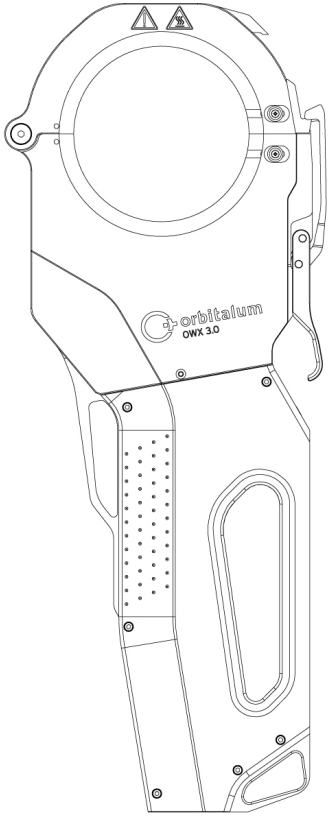
ORBIWELD X 3.0

en **Enclosed orbital weld head**

Translation of original operating instructions and spare parts list



836 060 201 REV 00 | 2501

orbitalum
orbital | cutting + welding

An ITW Company

Table of Contents

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. 2. 3. …	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
OW	Closed orbital weld head from the ORBIWELD series
OWX	Closed orbital weld head of the ORBIWELD X series
SW	Orbital welding power source from the SMART WELDER series
MW	Orbital welding power source from the MOBILE WELDER series

1.4 Further applicable documents

The following documents apply together with these operating instructions:

- Operating instructions for the orbital welding power source

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 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 particular risk	Employees at particular risk (with the exception of those with active implants)	Employees with active implants
	(1)	(2)	(3)
Arc welding, manual (including MIG (Metal Inert Gas), MAG (Metal Active Gas), TIG (Tungsten Inert Gas) under observance of tried-and-tested procedures and without physical contact to the line	No	No	Yes

* To Directive 2013/35/EU

2.2 Using the machine

2.2.1 Proper use

The orbital weld head is intended solely for the following utilization:

- Utilization in combination with an Orbital welding power supply of the Mobile Welder and Smart Welder series.
- TIG welding of materials that are specified in these operating instructions (see chap. applications).
- Empty unpressurized tubes that are free of contaminations, explosive atmospheres or liquids.

Only protective gases that are classified for TIG welding in accordance with EN ISO 14175 may be used.

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 and the general safety information for enclosed orbital weld heads.
- 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.
- 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 machine is operated by one person.
- A space of about 2 m for people to move around the machine 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 machine 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.
- Smoke, steam, oil vapors and grinding dust must be avoided.
- Avoid salty ambient air (sea air).

2.3 Environmental protection and disposal

2.3.1 Information regarding the Ecodesign Directive 2009/125/EG

- Do not dispose of product (if applicable) with general waste.
- Reuse or recycle waste electrical and electronic equipment (WEEE) by disposing of it at a designated collection point.
- Contact your local recycling office or dealer for more information.

(as per RL 2012/19/EU)

Critical raw materials potentially present in indicative quantities greater than 1 gram at the component

COMPONENT	CRITICAL RAW MATERIAL
Printed circuit boards	Barite, 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
Cable 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

2.4 Personnel qualification

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

- Only employ personnel who satisfy the job- and age-specific regulations that apply to the operation site.
- **No** physical and mental impairments.
- Persons whose ability to respond is affected by drugs, alcohol or medications are not eligible as staff.
- Operation of the machine by underage persons only under supervision by a person authorized to issue instructions.
- A basic knowledge of the TIG welding process is advisable.

2.5 Fundamental information on operational safety

CAUTION! Observe valid safety and accident prevention regulations!

Improper usage can impair safety. This can result in life-threatening injuries.

- Never leave the weld head unattended when the power supply is switched on.
- The operator must ensure that no 2nd person is located within the danger zone.
- Do **not** modify or convert the weld head.
- Use the weld head only in technically flawless operating order and condition.
- Use only genuine tools, spare parts and accessories as well as specified operating materials.
- In case of changes in the operating behavior, stop operation immediately and have the fault eliminated.
- Do not remove safety devices.
- Do not pull the machine by the hose package or the cable.
- Repair and maintenance work on the electrical equipment may only be carried out by a qualified expert.
- Opening or altering the weld head is prohibited, except for the purpose of removing foreign matter from the transmission.
  Observe the troubleshooting information (*see chapt.* “Troubleshooting” of the operating instructions).

⚠	**CAUTION!**	Risk of injury due to monotonous work and exhausting work in places that are difficult to access and performing overhead work! 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.

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

2.6 Personal protective equipment

The following personal protective equipment must be worn while working at the system:

- ► Safety gloves according to EN 407 for welding operation and DIN 388 for installing the electrode.
- ► Safety shoes according to EN ISO 20345, Class SB.
- ► For overhead work safety helmet according to EN 397.
- ► Wear hearing protection in work environments > 80 db (A).

2.7 Remaining risks

2.7.1 Mechanical hazards

⚠	**DANGER!**	The rotating machine parts can cause hair, jewelry or clothes to be caught and pulled into the housing.

- ► Wear tight-fitting clothes.
- ► Do **not** wear open hair, jewelry or other accessories that can be easily drawn in.

⚠	**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.

	CAUTION!	Falling of the orbital weld head during transportation, mounting/dismantling or setting up.

⚠	**CAUTION!**	Falling of the weld head in case of impermissible usage in overhead position!

- ► Wear safety shoes to EN ISO 20345, Class SB.
- ► Place the transport case on a stable base near (approx. 1.5 m/ 4.9 ft) the welding power supply.
- ► Do **not** carry the transport case on a ladder.
- ► To set up the weld head place it flat and ensure that it cannot fall down.
- ► Fit drop guard to weld head.
- ► Weld head may **only be used with drop guard** in overhead positions.
- ► Do not transport the device by crane. Use handles, straps or holders for hand transport only.

► Always carry out orbital weld head OW 170 mounting/dismantling work on the pipe employing 2 persons.

CAUTION! Falling of the transport case caused by it being put down improperly!

► Place the transport case on a stable base near (approx. 1.5 m) the welding power supply.

CAUTION! Danger of being pricked by the electrode or, where applicable, by the cold wire both for the operator and for third parties while grasping the weld head.

► Do not grasp the weld head at the position of the electrode or of the cold wire (for KD versions).

► Remove the electrode and, if appropriate, the cold wire before storing the weld head (for KD versions).

CAUTION! Risk of body parts being crushed due to the clamping cassette falling off when clamping onto the workpiece.

