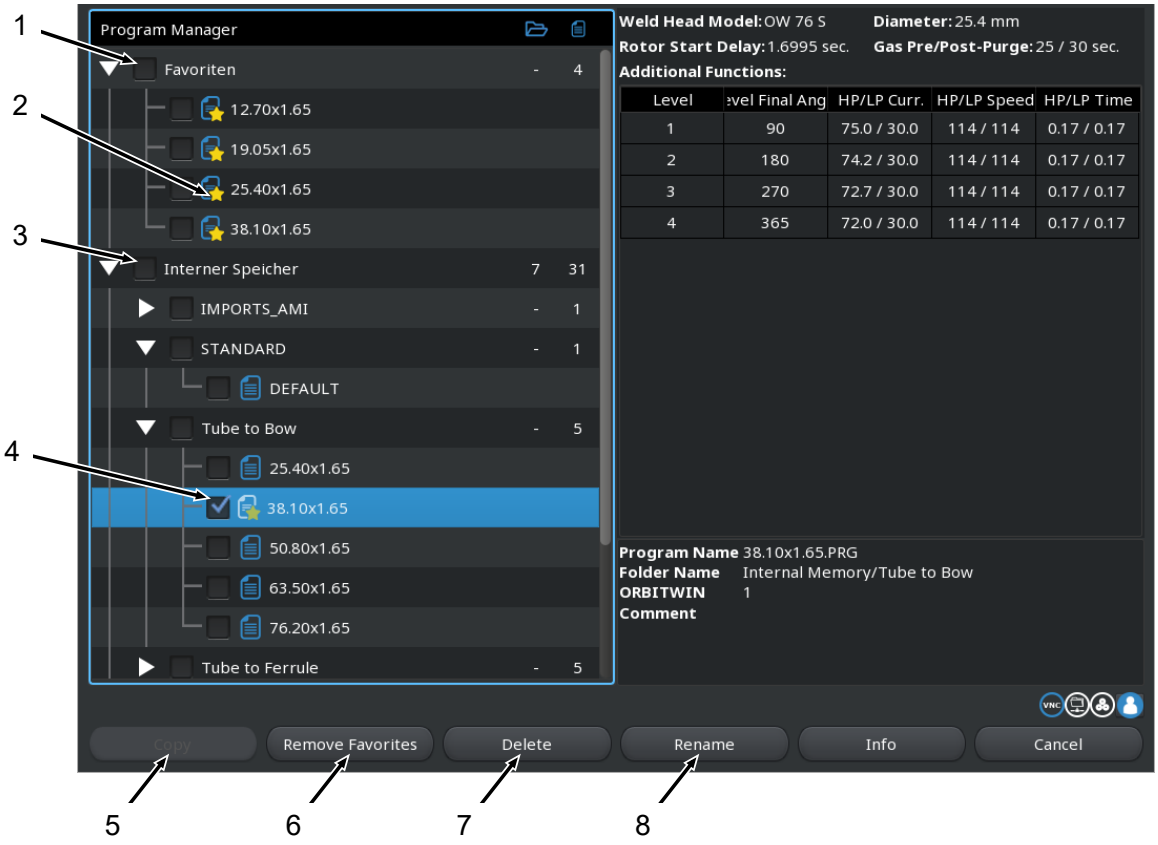



*Illustration: Softkey assignment "Manage welding programs" when welding program is selected*

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Favorites folder | This folder contains links to the welding programs selected as favorites for quick access. |
| 2 | Favorites icon | The star icon indicates that the selected program has been marked as a favorite. |
| 3 | Checkbox | The checkboxes can be used to select individual folders and welding programs, as well as a selection of welding programs for management purposes. |
| 4 | Activated checkbox | An activated checkbox is marked with a check mark. Individual folders and welding programs, as well as a selection of welding programs, can be selected for management by activating the checkboxes. |
| 5 | "Add to favorites" softkey | Welding programs and folders can be marked as favorites using the "Add to favorites" softkey.<br>*For detailed information, see chapter* Add welding procedure as favorite [▶ 61] |
| | "Copy" softkey | The "Copy" softkey can be used to copy welding programs and folders.<br>*For detailed information, see chapter* Copying welding procedures and folders [▶ 62] |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 6 | "Move" soft key | The "Move" softkey can be used to move welding programs and folders between storage locations.<br>*For detailed information, see chapter* Moving welding procedures and folders [▶ 63] |
| | "Remove Fav." softkey | The "Remove Fav." softkey can be used to remove the favorite status of welding programs and folders.<br>*For detailed information, see chapter* Remove welding procedures as favorite [▶ 61] |
| 7 | "Delete" softkey | The "Delete" softkey can be used to delete welding programs and folders.<br>*For detailed information, see chapter* Deleting welding procedures and folders [▶ 65] |
| 8 | "Rename" soft key | The "Rename" softkey can be used to rename welding programs and folder names.<br>*For detailed information, see chapter* Renaming welding procedures and folders [▶ 61] |

#### 8.1.1.4.1 Add welding procedure as favorite

Welding programs can be marked as favorites for quicker access.
The marked programs are linked in the "Favorites" folder.

***NOTICE!*** **If an entire folder is selected and added to the favorites, only the welding programs in the "Favorites" folder are linked, not the folder itself.**

From the main menu:

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (*see* Program Manager [▶ 57]).
3. Activate the checkboxes of the welding programs or folders to be marked (*see* Managing welding procedures [▶ 60]).
4. Select the "Add to Favorites" softkey (*see* Managing welding procedures [▶ 60]).

#### 8.1.1.4.2 Remove welding procedures as favorite

***NOTICE!*** **Removing the favorite status removes the welding program from the "Favorites" folder. The welding program is not deleted and remains in its original storage location.**

From the main menu:

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (Program Manager [▶ 57]).
3. Activate the checkboxes for the welding programs to be removed in the favorites folder or program folder (Managing welding procedures [▶ 60]).
4. Select the "Remove Favorites" soft key (Managing welding procedures [▶ 60]).

#### 8.1.1.4.3 Renaming welding procedures and folders

From the main menu:

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (Main menu [▶ 52]).
3. At the folder level, select the desired target folder with the menu cursor or, at the welding program level, select the desired welding program (Managing welding procedures [▶ 60]).
4. Select the "Rename" softkey. The welding program or folder name is highlighted in yellow and the software keyboard is displayed.
5. Rename the welding program or folder using:

- **Touch**
  Rename the welding program or folder using the input layout of the software keyboard and confirm the entry with the "Done" keyboard button.
- **USB keyboard**Pressing a key on the external keyboard hides the software keyboard. Rename the welding program or folder using the input layout of the external keyboard and confirm the entry with the "Enter" key.

### 8.1.1.4.4 Copying welding procedures and folders

Copying creates a copy of the selected welding procedure(s) or folder(s) at the destination.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **The Copy function can be used within and across drives.** |

| | | |
|---|---|---|
| ***NOTICE!*** |  | **If welding procedures are saved to an external drive (USB/LAN), a PDF of the procedure's content is automatically generated and saved together with the welding procedure file. The same applies to moving and copying logs.** |

The following items can be copied:

- A complete folder
- Individual welding procedures from a folder
- A selection of welding procedures from a folder

If only one drive is selected as the destination when copying a welding procedure or a selection of welding procedures, the original folder is also created when copying the welding procedures. The copied welding procedures are then also located in it.

The following items cannot be copied:

- Complete drives
- Welding procedures directly to the drive level
- Welding procedures within the same folder
- Selections of welding procedures from different folders

From the main menu

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (Main menu [▶ 52]).
3. Activate the checkboxes for the welding procedures or folders to be copied (Managing welding procedures [▶ 60]).
4. Mark the destination drive or folder with the menu cursor.
5. Select the "Copy" softkey.
6. System prompt: “Do you wish to copy the selected files?" Confirm with"Yes”.

### 8.1.1.4.5 Moving welding procedures and folders

| | | |
|---|---|---|
| ***NOTICE!*** |  | **The Move function can be used within a drive and across drives.** |

| | | |
|---|---|---|
| ***NOTICE!*** |  | **If welding programs are saved to an external medium (USB/LAN ), a PDF of the program content is automatically generated and saved alongside the welding program file. The same applies to moving and copying logs.** |

The following can be moved:

- A complete folder
- Individual welding programs from a folder
- A selection of welding programs from a folder

If only one drive is selected as the destination when moving a welding program or a selection of welding programs, the source folder is also created when the welding programs are moved. The copied welding programs are then also located in this folder.

The following cannot be moved:

- Complete drives
- Welding programs directly at the drive level
- Welding programs within a folder
- Selections of welding programs from different folders

From the main menu:

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (Main menu [▶ 52]).

3. Activate the checkboxes for the welding programs or folders to be copied (Managing welding procedures [▶ 60]).
4. Select the target drive or target folder with the menu cursor.
5. Select the "Move" softkey.
6. Confirm the system prompt "Move program?" with "Yes."

### 8.1.1.4.6 Deleting welding procedures and folders

***NOTICE!***  **Deleting permanently removes welding programs or folders from the drive.**

The following can be deleted:

- A complete folder
- Individual welding programs from a folder
- A selection of welding programs from a folder

The following cannot be deleted:

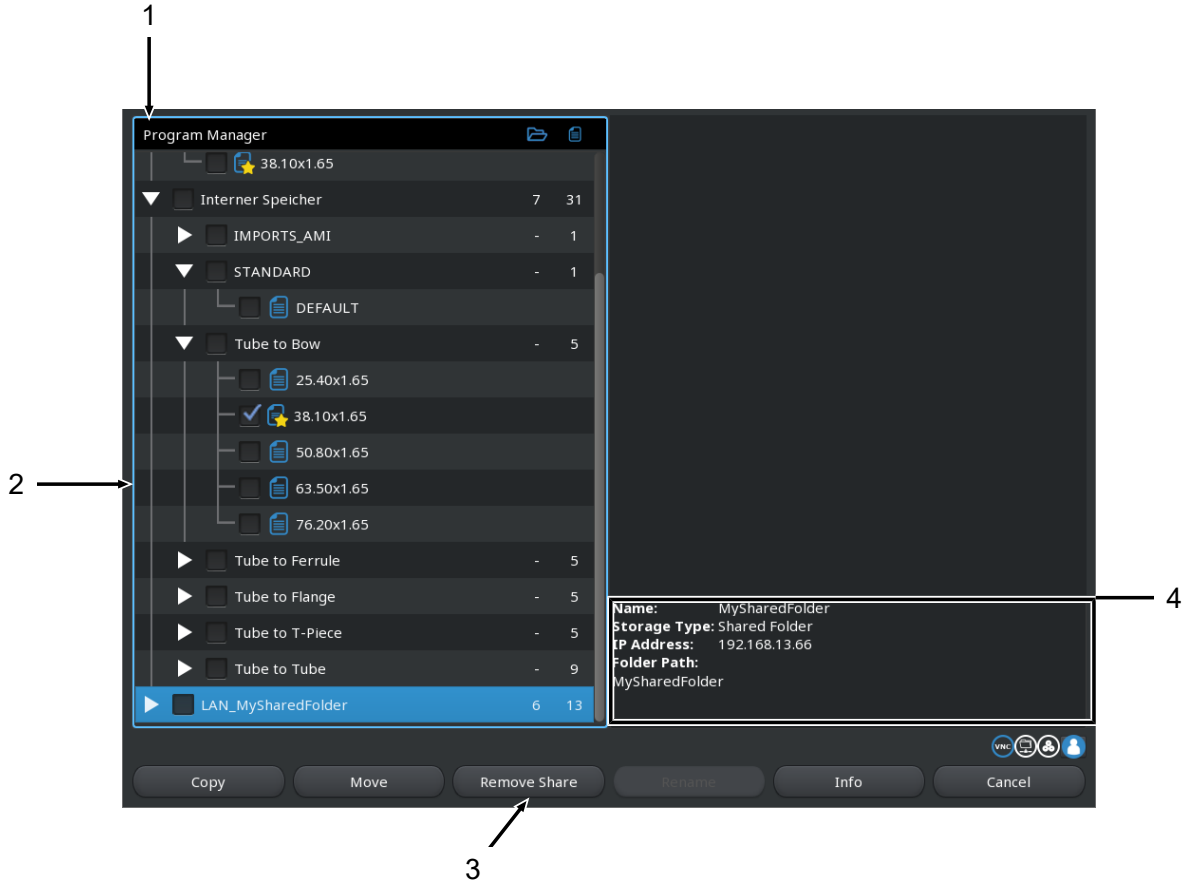
- Entire drives

From the main menu:

1. Select the "Program Manager" menu item.
2. Select the "Manage" softkey (Program Manager).
3. Activate the checkboxes for the welding programs or folders to be deleted (Managing welding procedures [▶ 60]).
4. Select the target drive or target folder with the menu cursor.
5. Select the "Delete" softkey.
6. Confirm the system query "Do you really want to delete the selected directories and/or files?" with "Yes."

### 8.1.1.5 Removing share

LAN network drives can be removed from the program manager using the "Detach" softkey.




| ITEM | DESCRIPTION | FUNCTION |
|---|---|---|
| 1 | Drive level | All active and connected drives are displayed at this level.<br>Drives can be:<br>• Internal storage.<br>• External storage media connected via USB.<br>• LAN network storage locations. |
| 2 | Menu cursor | Drives, folders, or welding programs marked with the menu cursor are highlighted in blue in the program manager. |
| 3 | "Disconnect" soft key | Network shares or storage locations can be removed using the "Disconnect" softkey.<br>*See also chapter* Shared Folder Setup [▶ 106] |
| 4 | Drive information | The "Drive Information" field displays information about the drive currently selected with the menu cursor.<br>• **Name:** Displays the drive name.<br>• **Storage type:** Shows whether it is internal, USB, or LAN storage.<br>• **IP address:** Displays the IP address of the network storage location.<br>• **Directory path:** Displays the network path of the network storage location. |

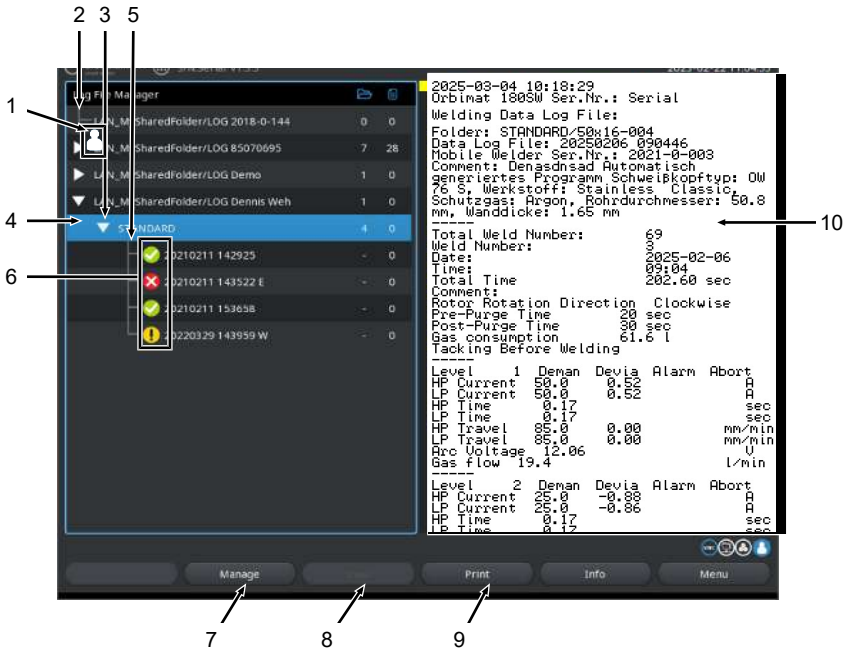
## 8.1.2 Protocol Manager

The log manager can be used to view and print welding logs and organize them across storage locations and folders. Welding logs and folders can be copied, moved, or deleted across drives.
The log manager also provides an overview of the welding logs located in the storage locations and a preview and complete view of the welding log.

***NOTICE!***

**Logs can only be saved to external storage media (USB/LAN)!**

**The "STANDARD" log folder cannot be deleted.**




| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | "Local" icon | The power source can display log files from other Orbitalum power sources, among other things.<br>This is the case, for example, with a shared LAN storage location where multiple power sources store the welding logs.<br>The local icon marks the storage location that belongs to the currently used power source. |
| 2 | Drive level | All active and connected drives are displayed at this level.<br><u>Drives can be:</u><br>• Internal storage<br>• External storage media connected via USB<br>• LAN network storage locations. |
| 3 | Folder level | All welding log folders created in the parent storage location are displayed at this level. The folder structure is taken from the program manager of the corresponding welding program. |
| 4 | Menu cursor | Drives, folders, or welding programs marked with the menu cursor are highlighted in blue in the program manager. |

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 5 | Welding log level | Displays the name of the welding program associated with the logs.<br>All welding logs in the folder are listed at this level.<br>Each log has a unique number that is generated from the current date and time when the data record is saved (at the end of the current welding operation).<br>Example:<br>`Protokolldatei 20210302 103517 (02.03.2021 um 10.35 Uhr und 17 Sekunden)` |
| 6 | Welding log status icon | The status symbol indicates whether a warning message or an abort occurred during the welding of the corresponding log, or whether the welding was completed without any such incidents. |
| | **SYMBOL** | **MEANING** |
| |  | Check mark: All measured actual values are within the monitoring limits for alarm and termination. |
| |  | Exclamation mark: An alarm message was issued during welding. The alarm limits specified in the monitoring limits were exceeded or not reached. The process was not aborted. |
| |  | Cross: Welding was aborted. The monitoring limits were exceeded or not reached, or the operator triggered a "STOP". |
| 7 | "Manage" softkey | The "Manage" softkey opens a softkey submenu that can be used to delete, copy, move, and print welding logs.<br>*For more information, see chapter* Managing welding procedures [▶ 60] |
| 8 | "Display" softkey | The "Display" softkey opens the welding log currently selected with the menu cursor and displays it in full screen mode.<br>The full display can be closed by pressing the "Close" softkey. |
| 9 | "Print" soft key | The "Print" softkey prints the welding report currently selected with the menu cursor using the printer specified in the system settings.<br>*For more information, see chapter* System adjustments [▶ 90] |
| 10 | Welding log preview | The Welding Protocol Preview information field displays the contents of the currently selected welding protocol. |

## 8.1.3 Auto programming

Auto programming is used for software-supported creation of welding procedures based on the workpiece dimensions, the welding gas and the weld head type.

***NOTICE!***



**The result of the auto programming serves as a reference value**

No guarantee is given for an optimal welding result.

- ► The welding result must be checked (specifications, welding instructions, etc.)
- ► The welding parameters may have to be adjusted subsequently.

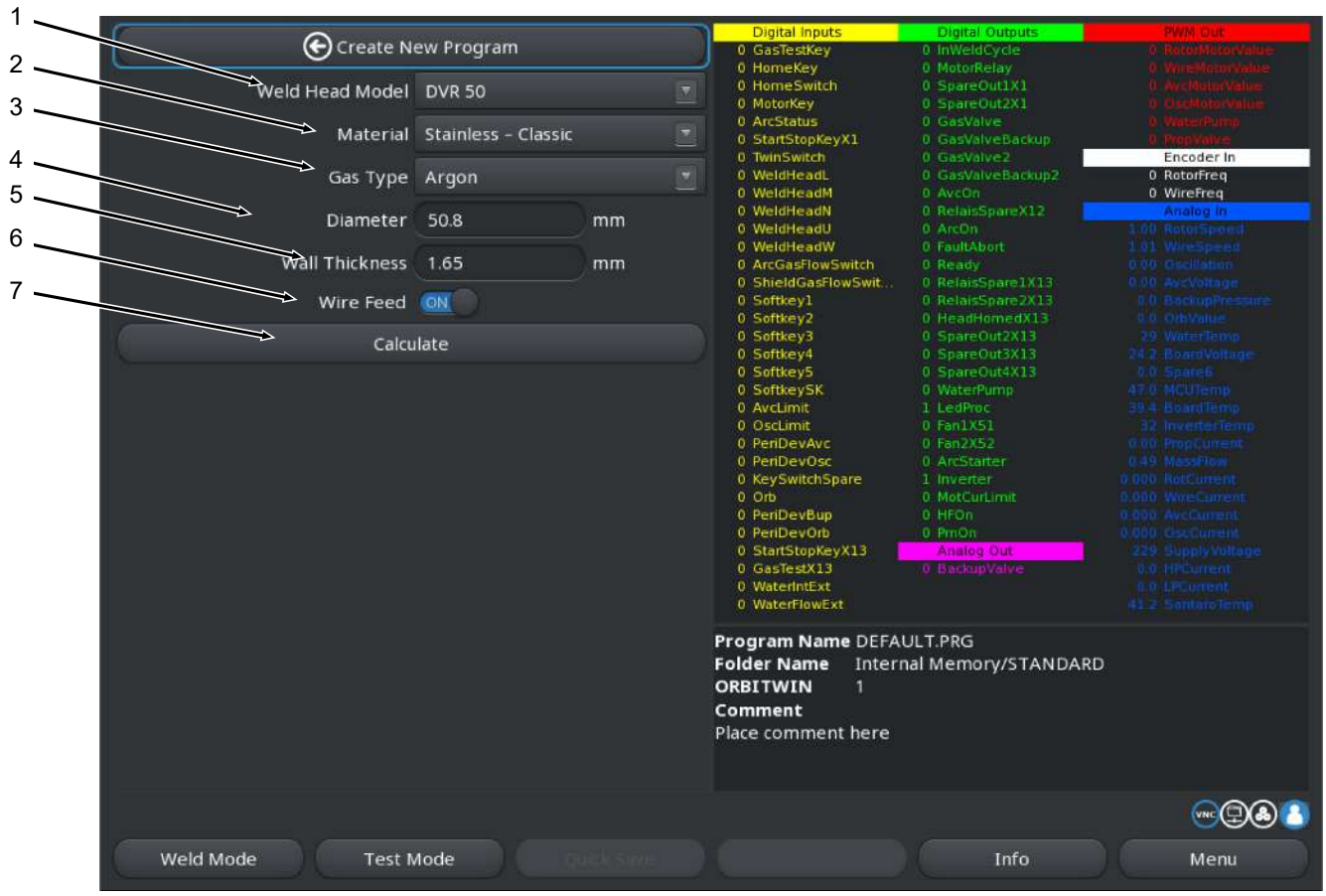
Auto programming only works in conjunction with an orbital weld head or rotary table. This function is not available for manual welding torches.

### 8.1.3.1 Using auto programming

From the main menu:

1. Select the "Auto programming" menu item.
2. Select the "Welding head type" menu item.
3. Select "Material" and parameter set.
4. Select "Shielding gas."
5. Enter "Tube diameter."
6. Enter "Wall thickness."
7. Select the "Wire feed" slider.
8. Slider "ON" = welding with cold wire
   Slider "OFF" = Welding without cold wire
9. Press the "Calculate welding program" menu button.

⇨ After successful entry, the power source returns to the main menu.




| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Welding head type | ***NOTE***<br>**For automatic detection, the drop-down list must be activated once. The connected welding head type is highlighted and can be selected.**<br>Selection option for the welding head type.<br>If a weld head is already connected, the connected weld head type is determined automatically. |
| 2 | Material | Several materials and parameter sets are available for programming.<br>The selection must be made according to the application.<br>**Stainless Classic = Classic** Orbitalum parameter set.<br>Suitable for general stainless steels.<br>**Stainless-4-Level = Stainless steel** parameter set.<br>Recommended for ASME stainless steel pipe dimensions,<br>suitable for high-purity and pharmaceutical applications.<br>**Stainless-Slope = Stainless steel parameter set** with linear current reduction across the entire tube diameter.<br>Suitable for all common stainless steels.<br>**Carbon = Classic** Orbitalum parameter set.<br>Suitable for general carbon steels.<br>**Titanium** = Classic Orbitalum parameter set.<br>Suitable for titanium and titanium alloys. |

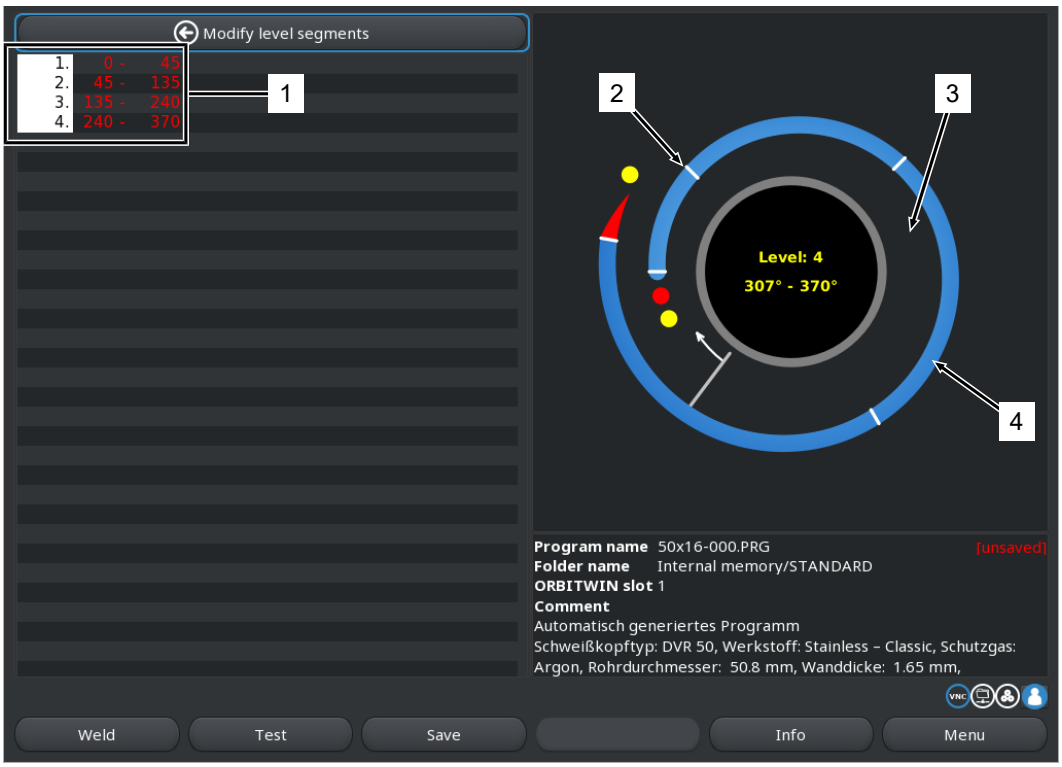
| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 3 | Shielding gas | Several shielding gases are available for programming.<br>The selection must be made according to the application and the protective gas to be used.<br>**Argon**<br>Standard protective gas argon, e.g.: Argon 4.6 or Argon 5.0<br>**Argon H2-2%**<br>Argon shielding gas with 2% hydrogen content<br>**Argon H2-5%**<br>Argon shielding gas with 5% hydrogen content |
| 4 | tube diameter | Enter the outer diameter of the pipe |
| 5 | Wall thickness | Enter the pipe wall thickness |
| 6 | Wire feed | Option to select whether cold wire should be used or not.<br>***NOTE***<br>**This function depends on the welding head.**<br>**Can only be activated with weld heads that support cold wire.** |
| 7 | Menu button "Calculate welding program" | Pressing the "Calculate welding program" menu button creates the welding program based on the parameters entered. |

## 8.1.4 Adjusting the program

In the "Adjust Program" menu, welding parameters and levels of the currently loaded welding procedure can be viewed and adjusted. Levels can be changed, removed or added. In addition to the parameters relevant to welding, various settings relevant to the welding procedure can be made.

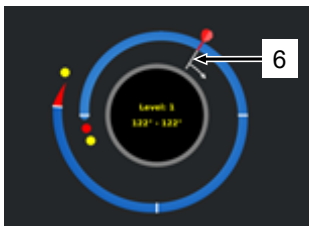
### 8.1.4.1 Adjusting level segments

In the "Set sectors" menu, program sectors can be changed, removed, or added to the currently loaded welding program.










| ITEM | DESCRIPTION | FUNCTION |
|---|---|---|
| 1 | Sector list | Tabular overview of the sectors contained in the currently loaded program, specifying the number of sectors and their angle ranges from-to. |
| 2 | Sector boundary | Marks the beginning and/or end of a sector. |
| 3 | Sector cursor | The sector cursor can be used to move and reset sector boundaries. |
| 4 | Sector | Sector area. Delimited by two sector boundaries. |
| 5 | Green cursor flag | The green cursor flag appears when the cursor is placed exactly on the sector boundary. |
| 6 | Red cursor flag | The red cursor flag appears when a sector boundary is selected. |

***NOTICE!***

**By holding down the rotary knob and then turning it, the sector cursor jumps directly to the next sector boundary in the direction of rotation.**

► The input combination of pressing and holding must be performed within one second!

#### 8.1.4.1.1 Adding a new level segment/level segment boundary

To add a new sector or sector boundary, follow these steps.

From the main menu:

1. Select the "Set Sectors" menu item.
2. Position the sector cursor (3) on the desired position and select it.

⇨ A new sector boundary (2) is set. The new sector and sector range are now listed in the sector list (1).

#### 8.1.4.1.2 Moving a level segment boundary

To move a level segment boundary, follow the steps below.

From the main menu

1. Select the "Adjust Level Segments" menu item.
2. Place the level segment cursor (3) on the segment boundary (2) to be moved (5) and select it (6).
3. Move the selected level segment boundary (6) to the desired position and place it by selecting it again.

#### 8.1.4.1.3 Deleting a level segment boundary

To delete a sector boundary, follow these steps.

From the main menu:

1. Select the "Set Sectors" menu item.
2. Place the sector cursor on the sector boundary to be deleted and select it.
3. Place the selected sector boundary exactly on the preceding or following sector boundary and select it.

⇨ The sector boundary is deleted.

### 8.1.4.2 Adjusting parameters

The welding program parameters of the currently loaded welding program can be adjusted via the "Set parameters" menu.




*Illustration: "Set Parameters" menu*

### Change parameter values




| POS. | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Input field – highlighted in yellow | Input fields highlighted in yellow indicate all values currently changed in the welding program that differ from the current memory status.<br>When the welding program is saved again, the changed values are accepted and highlighted in gray.<br>**NOTICE! This function serves as a guide for the user when creating and adjusting the welding program.** |
| 2 | "Apply value" softkey | Pressing the "Apply value" softkey applies the parameter value currently selected with the menu cursor to all subsequent sectors and overwrites existing values.<br>**NOTICE! This function serves as a convenience feature for the user to adjust identical values across sectors more quickly.** |

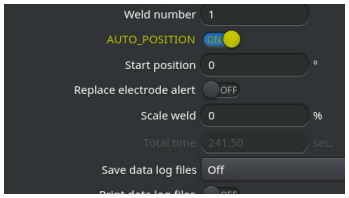
### 8.1.4.2.1 Basic adjustments

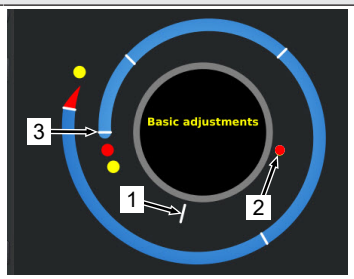
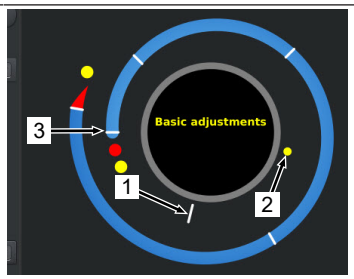
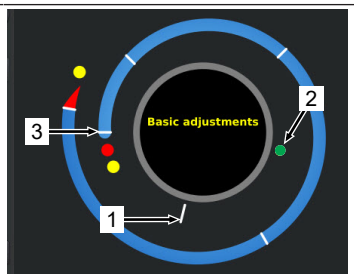
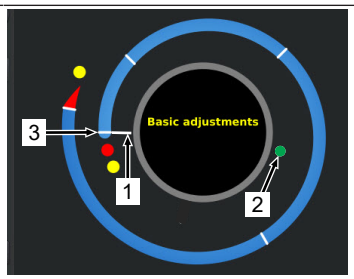
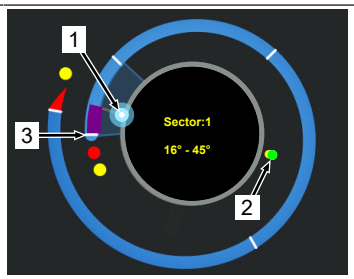
All basic settings required for the welding process can be made in the "Basic settings" section of the welding program.




*Illustration: Basic settings, upper menu area*

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 1 | Process notes | *See chapter* "Process Details" [▶ 83] |
| 2 | tube diameter | Input field for the outer diameter of the pipe to be welded in mm. |
| 3 | Welding head type | Option to select the burner type.<br>If a welding torch is already connected, the connected torch type is determined automatically.<br>**NOTICE! The drop-down list must be activated once for automatic detection. The connected torch type is highlighted and can be selected.** |
| 4 | Weld seam number | Consecutive counting of welds.<br>Weld seam numbers can also be assigned individually.<br>They serve as a progress indicator or as an identifier for documentation purposes.<br>**NOTICE! When the welding power source is restarted or the program is changed, the weld seam number is always reset to "1".** |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 5 | Starting position graphic | Input in °. Visually rotates the process graphic of the software to the desired angle. Serves as an orientation aid for the actual starting position of the electrode or the alignment of the weld head on the pipe. |
| | Auto position | Only in conjunction with a weld head from the OWX series. *See also* the operating instructions for the weld head.<br><br>When an OWX series weld head is connected, the parameter "Initial position graphic" is replaced by "Auto position" in the menu:<br><br><br><br>**NOTICE! This function is only useful when performing welding on horizontal pipes. It must be deactivated for vertical pipes or pipes with excessive inclination, as otherwise the start of welding will be blocked.**<br><br>When this function is activated, the electrode moves to the optimum start position (3) (9 o'clock position) even if the weld head cannot be clamped onto the workpieces in such a way that the handle points vertically downwards.<br><br>The positions of the handle (2) and the electrode (1) during positioning, in welding readiness, and during welding can be observed in the **process graphic of the power source**. If the weld head is rotated around the pipe axis, the position indicators move with it.<br><br>The point indicating the handle position changes color between red, yellow, and green, depending on whether or not it is possible to start the welding process in the current position: |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| | | 🔴 **Welding not possible.**<br>Pipe alignment deviates too much from the horizontal.  |
| | | 🟡 **Welding not possible.**<br>Weld head in motion.  |
| | | 🟢 **Electrode can be moved to the start position.**<br>Electrode not yet moved to start position (9 o'clock position).  |
| | | 🟢 **Welding process can be started.**<br>Electrode moved to start position (9 o'clock position).  |
| | | 🟢 **Welding process in progress.**<br>After ignition, the electrode display changes to a blue glowing dot.<br>The welded section is highlighted in bright color.  |
| 6 | Start position | Input in °. Determines the start position of the welding process based on the basic position of the weld head. After the welding process has started, the electrode moves from the basic position to the entered position. Ignition takes place after this position has been reached.<br>**NOTICE! Due to the open position of the welding head rotor, there is a risk of misfires between the rotor and surrounding components when the electrode or welding head rotor is moved from the home position. When using this function, ensure that the electrode is in good condition, that the electrode gap is correct, and that the contact surfaces (clamping shells and ground connections) and workpiece surfaces are clean!** |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 7 | Electrode replacement warning | When this function is activated, a number of welding ignitions can be defined. Once this number has been reached, a message window prompts the operator to check or change the electrode. |
| 7.1 | Ignitions until electrode replacement | Input field for the number of ignitions after which a message window appears prompting the operator to change the electrode.<br>After each ignition, the value is reduced by 1. When the value "0" is reached, the message window appears. |
| 8 | Correction factor | By entering a correction factor in %, the HP and TP welding currents programmed for the individual sectors can be changed across sectors. It is recommended to use this function if the welding current is to be adjusted across sectors rather than sector-specifically.<br>**NOTICE! The HP and TP welding current values changed by the correction factor are applied after the welding program is saved. The new welding current values now serve as the new calculation basis for the correction factor. Therefore, the factor is displayed with a value of 0% after saving.** |




*Illustration: Basic settings, lower menu area Advanced settings display activated*

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 9 | Total time | Displays the total time of the welding program in seconds from the start command of the welding process to the end of the gas post-flow time. |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 10 | Save logs | This function determines whether and where welding data logs for the currently active welding program are saved.<br>The desired storage location can be selected from the drop-down list.<br>The welding data logs are saved for each weld in CSV and PDF format at the selected location.<br>**Off**<br>Welding data logging is deactivated.<br>**USB**<br>Save to USB data carrier.<br>Prerequisite:<br>Data carrier is connected to any USB port.<br>If multiple USB data carriers are connected, they are listed individually in the drop-down list.<br>**NET**<br>Saving to the local network.<br>Prerequisite:<br>Power source is integrated into the network and network directory is set up.<br>*See chapter* Network environment [▶ 104] |
| 11 | Printing logs | When activated, the welding data log is printed on the selected printer after each weld, regardless of whether the log is saved. |
| 12 | Printer selection | **Internal**<br>System printer built into the welding power source.<br>**USB**<br>External USB printer<br>Prerequisite:<br>Printer is connected to any USB port.<br>**NOTICE! Due to the wide variety of USB printers available on the market, general compatibility cannot be guaranteed.**<br>**NET**<br>Network printer<br>Prerequisite:<br>Power source is connected to the network. *See chapter* Network environment [▶ 104].<br>The printers shared on the network are listed in the drop-down list. |
| | Update printer list | Selecting this option updates the printer list in the background.<br>When you reopen the drop-down list, any new entries will be displayed. |
| 13 | Log only for complete welds | When activated, welding data logs are only created when the welding process is completely finished. No logs are created if the process is stopped manually.<br>This function can be helpful when tacking points are set using the weld head by manually moving the electrode position and briefly starting and stopping the welding process. |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 14 | Advanced | This function determines whether the "Rotation direction" and "Tacking" setting options are displayed.<br>**ON**<br>Display of the advanced setting options activated.<br>**OFF**<br>Display of advanced settings disabled. |
| 15 | Direction of rotation | Drop-down list selection of the desired direction of rotation of the weld head. **NOTICE! Only displayed if the "Advanced" setting (14) is activated.**<br>**Clockwise**<br>Standard direction of rotation: Starts welding in an ascending direction<br>**Counterclockwise**<br>Alternative direction of rotation: Starts welding downwards |
| 16 | Tacking | This function determines whether the tacking parameters are displayed. **NOTICE! Only displayed if the "Advanced" setting (14) is activated.**<br>When this function is activated, tacking points are set according to the programmed tacking parameters after the gas pre-flow time has elapsed.<br>This function can be helpful for fixing the alignment of the pipes to be welded before the actual welding process by partially welding the workpiece surface. This is useful, for example, for materials that tend to warp when exposed to heat.<br>**ON**<br>Display of tacking parameters activated.<br>**OFF**<br>Display of tacking parameters deactivated. |
| 17 | Welding after tacking | **NOTICE! Only displayed if the "Tack" setting (16) is activated.**<br>When this function is activated, the electrode moves to the programmed start position after the last tacking point has been set, from where the actual welding process starts immediately after reaching the position.<br>When the function is deactivated, only the tacking parameters of the welding program are taken into account.<br>After setting the last tack point and after the gas post-flow time has elapsed, the process is terminated.<br>This function is useful if the workpiece is only to be tack welded. |
| 18 | Tack points | **NOTICE! Only displayed if the "Tacking" setting (16) is activated.**<br>Enter the desired number of staples. Minimum 2, maximum 8. |
| 19 | Stapling current | **NOTICE! Only displayed if the "Stitching" setting (16) is activated.**<br>Continuous welding current in amperes for the duration of the stapling process. |
| 20 | Pilot current | **NOTICE! Only displayed when the "Spot Welding" setting (16) is activated.**<br>Pilot current for maintaining the arc between the tack points.<br>**NOTICE! This function is used to maintain the arc when moving the electrode between tack point positions so that it does not have to be reignited at each tack point. Therefore, the pilot current should be set as low as possible so that the pilot current does not alter the workpiece surface.** |

| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 21 | Spot welding time | **NOTICE! Only displayed when the "Spot Welding" setting (16) is activated.**<br>Duration of the upcoming tacking current in seconds. |
| 22 | Comment on the welding program | Free text field for additional information about the welding program. |

### 8.1.4.2.1.1 "Process Details"

In the "Process notes" menu, additional welding process-related information and comments on individual parameters such as material, gas, or electrode can be entered, e.g., a description of the seam preparation or the angle position of the electrode adapter.

This provides the user with important information for reproducing and documenting welding results.

The process notes can be created individually for each welding program.




| ITEM | DESCRIPTION |
|---|---|
| 1 | Text and number input fields for values of specific parameters. |
| 2 | Comment field for free text. |
| 3 | "Save" softkey for saving entries. |

Procedure:

1. Select the desired parameter.
2. Enter the values or texts to be documented in the input fields using the keyboard.
3. Press the "Save" softkey.

⇨ Parameter values and comments have been saved in the process notes.

***NOTICE!***

**The "process notes" are program-related and are stored in the data record of the respective welding program.**

Print out process notes together with welding programs, see chapter Documentation settings [▶ 99]

### 8.1.4.2.2 Gas pre purge

All welding program parameters relating to gas pre-flow can be set in the "Gas pre-flow" section of the welding program.

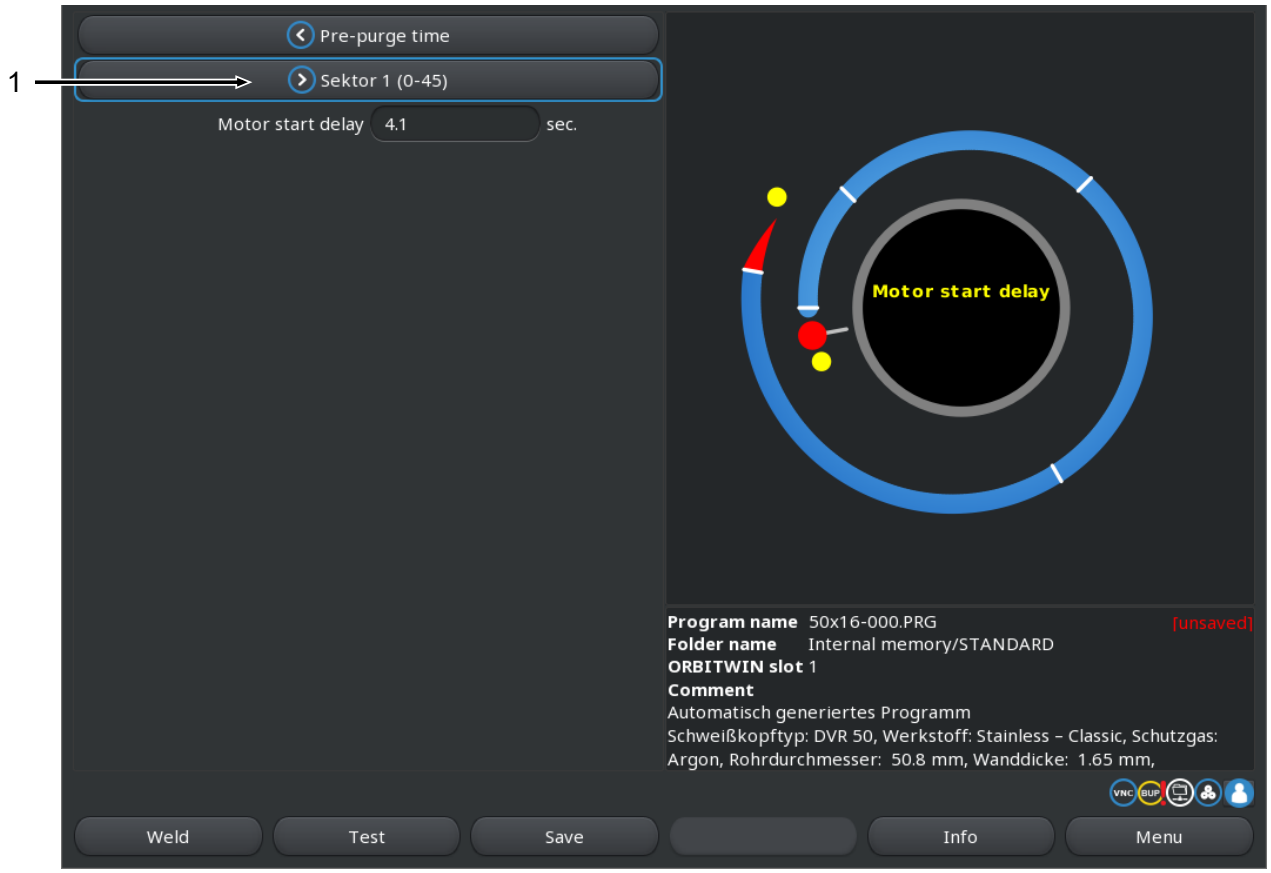



| POS. | PARAMETER | FUNCTION/SETTING OPTION |
|---|---|---|
| 1 | Gas pre-flow time | Period from process start to ignition in seconds during which the weld head is supplied with the process gas quantity.<br>*See also chapter* Gas overview [▶ 122] |
| 2 | Gas volume | Process gas volume supplied to the welding torch during the welding process and the regular gas pre-flow and post-flow times.<br>*See also chapter* Gas overview [▶ 122] |
| 3 | Gas Overview | Switches to the "Gas Overview" menu.<br>*See also chapter* Gas overview [▶ 122] |
| 4 | Flow Force | Activates/deactivates the Flow Force function in the gas pre-flow phase.<br>*For more information, see chapter* Gas overview [▶ 122] |
| | | ON Activates the Flow Force function |
| | | OFF Deactivates the Flow Force function |
| 5 | Flow Force time (gas pre-flow) | Period in seconds during which the weld head is supplied with the set Flow Force gas quantity.<br>**NOTICE! It is recommended to reduce the welding gas volume to the actual process gas volume at least 2 seconds before igniting the arc so that the gas flow stabilizes before ignition.** |
| 6 | Flow force gas volume | Welding gas volume applied to the weld head during the flow force time in the pre-flow and post-flow phases. |

| POS. | PARAMETER | FUNCTION/SETTING OPTION | |
|---|---|---|---|
| 7 | Extended | ON | Expands the menu to include the "Forming gas control" parameter. |
| | | OFF | Hides the parameters for "forming gas control." |
| 8 | Forming gas control | ON | Activates the number input fields for the "forming gas control" parameters. |
| | | OFF | Activates the number input fields for the "forming gas control" parameters. |
| 9 | Angle for upper point | Rotation angle from the starting position of the weld head to the trough position (12 o'clock position). | |
| 10 | Pressure at upper point | Pipe internal pressure that is present when the weld head is in the trough position (12 o'clock position). | |
| 11 | Pressure on the lower side | Pipe internal pressure that is applied while the weld head moves along the underside of the pipe (between 3 and 9 o'clock). | |
| 12 | Forming gas pressure b. Pre-flow | Forming gas pressure applied during the gas pre-flow time specified in the program. | |

### 8.1.4.2.3 Pool Formation

All welding program parameters relating to the basic settings for weld pool formation can be adjusted in the "Weld pool formation" section of the welding program.




| ITEM | PARAMETER | FUNCTION |
|---|---|---|
| 1 | Weld pool formation time | Period between ignition and the programmed time in sector 1 during which the welding current is to be built up linearly, in seconds. The bath formation process is static without any rotational movement. |

### 8.1.4.2.4 Level

The "Sector" section of the welding program contains all welding program parameters for the individual sectors. A welding program can consist of several sectors. By using several sectors, physical conditions such as the effect of gravity in different welding positions can be addressed individually.




*Illustration: Welding program section "Sector"*

| POS. | PARAMETER | FUNCTION |
|---|---|---|
| 1 | End angle | Enter the end angle of the selected sector. The end angle forms the start angle of the following sector. |
| 2 | Slope | Duration of the linear welding current adjustment between the current value of the current sector and that of the following sector.<br>The value is the percentage of the sector time of the following sector in which the linear transition from the (current) value of the preceding sector to the current value of the current sector takes place. |
| 3 | HP current | High pulse welding current, primary welding current in amperes. |
| 4 | TP current | Low pulse welding current, secondary welding current in amperes. |
| 5 | HP time | High pulse time: Period during which the HP current flows, in seconds. |
| 6 | TP time | Low pulse time: Period during which the TP current flows, in seconds. |
| 7 | HP speed | High pulse speed: Welding speed at which the high pulse welding current is applied, in mm/min (in/min). |
| 8 | TP speed | Low pulse speed: Welding speed during the low pulse welding current period, in mm/min (in/min). |

### 8.1.4.2.5 Weld seam end

All welding program parameters relating to the ramp-down phase at the end of welding can be set under the "Weld seam end" welding program section. These settings can prevent the formation of an end crater.




*Illustration: Welding program section "Weld end"*

| POS. | PARAMETER | FUNCTION | |
|---|---|---|---|
| 1 | Reduction | Period of linear current reduction, starting from the welding current level of the previous sector, until the set end current is reached in seconds. | |
| 2 | Final current | Value of the end current in amperes at which the arc extinguishes when reached by the current reduction. | |
| 3 | Extended | ON | Expands the menu to include the "Rotation during reduction" parameter. |
| | | OFF | Hides the "Rotation when lowering" parameter. |
| 4 | Rotation during lowering | The "Rotation during lowering" function can be used to set the rotation behavior of the welding head rotor during lowering. | |
| | | ON | The electrode is moved during descent at the welding speed of the previous sector. |
| | | OFF | The electrode remains stationary during descent. |

### 8.1.4.2.6 Gas post purge

All welding program parameters relating to gas post-flow can be set in the "Gas post-flow" section of the welding program.




*Illustration: Welding program section "Gas post-flow time"*

| POS. | PARAMETER | FUNCTION |
|---|---|---|
| 1 | Gas post-flow time | Period during which the weld head is supplied with the process gas quantity after the arc has been extinguished, in seconds.<br><br>*See also chapter* Gas overview [▶ 122] |
| 2 | Return delay | Period during which the electrode remains in its last position after the arc has been extinguished until it is automatically returned to its home position, in seconds. |
| 3 | Gas Overview | Switches to the "Gas Overview" menu.<br><br>*See also chapter* Gas overview [▶ 122] |
| 4 | Flow Force – Afterflow | Activate/deactivate the Flow Force function in the gas flow phase.<br><br>*See also chapter* Gas overview [▶ 122]<br><br>Flow Force ON – Flow Force active<br>Flow Force OFF – Flow Force inactive |
| 5 | Flow Force time – afterflow | Period during which the weld head is supplied with the set Flow Force gas volume in seconds.<br><br>**NOTICE! It is recommended to continue supplying the process gas for 3 seconds after the arc has been extinguished and then switch to the Flow Force gas volume.** |

## 8.1.5 Settings

### 8.1.5.1 System adjustments

System settings can be configured at the system level.

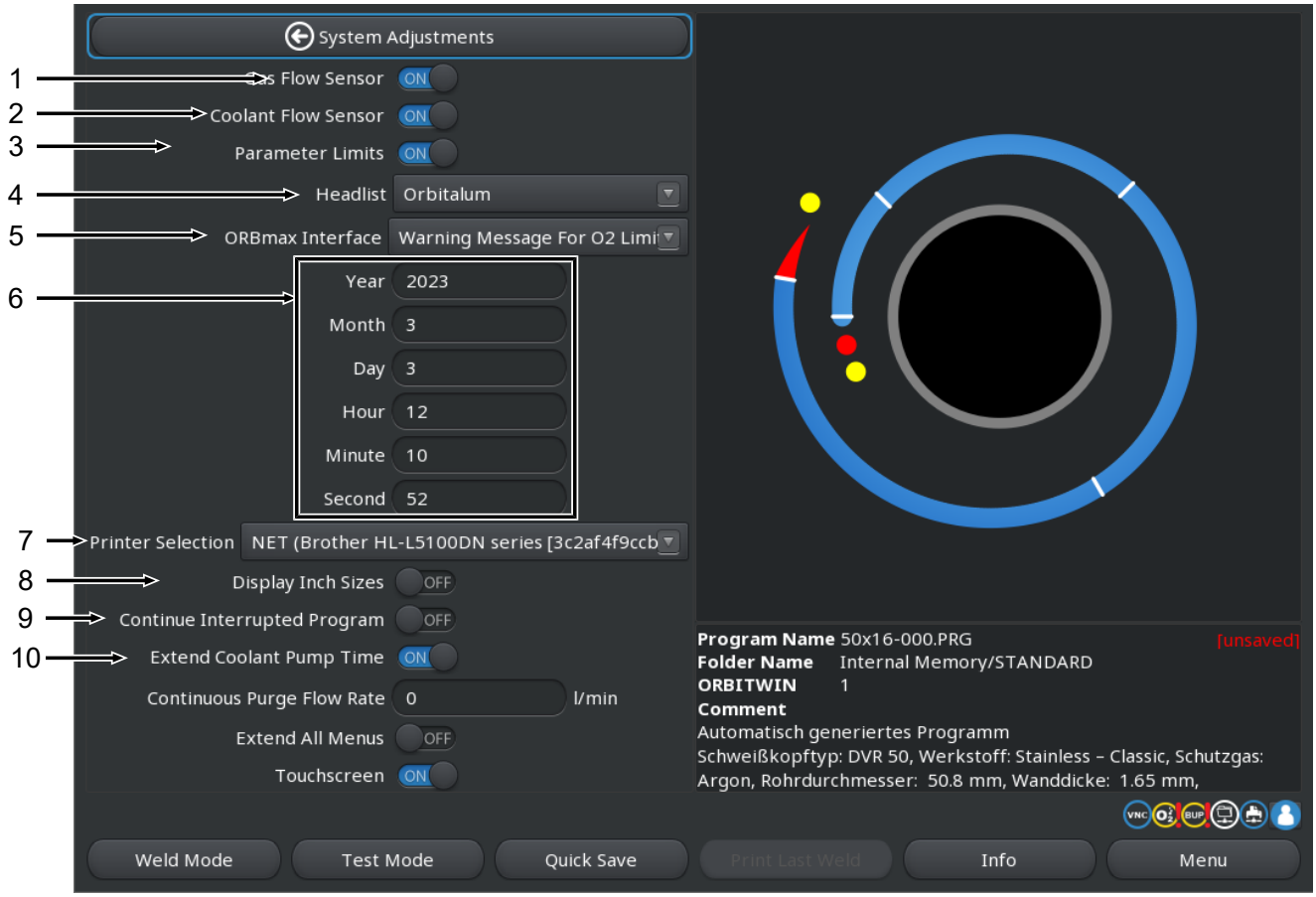
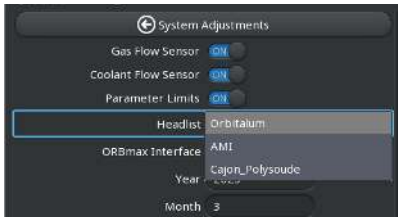
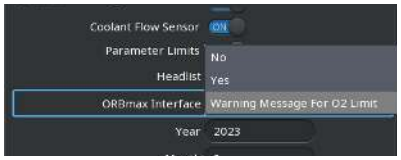



*Illustration: System settings, upper menu area*

| ITEM | DESCRIPTION | SYSTEM SETTINGS OPTIONS |
|---|---|---|
| 1 | Gas sensor | The "Gas sensor" function can be used to temporarily deactivate the welding gas sensor and thus welding gas monitoring. This can be useful, for example, if the gas sensor is defective and work must be continued temporarily. |
| | | ON Welding gas monitoring active |
| | | OFF Welding gas monitoring deactivated |
| | | **CAUTION When the welding gas sensor is deactivated, the welding gas flow is not actively monitored by the power source! Therefore, the operator must pay increased attention when continuing to use the power source. The welding gas flow and quantity must be monitored by the operator! Defective sensors must be replaced as soon as possible.** |
| | | **NOTICE! For safety reasons, the function is reset to gas sensor "ON" after each restart of the power source**. |

| ITEM | DESCRIPTION | SYSTEM SETTINGS OPTIONS |
|---|---|---|
| 2 | Coolant sensor | The "Coolant sensor" function can be used to temporarily deactivate the coolant sensor and thus the monitoring of the coolant flow. This can be useful, for example, if the coolant sensor is defective and work must be continued temporarily. |
| | | ON — Coolant monitoring active |
| | | OFF — Coolant monitoring deactivated |
| | | **CAUTION When the coolant sensor is deactivated, the coolant flow of the power source is not actively monitored! Therefore, the operator must pay increased attention when continuing to use the power source. The coolant flow must be monitored by the operator! Defective sensors must be replaced as soon as possible.** |
| | | **NOTICE! For safety reasons, the function is reset to coolant sensor "ON" after each restart of the power source.** |
| 3 | Monitoring limits | The "Monitoring limits" function can be used to activate or deactivate the limit values defined under "Program settings" > "Monitoring limits". |
| | | *See chapter* Limit Adjustments [▶ 97] |
| | | When monitoring limits are activated, an alarm message is issued or a welding process is terminated when the defined limits for welding current, welding voltage, and welding speed are reached. |
| | | ON — Welding parameter monitoring activated |
| | | OFF — Welding parameter monitoring deactivated |
| | | **CAUTION When monitoring limits are deactivated, there is no active monitoring of welding parameters such as welding current, welding voltage, and welding speed! Therefore, the operator must pay increased attention when continuing to use the power source. The welding process must be continuously observed and monitored by the operator! It is recommended that this function only be temporarily deactivated in exceptional cases.** |
| 4 | Head list | Selection of the head list to be used. |
| | | All technical specifications of the weld heads are recorded in the head list. |
| | |  |
| | | The connected weld head is recognized by the power source and the corresponding conditions are assigned by the software. |
| | | When using the adapter solution for competitor welding heads, the head list must be adjusted accordingly. |
| | | Orbitalum — Standard head list – includes all Orbitalum welding head data. |
| | | AMI — Includes entered AMI welding head data. |
| | | Cajon_Polysoude — Includes entered Cajon, Swagelok, and Polysoude welding head data. |
| | | **NOTICE! Modified head lists that differ from the original are marked with a preceding [M].** |

| ITEM | DESCRIPTION | SYSTEM SETTINGS OPTIONS | |
|---|---|---|---|
| 5 | ORBmax interface | The "ORBmax Interface" function can be used to set whether an ORBmax residual oxygen device is connected or not and whether the Orbmax interface should issue a warning message when the oxygen limit is reached.<br> | |
| | | No | Make this setting if no ORBmax is connected. |
| | | Yes | Make this setting if an ORBmax is connected. |
| | | Warning message when the O2 limit is reached | Make the setting if an ORBmax is connected and a warning message is to be displayed on the ORBmax interface when the preset oxygen limit is reached. |
| 6 | Date and time | Input fields for current date and time:<br>• Year<br>• Month<br>• Day<br>• Hour<br>• Minute<br>• Second | |
| 7 | Printer selection | Printer selection of the output printer for all print jobs, such as welding reports or welding programs.<br>Only printers that are accessible when the power source is started are listed in the printer list.<br>To add printers that become available later, the printer list must first be updated using the "Update printer list" option. The power source searches all USB ports and the LAN network for available network and USB printers. | |
| | | Internal | Output to integrated system printer |
| | | NET | Output to network printer |
| | | USB | Output to USB printer |
| | | Update printer list | Search USB ports and LAN network for available printers. |
| 8 | English units of measurement | Function for switching the system units of measurement between "Metric" and "Imperial."<br>After switching, all fields are displayed in the active unit of measurement and existing values are converted accordingly.<br>*See also chapter* Set units of measurement [▶ 49] | |
| | | ON | "Imperial" units of measurement activated |
| | | OFF | "Metric" units of measurement activated |

| ITEM | DESCRIPTION | SYSTEM SETTINGS OPTIONS | |
|---|---|---|---|
| 9 | Resuming welding process | When this function is activated, it is possible to resume the welding process at the point where it was interrupted.<br>**NOTICE! The process must be stopped manually using the "Stop" button!**<br>When the "Start" button is pressed again, the following message appears:<br>"Do you want to continue the interrupted welding process?"<br>The message can be confirmed with "Yes" or "No": | |
| | | Yes | The welding process starts with the "gas pre-flow and pool formation time" specified in the welding program, then switches directly to the sector and angle position of the interruption point and continues the welding process from there. |
| | | No | The welding process is interrupted. |
| 10 | Use coolant delay<br>**NOTICE! A cooling unit must be connected in order to use this function.** | The coolant delay function allows the power source's liquid cooling system to be activated beyond the welding process.<br>Activating this function also activates the "Coolant delay" input field in the welding program under the "Gas post-flow" program level.<br>Depending on the program, a time in minutes can be set there, during which the liquid cooling system remains active after the end of the welding process. | |
| | | ON | The "Coolant delay" program input field is activated. |
| | | OFF | The "Coolant delay" program input field is deactivated. |
| | | **NOTICE! When the liquid cooling system is active, the weld head must not be disconnected from the power source.** | |

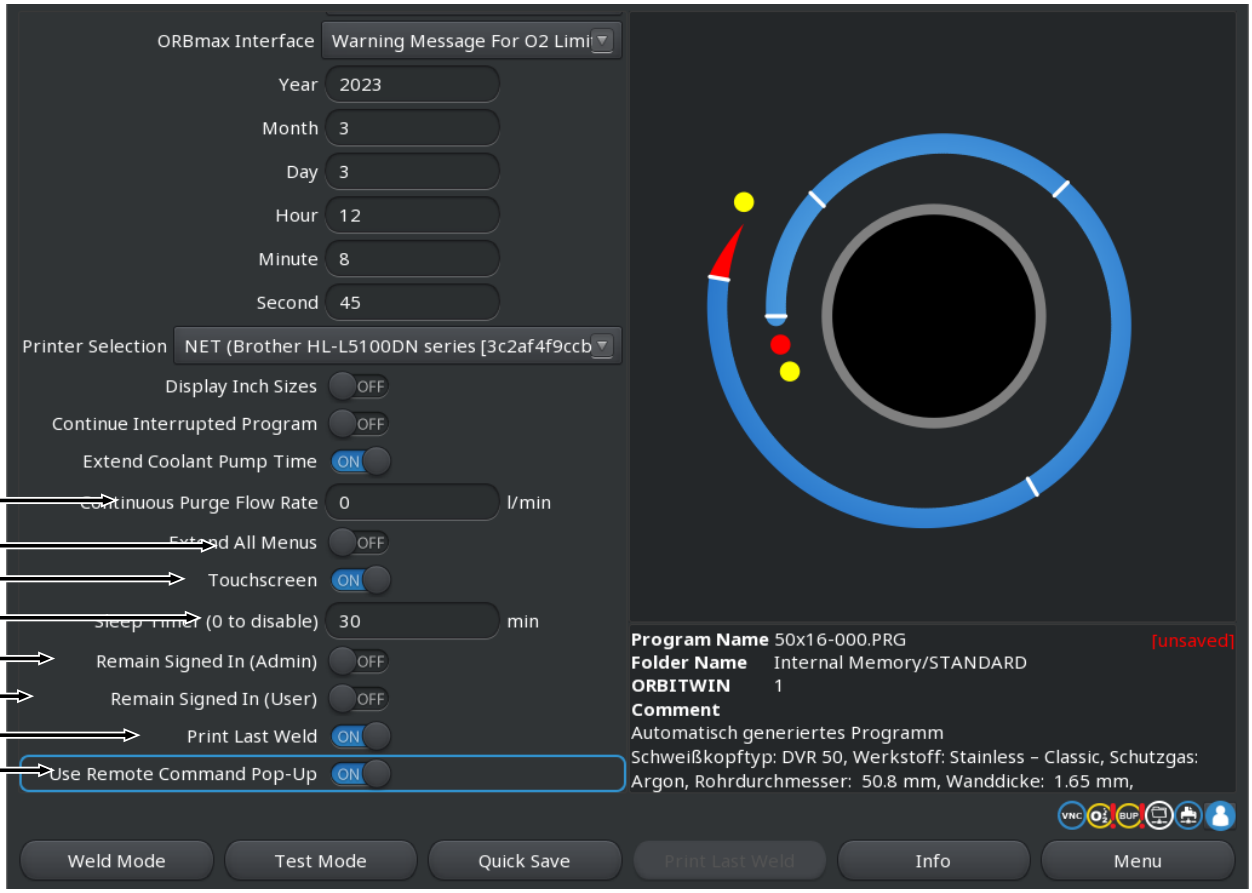



*Illustration: System settings, lower menu area*

| ITEM | DESCRIPTION | SYSTEM SETTINGS OPTIONS | |
|---|---|---|---|
| 11 | Permanent gas volume | The "Permanent gas flow rate" input field can be used to set the gas volume flow in l/min that flows into the weld head when the "Gas permanently on" function is activated.<br>Recommended permanent gas volume: 2-5 l/min<br>*See also chapter* Gas overview [▶ 122] | |
| 12 | Advanced | | |
| 13 | Touch | Enable or disable the touch function of the screen. | |
| | | ON | Touch function activated |
| | | OFF | Touch function deactivated |
| 14 | Sleep timer | Period of inactivity in minutes after which the power source is put into sleep mode but not disconnected from the power supply. | |
| 15 | Stay logged in (Admin) | The "Stay logged in (Admin)" function can be used to define the authorization level or range of functions with which the power source starts up after being switched on. *See also section* User levels [▶ 33] | |
| | | ON | The power source always starts with the authorization level: "Full range of functions"<br>The password for activating the full range of functions must be entered once. |
| | | OFF | The power source always starts with the authorization level: "Limited range of functions." |
| 16 | Stay logged in (user) | The "Stay logged in (user)" function can be used to define the authorization level or functional scope with which the power source starts up after being switched on. *See also section* User levels [▶ 33] | |
| | | ON | The power source always starts with the authorization level: "Restricted functionality".<br>The password for activating the restricted range of functions must be entered once. |
| | | OFF | The power source always starts with the last selected authorization level. |
| 17 | Print last log | When the "Print last log" function is activated, the additional "Print last log" softkey is activated in the main test and welding menu.<br>By pressing the "Print last log" softkey, the welding log for the last weld seam can be printed out retrospectively, regardless of the log settings in the welding program.<br> | |
| | | ON | Soft key "Print last log" activated in the main, test, and welding menus. |
| | | OFF | Softkey "Print last log" deactivated in the main, test, and welding menus. |
| 18 | Use remote command pop-up | | |

### 8.1.5.2 Program settings

All program-related settings can be configured in the program settings.

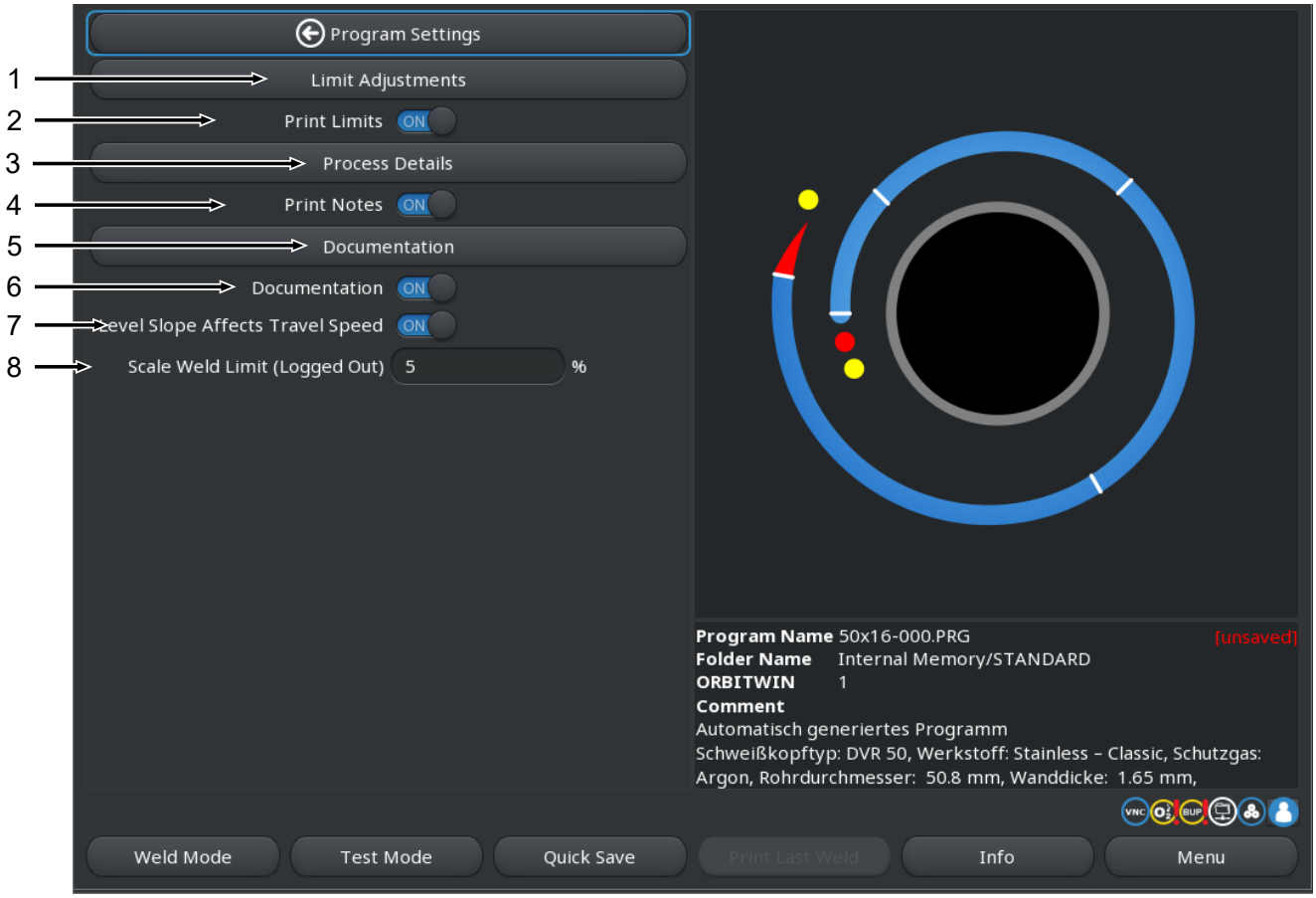



*Illustration: "Program settings" menu*

| ITEM | MENU ITEM | SETTING OPTIONS | |
|---|---|---|---|
| 1 | Monitoring limits | Under the menu item "Monitoring limits," you can set the limit values at which a warning message or a welding process interruption is triggered if they are exceeded or not reached.<br><br>*See also chapter* Limit Adjustments [▶ 97] | |
| 2 | Print limits | The "Print Limits ON/OFF" slider button can be used to specify whether the stored "monitoring limits" should be appended to each welding log. | |
| | | ON | "Monitoring limits" activated as an attachment. |
| | | OFF | "Monitoring limits" as an attachment deactivated. |
| 3 | Process notes | *See chapter* "Process Details" [▶ 83] | |
| 4 | Print notes | The "Print notes" slider button can be used to specify whether the information entered under "Process notes" should also be printed out when printing the welding program, in addition to the welding parameters. | |
| | | ON | Print "Process notes" activated |
| | | OFF | Print "Process notes" deactivated |
| 5 | Documentation | The documentation function can be used to define and map documentation processes.<br><br>*See also chapter* Documentation list [▶ 99] *and* Documentation settings [▶ 99] | |

| ITEM | MENU ITEM | SETTING OPTIONS | |
|---|---|---|---|
| 6 | Documentation | The "Documentation" slide button can be used to activate or deactivate the fields defined under the "Documentation" menu item and their documentation function in the welding program. | |
| | | ON | Fields defined under "Documentation" activated |
| | | OFF | Fields defined under "Documentation" deactivated |
| 7 | Speed with inclination | The "Speed with slope" slider can be used to specify whether the rotation speed adjustment between two sectors should be linear or abrupt.<br>When this function is activated, the behavior is set together with the welding current adjustment using the "Slope" welding program parameter.<br>*See also chapter* Level [▶ 87] | |
| | | ON | Linear rotation speed adjustment |
| | | OFF | Abrupt rotation speed adjustment |
| 8 | Limit for correction factor | The "Limit for correction factor" input field can be used to define the extent to which the welding current can be adjusted via the "Correction factor" welding program parameter in the "User mode" of the power source.<br>*See also chapter* "Process Details" [▶ 83] | |

### 8.1.5.2.1 Limit Adjustments

The power source regulates and monitors the target and actual values of welding current, arc voltage, and welding speed throughout the entire welding process.