► Attach drop guard to the clamping cassette (OW 25 GC only).

► Make sure that no one is beneath the site of operation.

► Wear personal protective equipment.

CAUTION! If you pull your hand away from the handle with a jerky motion, there is the risk of your fingers getting caught and being injured.
Dislocations and skin abrasions may be the result.

► Pull your hand and fingers away from the handle carefully.

► Do not wear any finger rings.

CAUTION! Hands and fingers can be caught in and crushed while setting up the weld head.

► Before setting up or before electrode replacement lay the weld head flat on the base

► Switch off the welding power supply before setting up or before an electrode replacement.

DANGER! Risk of hands and fingers being crushed due to unexpected start of the rotor when the electrode is being set up.

► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.

► Before moving the rotor with closed weld heads, fit clamping cassette or clamping units and close clamping unit and flip cover.

CAUTION! Risk of fingers being sheared when swivel bracket closed on one side between open swivel bracket and base body.

► Wear safety gloves according to DIN 388.

CAUTION! Danger of cut injuries caused by sharp pipe edges when clamping the weld head onto the pipe.

► Wear safety gloves according to DIN 388.

CAUTION! Injuries can occur during dismantling for the proper disposal of the weld head through uncertainties in handling tools.

► In case of uncertainties send the weld head to Orbitalum Tools – proper disposal is carried out here.

► Allow only a professional electrician to access the electrical system and open the weld head.

2.7.2 Electrical hazards

DANGER! Electrical hazards through touching as well as incorrect or damp protective equipment.

► Wear dry safety shoes, dry metal-free (grommet-free) leather gloves and dry safety suits to minimize the electrical hazard.

► Work on a dry surface.

DANGER! Electric shock along with injuries and damage to property on other devices due to erroneous ignition with unmounted or incorrectly positioned weld head!

► Do **not** play with weld head.

DANGER! Electric shock and risk of crushing due to improper action and opening of the weld head.

► Unplug the weld head from the power source.

► Allow machine to cool down sufficiently before opening.

► Allow only a professional electrician to access the electrical system.

► **Never** connect open weld head to the power source.

DANGER! Risk of death for people with heart problems or cardiac pacemakers.

DANGER! Depending on the form of the workplace, life-threatening electromagnetic fields can arise in the direct vicinity.

- ► People with heart problems or cardiac pacemakers must 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.

DANGER! There is the risk of a fatal electric shock on simultaneous contact with both potentials during the high-frequency ignition.

- ► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.
- ► Before moving the rotor with closed weld heads, fit clamping cassette or clamping units and close clamping unit and flip cover.
- ► From the start of the welding process avoid contact with the tube and the housing of the orbital weld head.
- ► Wear safety gloves DIN 12477, Type A for welding operation and DIN 388, Class 4 for mounting the electrode.

WARNING! Risk of burns, blindness and fire due to arcs.
An arc may develop by releasing welded 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 if the hose package connections are mechanically secured when connecting or switching on the power supply.
- ► Do not work near highly flammable substances.

⚠	WARNING!	Various injuries and damage to property due to electromagnetic incompatibility of surrounding devices during high-frequency ignition and devices in operation without a protective ground.

- ► Use only electrical devices with protective insulation in the working area of the welding system.
- ► Observe electromagnetically-sensitive devices when igniting the system.

⚠	**WARNING!**	Electrostatic discharges when opening the weld head. Damage to electronic components, fires and explosions may be the result.

- ► Send the weld head in for servicing or as an experienced user contact technical support.
- ► Employ ESD-suitable workplaces and ground all conductive components.
- ► Wear ESD-suitable clothing, shoes and gloves.
- ► Use ESD protective mat in the working area.
- ► Use ionizers to neutralize static charges in the air.
- ► Use ESD-safe packaging for sensitive components.
- ► Train employees who regularly deal with ESD and instruct them in the appropriate safety measures.

⚠	**CAUTION!**	Risk of falling due to being startled following electric shock when working at heights. In addition to fall injuries, the weld head and, where applicable, the clamping cassette can fall off and cause injuries.

- ► Before clamping the weld head on the workpieces switch the power supply to test mode.
- ► Attach all drop guards: Hose package strain relief, drop guard to weld head and, where applicable, to clamping cassette.

2.7.3 Thermal hazards

DANGER! Safety parts can fail due to impurity, breakage and wear, causing many risks of injury and risk of fire and burning due to the arc.

- ► Do not misuse the cable, for example by suspending or carrying the machine by the cable.
- ► Replace defective parts immediately and check daily for proper functioning.
- ► Have an expert replace defective lines and plugs immediately.
- ► Clean and maintain machine after every use.
- ► Keep the lines and hoses away from heat, oil, sharp edges or moving device parts.
- ► Check machine daily for externally visible damage and defects and have them remedied by a professional if necessary.

WARNING! Risk of burns, blindness and fire due to arcs.
An arc may develop by releasing welded 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 if the hose package connections are mechanically secured when connecting or switching on the power supply.
- ► Do not work near highly flammable substances.

WARNING! Fire hazard when using incorrect (e.g. explosive) gases during the welding process**.**
Burns are the result. In the worst case a fire will be started.

- ► Observe safety instructions in the operating instructions of the power source.
- ► Usage solely of protective gases that are classified for TIG welding process in accordance with EN ISO 14175.

WARNING! Thermal problems can arise in the event of incorrect positioning of the weld head, purging system or the use of impermissible materials in the welding area. In the worst case a fire will be started. Observe the local general fire protection measures.

- ► Position the weld head correctly.
- ► Use only permissible materials in the welding area.
- ► Let the cleaning agent evaporate completely after cleaning the weld head and prior to welding.

2.7.4 Risks due to materials and substances

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.

DANGER! Many injuries and material damage due to incorrect use of pressure tanks and other parts of the system (e.g. welding gas cylinder)!

- ► Heed safety regulations, especially those for pressure tanks.
- ► Comply with safety data sheets.
- ► If the system and its components exceed 25 kg in weight, lift using several people or lifting equipment.

WARNING! Poisonous vapors and substances during the welding process and handling of the electrodes!

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

WARNING! Risk of explosion when using incorrect (explosive) gases during welding process.
Severe injuries and death may be the result.

- ► Observe safety instructions in the operating instructions of the power source.
- ► Usage solely of protective gases that are classified for TIG welding process in accordance with EN ISO 14175.

⚠	**CAUTION!**	Risk of slipping due to coolant leaking when connecting and disconnecting the hose package and power supply.