The "Monitoring limits" menu item contains limit values which, if exceeded or not reached, trigger a warning message or an interruption of the welding process.

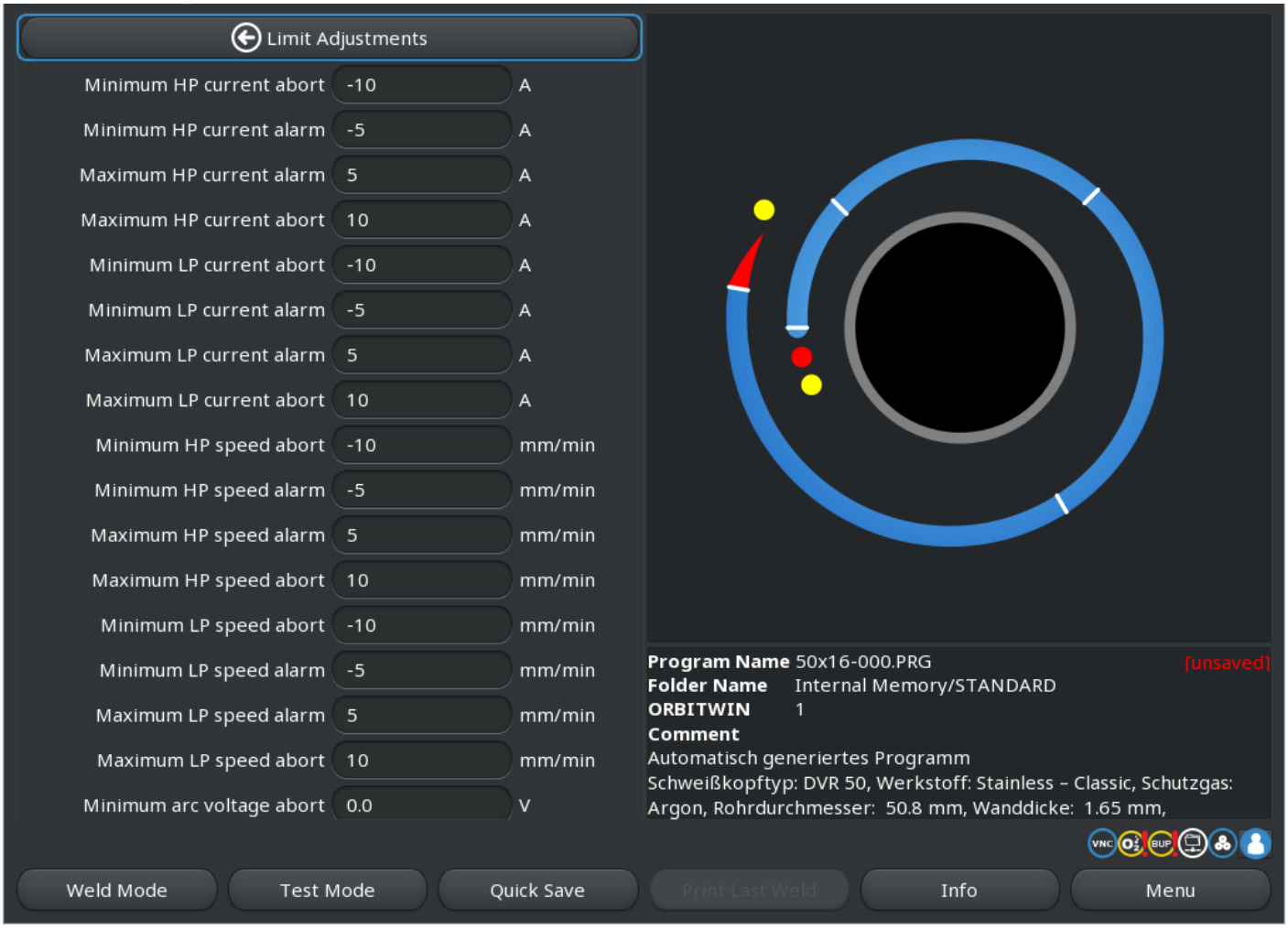



*Illustration: Monitoring limits menu, upper section*

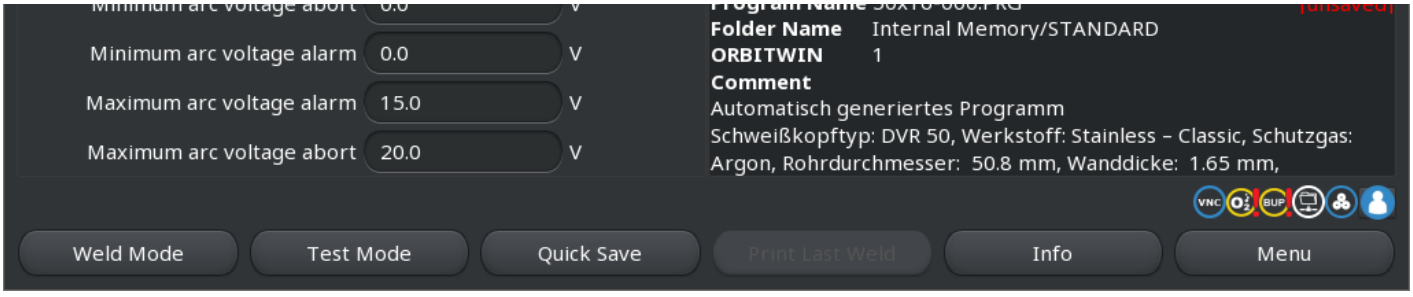



*Illustration: Monitoring limits menu, lower section*

The monitoring limits can be adjusted individually for each welding program.

Changes must be accepted using the "Save" softkey.

| | | |
|---|---|---|
| ***NOTICE!*** | | **The "Monitoring limits" are welding program-based and are stored in the welding program data record.** |

**CAUTION**



**If the monitoring limits are deactivated, there is no active monitoring of the welding parameters such as welding current, welding voltage, and welding speed!**

If the power source continues to be used, the operator must pay increased attention.

- ► The welding process must be continuously observed and monitored by the operator!
- ► This function should only be temporarily deactivated in exceptional cases.

### 8.1.5.3 Documentation settings

The Documentation section of the welding program displays all documentation fields defined under the "Documentation" program settings.




*Illustration: "Set Parameters" menu*

| ITEM | DESIGNATION | FUNCTION |
|---|---|---|
| 1 | Welding program section "Documentation" | The welding program section "Documentation" displays all documentation fields defined under the program settings "Documentation."<br><br>Prerequisites:<br>• Documentation fields have been defined and the documentation function has been activated.<br>*See chapter "* Program settings [▶ 95] *" and* Documentation list [▶ 99]<br>• The welding program parameter "Save logs" is activated.<br>*See chapter* Basic adjustments [▶ 76] |

Marking of documentation fields

- Documentation fields marked as **required** are outlined in red.
- Documentation fields marked as **permanent** are outlined in blue.
- Documentation fields marked as **permanent and required** are outlined in yellow.
- Unmarked documentation fields are outlined in white.

#### 8.1.5.3.1 Documentation list

The documentation function can be used to define and map documentation processes. When this function is activated, the operator is prompted to enter the defined documentation parameters before starting the orbital welding process.

- All parameters to be documented can be freely defined in terms of types and input intervals.
- The data can be entered either via the internal or external keyboard or via a code scanner.
- The defined parameters can be entered either before each weld or after each restart of the power source.
- The output is provided together with all welding-related target and actual values in the form of a welding log file, which can be saved on a USB medium or in a network directory or output via the internal or external printer.
- The documentation routine created can be saved on a USB storage medium and transferred to other power sources.

*See also chapter* System data [▶ 102]

**NOTICE! The documentation function is system-based and is automatically activated for each loaded welding program.**

Documentation fields can be added and managed in the documentation list.

In addition, you can set whether a value is required for a documentation field and whether it should be permanently saved.

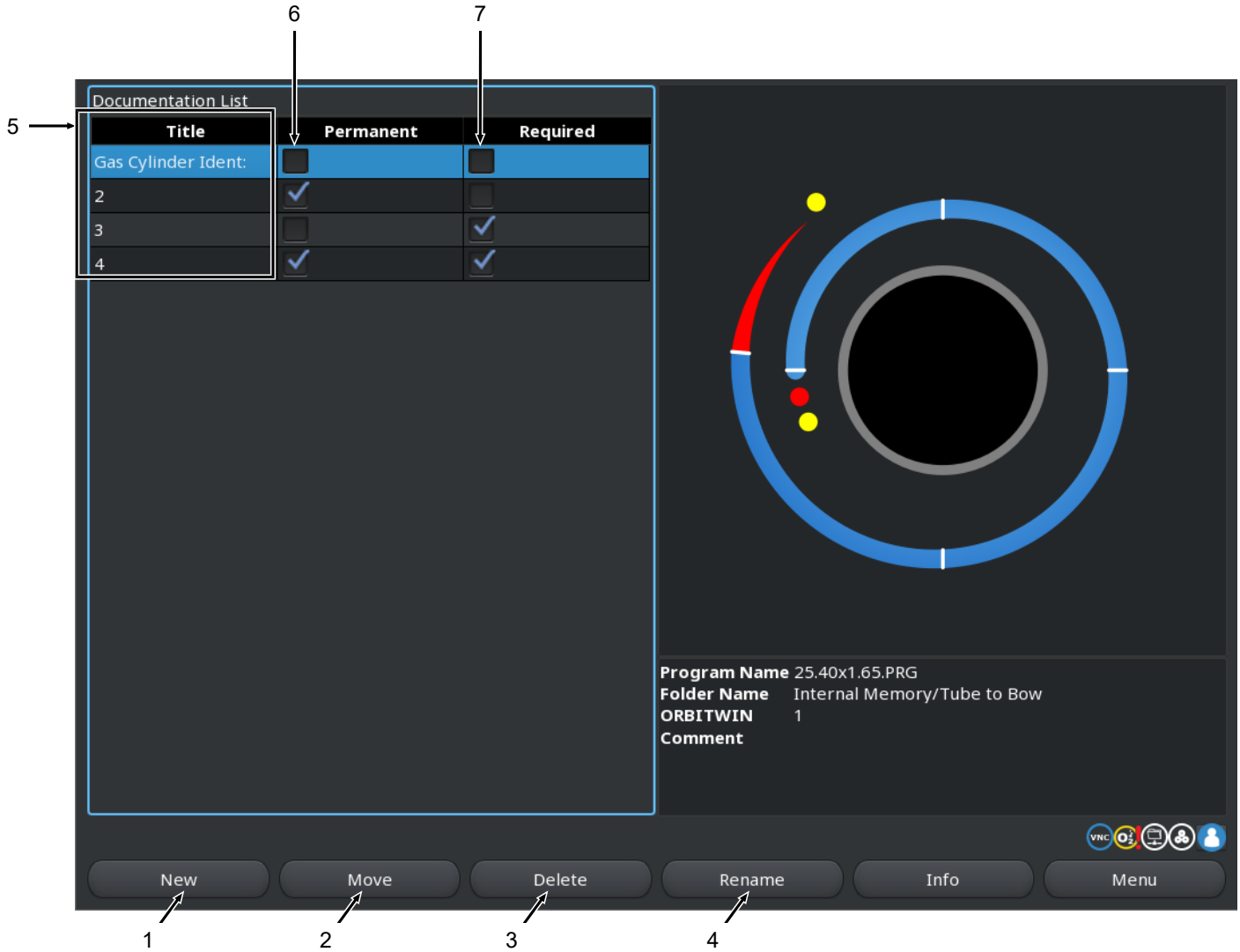



*Illustration: "Documentation list" menu*

| ITEM | SCREEN ELEMENT | FUNCTION |
|---|---|---|
| 1 | "New" soft key | The "New" softkey can be used to create new documentation fields. |
| 2 | "Move" softkey | The softkey "Move" can be used to change the display order of the documentation fields in the welding program and in the log file. |
| 3 | "Delete" softkey | The "Delete" soft key can be used to remove documentation fields. |

| ITEM | SCREEN ELEMENT | FUNCTION |
|---|---|---|
| 4 | Rename soft key | Documentation fields can be renamed using the "Rename" softkey. |
| 5 | "Title" text input field | Enter the name of the documentation parameter to be entered.<br>The name is displayed as the input field name in the welding program and under Documentation in the welding report. |
| 6 | "Permanent" checkbox | If this option is activated, the parameter value entered in the welding program is saved in the input field until the power source is restarted.<br>This option is recommended for static parameters such as: "Welder ID," "Weld head serial number," "Gas cylinder number," "Gas type," etc.<br>If this function is deactivated, the contents of the input field are deleted after each ignition and must be re-entered.<br>This option is recommended for variable parameters such as: "Batch number," "Workpiece type," "Welding position in the geometry," etc.<br>**NOTICE! One, all, or none of the checkboxes can be activated.** |
| 7 | "Required" checkbox | When this option is enabled, a parameter must be specified in the corresponding documentation field in order to start a welding process.<br>**NOTICE! One, all, or none of the checkboxes can be activated.** |

#### 8.1.5.3.1.1 Creating a documentation field

To create a new documentation field, please follow these steps:

From the main menu:

1. Select the "Settings" menu item.
2. Select the "Program settings" menu item.
3. Select the "Documentation" menu item.
4. Press the "New" softkey.
5. Enter the name of the documentation parameter in the input field.

#### 8.1.5.3.1.2 Moving a documentation field

The documentation fields can be arranged in a rolling order using the "Move" softkey.
The specified order corresponds to the display order of the documentation input fields in the welding program and in the log file.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **Pressing the "Move" softkey moves the selected documentation field down one position at a time. Repeat the process until the desired position is reached.** |

From the main menu:

1. Select the "Settings" menu item.
2. Select the "Program settings" menu item.
3. Select the "Documentation" menu item.
4. Select the documentation field to be moved.
5. Press the "Move" softkey.

#### 8.1.5.3.1.3 Deleting a documentation field

The documentation fields can be removed using the "Delete" softkey.

***NOTICE!*** **Pressing the "Delete" softkey irrevocably deletes the selected parameter.**

From the main menu:

1. Select the "Settings" menu item.
2. Select the "Program settings" menu item.
3. Select the "Documentation" menu item.
4. Select the documentation field to be moved.
5. Press the "Delete" softkey.

#### 8.1.5.3.1.4 Rename documentation field

When renaming, the name of the documentation field can be changed.

From the main menu:

1. Select the "Settings" menu item.
2. Select the "Program settings" menu item.
3. Select the "Documentation" menu item.
4. Select the documentation field to be moved.
5. Press the "Rename" softkey.

### 8.1.5.4 System data

Under System Data, individual system areas of the software can be updated, backed up, and restored.

#### 8.1.5.4.1 Update

Individual system areas can be updated independently of each other under this menu item.

The following system areas are available for updating:

- System
- Auto programming
- Headlist
- Language files
- Documentation list

Procedure:

1. Insert the USB data storage media with the update file into any USB port.
2. Select the menu item for the desired system area.

⇨ After successful selection the update routine starts.

#### 8.1.5.4.2 Backup

Under the "Backup" menu item, individual system areas can be backed up independently of each other on a USB data carrier.

The following system areas are available for backup:

- Auto programming
- Head list
- Language files

- Documentation list

Procedure:

1. Insert the USB data carrier into any USB port.
2. Select the menu item for the desired system area.

⇨ After successful selection, the storage routine starts.

#### 8.1.5.4.3 Restore

Under the "Restore" menu item, the system can be reset to the latest software version.

Procedure:

1. Press the "Restore system" menu button (1).
2. Confirm the system dialog "Do you really want to restore the system?" with "Yes" (2).

⇨ After successful confirmation, the restore routine will start.

### 8.1.5.5 Network environment

| | | |
|---|---|---|
| ***NOTICE!*** |  | **Configuring the network is a more complex task and should be performed by a system administrator!** |

All settings for connecting the power source to a local network and accessing network printers can be made under the "Network environment" menu item.

With the UPGRADE Connectivity LAN/IoT/VNC option, welding programs and welding logs can be stored and accessed remotely. The ability to integrate into an MQTT/IoT/Industry 4.0 network allows data and control commands to be exchanged between network participants.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **The network functions are only available with the UPGRADE Connectivity LAN/IoT/VNC option. *See chapter* Upgrade options [▶ 142]** |

A target computer/server that meets the following system requirements is required for network setup:

- Ethernet RJ-45 (LAN) connection (10Base-T/100Base-TX/1000BaseTX)
- Active TCP/IP service
- Connection diagram according to Fig. Connection diagram

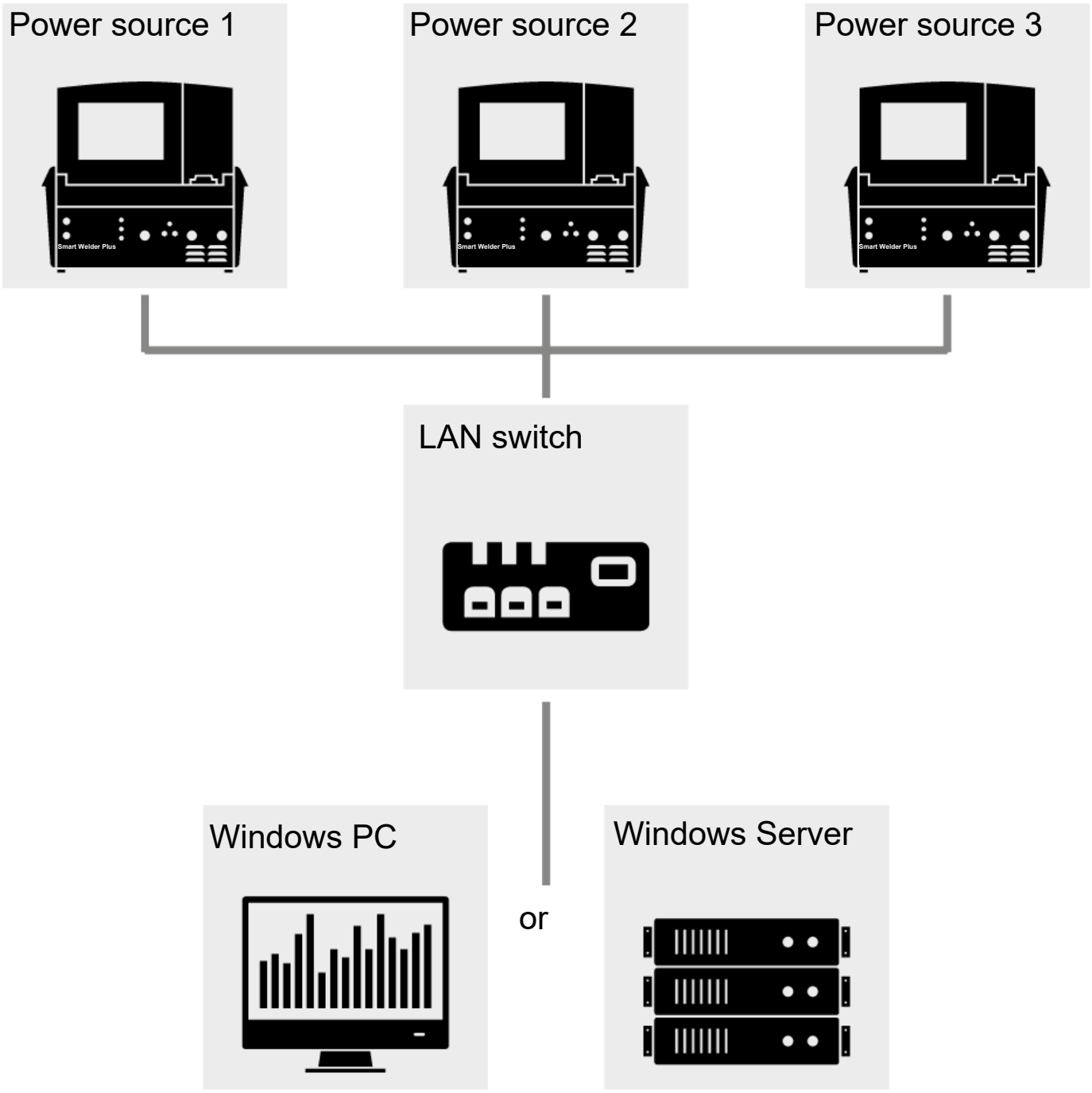



*Illustration: Connection diagram*

### 8.1.5.5.1 LAN network setup

All network-related parameters required for integrating the power source into a local network structure can be entered under the "Network LAN Setup" menu item.

| PARAMETERS | FUNCTION | |
|---|---|---|
| DHCP server | The DHCP function allows the power source to be integrated into an existing network without manual configuration. | |
| | DHCP server "ON" | The configuration parameters are sent directly from the DHCP server to the power source. |
| | DHCP server "OFF" | The configuration must be carried out manually using the following network parameters. |
| Interface | The parameter is set by the system and serves as information. No action required. | |
| Interface available | Parameter is set by the system and serves as information. No action required. | |
| MAC address | Parameter is set by the system and serves as information. No action required. | |
| Broadcast | Parameter is set by the system and serves as information. No action required. | |
| Subnet mask | Input field for the subnet mask address of the network.<br>**NOTICE! Mandatory network parameter. The subnet mask must be identical to the subnet mask of the network.** | |
| Default gateway | Input field for the default gateway address of the network.<br>**NOTICE! Mandatory network parameter. If no default gateway is available, the address 128.0.0.1 must be used.** | |
| DNS 1 | Input field for the IP address of the network's DNS server.<br>**NOTICE! Optional network parameter.** | |
| DNS 2 | Input field for the IP address of an alternative DNS server for the network.<br>**NOTICE! Optional network parameter.** | |
| IP address | Input field for the IP address of the power source.<br>**NOTICE! Mandatory network parameter. The IP address should be within the IP range of the network.** | |
| Set up network | Menu button for applying the network configuration<br>**NOTICE! After successful setup, the operating system of the power source restarts.** | |

### 8.1.5.5.2 Shared Folder Setup

Network storage locations for welding programs and log files can be set up under the "Network Directory Setup" menu item.

If identical storage locations are set up for multiple power sources, the data stored there can be shared between them.

***NOTICE!***



- ► The target directories must be created in advance on the target computer/server.
- ► A network share with read and write permissions must be set up for the target directory on the target computer/server.
- ► Multiple network directories can be set up in the power source.
- ► The network directories can be accessed in parallel via multiple power sources.

| PARAMETERS | FUNCTION |
|---|---|
| Add shared folder | The "Add shared folder" menu button opens the submenu for entering the storage location information for the shared folder. |
| Directory name | Input field for entering the internal directory name that is displayed in the "Program Manager" of the power source. |
| Computer name or IP address | Computer name or IP address of the target computer/server.<br>The computer name is preferred.<br>**NOTICE! Please note the correct upper/lower case!**<br>IMPORTANT.<br>• A network share with read and write permissions must be set up for the target directory on the target computer/server.<br>• Entering the address **without** the preceding "computer name":<br>Example:<br>**Correct:** "ORBINet/Welding/Data"<br>**Incorrect:** \\ ORBINet \ORBINet\Welding\Data<br>• **Do not** use slashes at the beginning of the network path:<br>**Correct:** "ORBINet/Welding/Data"<br>**Incorrect:** "/ORBINet/Welding/Data"<br>• Only use slashes (/) to separate folders in the network path:<br>**Correct:** "ORBINet/Welding/Data"<br>**Incorrect:** "ORBINet\Welding\Data"<br>• **Do not** use folder names with spaces:<br>**Correct:** "ORBINet/Welding/Data"<br>**Incorrect:** "ORBINet /Welding/Data" |
| User | Username or domain/username with read and write permissions for the target directory.<br>Example: "Administrator" or "DOMAIN/Administrator" |
| Pass | Input field for the password associated with the user name, which exists on the login server. |

| PARAMETERS | FUNCTION | |
|---|---|---|
| Advanced settings | The "Advanced settings" menu button opens a submenu for entering the SMB version network parameters and the security mode of the server network. | |
| | SMB version | Drop-down list for selecting the SMB version.<br>• Server Message Block network protocol for file, print, and other server services.<br>• The factory setting for this option is "Default" and does not usually need to be changed.<br>• If you experience connection problems, the SMB version can be adjusted accordingly.<br>• Set the SMB version according to the operating system of the target computer/server.<br>This setting should preferably be made by a system administrator.<br>Options: |

| Version | Operating system |
|---|---|
| Default | Automatic selection of the correct SMB version |
| 1.0 | Windows 2000, Windows XP, Windows Server 2003, Windows Server 2003 R2 |
| 2.0 | Windows Vista, Windows Server 2008 |
| 2.1 | Windows 7, Windows Server 2008 R2 |
| 3.0 | Windows 8, Windows Server 2012 |
| 3.02 | Windows 8.1, Windows Server 2012 R2 |
| 3.1.1 | Windows 10, Windows Server 2016 TP2 |

| | | |
|---|---|---|
| Advanced settings | Authentication and Security | Drop-down list for selecting the security mode of the server network.<br>If you encounter connection problems, you can adjust the security mode accordingly.<br>Set the mode according to the operating system of the target computer/server.<br>This setting should preferably be made by a system administrator.<br>Options: |

| Mode | Description |
|---|---|
| none | Attempt to connect as a null user (no name) |
| krb5 | Use Kerberos version 5 authentication |
| krb5i | Use Kerberos authentication and forcibly enable packet signing |
| ntlm | Use NTLM password hashing |
| ntlmi | Use NTLM password hashing and force packet signing |
| ntlmv2 | Use NTLMv2 password hashing |
| ntlmv2i | Use NTLMv2 password hashing and force packet signing |
| ntlmssp | Use NTLMv2 password hashing encapsulated in Raw NTLMSSP message |

| PARAMETERS | FUNCTION |
|---|---|
| Add network directory | Menu button to apply the entered parameters.<br>**NOTICE! Once the network directory has been successfully set up on the power source, it can be accessed in the main menu via the "Program Manager" and the "Log Manager".**<br>*See chapter* Program Manager [▶ 57]<br>*See list item "Software status icons" in chapter* Main menu [▶ 52]<br>**NOTICE! If the power source cannot establish a network connection, an error message is displayed. In this case, check the entered parameters, network cabling, and network settings.** |

The computer name is preferred.

**NOTICE! Pay attention to correct upper/lower case!**

#### 8.1.5.5.3 WLAN setup

The WLAN functionality enables network connection via a WLAN dongle, which can be plugged into one of the USB ports.

This requires activation of the connectivity upgrade; *see sections* Activation [▶ 32] and Upgrade options [▶ 142].

Under the menu item "WLAN Setup," the WLAN functionality can be activated or deactivated using a slider.

### 8.1.5.6 Service

#### 8.1.5.6.1 Coolant pump On

The "Coolant pump on" function is used to empty the coolant tank, e.g., for service purposes such as coolant replacement or during prolonged power outages.

#### 8.1.5.6.2 Motor calibration

Use to check and correct the rotor speed.

*For how to use, see the chapter* Motor calibration [▶ 137]

#### 8.1.5.6.3 Importing procedures

The "Import Programs" function can be used to import welding programs from ORBIMAT C and ORBIMAT CB generation power sources and convert them to the current welding program format.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **Welding programs from the ORBIMAT CA generation are fully compatible and do not need to be imported. They can be copied/opened directly via the "Program Manager."** |

Preparation

1. Create the "PROGRAMS" folder on a compatible USB stick using a PC.

| | | |
|---|---|---|
| ***NOTICE!*** |  | **The "PROGRAMS" folder must be located at the top level in the root directory of the USB stick.** |

2. Copy the welding programs to be imported without subfolders into the "PROGRAMS" folder you created.

Execution

1. Insert the USB stick into any USB port on the power source.
2. Select the "Import programs" button.

⇨ If the import is successful, the message "Program import complete" appears.

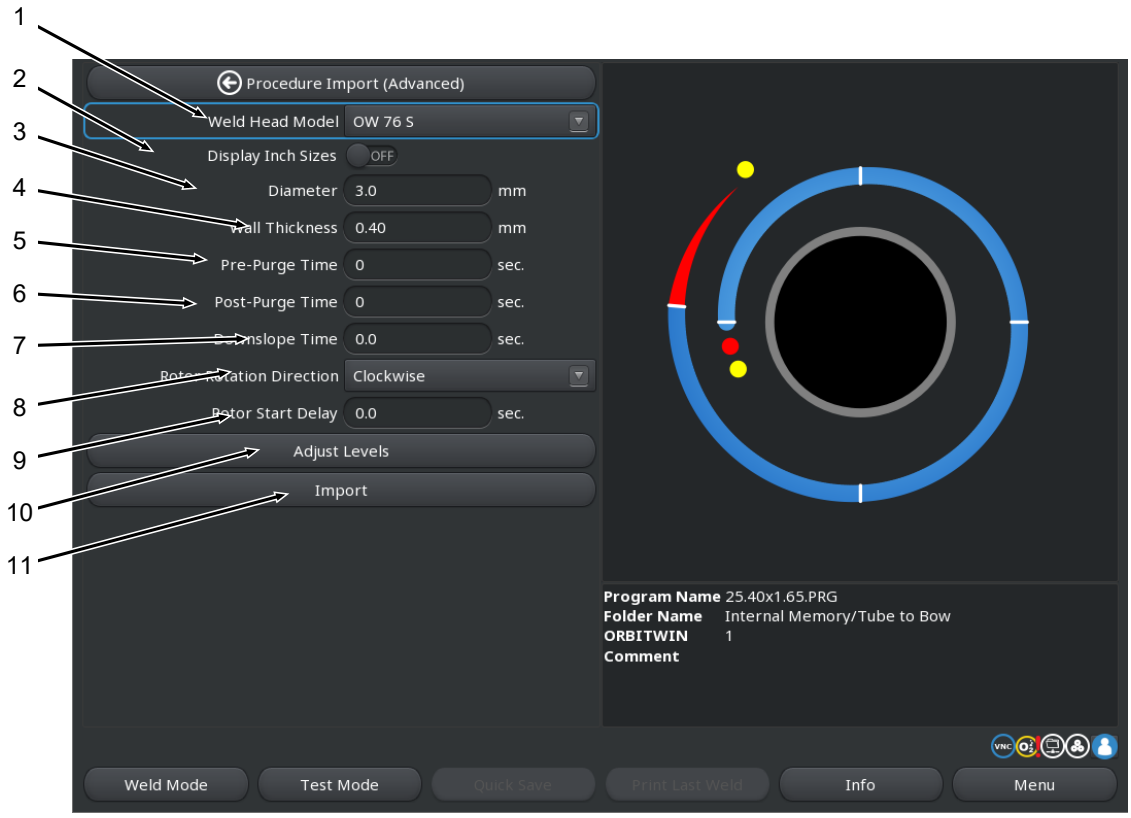
3. Confirm with "OK."
4. Restart the power source.

⇨ The imported programs can be used in the "Program Manager" in the "Import_XXX" folder.

### 8.1.5.6.4 Importing an Arc Machines Program

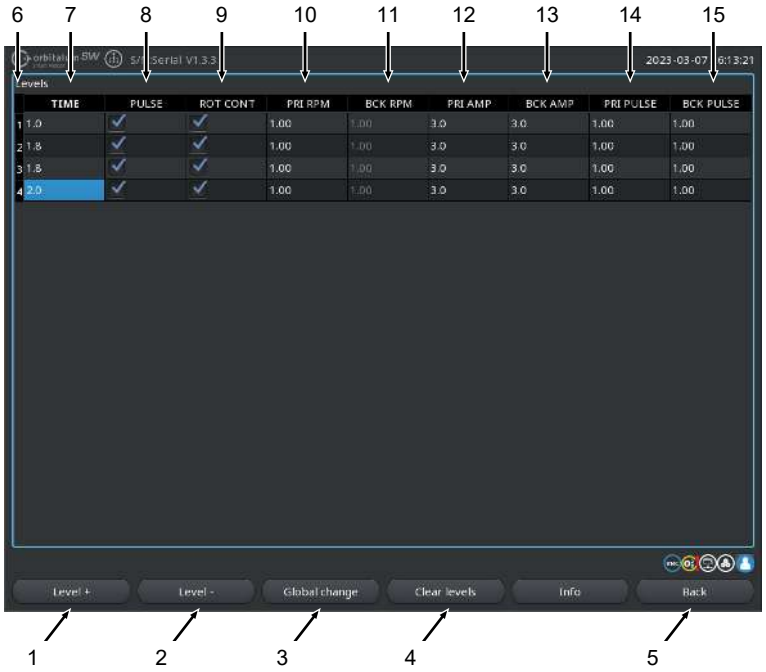
The "Import AMI program" function can be used to import welding program parameters from Arc Machines power sources into an Orbitalum welding program.

To do this, all of the following welding program parameters must be transferred from the AMI welding program to be converted into the input masks.