- ► Remove leaking coolant immediately.

2.7.5 Ergonomic hazards

⚠	**CAUTION!**	Long-lasting physical damage due to incorrect posture. 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.

⚠	**CAUTION!**	Risk of injury due to monotonous work and exhausting work in places that are difficult to access and performing overhead work! 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.

2.7.6 Hazards due to radiation

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

- ► **Do not** look into the electric arc.
- ► Wear eye protection to EN 170.

2.7.7 General danger

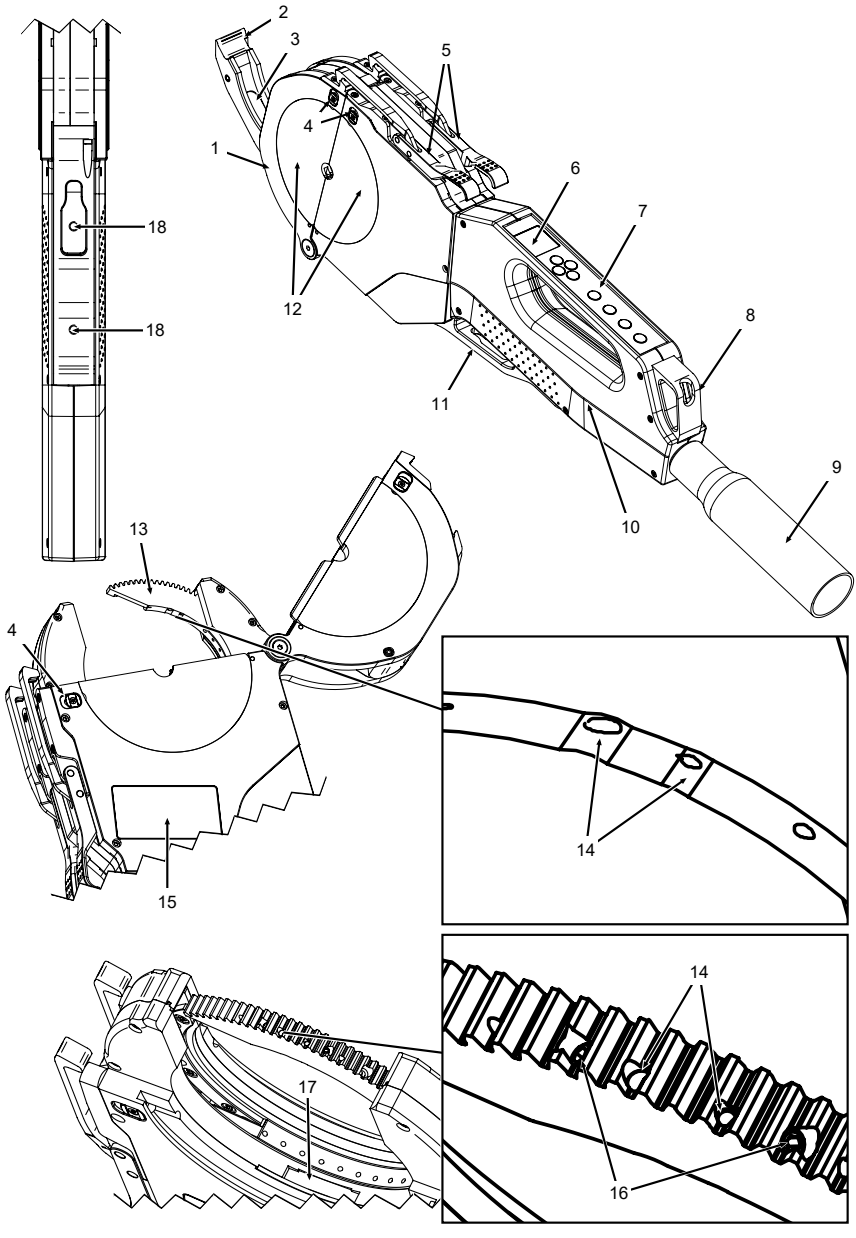
⚠	**CAUTION!**	General danger

- ► 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.

3 Scope of application

SCOPE OF APPLICATION		OWX 3.0
Pipe (outer diameter)	[mm]	6 ... 77
min. … max.	[inch]	0.25 ... 3.0
Welding process	Tungsten inert gas process (TIG)	
Materials	All materials that are fundamentally suitable for the TIG welding process.	

4 Description



POS.	DESIGNATION	FUNCTION
1	Swivel clamp	Open and close the weld head.
2	Flip cover	Opening the welding chamber to align the electrode and to check the sleeve joint and the offset.
3	View window made of protection welding glass	Monitor welding protected against infrared, glare and UV rays.
4	Clamping insert lock	Lock and unlock clamping insert
5	Latches	Lock closed swivel bracket.
6	Display	Displays of weld head menu and information.
7	Control panel	Operate weld head.
8	Handle mounting lug	Mounting option for drop guard.
9	Hose package	Connect weld head with welding power supply.
10	Handle	Hold weld head.
11	Basic body mounting lug	Mounting option for table mount or drop guard.
12	Clamping insert*	Align and clamp workpieces.
13	Rotor	Guide the electrode radially around the workpiece.
14	Electrode holders (1.6 and 2.4 mm) with brass markings	Holder for electrodes.
15	Type plate	Lists data for the weld head.
16	Electrode clamping screws	Fasten and unfasten the electrodes in the electrode holders.
17	Inside light	Illuminating the welding chamber, *see chapt.* Start menu
18	Mounting holes	Interface for mounting in a system, *see chapt.* Dimensions [▶ 30]

** Clamping inserts are not included in the scope of delivery but are absolutely necessary for the insert and have to be ordered separately. See* Accessories (optional) [▶ 88]

4.1 Electrode holders

The OWX series has 2 electrode holes for electrode diameters of 1.6 mm (0.063 in) and 2.4 mm (0.094 in).

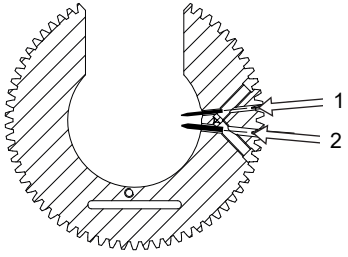


Illustration: Rotor electrode holes

1	Electrode hole Ø 1.6 mm (0.063 in)	2	Electrode hole Ø 2.4 mm (0.094 in)

Installing electrode, see chapt. Set up the electrode [▶ 53]

4.2 Integration in custom-specific devices

For the installation of the weld head in customer-specific fixtures, such as factory holding and handling fixtures, two 7 mm deep M5 threads (1) and (2) are located in the aluminum body of the mounting lug.