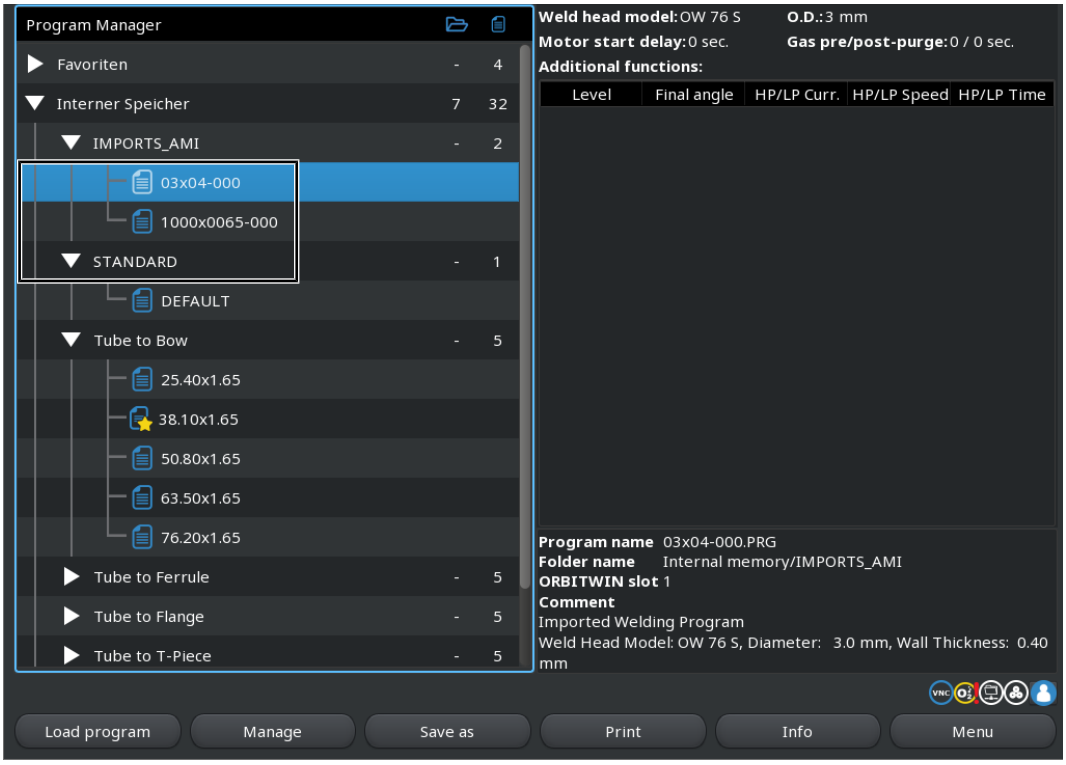

| ITEM | MENU ITEM | SETTING OPTIONS | |
|---|---|---|---|
| 1 | Welding head type | Option to select the torch type to be used. | |
| 2 | English units of measurement | Function for switching the units of measurement between "Metric" and "Imperial." After conversion, all fields are displayed with the active unit of measurement and existing values are converted accordingly. | |
| | | Options: | |
| | | English units of measurement ON | "Imperial" units of measurement active |
| | | English units OFF | Metric units active |
| 3 | tube diameter | Enter the outer diameter of the pipe | |
| 4 | Wall thickness | Enter the pipe wall thickness | |
| 5 | Gas pre-flow time | Period in seconds during which the weld head is supplied with welding gas from the start of the process until ignition. | |
| 6 | Gas post-flow time | Period in seconds during which the weld head is supplied with welding gas after the arc has been extinguished. | |

| ITEM | MENU ITEM | SETTING OPTIONS | |
|---|---|---|---|
| 7 | Reduction | Period in seconds of linear current reduction, starting from the welding current level of the previous sector, until the set end current is reached. | |
| 8 | Direction of rotation | Drop-down lists Selection of the desired rotation welding direction. | |
| | | Clockwise | Standard direction of rotation – starts with ascending welding |
| | | Counterclockwise | Alternative direction of rotation – starts welding downwards |
| 9 | Weld pool formation time | Enter the bath formation time in seconds. | |
| 10 | Adjust sectors | Under the menu item "Adjust sector," sectors can be created and the sector-specific parameters of the AMI welding program can be entered.<br>The input is made in tabular form.<br>Before entering a value, the input field must be selected/highlighted.<br>**NOTICE! All of the following parameters can be transferred from existing AMI welding programs as shown, without converting the units.** | |




| Pos. | Screen element | Function |
|---|---|---|
| 1 | Softkey "Sector +" | The "Sector +" softkey adds another sector entry to the end of the sector table. |
| 2 | "Sector -" soft key | The "Sector -" softkey deletes the last sector from the sector table. |
| 3 | "Apply" soft key | The "Apply values" softkey is used to apply the value of the currently selected welding parameter to all cells below it. |
| 4 | "Reset" softkey | The "Reset" softkey resets the entire sector table. |
| 5 | "Back" softkey | Returns to the previous menu level. |
| 6 | "Sector number" column | Displays the current sector count and number in ascending order in a table. |
| 7 | "TIME" column | Sector time in seconds. |

| ITEM | MENU ITEM | SETTING OPTIONS | | |
|---|---|---|---|---|
| | 8 | "PULSE" column | Checkbox for pulsating welding current | |
| | | | Checkbox activated | PULSE "ON" |
| | | | Checkbox deactivated | PULSE "OFF" |
| | 9 | Column "RED CONT" | Checkbox continuous rotation | |
| | | | Checkbox activated | RED "CONT" |
| | | | Checkbox deactivated | RED "NCONT" |
| | 10 | Column "PRI RPM" | Number input field Primary rotations per minute | |
| | 11 | Column "BCK RPM" | Number input field Secondary rotations per minute | |
| | 12 | "PRI AMP" column | Number input field Primary welding current in A | |
| | 13 | "BCK AMP" column | Number input field for secondary welding current in A. | |
| | 14 | Column "PRI PULSE" | Number input field for primary pulse time in seconds | |
| | 15 | "BCK PULSE" column | Number input field for secondary pulse time in seconds | |
| 11 | Import | Pressing the "Import" menu button converts the entered AMI welding parameters into an Orbitalum welding program.<br>The converted AMI welding program is automatically saved in the "Program Manager" in the internal memory in the path Internal Memory/PROGRAM/IMPORTS_AMI. | | |



### 8.1.5.6.5 Settings for external printer

Settings for text output can be configured in the "Settings for external printer" menu.

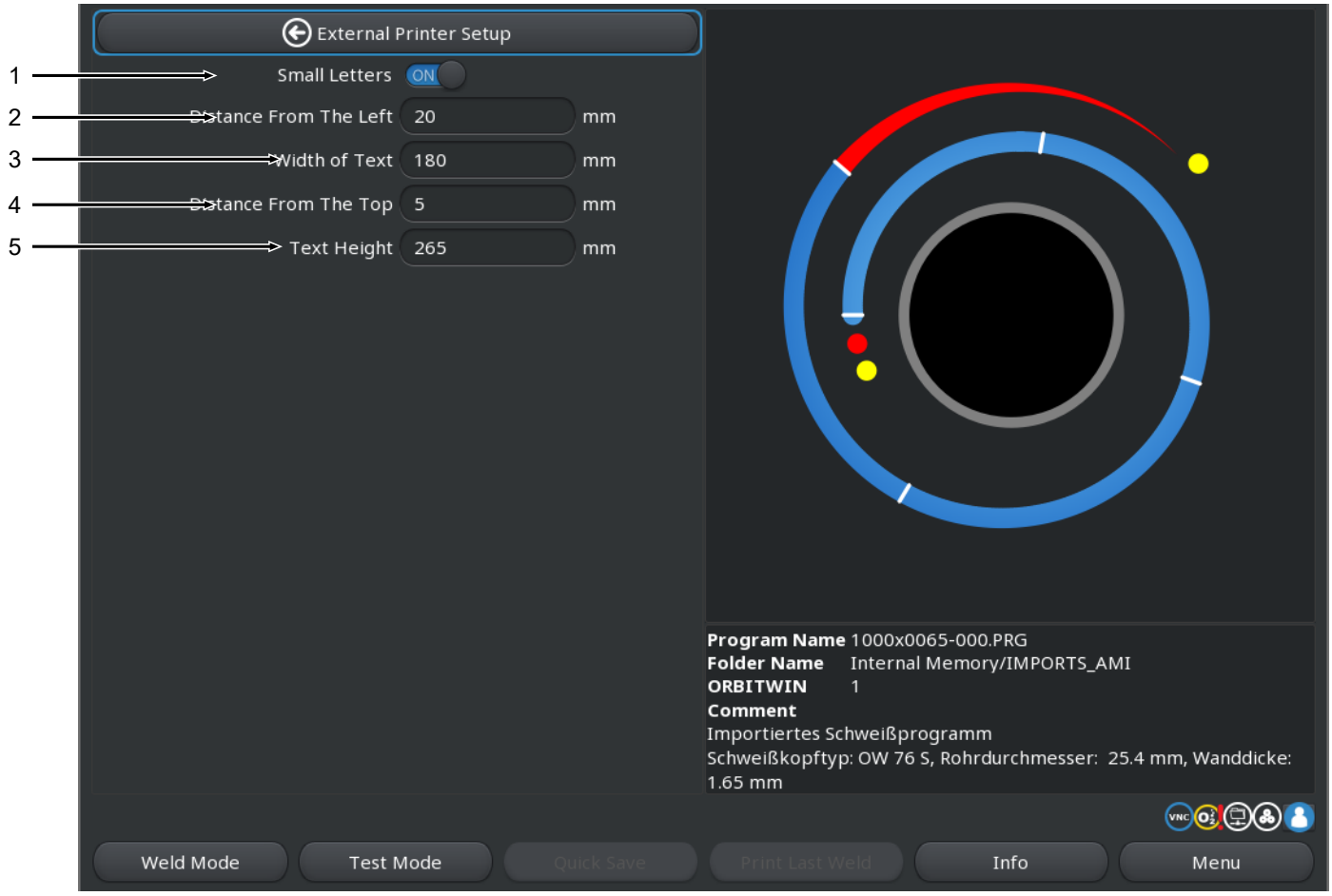



*Illustration: "External Printer Settings" menu*

| ITEM | MENU ITEM | SETTING OPTIONS | |
|---|---|---|---|
| 1 | Reduce font size | ON | Small font size activated |
| | | OFF | Small font size disabled |
| 2 | Distance from left | Distance value from the left edge of the sheet to the start of the print area in mm | |
| 3 | Text width | Width of the print area in mm. | |
| 4 | Distance from top | Distance in mm from the top edge of the sheet to the start of the print area. | |
| 5 | Text height | Height of the print area in mm. | |

### 8.1.5.6.6 Service screen

The "Service Screen" displays an overview of all electronic input and output signals of the power source control. These can be used for troubleshooting in the event of a service call.

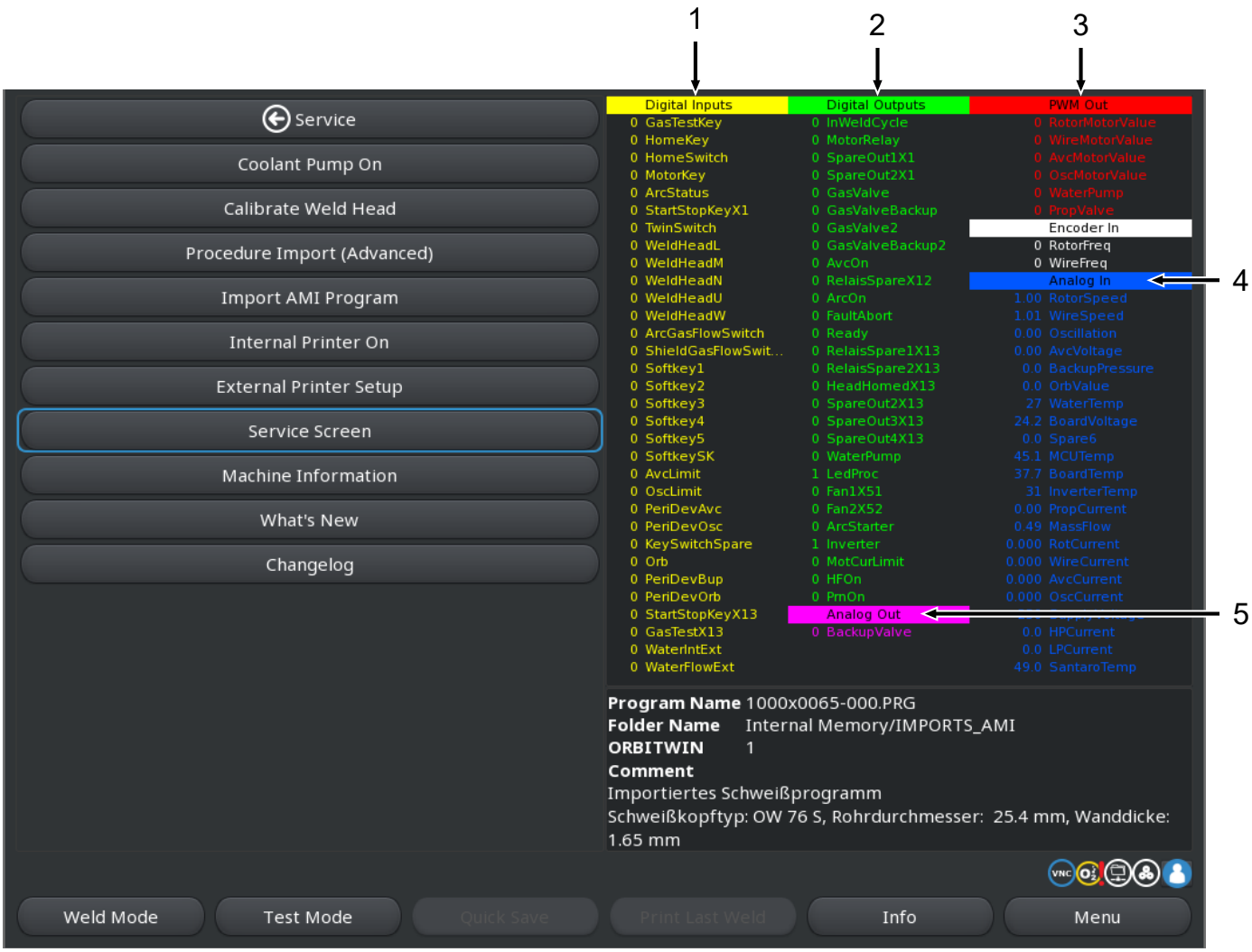



*Illustration: "Service screen" menu, signal value table*

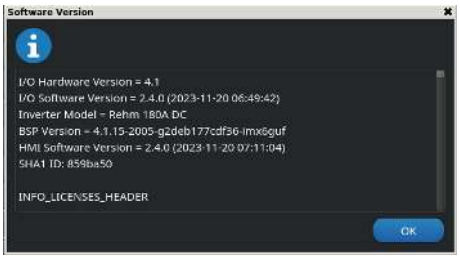
| ITEM | SCREEN ELEMENT | DISPLAY |
|---|---|---|
| 1 | Digital inputs | Current values of the digital inputs |
| 2 | Digital outputs | Current values of the digital outputs |
| 3 | PWM Out | Current actual values of the running process calculated from the information provided by the analog inputs or serial inverter interface. |
| 4 | Analog In | Current values of the analog inputs. |
| 5 | Analog Out | Current values of the analog outputs |

### 8.1.5.6.7 Info

The "Info" menu button in the service menu opens an information overview of the currently used software version and the serial number of the power source.

Main menu > Settings > Info





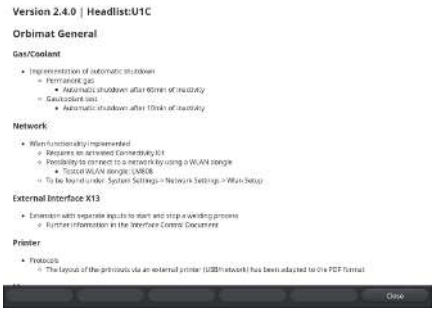

Close the information overview by clicking the "OK" button.

### 8.1.5.6.8 What's new

The "What's new" menu button in the service menu opens an information overview of the software functions added in the last software update.

Main menu > Settings > Service






Close the information overview by clicking the "Close" button.

### 8.1.5.6.9 Changelog

The "Changelog" menu button opens an information overview of all software changes by software version.

## 8.1.5.7 Setting the language and keyboard

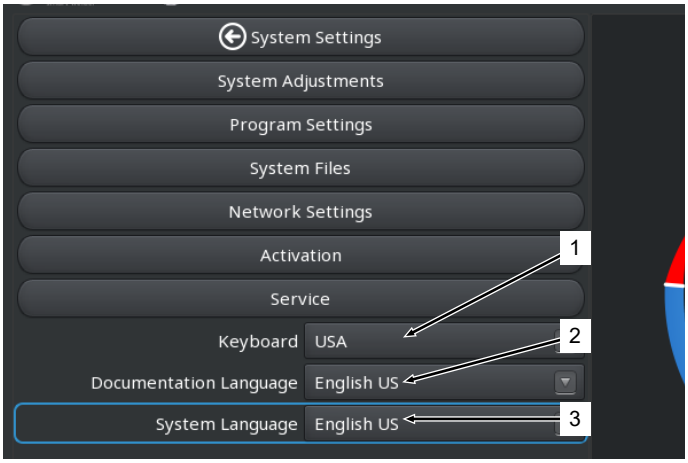



*Illustration: "System Settings" menu*

| ITEM | MENU ITEM | DISPLAY |
|---|---|---|
| 1 | Keyboard | Setting the language-specific keyboard layout of the external USB keyboard. |
| 2 | Documentation language | Setting the language of the documentation/log file independently of the system language. |
| 3 | System language | Setting the system language of the power source.<br><br>*See also chapter* Setting the system and documentation language [▶ 48] |

***NOTICE!***



**Changing the language changes all messages, parameter and menu names in the software and printouts. Comments or logs entered by the operator are not translated.**

## 8.2 Weld mode

The "Welding" softkey (1) takes you from the main menu to welding mode:

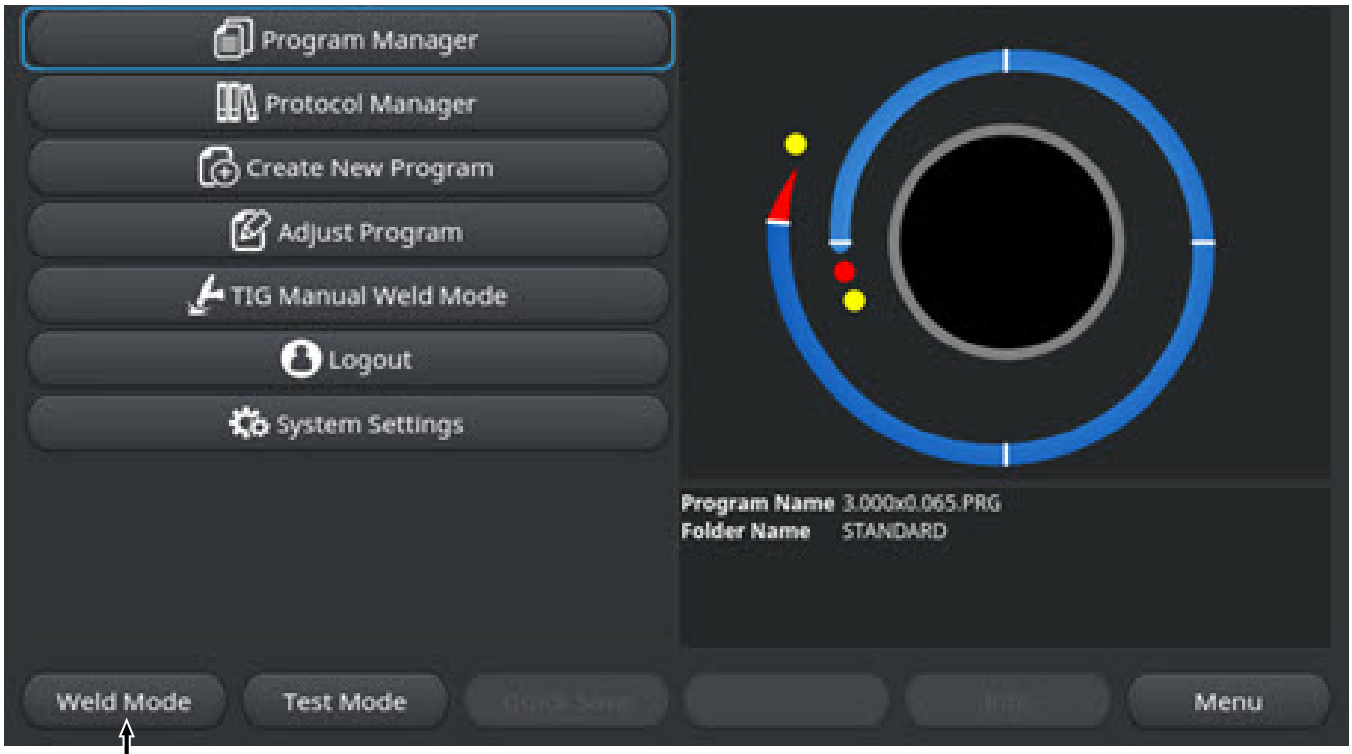



*Illustration: Main menu*

In the welding menu/welding mode, the welding process can be started and all functions relevant to welding can be controlled.

At the administration level, the welding parameters of the currently loaded welding process can also be adjusted (*see also chapter* User levels [▶ 33]).

| | | |
|---|---|---|
| **CAUTION** | ⚠ | **General danger**<br>► In case of danger, unplug the mains plug!<br>► Accessibility to the mains plug must always be assured in order to permit disconnecting the power supply from the mains. |
| **WARNING** | ⚠ | **Dangers from electromagnetic fields**<br>Active implants of persons in the vicinity can be disturbed<br>► Persons with pacemakers, defibrillators or neurostimulators may only work with the power supply after a workplace evaluation by the system operator. *See EMF Directive at* Requirements for the owner-operator [▶ 6] |
| **CAUTION** | ⚠ | **Danger from incorrect operating sequence**<br>► Observe the operator's obligations.<br>► Operation only by suitable, instructed personnel. |

**WARNING**



**Danger of suffocation!**

If the level of shielding gas in the ambient air rises, lasting damage or risk of death can arise as the result of suffocation.

- ► Use only in well ventilated areas.
- ► Monitor oxygen, if necessary.

**WARNING**



**Risk of burns, blindness and fire due to arcs**

An arc may develop by releasing the welding contacts during operation. This can result in burns and blindness, in the worst case a fire can be started.

- ► Connect and disconnect the weld head only when the power supply is shut down.
- ► Lay the lines and cables so that they are **not** under tension.
- ► Ensure that under **no** circumstances can people trip over lines and/or cables.
- ► Attach the strain relief.
- ► Check that hose package connections fit firmly in place when connecting or before activating the power supply.
- ► Do not work near highly flammable substances.
- ► Operate only on non-combustible surfaces.

**WARNING**



**Danger of fire**

- ► Follow general fire prevention measures!
- ► Do **not** work near flammable substances.
- ► Do **not** use flammable substances as a base in the welding area.
- ► Do **not** weld near solvents (for example where degreasing, painting is being carried out) or explosive substances.
- ► Do **not** use flammable gases.
- ► Ensure that **no** flammable materials or soiling is located near the machine.

***NOTICE!***



**Press and hold (3 sec.) the "GAS" button on the welding head remote control to switch between the "Test" and "Welding" menus.**

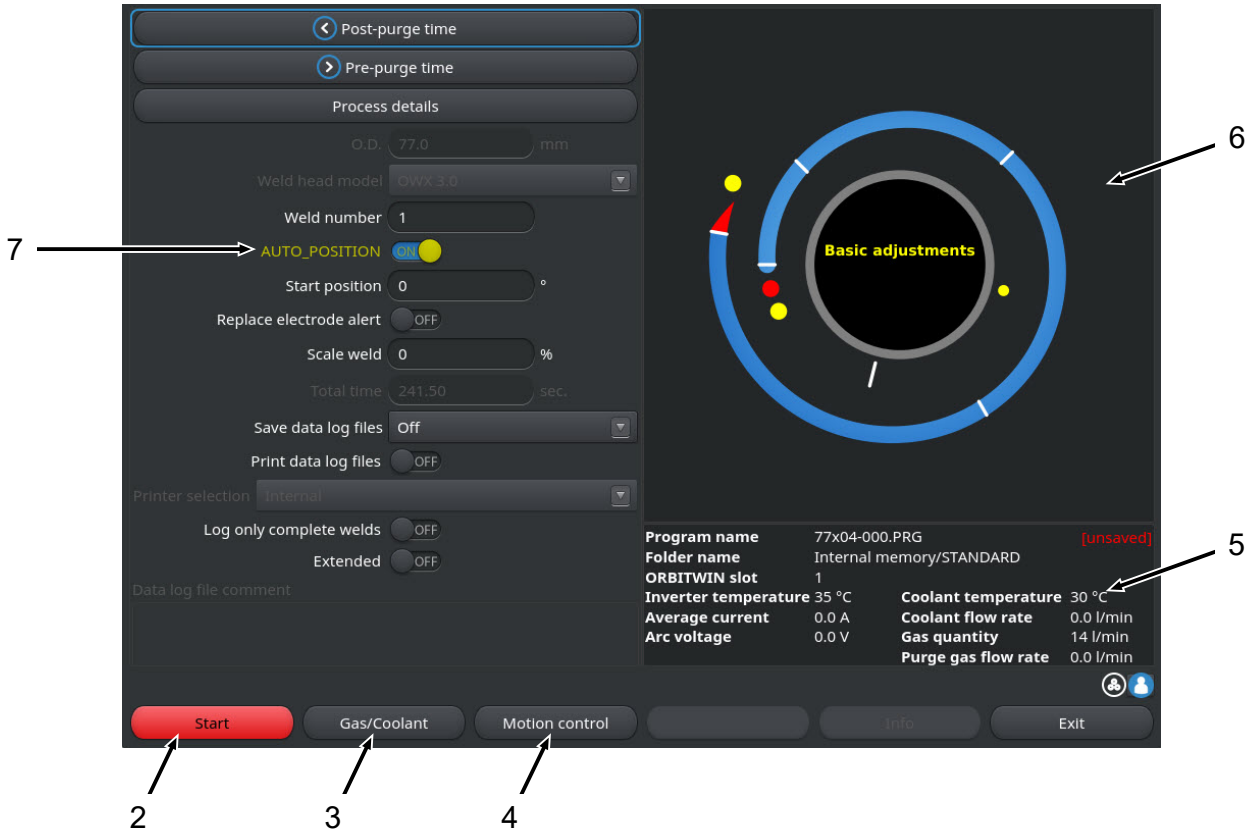



*Illustration: "Welding" menu, "START" soft key red*

| ITEM | CONTROL ELEMENT | FUNCTION |
|---|---|---|
| 1 | "Welding" soft key | The "Welding" softkey (*see fig. Main menu at* the beginning of the chapter) takes you from the main menu to welding mode. |
| 2 | "START" soft-key | Starts the welding process with welding gas and coolant flow based on the parameters of the currently loaded welding program. In welding mode, the "Start" softkey (2) is highlighted in red.<br>**NOTICE! The welding head type programmed in the welding program must match the type connected to the power source. If the welding program parameters are outside the welding head specifications, it is not possible to start the welding process.** |
| 3 | "Gas/Coolant" soft key | The "Gas/Coolant" softkey opens a softkey submenu with all coolant and welding gas-related functions.<br>*See chapter* "Gas/Coolant" softkey [▶ 121] |
| 4 | "Manual Control" softkey | The "Manual Control" softkey opens a softkey submenu in which the welding head rotation and cold wire functions can be controlled manually.<br>*See chapter* Motor control [▶ 125] |
| 5 | Welding program information field | The welding program information field provides an overview of current technical values such as coolant and gas flows, welding voltage, and temperatures. |
| 6 | Process graphic | The process graphic shows an overview of the current process progress and the current welding position on the workpiece during the active welding process. |

| ITEM | CONTROL ELEMENT | FUNCTION |
|---|---|---|
| 7 | "Auto position" | When autoposition is activated, the positions of the handle and the electrode of the welding head are detected and displayed in the process graphic. The symbol for the handle position changes between red, yellow, and green depending on whether it is possible to start the welding process in the current position or not.<br>*See sections 19.8 and 19.9 in chapter* Main menu [▶ 52] |

**CAUTION**



**The rotor may start unexpectedly while setting up the electrode.**

Risk of crushing hands and fingers!

- ► Before mounting the electrode: Turn off the power source.
- ► To move the rotor to the home position: Close the clamping cassette or clamping unit and the flip cover.

**WARNING**



**Damage to health from toxic emissions in the ambient air**

- ► No welding of coated workpieces and - of pressurized / media-containing pipes / objects.
- ► Clean workpieces before welding.
- ► Weld only materials suitable for the TIG welding process (TIG DC).

**WARNING**



**Health hazard from inhalation of radioactive particles**

- ► Do not use electrodes containing thorium.
- ► Do not weld radioactive workpieces.

## 8.2.1 "Gas/Coolant" softkey

The "Gas/Coolant" softkey takes you from the "Welding" menu to a submenu with all functions relevant to welding gas.

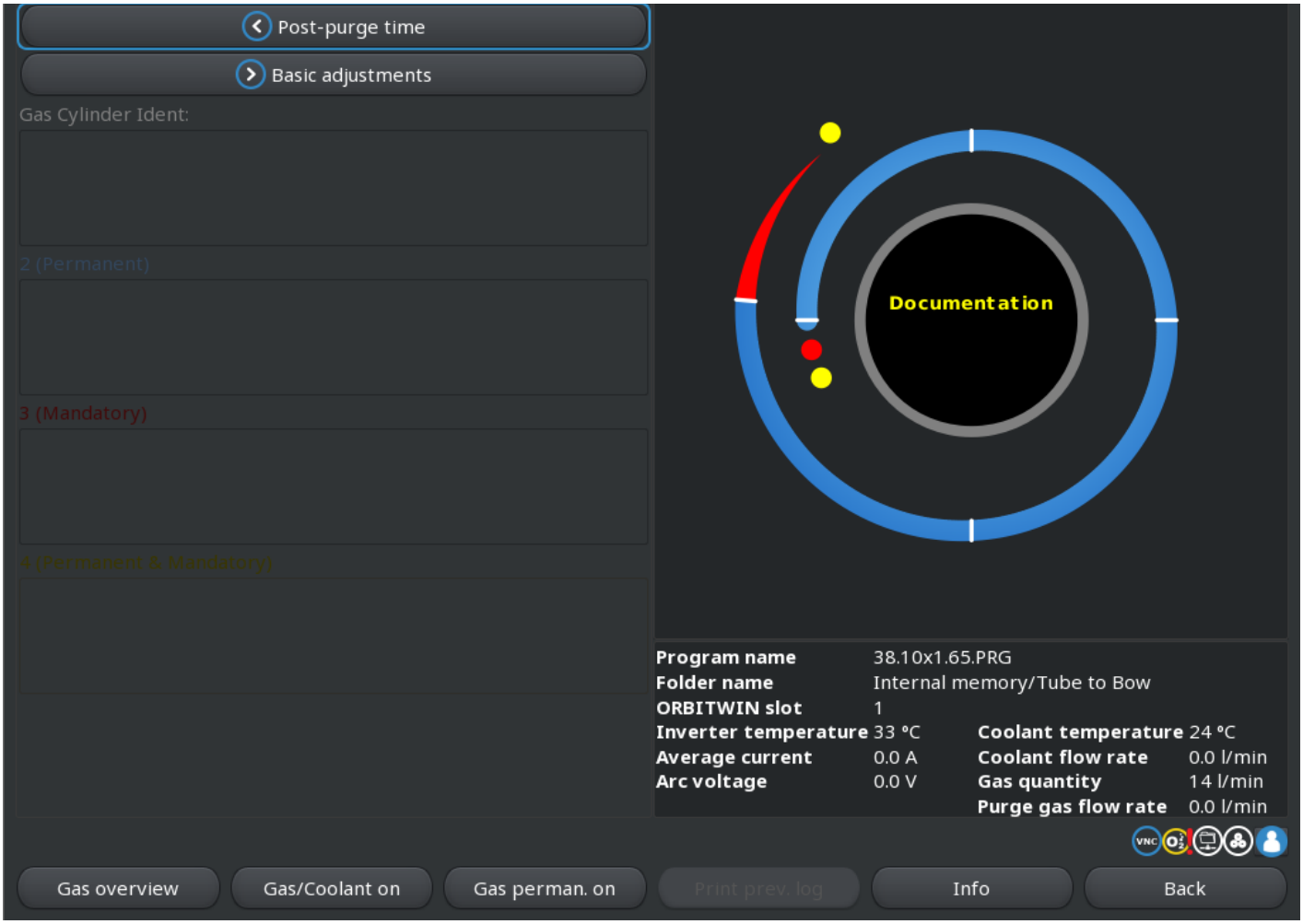



*Illustration: "Gas/Coolant" menu, welding gas-related functions*

### 8.2.1.1 "Gas On" softkey

The "Gas on" softkey manually starts the gas flow.

Pressing it again stops the gas and coolant flow.

| | | |
|---|---|---|
| ***NOTICE!*** | | **Manual start-up allows the gas and coolant flow to be checked independently of the welding process to ensure that everything is working properly. An error message is displayed if there is a gas or coolant shortage.** |

### 8.2.1.2 Gas overview

The gas overview provides a summary and visualization of the welding gas parameters gas pre- and post-flow time and the special functions Flow Force and Permanent Gas.

These functions can be used to optimize welding gas management in terms of gas consumption, start-up colors, and process time.

**Welding gas special functions**

By using special welding gas functions such as Flow Force and Permanent Gas, the welding process can be optimized in terms of process time, start-up colors, gas consumption, workpiece and welding head temperature.

Flow Force

The Flow Force function is primarily used to reduce gas pre-flow and post-flow times. It offers advanced welding gas settings for optimizing welding gas management. In addition to process time, the Flow Force functions can also be used to optimize start-up colors, gas volume, workpiece and welding head temperature.

In the gas pre-flow phase, the weld head is supplied with a significantly increased amount of gas compared to the actual welding gas volume before the arc is ignited in order to achieve faster and more efficient flushing or removal of residual oxygen in the weld head.

In the gas post-flow phase, the weld head can be supplied with a significantly higher gas volume to achieve faster cooling of the workpiece and the weld head.

Permanent gas

***NOTICE!*** **The permanent gas function is automatically switched off after 65 minutes of inactivity.**

The permanent gas function continuously supplies the weld head with a constant flow of welding gas to prevent oxygen from entering the weld head, even during non-productive times.

The permanent flushing of the weld head significantly reduces the gas flow time.

As with the Flow Force function, this allows the process time, start-up colors, gas volume, and welding head temperature to be optimized.

***NOTICE!*** **A combination of the Flow Force and permanent gas functions is also possible.**

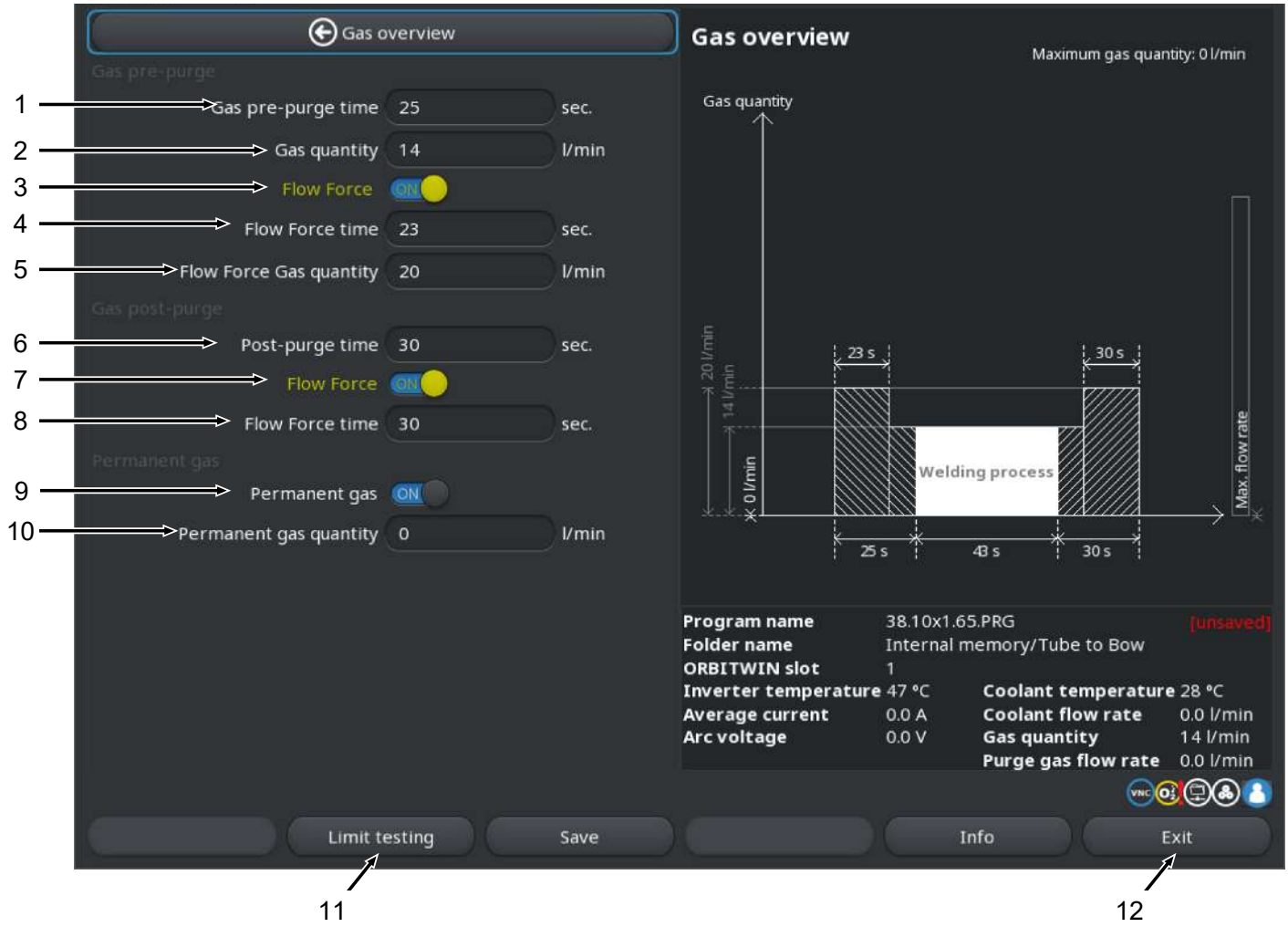



*Illustration: "Gas Overview" menu, upper section*

| POS | MENU ITEM | FUNCTION |
|---|---|---|
| 1 | Gas pre-flow time | Period in seconds during which the weld head is supplied with the process gas volume from the start of the process until ignition. |
| 2 | Gas volume | Process gas volume supplied to the weld head during the welding process and the regular gas pre-flow and post-flow times. |

| POS | MENU ITEM | FUNCTION | |
|---|---|---|---|
| 3 | Flow Force - Pre-flow | Function for activating the Flow Force function in the gas pre-flow phase. | |
| | | Flow Force ON | Flow Force active |
| | | Flow Force OFF | Flow Force inactive |
| 4 | Flow Force time - pre-flow | Period in seconds during which the weld head is supplied with the set Flow Force gas volume during the gas pre-flow time<br>**NOTICE! It is recommended to reduce the welding gas volume to the actual process gas volume at least 2 seconds before igniting the arc in order to stabilize the gas flow before ignition.** | |
| 5 | Flow Force gas volume | Welding gas volume with which the weld head is supplied during the flow force time in the pre-flow and post-flow phases. | |
| 6 | Gas post-flow time | Period in seconds during which the weld head is exposed to the process gas volume after the arc has been extinguished. | |
| 7 | Flow Force - Post-flow | Function for activating the Flow Force function in the gas post-flow phase. | |
| | | Flow Force ON | Flow Force function active |
| | | Flow Force OFF | Flow Force function inactive |
| 8 | Flow Force time - post-flow | Period in seconds during which the weld head is supplied with the set Flow Force gas quantity during the gas post-flow time.<br>**NOTICE! It is recommended to allow the process gas quantity to continue for 3 seconds after the arc has been extinguished and then switch to the Flow Force gas quantity.** | |

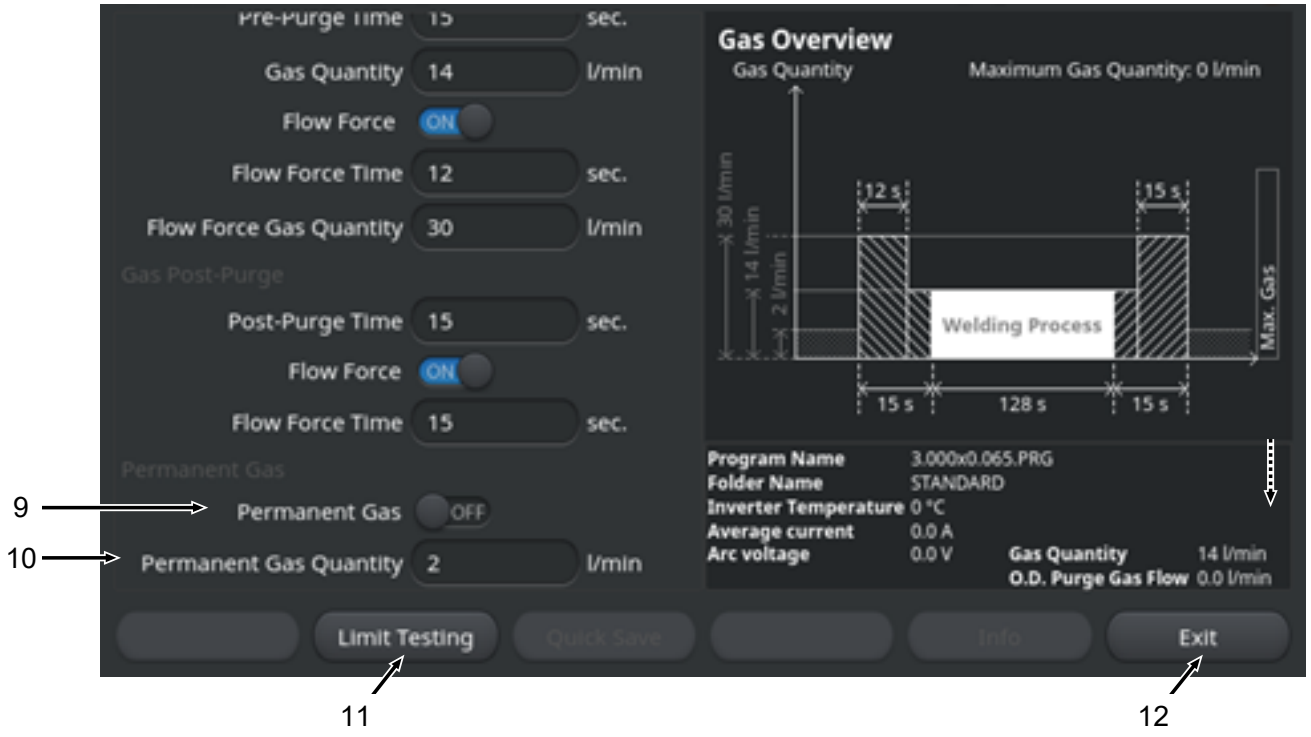



*Illustration: "Gas Overview" menu, lower section*

| ITEM | MENU ITEM | FUNCTION | |
|---|---|---|---|
| 9 | Permanent Gas | Function for activating the permanent gas function. | |
| | | Permanent gas ON | Permanent gas function active |
| | | Permanent Gas OFF | Permanent gas function inactive |

| ITEM | MENU ITEM | FUNCTION |
|---|---|---|
| 10 | Permanent gas quantity | Welding gas quantity with which the weld head is permanently supplied during non-productive time. |
| 11 | Softkey "Limit test" | Using the "Limit test" softkey, the power source starts a welding gas flow test to determine the maximum welding gas volume available at the gas inlet socket.<br>The determined gas volume is transferred to the "Flow Force Gas Volume" input field, taking into account a safety margin.<br>***NOTE***<br>1. Ensure that the welding gas supply and the weld head are connected correctly.<br>2. If an insufficient welding gas volume can be determined, check the welding gas source and set it to the maximum available gas volume. |
| 12 | "Exit" softkey | Closes the "Gas Overview" and returns to the welding menu. |

#### 8.2.1.3 "Permanent Gas" softkey

The "Gas permanently on" softkey starts the permanent gas supply.

Pressing it again stops the permanent gas supply.

The permanent gas volume can be defined in the system settings or in the "Gas overview" under the entry "Permanent gas volume".

*For more information, see the chapter* Gas Overview [▶ 122] and System Settings [▶ 90].

#### 8.2.1.4 "Back" softkey

The "Back" softkey takes you directly back to the "Weld Mode" menu.

### 8.2.2 Motor control

The "Motor Control" softkey takes you from the "Weld Mode" menu to a submenu where the weld head rotation and cold wire functions can be controlled manually.

#### 8.2.2.1 "Motor" softkey

The "Motor" softkey opens a softkey submenu with all rotation functions of the weld head:

| MENU ITEM | FUNCTION |
|---|---|
| "Jog Rotor CCW" softkey | Rotates the weld head rotor counterclockwise. |
| "Jog Rotor CW" softkey | Rotates the weld head rotor clockwise. |
| "Home Position" softkey | Rotates the weld head rotor to the home position. |
| "Exit" softkey | Takes you back to the "Motor Control" softkey menu. |

#### 8.2.2.2 "Wire" softkey



The "Wire" softkey opens a softkey submenu with all cold wire functions of the weld head:

| MENU ITEM | FUNCTION |
|---|---|
| "Wire Reverse" softkey | Retracts the cold wire. |
| "Wire Forward" softkey | Advances the cold wire. |

| | | |
|---|---|---|
| *NOTICE!* |  | **The softkeys are only displayed if the selected weld head supports wire.** |

### 8.2.2.3 "Global Change" softkey



Pressing the "Global Change" softkey transfers the parameter value currently marked with the menu cursor to all subsequent levels and existing values are overwritten.

| | | |
|---|---|---|
| *NOTICE!* |  | **The function serves the user as a convenience function to adjust identical values across segments faster.** |

### 8.2.2.4 "Menu" softkey

Takes you back the the "Main Menu".

## 8.3 Testing

The "Test" softkey (1) takes you from the main menu to test mode.




*Illustration: Main menu, "Test" softkey*

In the test menu/test mode, you can start a simulation process and control all welding-related functions in order to check and adjust the sequence of the currently loaded welding program.

The entire welding process is started, but without:

- Arc ignition / welding current
- Welding gas flow
- Coolant flow

***NOTICE!***

**The deeper the RPM regulator is pressed, the higher the speed.**

**The machining behavior can be influenced by the speed.**

**When processing pipes, the speed can reduce or be influenced and can be adjusted with the RPM regulator.**

**The larger the tube diameter the lower the speed must be set, to gain optimal cutting conditions.**

Except for the above features, the test mode is identical to the "Welding" mode.

In test mode, the "Start" softkey (2) is highlighted in yellow.

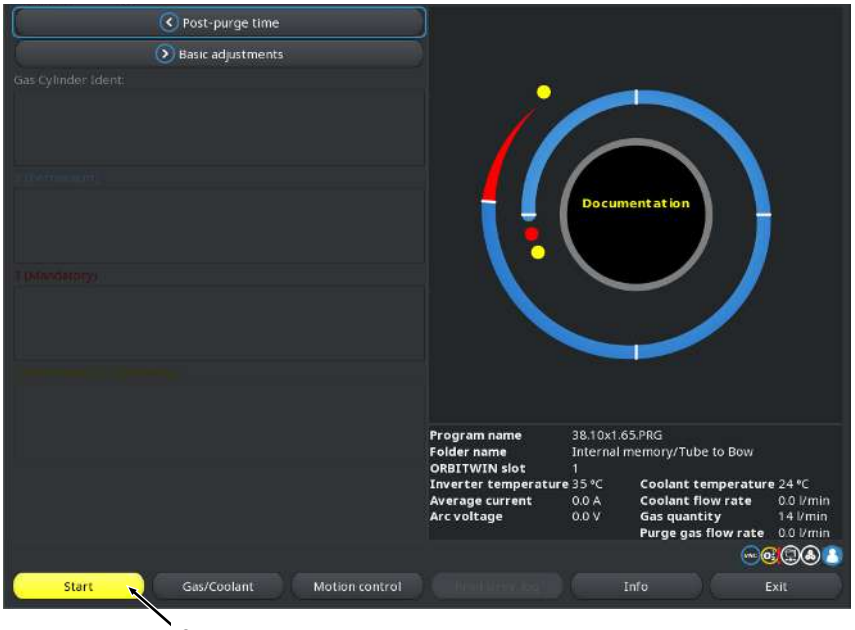



*Illustration: "Test" menu, "START" soft key yellow*

| ITEM | CONTROL ELEMENT | FUNCTION |
|---|---|---|
| 2 | "Start" softkey | Starts the simulation process without arc ignition, welding current, welding gas, and coolant flow, based on the parameters of the currently loaded welding program.<br>**NOTICE! The welding head type programmed in the welding program must match the type connected to the power source.**<br>*For all other functions, see chapter* Weld mode [▶ 118] |

## 8.4 Welding process

✓ The power source must be in welding mode.

► Pressing the "START" softkey starts the welding process and thus the coolant flow and the welding gas supply to the gas pre-flow.

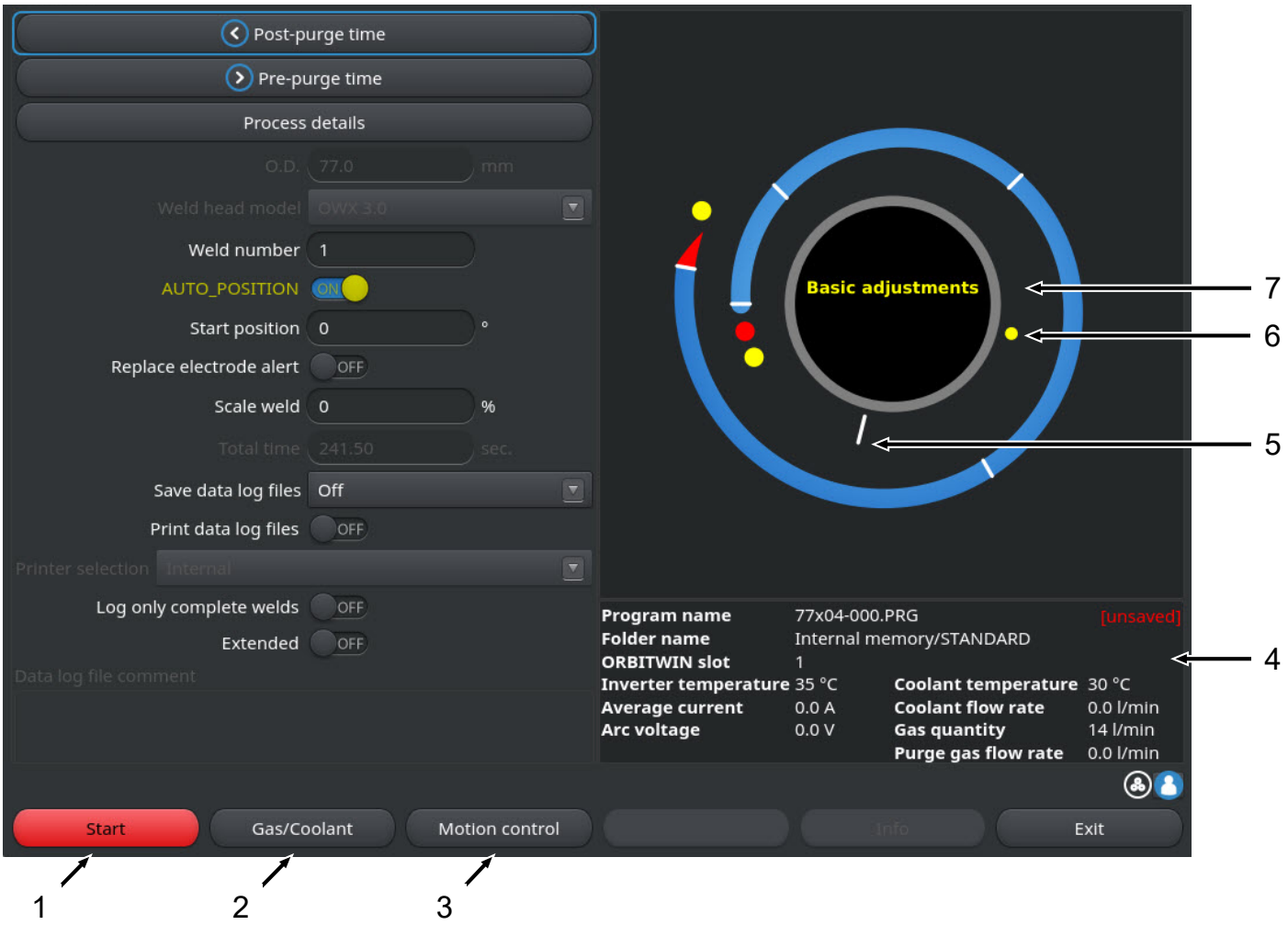



*Illustration: "Welding process" menu, "START" softkey red*

1. Once the gas pre-flow time has elapsed, the arc ignites and the weld pool forms.
2. Once the weld pool has formed, the rotor starts to rotate and the welding parameters for the first sector are set. At a sector transition, the welding parameters are adjusted to those of the following sector.
3. After reaching the end of the last sector, the reduction phase starts, during which the welding current is reduced linearly until the end current is reached.
4. When the end current value is reached, the arc extinguishes and the gas post-flow time begins.
5. At the end of the gas post-flow time, the welding gas and coolant flow is stopped and the welding process is complete.

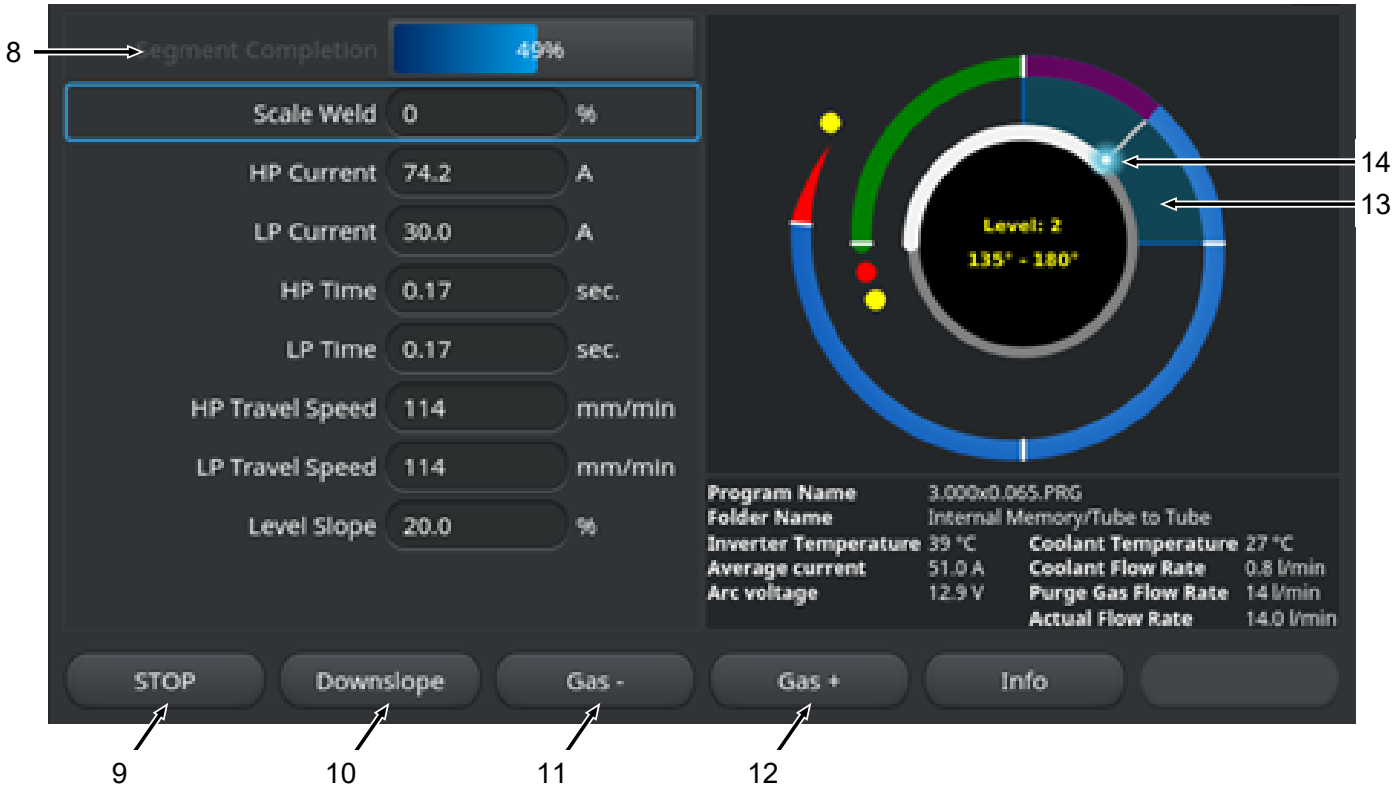



*Illustration: View during the welding process*

| POS. | SCREEN ELEMENT | FUNCTION |
|---|---|---|
| 1 | "START" softkey | Starts the welding process with welding gas and coolant flow based on the parameters of the currently loaded welding program. In welding mode, the "Start" softkey (2) is highlighted in red.<br>**NOTICE! The welding head type programmed in the welding program must match the type connected to the power source. If the welding program parameters are outside the welding head specifications, it is not possible to start the welding process.** |
| 2 | "Gas" softkey "Gas/Coolant" | The "Gas/Coolant" soft key opens a soft key submenu with all coolant and welding gas-related functions.<br>*See chapter* "Gas" softkey |
| 3 | "Manual Control" softkey | The "Manual Control" softkey opens a softkey submenu in which the welding head rotation and cold wire functions can be controlled manually.<br>*See chapter* Motor control |
| 4 | Welding program information field | The welding program information field provides an overview of current technical values such as coolant and gas flows, welding voltage, and temperatures. |
| 5 | Electrode position display | **NOTICE! Only with OWX series weld heads and the "Autoposition" function activated.**<br>Displays the current electrode position.<br>*See also* Basic adjustments [▶ 76] |

| POS. | SCREEN ELEMENT | FUNCTION |
|---|---|---|
| 6 | Handle position display | **NOTICE! Only with the OWX weld head and "Autoposition" function activated.**<br>Displays the current handle position.<br>*See also* Basic adjustments [▶ 76] |
| 7 | Process graphic | During the active welding process, the process graphic shows an overview of the current process progress and the current welding position on the workpiece. |
| 8 | Process progress | The process progress bar shows the progress of the currently active sector in %. |
| 9 | "Stop" softkey | Pressing the "Stop" softkey immediately terminates the entire welding process. |
| 10 | "Lowering" softkey | Pressing the "Lowering" softkey causes the power source to switch to the lowering phase of the welding program. |
| 11 | "Gas –" softkey | Reduces the welding gas flow rate by 1 l/min. |
| 12 | "Gas +" softkey | Increases the welding gas flow rate by 1 l/min. |
| 13 | Sector marker | Displays the currently active sector. |
| 14 | Animation graphic Welding position | Displays the current welding position. |

***NOTICE!***  **The parameters displayed in the welding process can be adjusted during the welding process.**

# 9 Storage and decommissioning

► Before storage or decommissioning, drain the coolant tank. *See chapter* Drain coolant [▶ 135].

The following storage conditions must be observed:

- Storage only in enclosed spaces
- Do not store near materials that may cause corrosion.
- Temperature range -20 to +55 °C
- Relative humidity up to 90 % at 40 °C

The operator obligations for proper disposal in chapter Environmental protection and disposal [▶ 10] and the following safety note must be observed:

| | | |
|---|---|---|
| **CAUTION** |  | **Risk of injury from improper disassembly**<br>► The device may only be opened by a qualified electrician |

# 10 Special commands

## 10.1 Keyboard entry of special commands

Special commands can be entered in the power supply software via the external USB keyboard.

To do this, enter the following key combinations while holding down the "Alt" key:

**VER** ► Display the software version.

**SER** ► Display the service screen.

**SLO** ► Switches the slope representation in the welding procedure from % to seconds.

**RES** ► Restarts the software

**BMP** ► Creates an image file of the current screen in BMP format. Prerequisite: USB data storage media must be plugged in.

## 10.2 "Special Commands" softkey

US Reset

If a connected USB peripheral does not work as expected, you can try to fix the error via a USB reset without having to restart the power supply.

► In the main menu, press and hold the "Menu" softkey button for at least 5 seconds.

Reset information messages

► Press and hold the "Info" softkey button.

# 11 Service and maintenance

## 11.1 Service screen

See chapter Service Screen [▶ 115].

## 11.2 Software information

*See chapter* Info [▶ 116], What's new [▶ 116] *and* Changelog [▶ 116].

## 11.3 Status-LED

On the rear side of the machine there are three status LEDs (pos. 34):




*Illustration: LED on rear side Smart Welder*

| LED | STATE | STATUS |
|---|---|---|
| 1 | ON | System OK |
| 2 | ON | Coolant pump ON |
| | OFF | Coolant pump OFF |
| 3 | Flashing | Coolant flow active |
| | OFF | No coolant flow |

## 11.4 Cooling unit

### 11.4.1 Coolant

***NOTICE!***

- ► Operate the device only with the OCL-30 coolant by Orbitalum Tools GmbH.
- ► Mixing with other liquids or use of other coolants can lead to damage.
- ► Regularly check coolant level.
- ► Always completely replace coolant.
- ► Do not allow coolant to escape into the sewage system or waters.
- ► The coolant must be disposed according to local regulations and taking into account the coolant safety data sheet.
- ► Immediately clear up any spilled coolant and dispose correctly.

## 11.4.2 Fill coolant tank

***NOTICE!***

**Check and, if necessary, refill the coolant level before welding.**

► Ensure that the power supply is not connected to the mains network during refilling.

***NOTICE!***

**Cooling is only ensured with a full coolant tank.**

► Please adhere to the following steps, otherwise the pump could be damaged by running dry.







Procedure:

1. Disconnect power source from mains network.
2. Place the power source with the side of the coolant tank on a table edge.
3. Unscrew the cap (1) of the coolant tank from the filler neck (2).
4. Fill coolant OCL-30 up to a maximum of the “max.” mark of the level indicator (3).

***NOTICE!***

► Never allow the coolant level to drop below the “min.” mark of the level indicator.

5. Screw the cap of the coolant tank onto the filler neck (2).

## 11.4.3 Drain coolant

Use during coolant replacement and when draining the tank during extended machine downtime.

Preparation

1. Connect the drain hose (included in scope of delivery) to the blue coolant connection (1).
2. Hold the open end of the hose in a collection container (min. 3 liters).



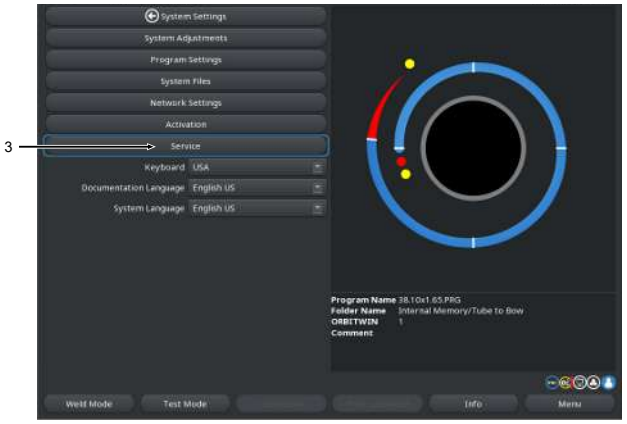
Procedure

Carry out the following steps in the menu of the welding power supply:

► In the main menu press the “System Settings” button (2).




► Press the “Service” button (3).




► Press the “Coolant Pump On” button (4).

⇨ Pump out process begins and message “Coolant is being pumped out” appears.




► Check level indicator and end pump out process via the “Cancel” (5) message button when the tank is empty.



***NOTICE!***

**Pump out process is limited to about 30 seconds.**

**The pump speed audibly increases when the pump is idling.**

- ► Immediate stop pump out process.
- ► If no coolant discharges for more than 10 seconds of pumping, stop pump out process in order to avoid pump damage.
- ► For complete draining, slightly lift the rear of the power source.
- ► Repeat the process until the coolant tank is completely empty.
- ► To disconnect the drain hose from the coolant connection, slightly push back the blue ring of the connection.

## 11.5 Motor calibration

During motor calibration, the rotation speed of the welding head is measured and compared with the target speed. A deviation can be compensated by the software.

If several weld heads of the same type are used, it is recommended that you perform a motor calibration each time the weld head is changed.

**CAUTION**

**Coolant leakage during weld head change**

Irritation of skin, eyes and respiratory tract possible on contact with coolant.

- ► When changing the weld head, switch off the coolant pump and power supply.

***NOTICE!***

**Motor calibration is only possible for weld heads with limit switches. Not for MH series weld heads.**

If several weld heads of different types or if all of the same weld heads are identical, this is not necessary because the machine stores one deviation per head type.

*See also* Motor calibration [▶ 109] in chapter Settings.

Preparation

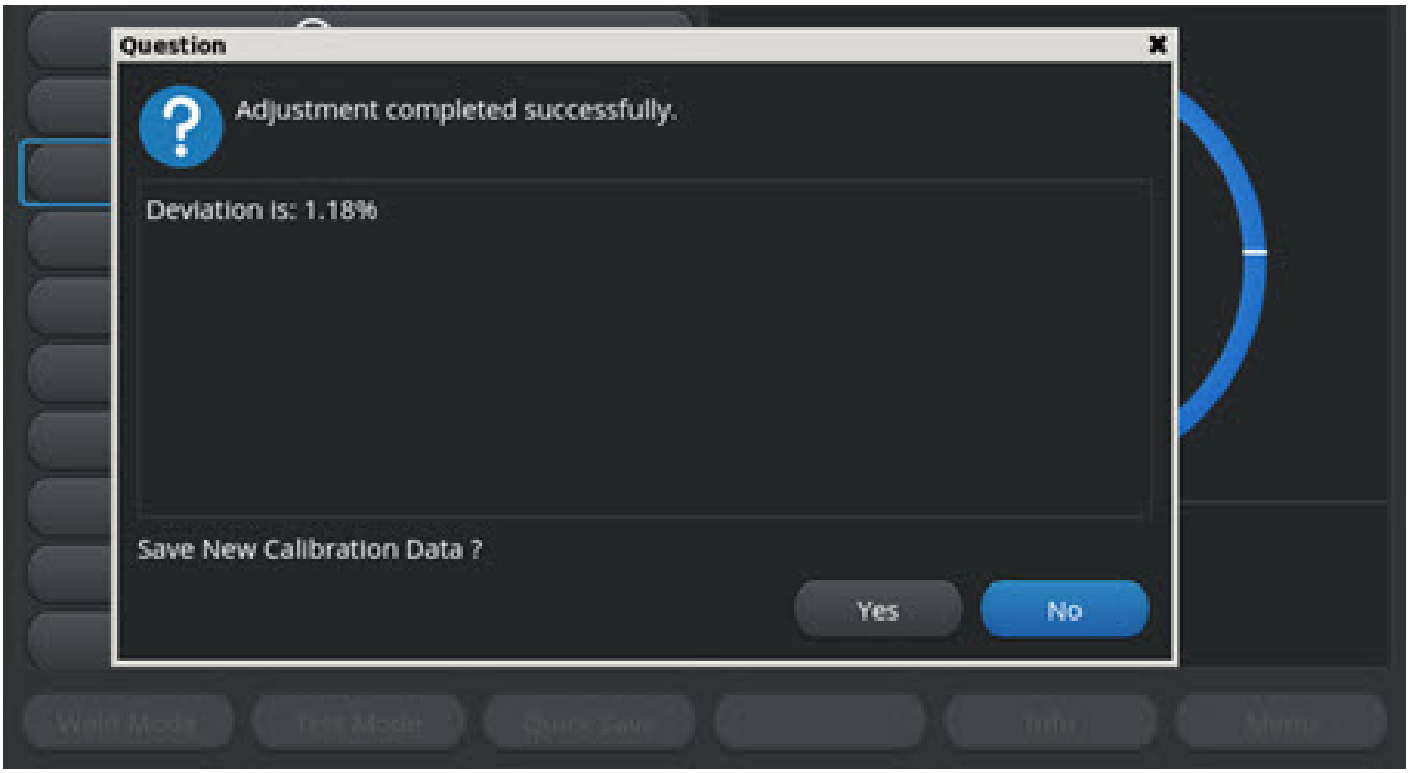
► Connect the weld head to the power supply- see the operating instructions for the weld head.

Procedure

1. Press the "Motor Calibration" button.
   ⇨ The weld head rotor moves to the home position and then performs a complete revolution. The required time is measured and compared with the setpoint. The deviation is displayed as a percentage. Properly calibrated heads generally mean deviations of +/- 2 %.



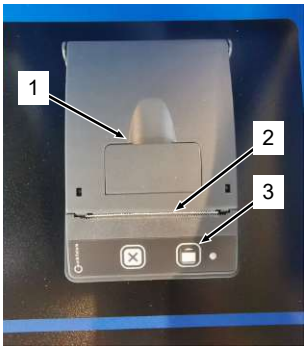

⇨ A message appears: “Should the new calibration data be saved?”




2. If deviation is less than 1%: Confirm the message with “No”.
3. If deviation is greater than 1%: Confirm the message with “Yes”.
   ⇨ The deviation value determined is accepted.
   ⇨ The machine knows the error of the currently connected weld head and compensates for it in the welding process.

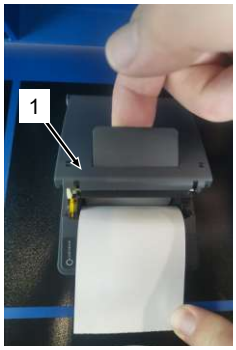
# 11.6 Printer

## 11.6.1 Replacing the roll of paper










1. Flip up the printer cover (1).
2. Align the new paper roll (4) as shown and unroll the paper far enough so that it protrudes from the cover slot (2).
3. Hold the beginning of the paper above the cover slot (2) and close the printer cover (1).
4. Tear off excess paper by pulling upwards.

⇨ The paper roll is ready for use.

► If the tear-off edge extends into the printer interior, press button (3) to trigger paper feed. When enough paper protrudes from the cover slot to grip it, release button (3).

⇨ The printer paper can now be torn off again upward.

# 11.7 Service and customer support

## 11.7.1 Customer support

Our products are extremely robust and reliable. To ensure the performance in the long run, the recommended service and maintenance intervals should be performed regularly.

We offer competent service via branches as well as our worldwide network of authorized partners. These are carefully selected and are regularly trained by our experts to always be up-to-date with regard to products and technologies.

All service and maintenance work is performed with great care by qualified and motivated employees. They analyze your situation to find the best long-term solution.

Service contact at Orbitalum GmbH Singen:

E-mail: customerservice@orbitalum.com

Phone: +49 (0) 77 31 792-786

If you require service, please download our "Service Form" from the Orbitalum home page at Service & Repairs and enclose the completed form with the shipment of the affected goods.

## 11.7.2 Technical support & application engineering

Do you have questions about the operation of your Orbitalum system or do you have a technical problem?

Our experienced and qualified product and application specialists will support you in the correct selection and application of products.

In order to process your request as efficiently as possible, please provide us with the serial number of the equipment concerned when contacting us. This way we will have an initial overview.