For the position determination *see chapt.* Dimensions [▶ 30].

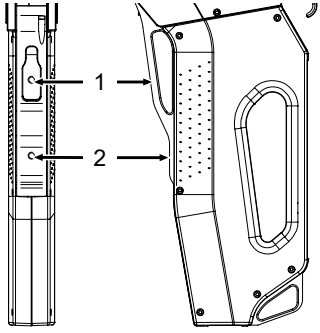
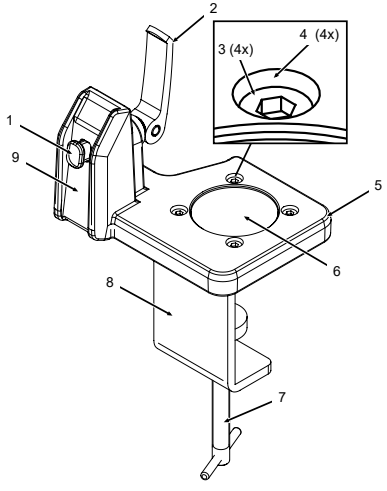


Illustration: Holes in the aluminum body of the mounting lug

4.3 Table mount (optional)

See also Mounting table mount [▶ 40]

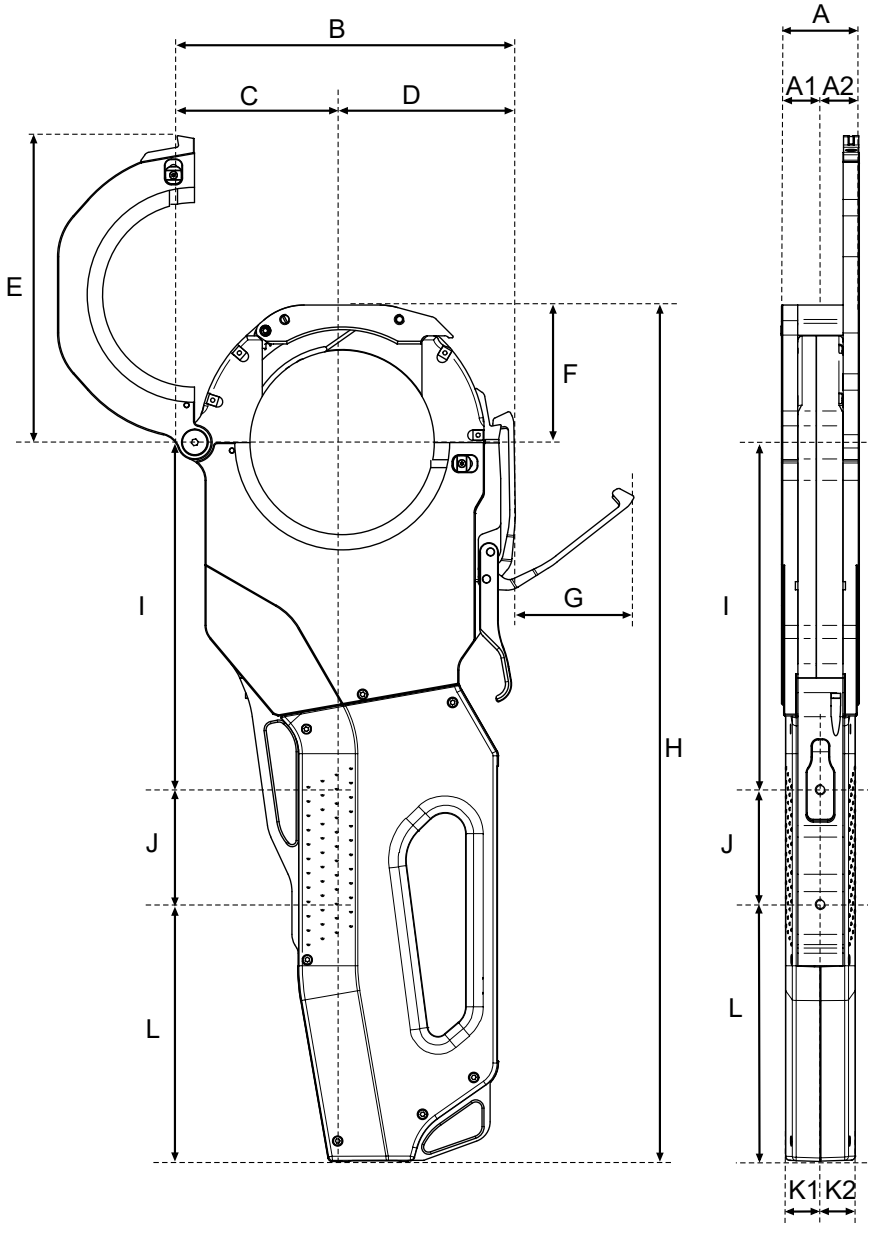


POS.	DESIGNATION	FUNCTION
1	Holding pin	Holds the weld head's mounting lug in place.
2	Clamping lever	Clamping and unclamping the weld head on the table mount.
3	Fastening screws (4x)	Fastening the mounting bracket.
4	Mounting holes (4x)	Holder of mounting screws for • Fastening the mounting bracket. • Fastening on table top.
5	Base	Supports and connects the quick clamping system and screw clamp.
6	Rubber pad	Is used as a defined support for small parts, like electrodes and screws, when the table mount is mounted using the integrated screw clamp or with screws on the worktop.
		Is used in the application of alternative fastening systems as the supporting area for feet of screw clamps or quick clamps.
7	Tensioning screw	Clamp bracket (8) and base (5) on edge of table.
8	Mounting bracket	Counter support for tensioning screw (7).
9	Guide groove	Guides and fastens the weld head in position.