- Handling of technical inquiries and problems

- Systematic fault diagnosis and correction
- Support in the selection of the right spare parts
- Support during operation, commissioning and test runs
- Support by telephone, by e-mail and on request also at your facility

E-mail: tech.support@orbitalum.com

Phone: +49 (0) 77 31 792-764

### 11.7.3 Operator and service training

Our specialist knowledge is imparted by our own experts in small groups in our modern training rooms in Singen. This makes it possible to respond to each individual participant and address specific questions. We will gladly conduct training at your facility upon request.

At the end of each training you will receive a certificate of attendance and a certificate confirming that you have acquired the required knowledge.

Operators from the plant, container and pipeline construction industries are particularly suitable as target groups for the various training courses.

E-mail: training@orbitalum.com

Phone: +49 (0) 77 31 792-741

# 11.8 Maintenance and care

- Do not use lubricants or sliding agents.
- If the surfaces are soiled, use only residue-free cleaning agents for cleaning.

**NOTICE! The following instructions for care depend, if not stated otherwise, strongly on the usage of the welding power supply.**

## 11.8.1 Maintenance schedule

| INTERVAL | ACTIVITY |
|---|---|
| **Daily** | ► Check the coolant in the tank and, if necessary, top up. |
| | **NOTICE! If welding heads are changed frequently, more frequent refilling of coolant may be necessary.** |
| | 1. After changing the welding head in “Welding” or “Test” mode, press the softkey “Gas/ Coolant” to flush out any air pockets in the hose package if necessary. Repeat the process if required. *See chapter* Weld mode [▶ 118] |
| | 2. Ensure that the coolant tank is completely filled with coolant and refill if necessary. |
| **Monthly** | ► Clean the machine fully from the outside. |
| | ► Check the power cable, power plug and machine for mechanical damage. |
| | ► Recommendation: Perform motor calibration even if the welding heads appear to run without faults. *See chapter* Motor calibration [▶ 137] |
| **Every six months** | ► Replace the coolant completely. *See chapter* Cooling unit [▶ 134] |
| **Annually** | ► Have inverter calibration carried out by the Orbitalum Service. |
| | ► Have the BGV-A3 inspection carried out by Orbitalum or a certified service center. |

# 12 Upgrade options

Optional upgrade options allow the functionality of the power source software to be easily expanded.
Activation is performed using an alphanumeric activation code (“activation key”) that can be entered in the system settings.

*See chapter* Activation [▶ 32]

In the operating instructions functions that require upgrades are marked with the respective upgrade icon.

*See chapter* Legend [▶ 5]

**UPGRADE Connectivity LAN/IoT/VNC (Code 850080001)***

Software upgrade to activate the following capabilities:

- Exchange of data from welding data logs and welding procedures between power supplies and LAN network drives.
- Integration of the power supply into an Industry 4.0/IoT environment via the MQTT protocol.
- Control of the power supply over VNC via PC, tablet, mobile device.
- Input of control commands via QR code scanner.

# 13 External interface X13

**External interface X13 – Control via higher-level systems**

The external interface **X13** allows the power source to be connected to a supervisory control system (e.g., PLC or robot controller). This interface enables remote control of basic functions and provides status feedback.

**Description**

The X13 interface is designed as **a 24 V logic interface** and offers digital inputs and outputs as well as optional analog signals.

**Pin assignment**

| PIN | SIGNAL | FUNCTION |
|---|---|---|
| 26 | +24 V | Power supply for control signals |
| 16 | GND | Ground |
| 18 | Start/Stop key_X13 | Start/Stop welding process |
| 9 | SpareIn_X13 (gas test) | Trigger gas test |
| 17 | Ready_X13 | Indicates “Ready to weld” |
| 7 | InWeldCycle_X13 | Indicates “Welding cycle active” |
| 8 | FaultAbort_X13 | Indicates “Fault during welding” |
| 24 | HeadHomed_X13 | Indicates “Weld head in home position” |
| 25 | ArcOn_X13 | Indicates “Arc active” |

**Functionality**

- **Start/Stop**: Pin 18 allows starting or stopping the welding process.
- **Gas Test**: Pin 9 triggers a gas test.
- **Status signals**: Pins 7, 8, 17, 24, and 25 provide feedback on the current machine state.

**Electrical Characteristics**

- Logic levels:
- Power supply: +24 V must be provided by the supervisory system.

**Application example**

A PLC can use the X13 interface to:

- Start the welding process when the system is ready.
- Trigger a gas test before welding begins.
- Monitor “Ready” and “Welding cycle active” signals to synchronize operations.

**NOTICE! Detailed description in the "Interface Control Document" starting on page 45! Available from Tech Support:**

Email: tech.support@orbitalum.com

Tel: +49 (0) 77 31 792-764

# 14 Accessories

| ITEM | CODE |
|---|---|
| USB WLAN stick, ORBITALUM | 850 030 015 |
| Barcode/QR code scanner MW/SW/PW | 850 030 005 |
| ORBIMAT remote control with 7.5 m cable | 875 050 001 |
| Transport case Smart Welder | 850 030 020 |
| ORBITWIN SW changeover unit | 853 000 001 |
| ORBICAR S cart | 884 000 001 |
| ORBICAR W travel carriage with ext. Cooling | 884 000 002 |
| ORBICOOL Active SW | 889 000 015 |
| Dual pressure regulator ARGON | 888 000 001 |
| Dual pressure regulator ARGON/HYDROGEN | 888 000 002 |
| TIG hand torch with 4.0 m hose package | 890 013 010 |
| Ground cable | 811 050 005 |
| ORBmax residual oxygen meter | 882 000 002 |

*Subject to change.*
*For detailed information, see product catalog, PDF download links:*

https://www.orbitalum.com/de/download.html

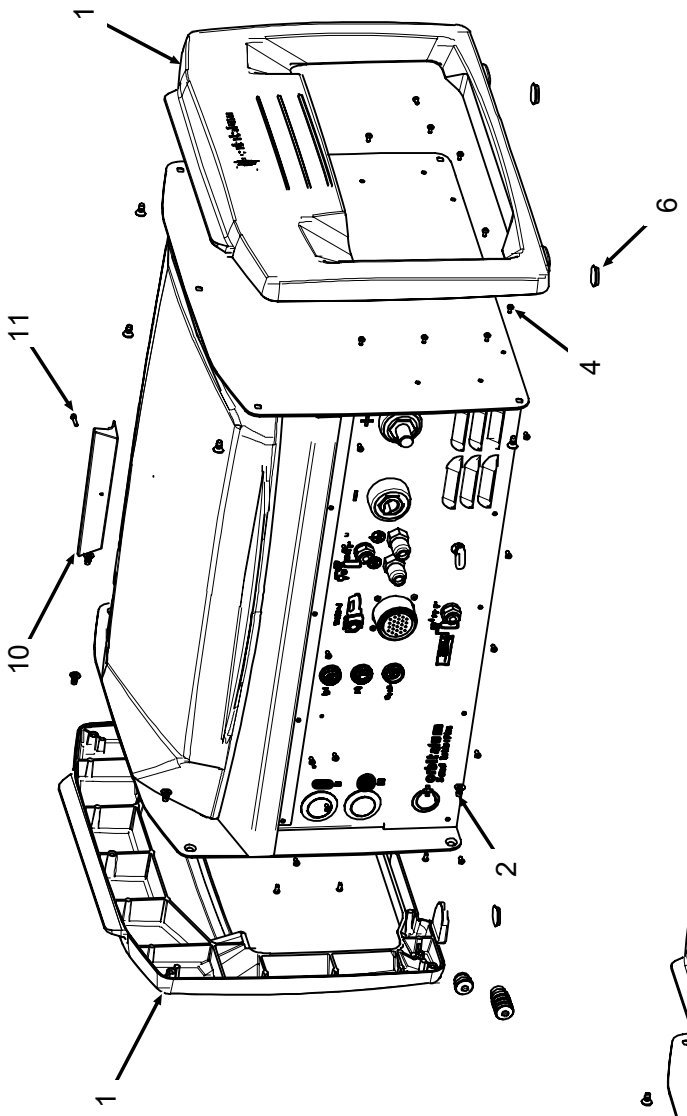
# 15 Consumables

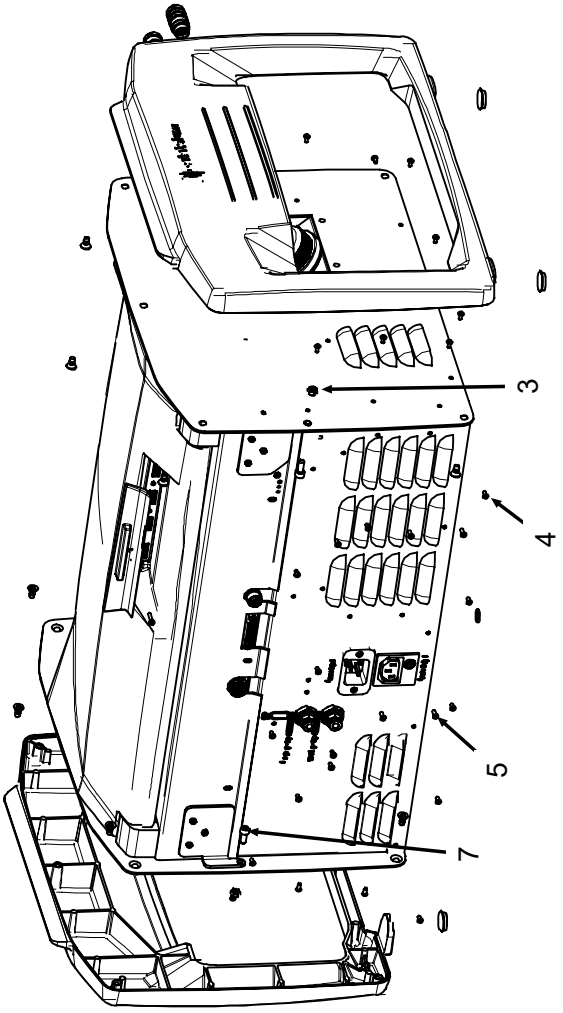
Available as an option.

| ITEM | CODE |
|---|---|
| Coolant OCL-30 (3.5 L canister) | 850 030 010 |
| Thermal paper rolls, pack of 3 | 854 030 001 |

# 16 ERSATZTEILLISTE / SPARE PARTS LIST

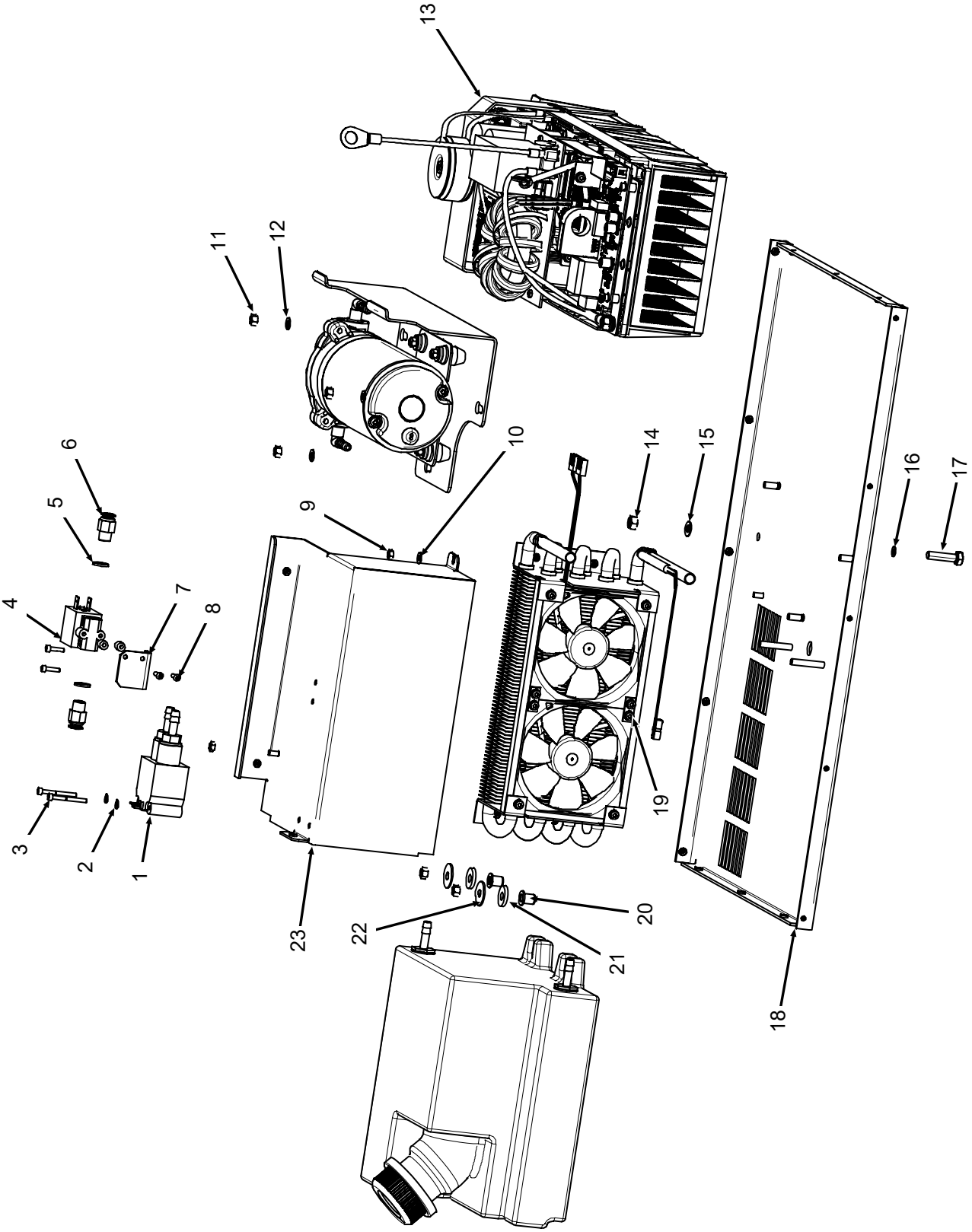
## 16.1 Maschine | Machine



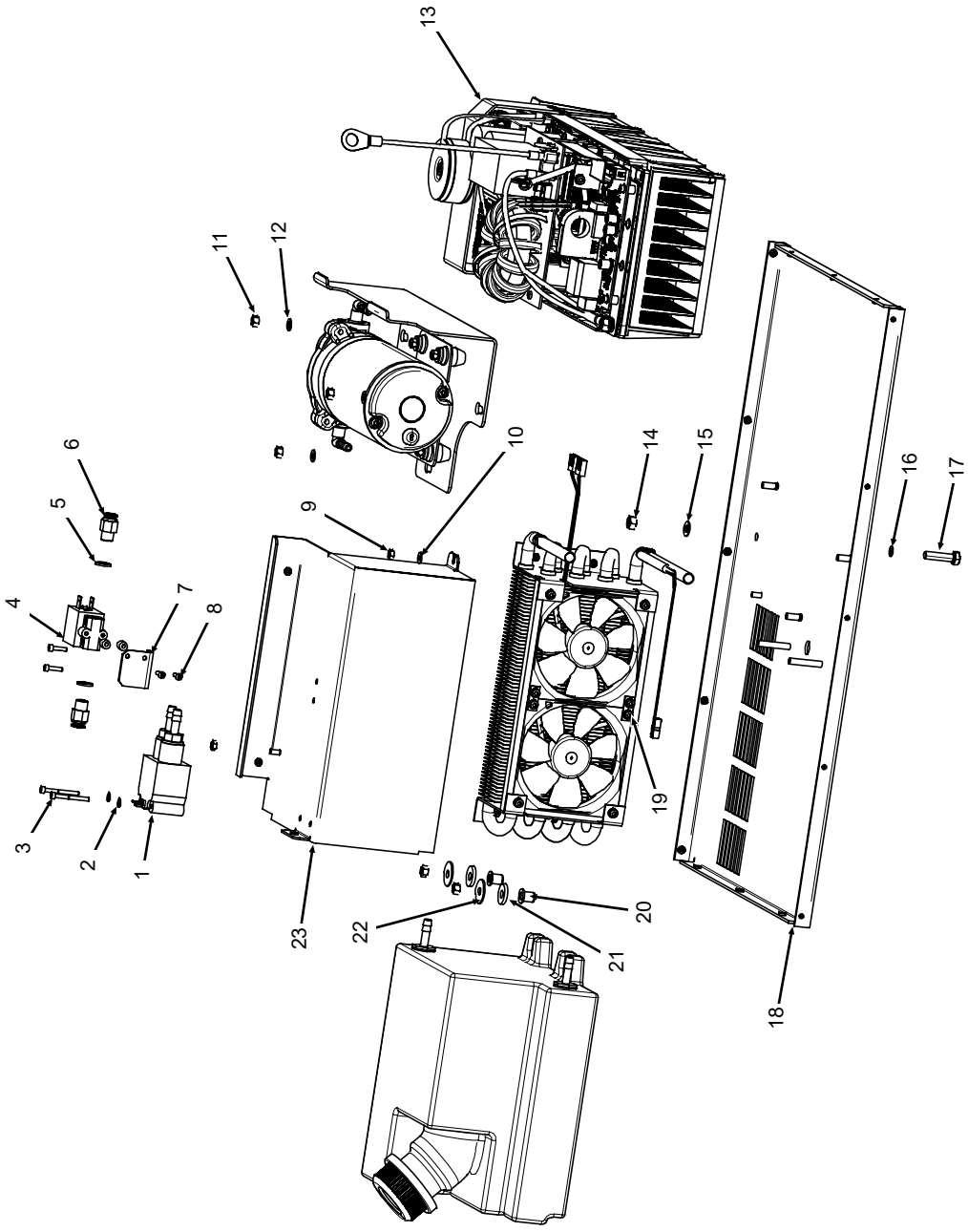



| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 020 171 | 2 | Seitenrahmen SW+<br>Side frame SW+ | 11 | 305 501 051 | 1 | Zylinderschraube ISO4762-M2.5x12-A2<br>Cylinder screw ISO4762-M2.5x12-A2 |
| 2 | 850 020 136 | 10 | Senkschraube DIN7500M-M5x10-ST-TX<br>Countersunk screw DIN7500M-M5x10-ST-TX | | | | |
| 3 | 501 607 310 | 2 | Sechskantmutter ISO10511-M5-05-ZN<br>Hexagon nut ISO10511-M4-05-ZN | | | | |
| 4 | 307 001 104 | 46 | Linsenschraube ISO7380-M3x6-A2-TX<br>Oval-head screw ISO7380-M3x6-A2-TX | | | | |
| 5 | 307 001 129 | 4 | Linsenschraube ISO7380-M3x10-A2-TX<br>Oval-head screw ISO7380-M3x10-A2-TX | | | | |
| 6 | 850 020 122 | 4 | Gummifuß<br>Rubber foot | | | | |
| 7 | 305 501 089 | 2 | Zylinderschraube ISO4762-M5x12-A2<br>Cylinder screw ISO4762-M5x12-A2 | | | | |
| 8 | 850 050 004 | 1 | Blindstecker Fernbedienungsbuchse SW<br>Remote control socket, blind plug SW | | | | |
| 9 | 850 010 020 | 1 | Schutzkappe Frontplattenbuchsen ORB/BUP<br>Protection cap front panel sockets SW | | | | |
| 10 | 850 020 159 | 1 | Abdeckung Smart-Hub-Platine<br>Smart hub circuit board, cover | | | | |

## 16.2 Gehäuse | Housing

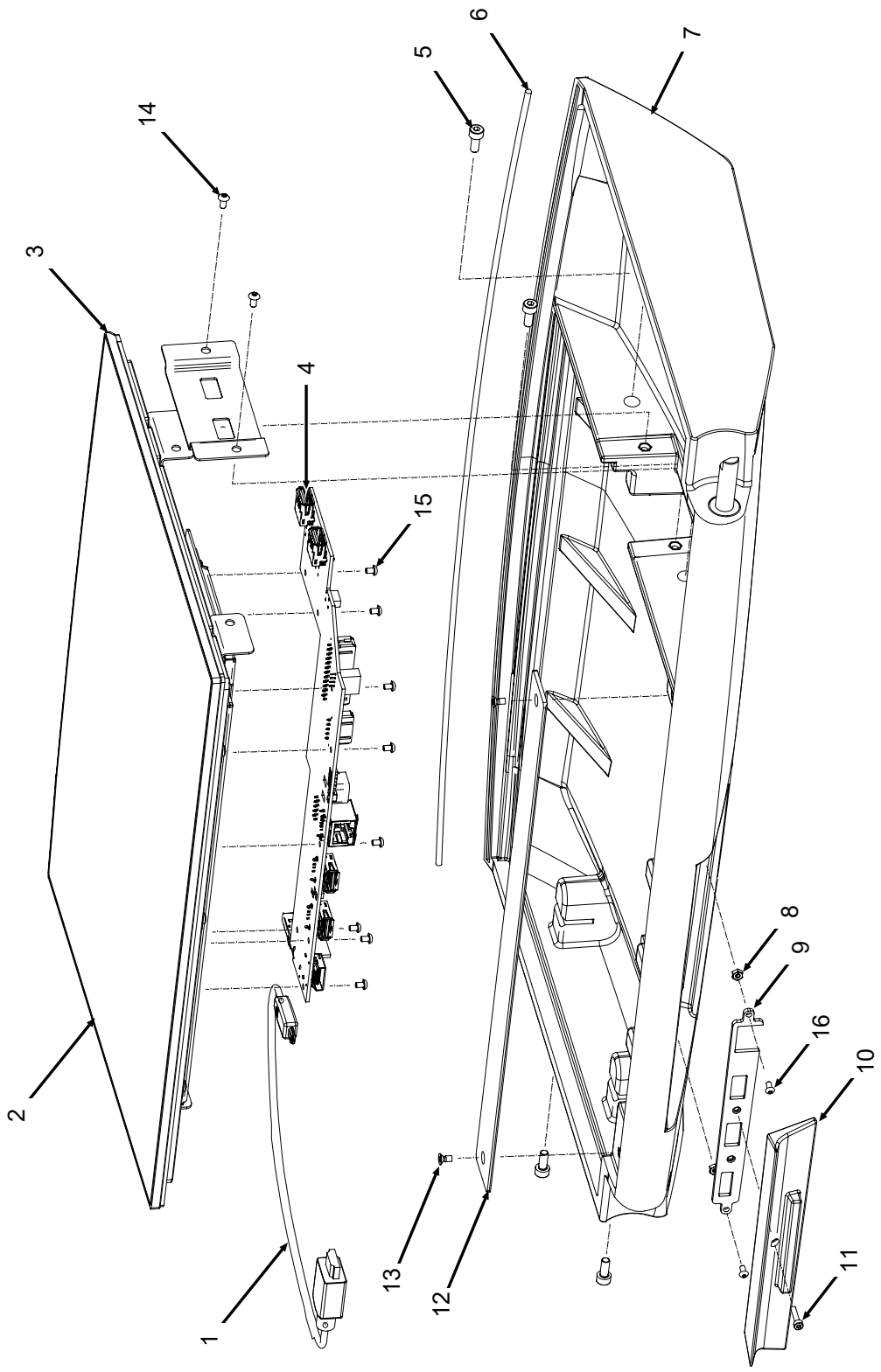


| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 050 005 | 1 | Wasserflusssensor MW/SW, kpl.<br>Water flow sensor MW/SW, cpl. | 11 | 500 602 310 | 5 | Sechskantmutter ISO4032-M5-A2<br>Hexagon nut ISO4032-M5- |
| 2 | 542 500 325 | 2 | Scheibe DIN125-ISO7089-d3.2-A2<br>Washer DIN125-ISO7089-d3.2-A2 | 12 | 542 500 316 | 3 | Scheibe DIN125-ISO7089-d5.3-A2<br>Washer DIN125-ISO7089-d5.3-A2 |
| 3 | 305 501 056 | 2 | Zyl.schr. ISO4762-M3x30-A2<br>Cyl. scr. ISO4762-M3x30-A2 | 13 | 850 050 500 | 1 | Schweißstrominverter OSI220<br>Weld current inverter OSI220 |
| 4 | 875 012 029 | 1 | Magnetventil 24 VDC<br>Magnet valve 24 VDC | 14 | 500 602 311 | 1 | Sechskantmutter ISO4032-M6-A2<br>Hexagon nut ISO4032-M6-A2 |
| 5 | 860 020 081 | 2 | Dichtring, Typ 0 - 1/8"<br>Seal ring, type 0 - 1/8" | 15 | 871 020 035 | 1 | Sperrkantscheibe A4 K für Gewinde M6<br>Retaining washer A4 K for thread M6 |
| 6 | 860 020 015 | 2 | Steckverschraubung, SL 6 mm, 1/8"<br>Push-in fitting, SL 6 mm, 1/8" | 16 | 542 500 320 | 1 | Scheibe DIN125-ISO7089-d6.4-A2<br>Washer DIN125-ISO7089-d6.4-A2 |
| 7 | 871 001 010 | 1 | Haltewinkel Magnetventil<br>Angle bracket magnet valve | 17 | 300 000 215 | 1 | Sechskantschraube EN24017-M6x25-A2<br>Hexagon screw EN24017-M6x25-A2 |
| 8 | 307 001 131 | 4 | Linsenschr. ISO7380-M3x12-TX<br>Oval-h. scr. ISO7380-M3x12-A2-TX | 18 | 850 020 102 | 1 | Grundplatte SW<br>Base plate SW |
| 9 | 500 602 309 | 2 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 | 19 | 850 050 002 | 1 | Gewindetülle 1/4 inch/6 mm Rechtsgewinde<br>Threaded nozzle 1/4 inch/6 mm right-hand thread |
| 10 | 542 500 318 | 1 | Scheibe DIN125-ISO7089-d4.3-A2<br>Washer DIN125-ISO7089-d4.3-A2 | 20 | 850 020 121 | 2 | Bundbuchse<br>Flange bushing |


13
11
12
10
14
15
16
17
6
5
9
4
7
8
19
3
2
1
23
22
20
21
18

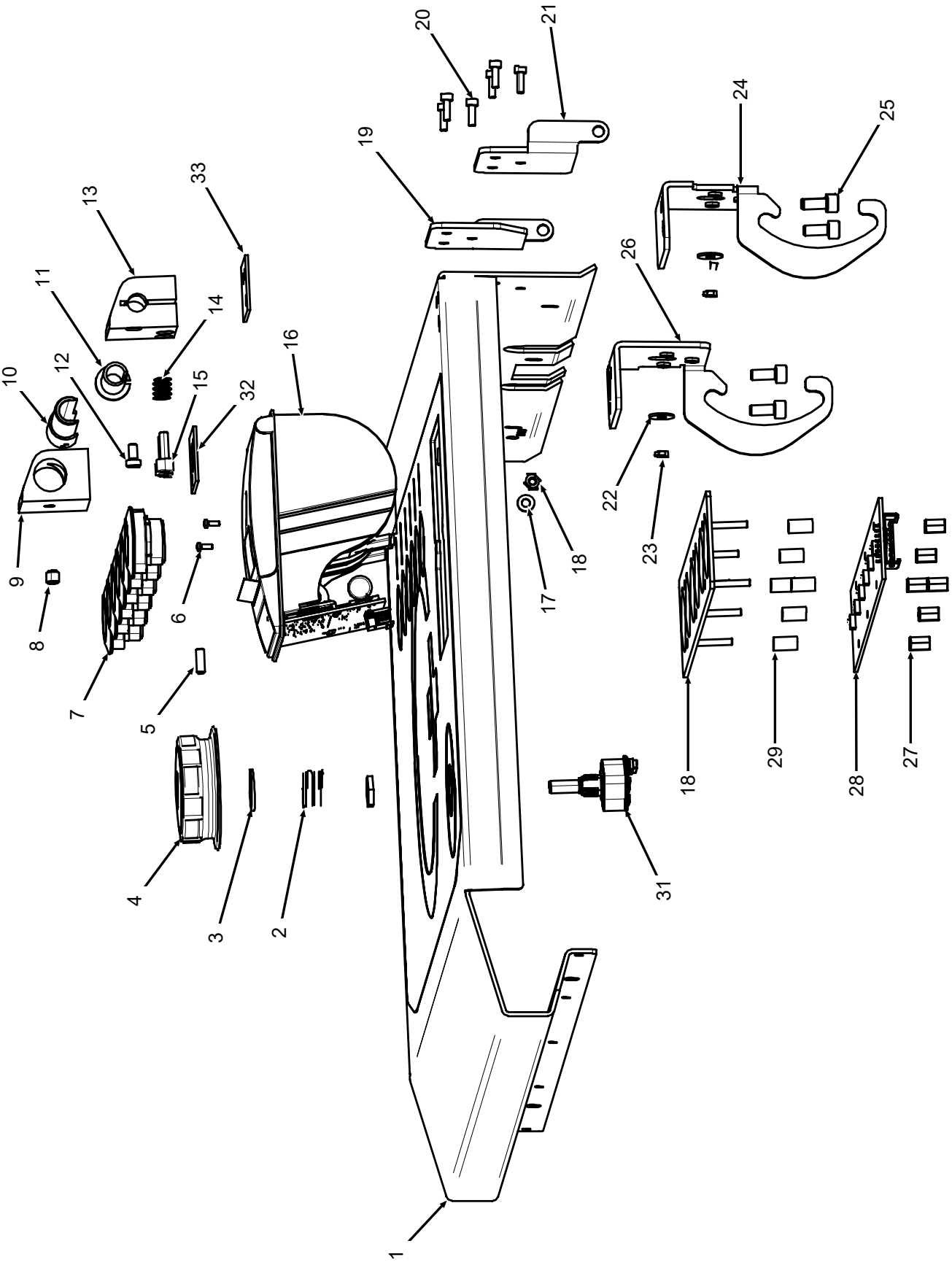
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 21 | 850 020 125 | 2 | Gummischeibe M6<br>Rubber washer M6 |
| 22 | 542 520 315 | 2 | Kotflügelscheibe 6.4x20 A2<br>Fender washer 6.4x20 A2 |
| 23 | 850 020 218 | 1 | Montageblech, Wärmetauscher SW<br>Mounting plate, heat exchanger SW |
| - | 850 040 032 | 1 Set | Schlauchset, blau, Kühlung ORBIMAT SW, bestehend aus:<br>• 1 x 350 mm Kühlflüssigkeitsschlauch, blau<br>• 1 x 300 mm Kühlflüssigkeitsschlauch, blau<br>• 1 x 250 mm Kühlflüssigkeitsschlauch, blau<br>• 2 x L-Stück Pumpenanschluss<br>• 2 x 1-Ohr-Klemme Einlagering 9.6-11.3mm 11.8<br><br>Hose set, blue, cooling ORBIMAT SW<br>comprising:<br>• 1 x 350 mm coolant hose, blue<br>• 1 x 300 mm coolant hose, blue<br>• 1 x 250 mm coolant hose, blue<br>• 2 x L piece pump connection<br>• 2 x 1-ear clamp insert 9.6-11.3mm 11.8 |

## 16.3 Gehäuseoberteil | Housing top

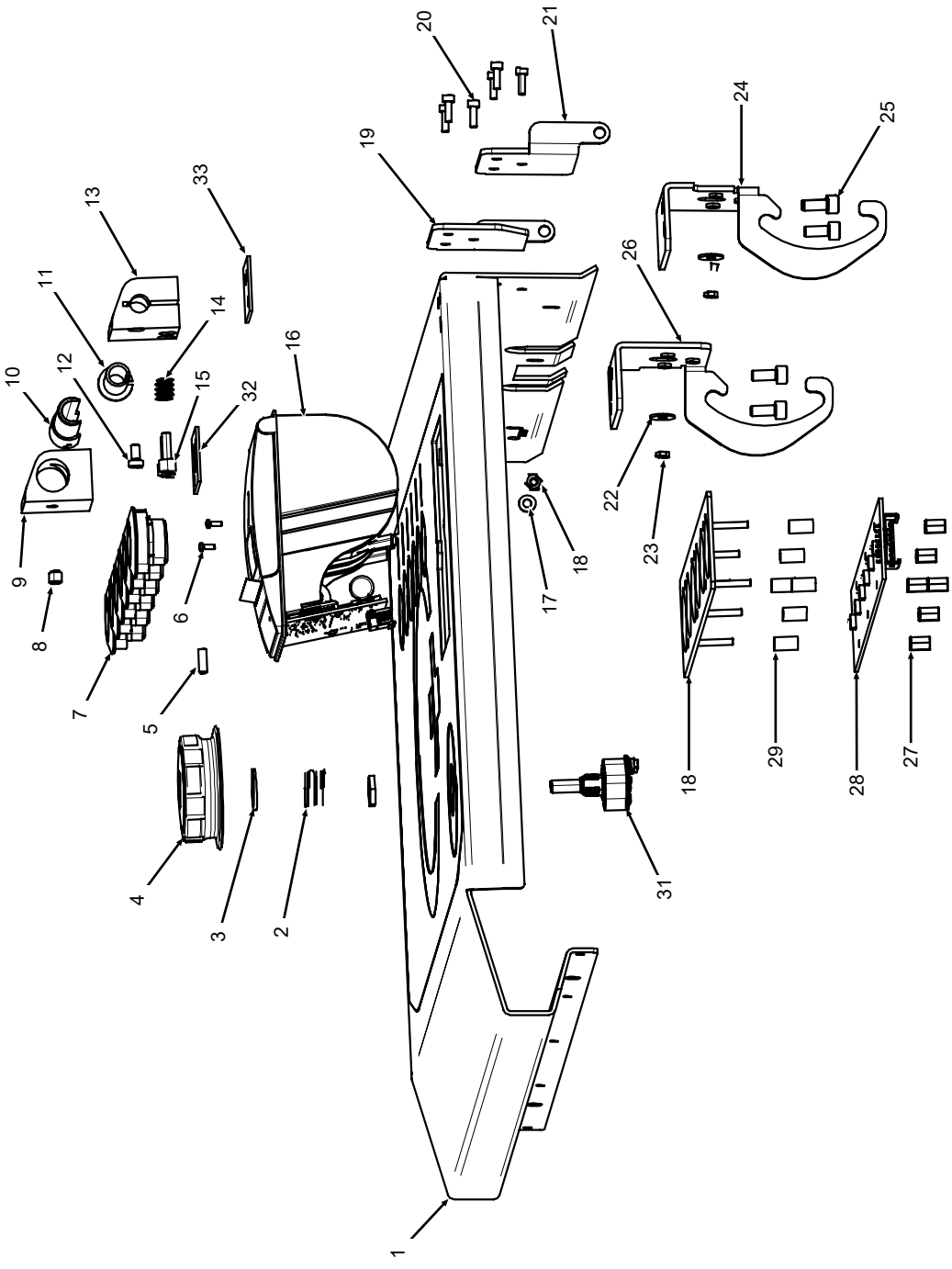


| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 040 004 | 1 | HDMI-Leitung L0.45; HDMI-HDMI Mikro<br>HDMI cable L0.45; HDMI-HDMI micro | 11 | 305 501 051 | 1 | Zylinderschraube ISO4762-M2.5x12-A2<br>Cylinder screw ISO4762-M2.5x12-A2 |
| 2 | 850 050 010 | 1 | Display Rechnereinheit SW, kpl.<br>Display processor unit SW, cpl. | 12 | 850 020 158 | 1 | Deckel, Abdeckleiste, Gehäuse SW<br>Cover, cover strip, housing SW |
| 3 | 850 020 156 | 1 | Blende, USB-Anschlüsse SW/PW<br>Cover, USB ports SW/PW | 13 | 305 501 011 | 2 | Senkschraube ISO14581-M3x6-A2-TX<br>Counters.k screw ISO14581-M3x6-A2-TX |
| 4 | 850 010 005 | 1 | Platine, Smart-Hub SW/PW<br>Circuit board, smart hub SW/PW | 14 | 307 001 128 | 2 | Linsenschraube ISO7380-M4x10-A2-TX<br>Oval-head screw ISO7380-M4x10-A2-TX |
| 5 | 305 501 067 | 4 | Zylinderschraube ISO4762-M4x10-A2<br>Cylinder screw ISO4762-M4x10-A2 | 15 | 307 001 075 | 8 | Linsenschraube ISO7380-M2.5x6-A2<br>Oval-head screw ISO7380-M2.5x6-A2 |
| 6 | 850 020 164 | 0,8 m | Rundschnur EPDM 3 mm<br>Round cord EPDM 3 mm | 16 | 307 001 075 | 2 | Linsenschraube ISO7380-M2.5x6-A2<br>Oval-head screw ISO7380-M2.5x6-A2 |
| 7 | 850 020 151 | 1 | Schwenkhaube SW V2<br>Swivel hood SW V2 | | | | |
| 8 | 500 602 307 | 2 | Sechskantmutter ISO4032-M2.5-A2<br>Hexagon nut ISO4032-M2.5-A2 | | | | |
| 9 | 850 020 155 | 1 | Blende, USB/HDMI/LAN Anschl. SW V2<br>Cover, USB/HDMI/LAN connect. SW V2 | | | | |
| 10 | 850 020 159 | 1 | Smart-Hub-Platine, Abdeckung<br>Smart hub circuit board, cover | | | | |

## 16.4 Deckel | Cover

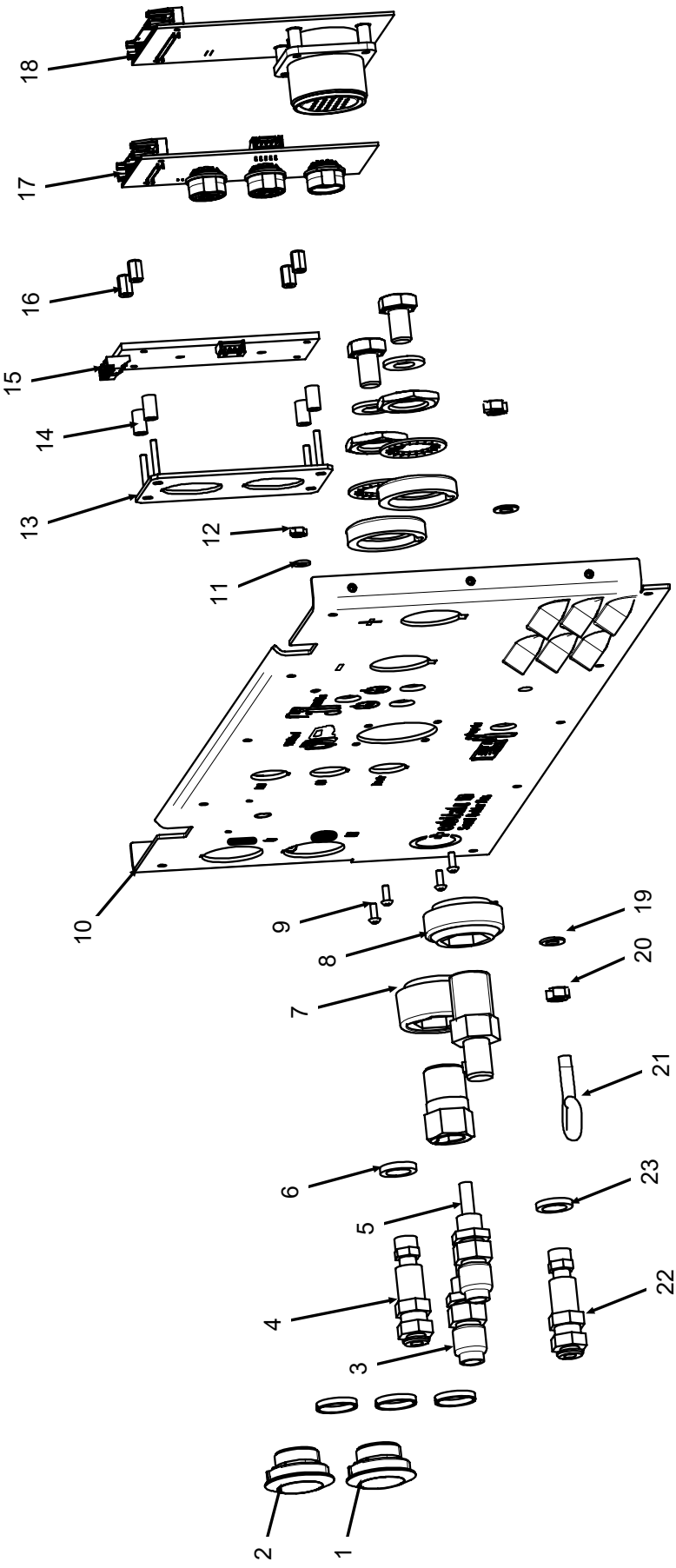


| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 020 100 | 1 | Deckel SW+<br>Cover SW+ | 13 | 850 020 110 | 1 | Lagerblock, rechts, Gehäuse SW<br>Bearing block, right-hand, housing SW |
| 2 | 790 052 409 | 1 | Druckfeder<br>Pressure spring | 14 | 850 020 119 | 8 | Tellerfeder DIN2093 8x4.2x0.4<br>Cup spring DIN2093 8x4.2x0.4 |
| 3 | 872 001 039 | 1 | Unterlegscheibe d 6 d 20 h 1.5<br>Washer d 6 d 20 h 1.5 | 15 | 850 020 116 | 2 | Zylinderschraube M4x0.35<br>Cylinder screw M4x0.35 |
| 4 | 850 020 099 | 1 | Betätigungsknopf, Drehsteller SW+<br>Button, rotary actuator SW+) | 16 | 854 010 053 | 1 | Einbaudrucker, Thermo V2<br>Built-in printer, thermal V2 |
| 5 | 445 005 244 | 1 | Gewindestift DIN913-M4x12-A2<br>Grub screw DIN913-M4x12-A2 | 17 | 871 020 033 | 1 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 6 | 850 020 162 | 2 | Linsenschraube DIN7500 M2x6<br>Oval-head screw DIN7500 M2x6 | 18 | 500 602 309 | | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 7 | 850 010 011 | 6 | Softkeytaster VA, blau<br>Softkey VA, blue | 19 | 850 020 132 | 1 | Scharnier außen links V2 SW<br>Hinge outside left V2 SW |
| 8 | 445 005 223 | 1 | Gewindestift DIN913-M6x6-A2<br>Grub screw DIN913-M6x6-A2 | 20 | 305 501 100 | 6 | Zylinderschraube ISO4762-M3x10-A2<br>Cylinder screw ISO4762-M3x10-A2 |
| 9 | 850 020 108 | 1 | Lagerblock, links, Gehäuse SW<br>Bearing block, left-hand, housing SW | 21 | 850 020 133 | 1 | Scharnier außen rechts V2 SW<br>Hinge outside right V2 SW |
| 10 | 850 020 109 | 1 | Gelenkbolzen, Gehäuse SW<br>Pivot bolt, housing SW | 22 | 790 052 389 | 2 | Scheibe DIN9021-d4.3 A2<br>Washer DIN9021-d4.3 |
| 11 | 850 020 118 | 1 | Gleitlagerbuchse<br>Slide bearing bushing | 23 | 500 602 308 | 2 | Sechskantmutter ISO4032-M3-A2<br>Hexagon nut ISO4032-M3-A2 |
| 12 | 305 801 050 | 1 | Zylinderschraube DIN7984-M4x8-A2<br>Cylinder screw DIN7984-M4x8-A2 | 24 | 850 020 130 | 1 | Scharnier innen rechts V2 SW<br>Hinge inside right V2 SW |

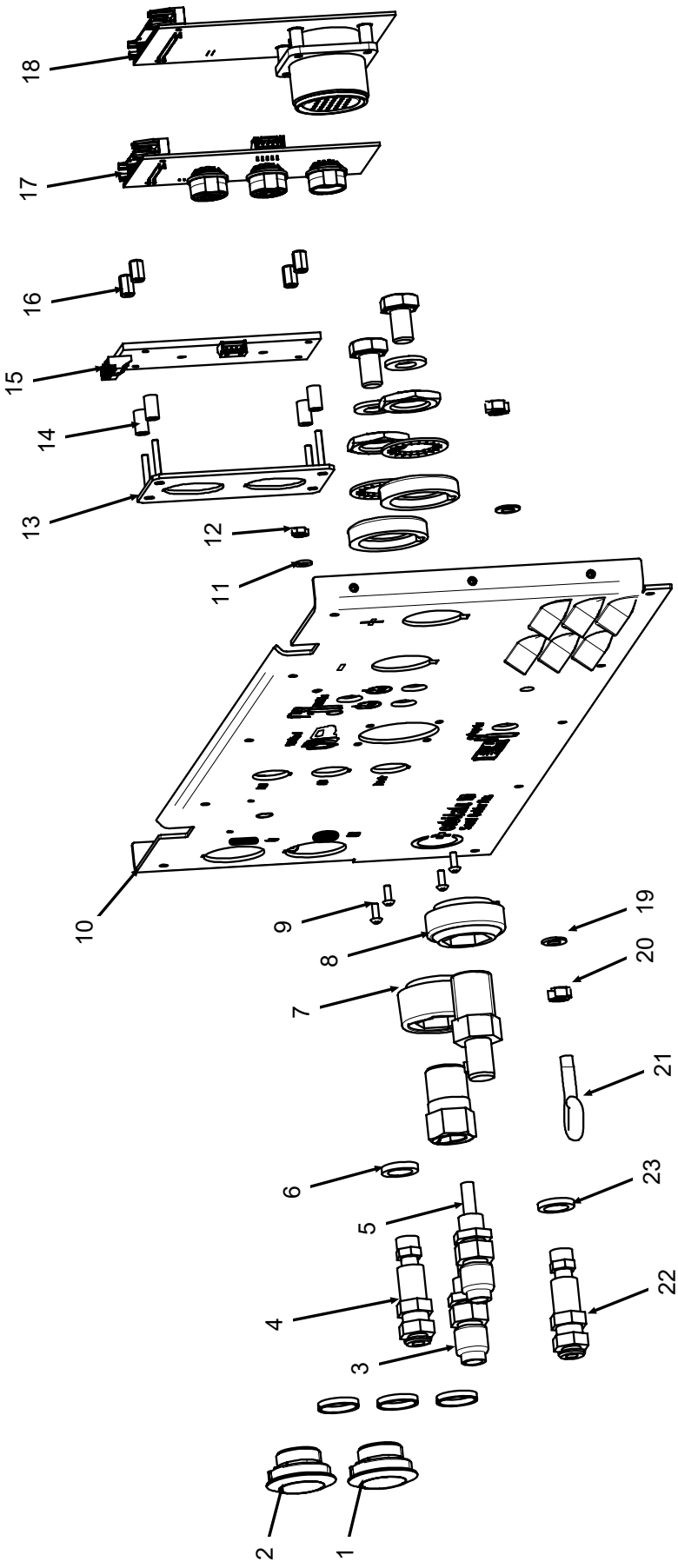

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
31
32
33

| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 25 | 305 501 089 | 6 | Zylinderschraube ISO4762-M5x12-A2<br>Cylinder screw ISO4762-M5x12-A2 | 31 | 872 012 008 | 1 | Drehsteller (V2)<br>Rotary actuator (V2) |
| 26 | 850 020 131 | 1 | Scharnier innen links V2 SW<br>Hinge inside left V2 SW | 32 | 850 020 143 | 1 | Scharnierdichtung SW+, links<br>Hinge seal SW+, left |
| 27 | 860 020 102 | 6 | Abstandshalter 10mm, M3 I/I SW6 PA<br>Spacer 10mm, M3 I/I WS6 PA | 33 | 850 020 144 | 1 | Scharnierdichtung SW+, rechts<br>Hinge seal SW+, right |
| 28 | 850 010 004 | 1 | Platine, Hauptsoftkeys SW<br>Circuit board, main softkeys SW | | | | |
| 29 | 850 020 123 | 1 | Abstandshülse AD6.5 ID3.5 L11.5<br>Spacer sleeve OD6.5 ID3.5 L11.5 | | | | |
| 30 | 850 020 140 | 1 | Montageblech, Hauptsoftkeytaster SW<br>Mounting plate, main softkey SW | | | | |

## 16.5 Frontplatte | Front panel

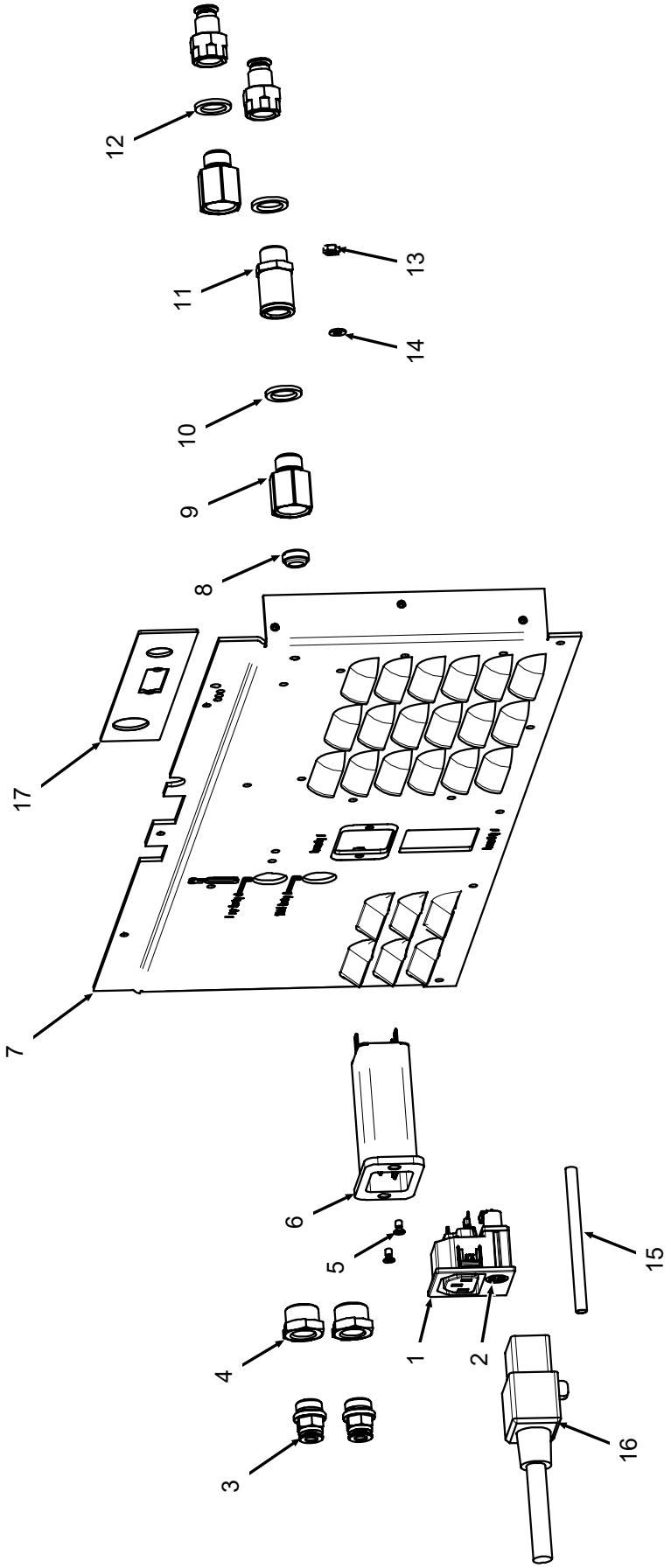


| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 010 014 | 1 | Softkeytaster, rot<br>Softkey, red | 11 | 871 020 033 | 1 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 2 | 850 010 015 | 1 | Softkeytaster, grün<br>Softkey, green | 12 | 500 602 309 | 1 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 3 | 850 020 306 | 1 | Einbaub. Kühlm. OM/OT V2, blau<br>Build-in soc. cool. OM/OT V2, blue | 13 | 850 020 142 | 1 | Montagebl., ON/OFF-Softkeyt. SW<br>Mounting plate, ON/OFF softkey SW |
| 4 | 875 012 048 | 1 | Gasanschlussbuchse, Schweißgas-Ausgang<br>Gas connection socket, welding gas out | 14 | 850 020 123 | 4 | Abstandshülse AD 6.5 ID 3.5 L 11.5<br>Spacer sleeve OD 6.5 ID 3.5 L 11.5 |
| 5 | 850 020 307 | 1 | Einbaubuchse Kühlmittel OM/OT V2, rot<br>Presa incorp.liqu.refrig.OM/OT V2, rosso | 15 | 850 010 012 | 1 | Platine, ON/OFF-Taster SW<br>Circuit board, ON/OFF button SW |
| 6 | 871 020 004 | 1 | Ring PA D18 d12.6 t3<br>Ring PA D18 d12.6 t3 | 16 | 860 020 102 | 4 | Abstandshalter 10mm, M3 I/I SW6 PA<br>Spacer 10mm, M3 I/I WS6 PA |
| 7 | 850 010 017 | 2 | Schweißstrom-Einbaubuchse 400 A<br>Weld current built-in socket 400 A | 17 | 850 010 016 | 1 | Platine, BUP-ORB-Fernbed.buchse SW<br>Circ. board BUP-ORB-rem. ctrl.soc. SW |
| 8 | 850 010 018 | 1 | Schweißstrom-Einbaustecker 400 A<br>Weld current built-in connector 400 A | 18 | 850 010 015 | 1 | Platine, 24pol. Steuerl.buchse SW<br>Circ. board, 24pol.ctr.cable socket SW |
| 9 | 307 001 126 | 4 | Linsenschraube ISO7380-M3x8-A2-TX<br>Flat-head screw ISO7380-M3x8-A2-TX | 19 | 542 500 320 | 2 | Scheibe DIN125-ISO7089-d6.4-A2<br>Washer DIN125-ISO7089-d6.4-A2 |
| 10 | 850 020 103 | 1 | Frontplatte, Gehäuse SW<br>Front plate, housing SW | 20 | 500 602 311 | 2 | Sechskantmutter ISO4032-M6-A2<br>Hexagon nut ISO4032-M6-A2 |


18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
19
20
21
23
22

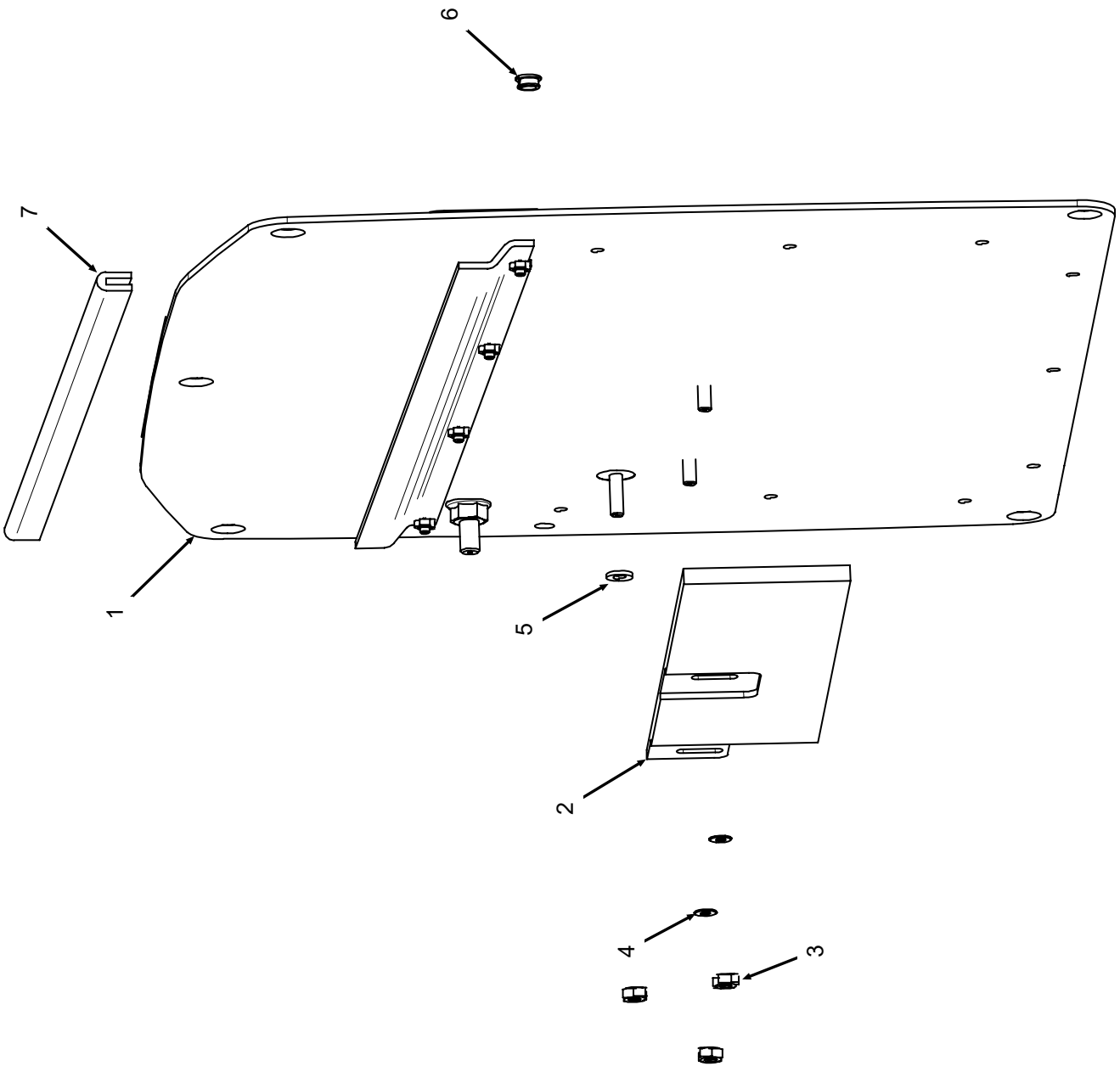
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 21 | 875 012 051 | 1 | Ringschraube, Zugentlastung<br>Ring bolt, strain relief |
| 22 | 850 020 098 | 1 | Formiergasbuchse, Gas-Ausgang SW+<br>Forming gas socket, gas outlet SW+ |
| 23 | 871 020 004 | 1 | Ring PA D18 d12.6 t3<br>Ring PA D18 d12.6 t3 |
| - | 850 050 004 | 1 | Fernbedienungsbuchse, Blindstecker SW<br>Remote control socket, blind plug SW |
| - | 850 010 020 | 2 | Schutzkappe Buchse USA<br>Female protection cap USA |

## 16.6 Rückwand | Back panel



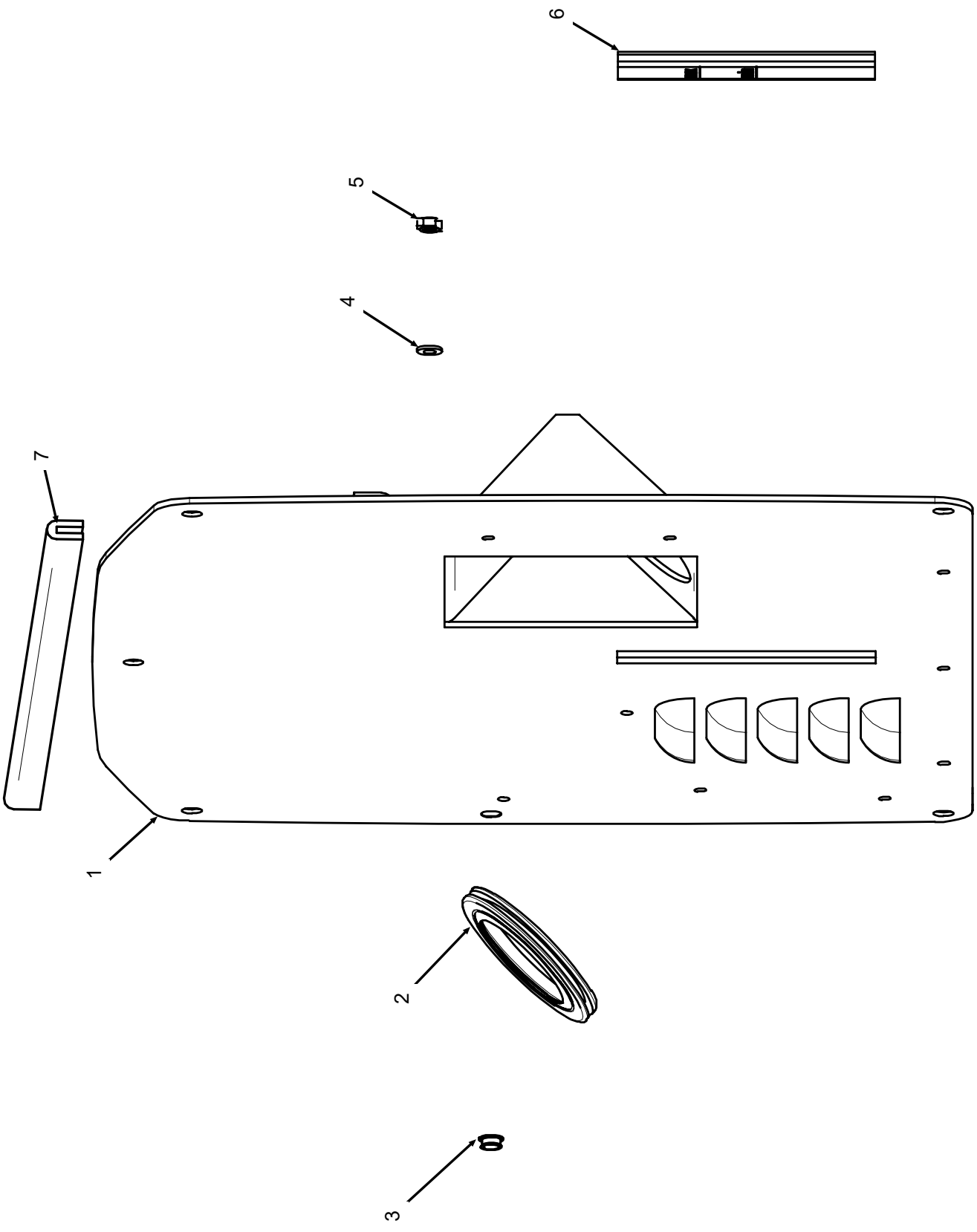
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 871 012 058 | 1 | Feinsicherung, träge, 5x20mm 1000mA<br>Fine w.fuse, time-lag, 5x20mm 1000mA | 11 | 850 020 304 | 1 | Druckreduzierventil, 4 bar 1/4"<br>Pressure reduction valve, 4 bar 1/4" |
| 2 | 850 010 037 | 1 | Netzanschlussbuchse ORBITWIN V2<br>Mains socket ORBITWIN V2 | 12 | 850 020 301 | 2 | Steckverschr. QSF 6mm 1/4 in gerade<br>Push-in fitting QSF 6 mm 1/4" straight |
| 3 | 854 020 053 | 2 | Steckverschr. NPQM-D-G14-Q6-P10<br>Push-in fitting NPQM-D-G14-Q6-P10 | 13 | 500 602 309 | 1 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 4 | 854 020 052 | 2 | Reduziernippel, MS A-G3/8; I-G1/4; L14<br>Red. nipple, MS A-G3/8; I-G1/4; L14 | 14 | 871 020 033 | 1 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 5 | 305 501 011 | 2 | Senkschraube ISO14581-M3x6-A2-TX<br>Counters. screw ISO14581-M3x6-A2-TX | 15 | 823 020 016 | 3 m | Gasschlauch Teflon 6x4 mm, weiß<br>Gas hose, Teflon 6x4 mm, white |
| 6 | 850 010 007 | 1 | IEC-Gerätestecker mit Filter<br>IEC connector plug with filter | 16 | 850 040 001 | 1 | Netzleitung DE<br>Power cable DE |
| 7 | 850 050 027 | 1 | Rückwand SW Plus, kpl.<br>Housing, back panel SW Plus, cpl. | 17 | 850 020 145 | 1 | Dichtung I/O Platine-Rückw. SW+<br>Seal I/O board back panel |
| 8 | 854 020 060 | 1 | Filterlinse 1/4" AG<br>Filter lense 1/4" OT | | | | |
| 9 | 854 020 050 | 1 | Reduziernippel, lang MS G1/4 a.-G3/8" i.<br>Reduction nipple, long MS G1/4 a.-G3/8" | | | | |
| 10 | 860 020 080 | 3 | Dichtring 0 - 1/4"<br>Seal ring 0 - 1/4" | | | | |

## 16.7 Seitenwand, rechts | Side panel, right



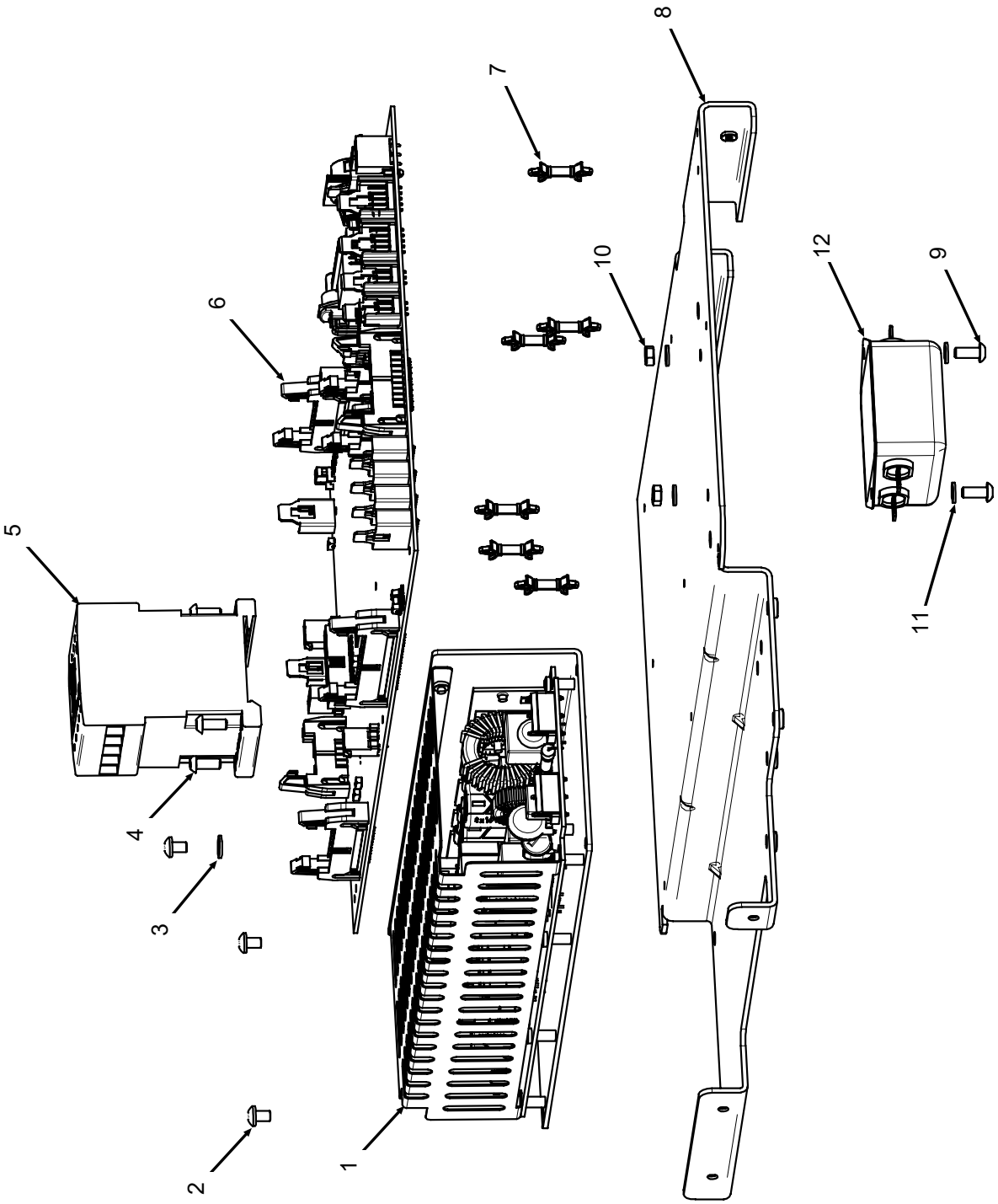
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 1 | 850 020 173 | 1 | Seitenwand rechts V2 SW<br>Side panel, right-hand V2 SW |
| 2 | 850 020 504 | 1 | Isolationsplatte, OSI Inverter<br>Insulation plate, OSI Inverter |
| 3 | 500 602 309 | 3 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 4 | 542 500 325 | 2 | Scheibe DIN125-ISO7089-d3.2-A2<br>Washer DIN125-ISO7089-d3.2-A2 |
| 5 | 871 020 033 | 1 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 6 | 850 020 105 | 1 | Clipslager MCM ID5 L2<br>Clip bearing MCM ID5 L2 |
| 7 | 854 070 011 | 300 mm | Kantenschutz Dichtungs Profil 1,0-2,0mm<br>Edge sealing profile 1,0-2,0mm |

## 16.8 Seitenwand, Tank | Side panel, tank



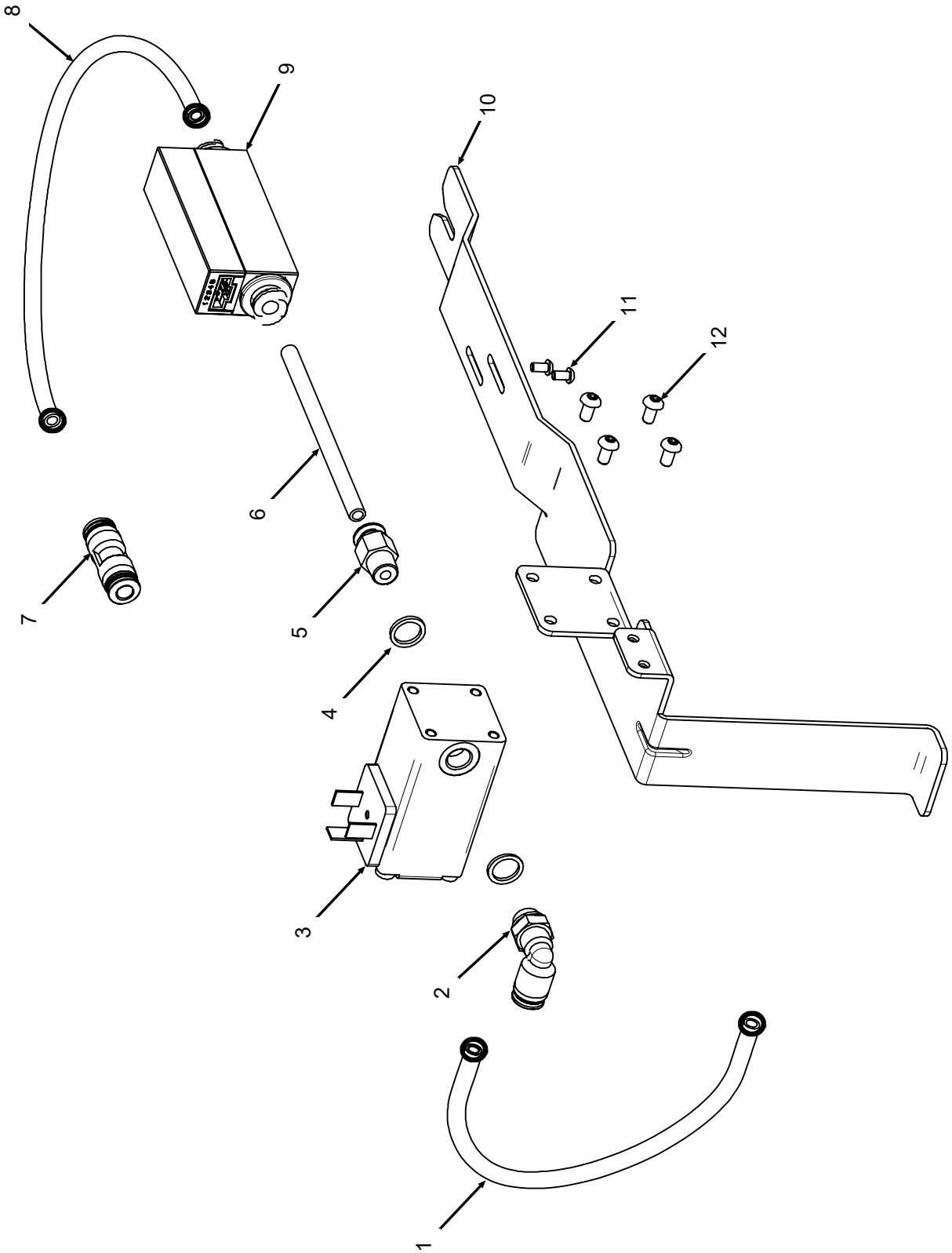
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 1 | 850 020 172 | 1 | Seitenwand links SW+<br>Left side panel SW+ |
| 2 | 850 020 004 | 1 | Tankdichtung SW/MW<br>Tank seal SW/MW |
| 3 | 850 020 105 | 1 | Clipslager MCM ID5 L2<br>Clip bearing MCM ID5 L2 |
| 4 | 871 020 033 | 1 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 5 | 500 602 309 | 1 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 6 | 850 020 005 | 1 | Tankfenster SW/MW<br>Tank window SW/MW |
| 7 | 850 070 011 | 300 mm | Kantenschutz DichtungsProfil 1,0-2,0mm<br>Edge sealing profile 1,0-2,0mm |