5 Technical specifications

TYPE		OWX 3.0
Code		837 000 001
Pipe (outer diameter)	[mm]	6.00 ... 77.00
min. … max.	[inch]	0,250 ... 3,000
Electrode diameter	[mm]	1.6/2.4
	[inch]	0,063/0,094
Machine weight including hose package	[kg]	8.50
	[lbs]	18,739
Transport weight (scope of delivery)	[kg]	16.70
	[lbs]	36,817
Hose assembly length	[m]	7.5
	[ft]	24.6

5.1 Dimensions



TYPE		OWX 3.0
Code		837 000 001
Dimension		
A	[mm]	38.00
	[inch]	1,496
A1	[mm]	19.00
	[inch]	0,748
A2	[mm]	19.00
	[inch]	0,748
B	[mm]	164.27
	[inch]	6,467
C	[mm]	80.03
	[inch]	3,151
D	[mm]	84.24
	[inch]	3,317
E	[mm]	149.64
	[inch]	5,891
F	[mm]	67.00
	[inch]	2,638
G	[mm]	58.20
	[inch]	2,554
H	[mm]	417.99
	[inch]	16,456
I	[mm]	169.50
	[inch]	6,673
J	[mm]	56.00
	[inch]	2,205
K1	[mm]	17.00
	[inch]	0,669
K2	[mm]	17.00
	[inch]	0,669
L	[mm]	125.49
	[inch]	4,941

6 Transport and shipping

6.1 Gross weight

MODEL		OWX 3.0
Weight*	[kg]	16.70
	[lbs]	36,817

** incl. scope of delivery and transport case*

6.2 Transport

WARNING

Danger of injury through high weight of the weld head!
The transport case with orbital weld head and delivery contents weighs 16.70 kg (36.817 lbs).

- ► Lift the orbital weld head carefully.
- ► Place the transport case on a secure base.
- ► Wear safety shoes to EN ISO 20345, Class SB.

► Transport the weld head in the transport case using the handle.

CAUTION

Danger of injury through pointed electrode!

If the weld head is removed incorrectly from the transport case, there is the danger that you may touch the pointed electrode.

- ► Use the handle provided to remove the weld head.
- ► Dismantle the electrode before transport.

► Use the handle to remove the weld head from the transport case.

7 Commissioning

7.1 Scope of delivery

ITEM	CODE	QUANTITY	UNIT
ORBIWELD X 3.0	837 000 001	1	PCS.
OWX tool set	836 030 001	1	PCS.
General safety information for enclosed weld heads	836 060 101	1	PCS.
Operating instructions & ETL, OWX Download link PDF: https://www.orbitalum.com/de/download.html	836 060 201	Unlimited (PDF)	PCS.
Transport case OWX 3.0	837 030 010	1	PCS.

We reserve the right to make changes.

- ► Check the delivery for completeness and damage caused by transport.
- ► Report any missing parts or damage caused by transport to your supplier immediately.

7.2 Prepare commissioning

Prerequisite:

Welding power supply connected and ready to operate.

WARNING

Risk of explosion when using incorrect (explosive) gases during welding process.

Severe injuries and death may be the result.

- ► Observe safety instructions in the operating instructions of the power supply.
- ► Usage solely of protective gases that are classified for TIG welding process in accordance with EN ISO 14175.

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.

- ► Check the weld head, hose package, ground cable and lines for damage (*see chapt.* Maintenance and care [▷ 77]).
- ► Check the weld head for loose parts and particles in the transmission (*see chapt.* Troubleshooting [▷ 82]).
- ► Check the working environment for possible sources of danger and, if applicable, eliminate them (*see chapt.* Machine constraints [▷ 9] *and* Tripping over wires and cables).
- ► Fill weld head with cooling liquid (*see chapt.* Carry out the gas and cooling liquid function test [▷ 57]).
- ► For usage in overhead position: Secure the orbital weld head with drop guard (*see chapt.* Fit drop guard [▷ 36]).

8 Setup and mounting

8.1 Procedure

INFO		Follow the operating instructions for the welding power supply!

Carry out setting up and mounting in the following order:

1. Before overhead work fit drop guard [▶ 36]
2. Connect the weld head to the power supply [▶ 47]
3. Mount clamping inserts [▶ 52]
4. Set up the electrode [▶ 53]
5. Clamp the weld head onto the workpieces [▶ 55]
6. Carry out the gas and cooling liquid function test [▶ 57]
7. Mount Table mount (optional) [▶ 39] and connect accessories [▶ 88]
8. Configure the welding procedure [▶ 57]

8.2 Fit drop guard

WARNING

Falling of unsecured weld head.

The device may drop and injure people.

- ► Before start of work, fit drop guard with sufficient load capacity (e.g. wire cable with snap hook) to weld head.
- ► Weld head must **not** be used unsecured in overhead positions.

Before start of work the weld head must be secured against falling.

To this end the weld heads of the OWX series have a safety lug (1) for fastening a suitable drop guard, such as a screw carbine (2), to a wire cable (3).

Connect safety lug (1), e.g. via a screw carbine (2), to a wire cable (3) secured above the workplace.

8.3 Smart Welder software update

To take advantage of the full functionality of the OWX weld head the power supply software has to be updated to **version 3.1.0 or higher**.

Prepare the software update:

The necessary software files, an explainer video and step-by-step instructions are available at http://www.orbitalum.com/owx-update.

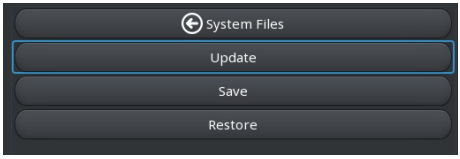
► Download the **Smartwelder.ZIP** and **OM_VX.X.X.OTU** files and save them to a USB stick. Make sure that the USB stick is formated in FAT32 format and has a memory size of at least 16 GB.

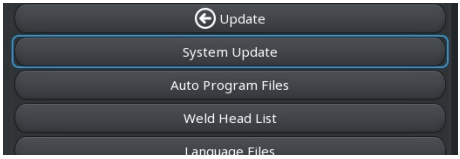
Perform the software update:

► Insert the USB update stick into any power supply USB port.

⇨ The power supply automatically recognizes which updates are needed based on the currently installed software version

► From the main menu navigate via “Settings” / “System data” / “Update” / “Update system” and confirm the execution of the update. Depending on the current software version, the update takes approx. 20-40 minutes. While the update is running do not switch the power supply off and do not remove the USB stick!





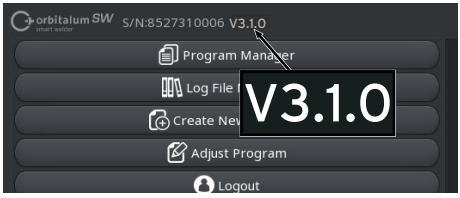
⇨ A progress bar on the display shows the status of the update.
The power supply restarts automatically when the update is finished.

Check the software version:

Depending on the original power supply software version, two update routines may be needed.

If the version **3.1.0** is shown in the display’s header, the software update has been completed successfully.

If a version < **3.1.0** is shown in the display’s header, perform the update routine again according to the above mentioned instructions.



8.3.1 Select the “Orbitalum” headlist

With the update of the Smart Welder software the “Orbitalum” headlist is updated automatically as well.