## 16.9 Platine | Circuit board



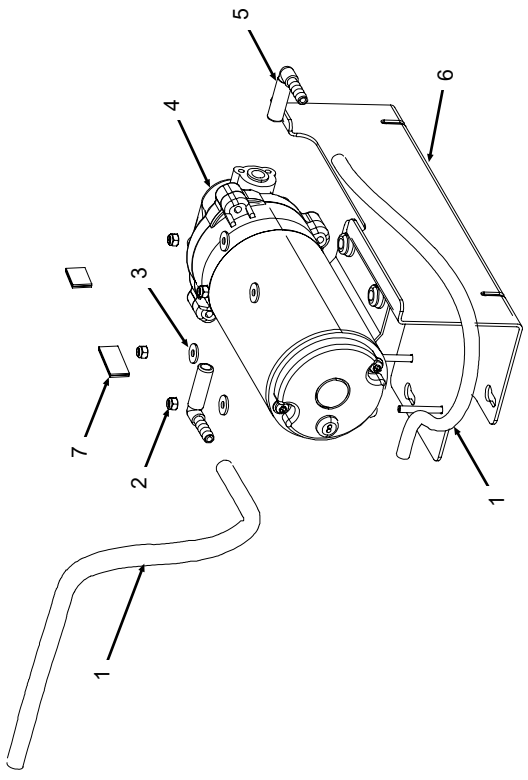
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 1 | 850 010 002 | 1 | Hauptnetzteil 4x24 VDC 300 W<br>Main power supply 4x24 VDC 300 W |
| 2 | 307 001 101 | 4 | Linsenschraube ISO7380-M4x6-A2-TX<br>Oval-head screw ISO7380-M4x6-A2 |
| 3 | 542 500 318 | 1 | Scheibe DIN125-ISO7089-d4.3-A2<br>Washer DIN125-ISO7089-d4.3-A2 |
| 4 | 307 001 128 | 4 | Linsenschraube ISO7380-M4x10-A2-TX<br>Oval-head screw ISO7380-M4x10-A2-TX |
| 5 | 875 012 025 | 1 | Schütz 165CA/180SW/MW<br>Contactor 165CA/180SW/MW |
| 6 | 850 010 028 | 1 | Rechnerboard - I/O Board Ver.D<br>Main board - I/O board ver.D |
| 7 | 850 020 210 | 9 | Isolationswinkel, Inverter SW/MW<br>Isolation bracket, inverter SW/MW |
| 8 | 850 020 214 | 1 | Montageblech, I/O-Platine SW/PW<br>Mounting plate, I/O board SW/PW |
| 9 | 307 001 112 | 2 | Linsenschraube ISO7380-M4x10-A2<br>Oval-head screw ISO7380-M4x10-A2 |
| 10 | 500 602 309 | 2 | Sechskantmutter ISO4032-M4-A2<br>Hexagon nut ISO4032-M4-A2 |
| 11 | 871020033 | 4 | Sperrkantscheibe A4 K für Gewinde M4<br>Retaining washer A4 K for thread M4 |
| 12 | 850010541 | 1 | Filter WE-CLFS Line Filter 20A 10mOhm<br>Filter WE-CLFS Line Filter 20A 10mOhm |

## 16.10 Proportional Ventil | Proportional valve



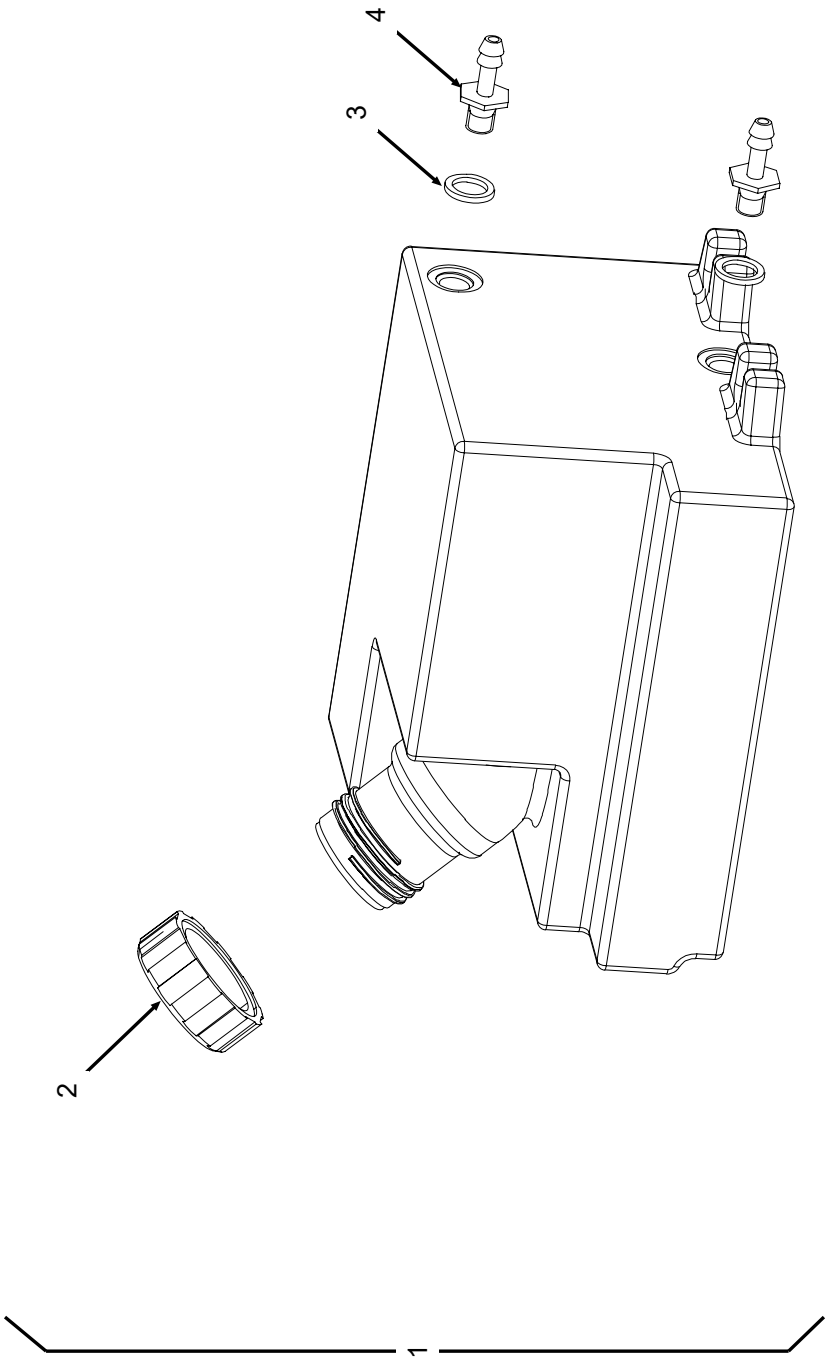
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 823 020 016 | 150 mm | Gasschlauch, Teflon<br>Gas hose, Teflon | 11 | 307 001 104 | 2 | Linsenschraube ISO7380-M3x6-A2-TX<br>Flat-head screw ISO7380-M3x6-A2-TX |
| 2 | 850 020 302 | 1 | L-Steckverschr. SL 6 mm 1/8 in Gew.<br>L push-in fitting SL 6 mm 1/8 in thread | 12 | 831 001 127 | 4 | Linsenschraube ISO7380-M4x8-A2-TX<br>Flat-head screw ISO7380-M4x8-A2-TX |
| 3 | 850 010 008 | 1 | Proportionalventil SW<br>Proportional valve SW | | | | |
| 4 | 860 020 081 | 1 | Dichtring, Typ 0 - 1/8"<br>Seal ring, type 0 - 1/8" | | | | |
| 5 | 860 020 015 | 1 | Steckverschraubung, SL 6 mm, 1/8"<br>Push-in fitting, SL 6 mm, 1/8" | | | | |
| 6 | 823 020 016 | 100 mm | Gasschlauch, Teflon 6x4 mm weiß<br>Gas hose, Teflon 6x4 mm, white | | | | |
| 7 | 823 020 036 | 1 | Steckverbinder, SL 6 mm auf SL 6 mm<br>Plug connector, SL 6 mm to SL 6 mm | | | | |
| 8 | 823 020 016 | 100 mm | Gasschlauch, Teflon 6x4 mm weiß<br>Gas hose, Teflon 6x4 mm, white | | | | |
| 9 | 850 010 022 | 1 | Massendurchflussmesser V2<br>Mass flow meter V2 | | | | |
| 10 | 850 020 216 | 100 mm | Montageblech, Proportionalventil SW<br>Mounting plate, proportional valve SW | | | | |

## 16.11 Pumpe | Pump



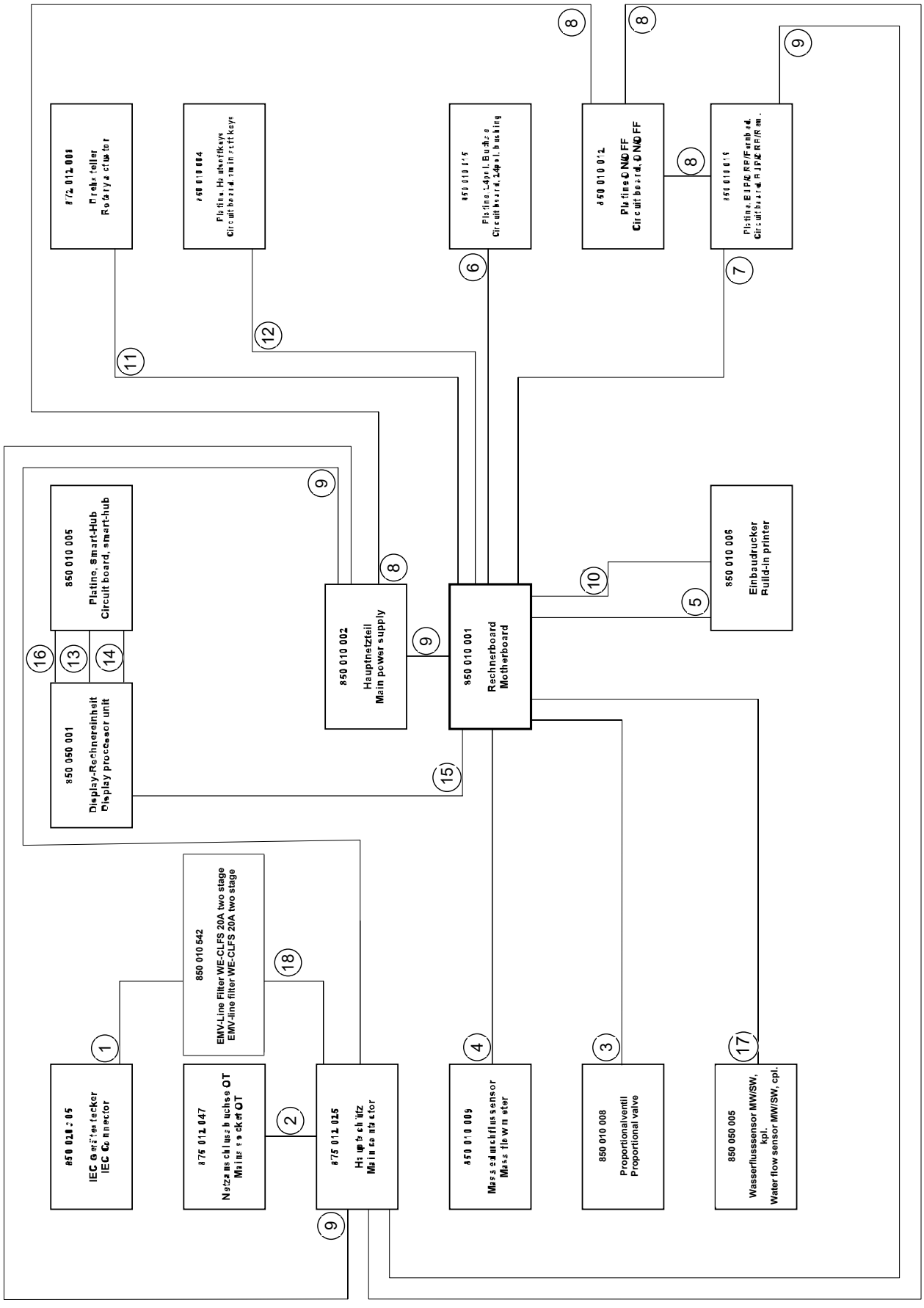
| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 040 032 | 1 | Schlauchset, blau, Kühlung SW, bestehend aus:<br>Hose set, blue, cooling ORBIMAT SW, consisting of: | 5 | 850 020 001 | 2 | L-Stück Pumpenanschluss<br>L piece pump connection |
| | | | **Stück / Quant.** — **Bezeichnung / Description** | 6 | 850 020 220 | 1 | Montageblech, Kühlmittelpumpe SW<br>Mounting plate, coolant pump SW |
| | | | 350 mm — Kühlflüssig.-sschl., blau<br>Coolant hose, blue | 7 | 882 020 007 | 160 mm | Moosgummiband, selbstkleb. 2x20 mm<br>Foam rubber tape, adhesive 2x20 mm |
| | | | 250 mm — Kühlflüssigk.-sschl, blau<br>Coolant hose, blue | | | | |
| | | | 300 mm — Kühlflüssigk.-schl. blau<br>Coolant hose, blue | | | | |
| | | | 2 — L-Stück Pumpenanschluss<br>L piece pump connection | | | | |
| | | | 2 — 1-Ohr-Klemme Einlagering 9.6-11.3mm 11.8<br>1-ear clamp insert 9.6-11.3mm 11.8 | | | | |
| 2 | 501 607 309 | 4 | Sechskantmutter ISO10511-M4-05-ZN<br>Hexagon nut ISO10511-M4-05-ZN | | | | |
| 3 | 790 052 389 | 4 | Scheibe DIN9021-d4.3<br>Washer DIN9021-d4.3 | | | | |
| 4 | 850 010 003 | 1 | Kühlmittelpumpe SW<br>Coolant pump SW | | | | |

## 16.12 Tank | Tank

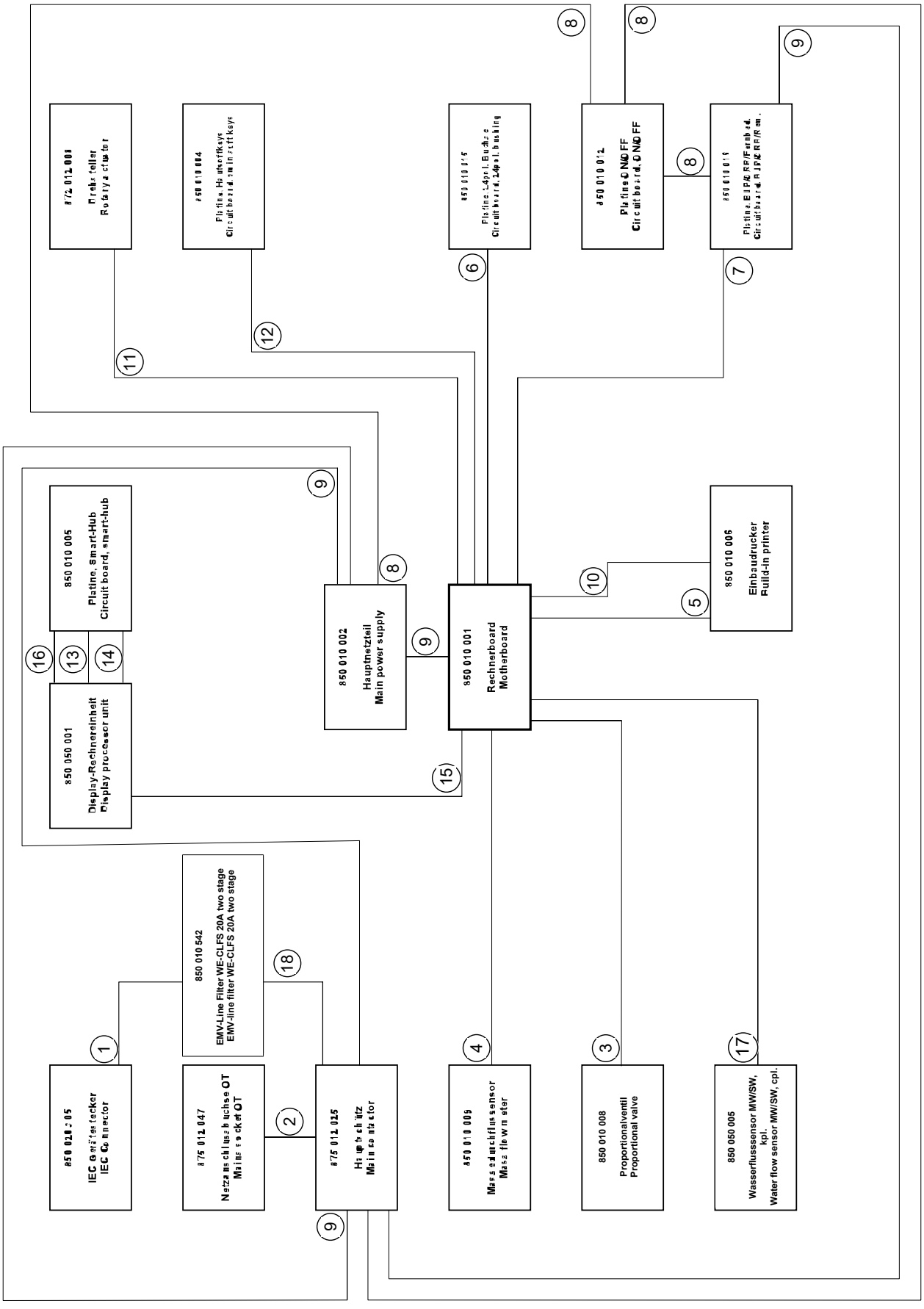


| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|
| 1 | 850 050 003 | 1 | Kühlmitteltank SW (komplett)<br>Coolant tank SW (complete) |
| 2 | 885 020 002 | 1 | Tankdeckel SW/MW<br>Tank cap SW/MW |
| 3 | 850 020 006 | 2 | Dichtung 18x13<br>Seal 18x13 |
| 4 | 858 020 002 | 2 | Gewindetülle ¼”/6 mm Rechtsgewinde<br>Thread.nozzle 1/4"/6 mm righthand thread |

# 16.13 Verbindungskabel | Connection cables



| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 850 040 507 | 1 | Kabel Netzanschlussb.-Filter<br>Cable mains socket-filter | 5 | 850 040 011 | 1 | Kabel Drucker-Rechnerboard<br>Cable printer-mainoard |
| 2 | 850 040 013 | 1 | Kabel OT-Netzausgangsbuchse-Schütz<br>Cable OT mains outpu socket-contactor | 6 | 850 040 018 | 1 | Kabel 24pol. Steuerl.-Hauptplatine<br>Cable 24pol. signal board-mainboard |
| 3 | 850 040 010 | 1 | Kabel Propotionalventil-Rechnerboard<br>Cable Proportinal valve-mainboard | 7 | 850 040 017 | 1 | Kabel BUP/ORB/Fernb.-Hauptplatine<br>Cable BUP/ORB/Remote-mainboard |
| 4 | Bis SN<br>To S/N<br>8507410111<br>(EU),<br>8507420073<br>(US),<br>8507450028<br>(CCC):<br>850 050 007 | 1 | Umrüstsatz Massendurchfl.-messer<br>Conversion kit mass flow meter | 8 | 850 040 006 | 1 | Kabel ON/OFF Platine-Rechnerboard<br>Cable ON/OFF board-mainboard |
| | | | | 9 | 850 040 015 | 1 | Kabel Netzteil-Hauptplatine-Schütz<br>Cable power supply-mainboard-contactor |
| | | | | 10 | 850 040 019 | 1 | FB-Kabel Drucker-Rechnerboard<br>Ribbon cable printer-mainboard |
| | Ab SN<br>From S/N<br>8507410112<br>(EU),<br>8507420074<br>(US),<br>8507450029<br>(CCC):<br>850 040 037 | | Leitung, X45 MD Sensor-Rechnerb. V2<br>Cable, X45 MF sensor-main board V2 | 11 | 850 040 020 | 1 | FB-Kabel Drehsteller-Rechnerboard<br>Ribbon cable rotary knop-mainboard |
| | | | | 12 | 850 040 008 | 1 | Kabel Hauptsoftkey Plat.-Rechnerboard<br>Cable main-softkey board-mainboard |
| | | | | 13 | 850 040 005 | 1 | Kabel SmartHub Platine-Display<br>Cable Smart-hub board main-display |
| | | | | 14 | 850 040 004 | 1 | HDMI-Leitung L0.45; HDMI-HDMI Mikro<br>HDMI cable L0,45; HDMI-HDMI Micro |


850 010 005
Platine, Smart-Hub
Circuit board, smart-hub
850 050 001
Display-Rechnereinheit
Display processor unit
850 010 002
Hauptnetzteil
Main power supply
850 010 001
Rechnerboard
Motherboard
850 010 006
Einbaudrucker
Build-in printer
850 010 542
EMV-Line Filter WE-CLFS 20A two stage
EMV-line filter WE-CLFS 20A two stage
IEC Gerätestecker
IEC Connector
875 012 047
Netzanschlussbuchse OT
Mains socket OT
875 012 025
Hauptschütz
Main contactor
850 010 009
Massedurchflusssensor
Mass flow meter
850 010 008
Proportionalventil
Proportional valve
850 050 005
Wasserflusssensor MW/SW, kpl.
Water flow sensor MW/SW, cpl.

| POS.<br>NO. | CODE<br>PART NO. | STK.<br>QTY. | BEZEICHNUNG<br>DESCRIPTION |
|---|---|---|---|
| 15 | 850 040 016 | 1 | Kabel Display-Hauptplatine<br>Cable display-mainboard |
| 16 | 850 040 009 | 1 | Kabel SmartHub Platine LAN-Display<br>Cable Smart-hub board LAN-display |
| 17 | 850 040 033 | 1 | Kabel Wasserflusswächter MW/SW<br>Cable water flow sensor MW/SW |
| 18 | 850 040 508 | 1 | Kabel Filter-Schütz<br>Cable filter-contactor |

# 16.14 Zubehör & Verbrauchsmaterial | Accessories & consumables

| POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION | POS. NO. | CODE PART NO. | STK. QTY. | BEZEICHNUNG DESCRIPTION |
|---|---|---|---|---|---|---|---|
| – | 850 040 030 | 1 | Fernb.adapter OM CA_B auf OM 180<br>Remote ctrl adapt. OM CA_B to OM 180 | - | 875 050 017 | 3 | Papierrollen -Drucker, 3er Pack<br>Paper rolls printer, pack of 3 |
| – | 850 030 004 | 1 | Adapter-Set Buchse/Stecker<br>Adapter set bushing/plug | – | 875 030 004 | 1 | Farbbandkassette, Drucker CA/SW<br>Ribbon cartridge, printer CA/SW |
| – | 850 030 010 | 1 | Kühlflüssigkeit OCL-30 3.5 l/118.3 fl oz<br>Coolant OCL-30 3.5 l/118.3 fl oz | - | 850 030 005 | 1 | Barcode-Scanner SW<br>Barcode scanner SW |
| – | 875 012 057 | 1 | Externe Tastatur ORBIMAT<br>External keyboard ORBIMAT | | | | |
| – | 850 010 021 | 1 | Externe Tastatur ORBIMAT USA<br>External keyboard ORBIMAT USA | | | | |
| | 875 030 018 | 1 | Schlauchanschluss-Set ORBIMAT<br>Bis SN 8507510106 (EU-Variante)<br>Hose connection set ORBIMAT<br>Up to SN 8507510106 (EU-Version) | | | | |
| - | 850 050 019 | 1 | Schlauch-Anschlussset SW EU<br>Ab SN 8507510107 (EU-Variante)<br>Hose connection set SW EU<br>From SN 8507510107 (EU-Version) | | | | |
| | 850 030 011 | 1 | Schlauchanschluss-Set ORBIMAT USA<br>Bis SN 8507520080 (US-Variante)<br>Hose connection set ORBIMAT USA<br>Up to SN 8507520080 (US-Version) | | | | |
| | 850 050 021 | 1 | Schlauch-Anschlussset SW US<br>Ab SN 8507520081 (US-Variante)<br>Hose connection set SW US<br>From SN 8507520081 (US-Version) | | | | |

# 16.15 Service, Kundendienst | Servicing, customer service

Für das Bestellen von Ersatzteilen und die Behebung von Störungen wenden Sie sich bitte direkt an unsere für Sie zuständige Niederlassung.

Für die Ersatzteilbestellung geben Sie bitte folgende Daten an:

- Maschinentyp
- Ersatzteilbezeichnung
- Code

For ordering spare parts and for the resolution of faults, please contact your branch office directly.

Please provide the following information when ordering spare parts:

- Machine type
- Spare parts description
- Part No.

# 17 DECLARATION OF CONFORMITY

## ORIGINAL

**de EG-Konformitätserklärung**
**en EC Declaration of conformity**
**fr CE Déclaration de conformité**
**it CE Dichiarazione di conformità**
**es CE Declaración de conformidad**
**nl EG-conformiteitsverklaring**
**cz ES Prohlášení o shodě**
**sk EÚ Prehlásenie o zhode**
**fi EY-vaatimustenmukaisuusvakuutus**

**Orbitalum Tools GmbH**
**Josef-Schüttler-Straße 17**
**78224 Singen, Deutschland**
**Tel. +49 (0) 77 31 792-0**

Maschine und Typ (inklusive optional erhältlichen Zubehörartikeln von Orbitalum): / Machinery and type (including optionally available accessories from Orbitalum): / Machine et type (y compris accessoires Orbitalum disponibles en option): / Macchina e tipo (inclusi gli articoli accessori acquistabili opzionalmente da Orbitalum): / Máquina y tipo (incluidos los artículos de accesorios de Orbitalum disponibles opcionalmente): / Machine en type (inclusief optioneel verkrijgbare accessoires van Orbitalum): / Stroj a typ stroje (včetně volitelného příslušenství firmy Orbitalum): / Stroj a typ (vrátane voliteľne dostupného príslušenstva od Orbitalum) / Kone ja tyyppi (mukaan lukien Orbitalumin lisävarusteet):

**Orbitalschweißstromquelle**
- **Mobile Welder**
- **Mobile Welder OC Plus**
- **Smart Welder**
- **Smart Welder Plus**
- **Power Welder**

Seriennummer: / Series number: / Nombre de série: / Numero di serie: / Número de serie: / Serienummer: / Sériové číslo: / Sériové číslo:

Hiermit bestätigen wir, dass die genannte Maschine entsprechend den nachfolgend aufgeführten Richtlinien gefertigt und geprüft worden ist: / Herewith our confirmation that the named machine has been manufactured and tested in accordance with the following directives: / Par la présente, nous déclarons que la machine citée ci-dessus a été fabriquée et testée en conformité aux directives: / Con la presente confermiamo che la macchina sopra specificata è stata costruita e controllata conformemente alle direttive qui di seguito elencate: / Por la presente confirmamos que la máquina mencionada ha sido fabricada y comprobada de acuerdo con las directivas especificadas a continuación: / Hiermee bevestigen wij, dat de vermelde machine in overeenstemming met de hieronder vermelde richtlijnen is gefabriceerd en gecontroleerd: / Tímto potvrzujeme, že uvedený stroj byl vyroben a testován v souladu s níže uvedenými směrnicemi: / Týmto potvrdzujeme, že uvedený stroj bol zhotovený a odskúšaný podľa nižšie uvedených smerníc / Vahvistamme täten, että edellä mainittu kone on valmistettu ja testattu seuraavien ohjeiden mukaisesti.:

- **Niederspannungsrichtlinie 2014/35/EU**
- **EMV-Richtlinie 2014/30/EU**
- **RoHS-Richtlinie 2011/65/EU**
- **Ökodesign-Verordnung (EU) 2019/1784**

Schutzziele folgender Richtlinien werden eingehalten: / Protection goals of the following guidelines are observed: / Les objectifs de protection des directives suivantes sont respectés : / Gli obiettivi di protezione delle seguenti linee guida sono rispettati: / Se observan los objetivos de protección de las siguientes directrices: / De beschermingsdoelstellingen van de volgende richtlijnen worden in acht genomen: / Jsou splněny ochranné cíle těchto nařízení: / Sú splnené ochranné ciele týchto nariadení / Seuraavien direktiivien suojelutavoitteet täyttyvät:

- **Maschinen-Richtlinie 2006/42/EG**

Folgende harmonisierte Normen sind angewandt: / The following harmonized standards have been applied: / Les normes suivantes harmonisées où applicables: / Le seguenti norme armonizzate ove applicabili: / Las siguientes normas armonizadas han sido aplicadas: / Onderstaande geharmoniseerde normen zijn toegepast: / Jsou použity následující harmonizované normy: / Boli aplikované tieto harmonizované normy / :Sovelletaan seuraavia yhdenmukaistettuja standardeja

- **EN IEC 60974-1:2018+A1:2019**
- **EN IEC 60974-3:2019**
- **EN 60974-10:2014+A1:2015**
- **EN ISO 12100:2010**
- **EN ISO 13849-1:2023**
- **EN ISO 13849-2:2012**
- **EN 63000:2018**

Bevollmächtigt für die Zusammenstellung der technischen Unterlagen: / Authorised to compile the technical file: / Autorisé à compiler la documentation technique: / Incaricato della redazione della documentazione tecnica: / Autorizado para la elaboración de la documentación técnica: / Gemachtigde voor het samenstellen van het technisch dossier: / Osoba zplnomocněná k sestavení technické dokumentace: / Splnomocnenec pre zostavenie technických podkladov / Valtuutettu laatimaan tekniset asiakirjat:

**Gerd Riegraf**
**Orbitalum Tools GmbH**
**D-78224 Singen**

Bestätigt durch: / Confirmed by: / Confirmé par: /
Confermato da: / Confirmado por: / Bevestigd door: / Potvrdil: / Potvrdil / Bestätigt durch:

Singen, 10.03.2026

Jürgen Jäckle - Manager Product Compliance

**Orbitalum Tools GmbH offers global customers the best in the field of pipe cutting and beveling as well as orbital welding technology from a single source.**

# worldwide | sales + service

## NORTH AMERICA

### USA

Orbitalum North America
Headquarters
281 Lies Rd E
Carol Stream, IL 60188
USA
Tel. +1 847 484 9100
24-Hour Emergency Response:
Tel. +1 847 484 9100

Northeast US
Orbitalum - New Jersey
1001 Lower Landing Road, Suite 208
Blackwood, New Jersey 08012
USA
Tel. +1 856 579 8747
24-Hour Emergency Response:
Mob. +1 609 414 21638

PACIFIC NORTHWEST US
Orbitalum - Oregon
2056 NE Aloclek Drive, Suite 314
Hillsboro, Oregon 97124
USA
Tel. +1 503 941 9270
24-Hour Emergency Response:
Mob. +1 971 777 2603

Southeast US
Orbitalum - South Carolina
171 Johns Road, Unit A
Greer, South Carolina 29650
USA
Tel. +1 864 655 4771
24-Hour Emergency Response:
Mob. +1 470 806 6663

SOUTHWEST US
Orbitalum - Arizona
Customer Support Center
3106 W Thomas Road, Suite 1117
Phoenix, AZ 85017
USA
Tel. +1 602 540 0813
24-Hour Emergency Response:
Tel. +1 805 433 3270

SOUTHWEST US
Orbitalum - Arizona
Customer Support Center
3106 W Thomas Road, Suite 1117
Phoenix, AZ 85017
USA
Tel. +1 602 540 0813
24-Hour Emergency Response:
Tel. +1 805 433 3270

### CANADA

Wachs Canada Ltd - East
Eastern Canada Sales,
Service & Rental Center
1250 Journey's End Circle, Unit 5
Newmarket, Ontario L3Y 0B9
Canada
Tel. +1 905 830 8888
Toll Free: 888 785 2000
24-Hour Emergency Response:
Mob. +1 647 278 0537

Wachs Canada Ltd - West
Western Canada Sales, Service & Rental Center
5411 82 Ave NW
Edmonton, Alberta T6B 2J6
Canada
Tel. +1 780 469 6402
Toll Free: 800 661 4235
24-Hour Emergency Response:
Mob. +1 847 537 8800

## EUROPE

### GERMANY

Orbitalum Tools GmbH
Josef-Schuettler-Str. 17
78224 Singen
Germany
Tel. +49 (0) 77 31 - 792 0

### MIDDLE EAST

### UNITED ARAB EMIRATES

ITW Welding Middle East
S3 A2SR10, Jebel Ali Free Zone, Dubai
United Arab Emirates
Phone: [+971] [0] 42559194
Mobile: [+971] 547904400

## ASIA

### CHINA

Orbitalum Tools GmbH
189 Huayuan Road
Kunshan, Jiangsu Province
China
Mob. +86 (0) 183 5165 7838
Tel. +86 (0) 512 5016 7816

### INDIA

ITW India Pvt. Ltd
Plot No.28/22, D-2 Block
Near KSB Chowk
MIDC, Chinchwad
Pune - 411019
Maharashtra - India
Mob. +91 (0) 91 00 99 45 78

### SINGAPORE

Orbitalum
23 Tagore Lane #04-06/07
Tagore 23 Warehouse
787601
Singapore

orbitalum

*An ITW Company*