If the “Orbitalum” headlist was modified prior to the update, an “Orbitalum [M]” – for “modified” – headlist is also generated and selected. Depending on the modification of the “Orbitalum [M]” headlist, it is possible that the OWX will not work properly. Because of that it is necessary to select the “Orbitalum” headlist first.

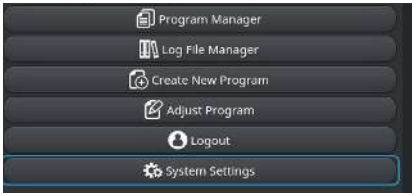
NOTICE!

Degraded communication setup between weld head and power supply.

Malfunctions may occur while setting up the communication if connecting the control cable to a power supply that is already switched on.

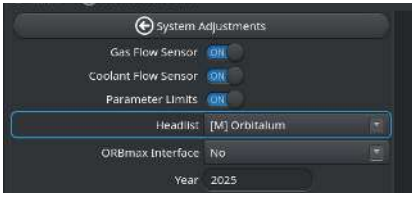
► Before connecting the welding head and the control cable make sure that the power supply is switched off.

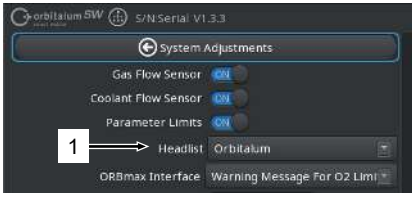
► From the main menu navigate via “Settings” to the menu item “Headlist” (1) in the “System settings”.



► Check which headlist is selected, if necessary select the “Orbitalum” headlist.

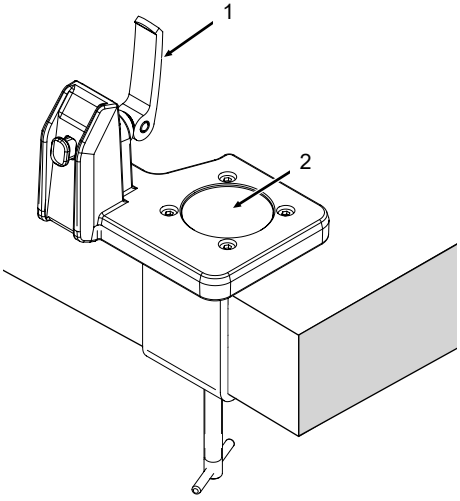
⇨ The OWX is now available in its full range of functions in the weld head selection.





8.4 Table mount (optional)

The optional table mount made of anodized aluminum makes it possible to attach and fasten weld heads of the ORBIWELD X series conveniently and securely. It can be clamped on the edges of worktops, screwed onto worktops or integrated in alternative fastening systems.



Range of applications

Table mount:

- For the stationary use of the weld head with clamping lever (1) pulled tight.
- For the short-term retention of the weld head with clamping lever (1) released.

Rubber pad (2):

- Defined support surface for small parts, like electrodes and screws.
- Support surface for the feet of screw clamps or quick clamps of alternative fastening systems.

8.4.1 Mounting table mount

Fast mounting on edge of table, like pre-assembled

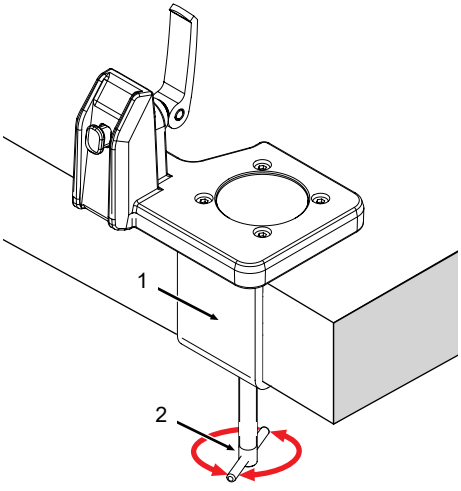


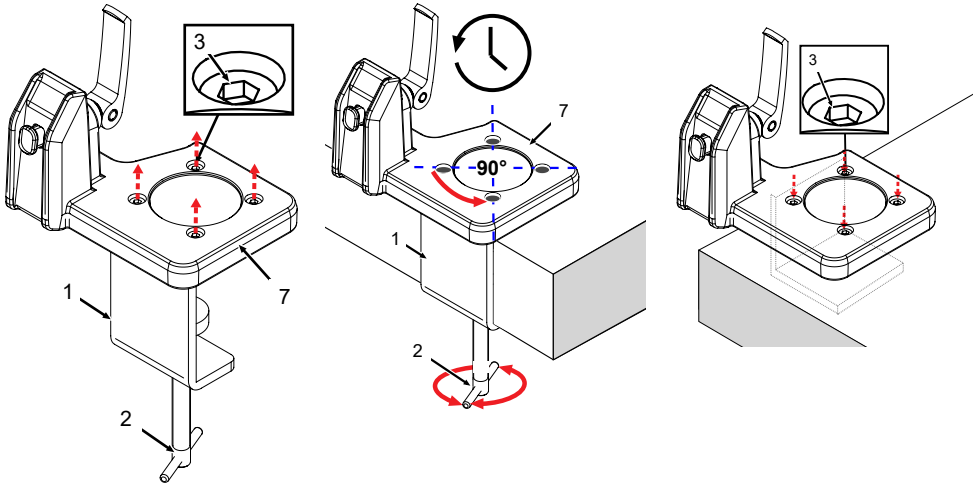
Illustration: Table mount with mounting bracket

Procedure:

1. Open tensioning screw (2) according to the worktop thickness.
2. Place mounting bracket (1) in position on the edge of the worktop and tighten tensioning screw (2) firmly enough that the table mount cannot be moved anymore by hand.
3. To remove the table mount carry out the action steps in the reverse order.

Fast mounting on edge of table, base turned by 90° on mounting bracket

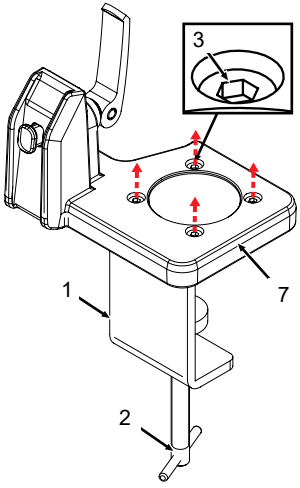
Fasten the base which can be turned by 90° on the mounting bracket to align the rotor's rotation axis parallel or perpendicular to the edge of table.



Procedure:

1. Dismantle the base (7) by unscrewing and removing the four fastening screws (3) from the mounting bracket (1).
2. Turn base (7) by 90° counterclockwise and using the four fastening screws (3) rescrew on the mounting bracket (1).
3. Open tensioning screw (2) according to the worktop thickness.
4. Place mounting bracket (1) in position on the edge of the worktop and tighten tensioning screw (2) firmly enough that the table mount cannot be moved anymore.
5. To remove the table mount carry out the action steps in the reverse order.

Screwed on worktop



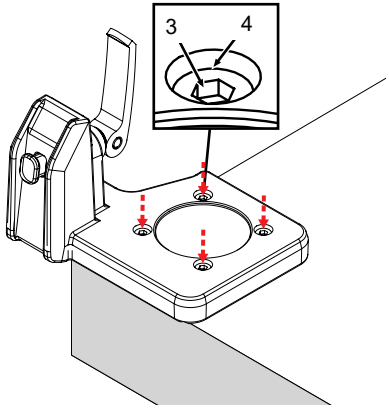


Table mount base screwed on worktop

Procedure:

1. Unscrew the four fastening screws (3) from base (7) and mounting bracket (1).
2. Using four suitable screws screw base (7) onto the worktop via the mounting holes (4).
3. To remove the table mount carry out the action steps in the reverse order.

Integrate in alternative fastening system

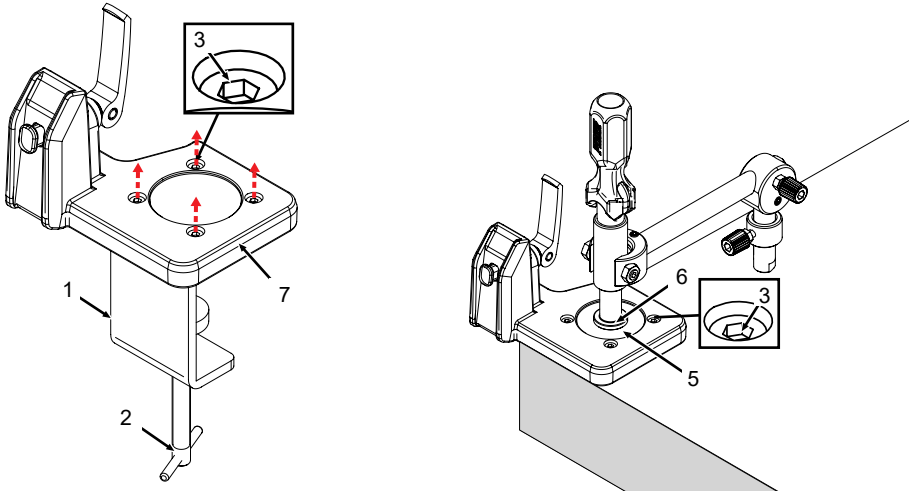


Table mount in alternative fastening system (example)

Procedure:

1. Dismantle the mounting bracket (1) by unscrewing and removing the four fastening screws (3) from the base (7).
2. Use rubber pad (5) as support surface for the feet of screw clamps or quick clamps (6) of the alternative fastening system, *see* installation instructions of the alternative fastening system.

8.4.2 Fastening the weld head on the table mount

The following work steps describe fastening the weld head on the table mount using tightened quick clamp for stationary use and using released quick clamp for short-term retention.

The clamping lever can be used for both the “parking” position for short-term retention and the “clamping” position for fastening the weld head:

Quick clamp tilted vertically downward for short-term retention

Quick clamp tilted vertically upward for stationary use.

CAUTION

If the quick clamp is loosened too much from the table mount, there is the risk that the weld head may fall off.

Injuries and property damage may be the result.

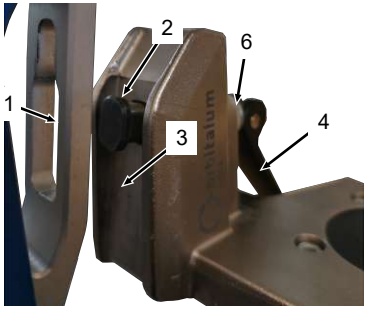
► Before attaching the weld head make sure that the clamping lever is not loosened too much.

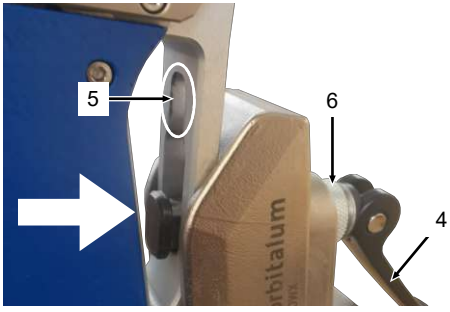
NOTICE!

The table mount is intended exclusively for short-term retention or fastening the OWX weld head. The user alone is liable for any damage and injuries arising from improper use.

► Release quick clamp (4) of the table mount.

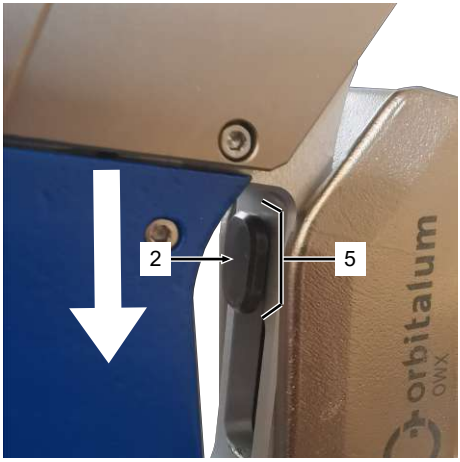
► Hold weld head vertically by the handle and push the lower, extended section of the mounting lug (1) completely over the head of the holding pin (2) and press against the stop face of the guide groove (3).





► Keep weld head pressed against the guide groove's stop face and pull downward as far as the stop so that the head of the holding pin (2) is seated in the upper, narrowed section of the mounting lug (5).

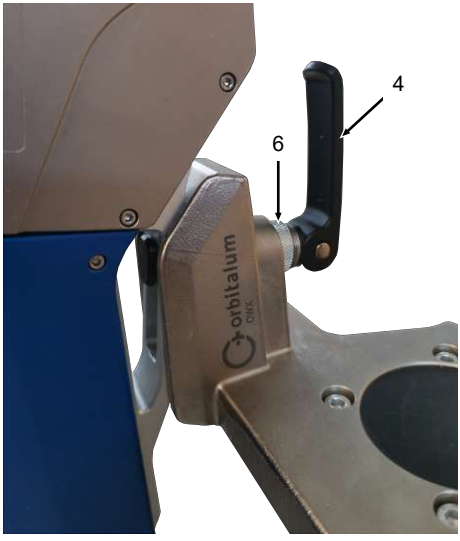
⇨ The table mount may now be used for short-term retention because the weld head can be mounted and unmounted without even releasing the clamping lever.



► Tighten bush (6) clockwise to the extent that the clamping lever (5) can only still be tilted back with resistance. If necessary, loosen bush to the extent that the clamping lever (5) can be tilted back completely.

► Tilt clamping lever (4) back completely.

⇨ The weld head is now clamped firmly on the table mount for stationary use.



► To release and remove the weld head from the table mount carry out the action steps in the reverse order.

8.5 Connecting the weld head to the power supply

DANGER

Fatal electrocution when user generates contact between electrode and ground potential (enclosure/workpiece or the like) and welding process is started.

Fatal electrocution due to live parts.

- ► Switch power supply off before connecting or disconnecting a weld head or manual welding torch.
- ► If the weld head or manual welding torch is not ready for operation, switch to test mode.
- ► Keep weld head closed.
- ► Do not generate any contact between electrode and ground potential (enclosure/workpiece or the like).

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.

CAUTION

Unintentional starting up of the weld head!

Crushing of hands and fingers.

- ► Switch off the Orbital welding power source.

CAUTION

Coolant leakage during weld head change

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

- ► Switch power supply off when changing weld head.

NOTICE!

Overheating of the weld head and damaging of the hose package because of a lack of cooling liquid!

► Ensure that the coolant tank of the welding power supply or of the external cooling device is filled sufficiently (coolant level should at least reach the "MIN" marking on the tank).

NOTICE!

During initial commissioning:

The hose package may be damaged while being unpacked from the packaging foil!

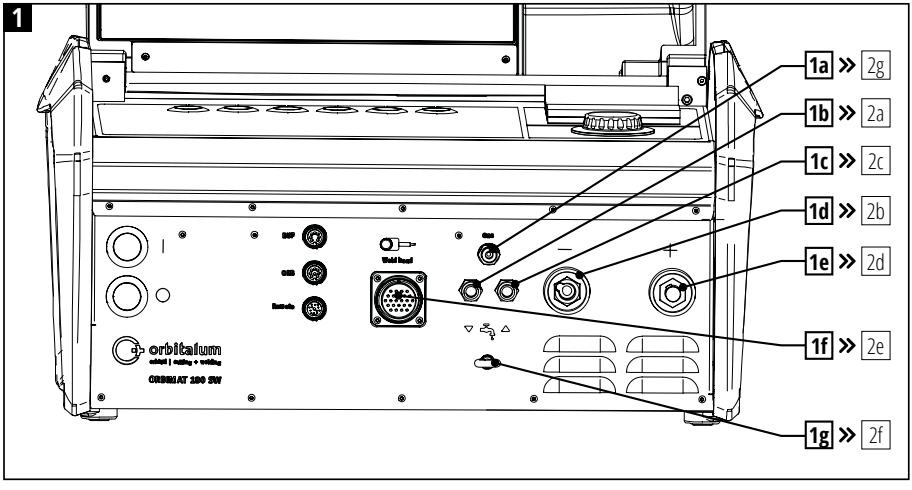
► Carefully sever the cable ties without damaging the hose package.

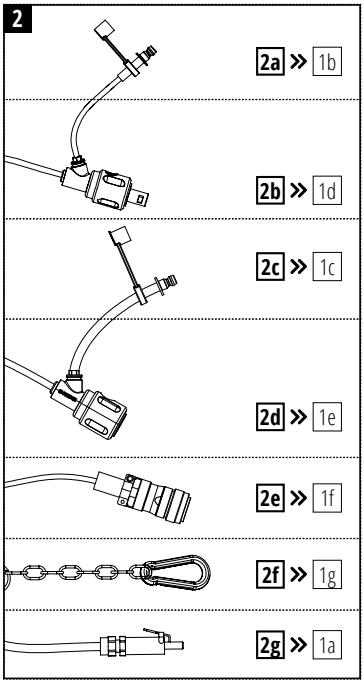
8.5.1 Connection sequence

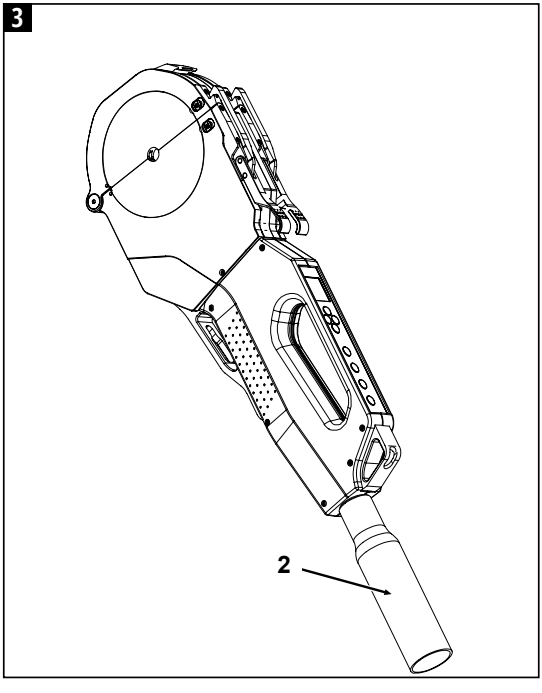
See also chapt. Wiring diagram [▶ 50]).

1. Attach the strain relief.
2. Connect the Amphenol plug.
3. Connect the welding current plug and welding current socket.
4. Connect the blue and red cooling liquid connection.
5. Connect the gas hose.
6. Switch on the welding power supply.
7. Carry out gas and cooling liquid function test.

8.5.2 Wiring diagram



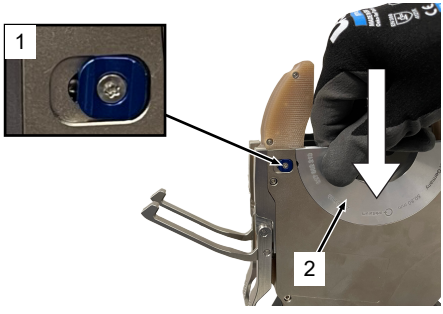




POS.	DESIGNATION	TO BE CONNECTED WITH	POS.
1	**Power supply, e.g. Smart Welder type**		
1a	Socket "Gas"	Plug "Gas", hose package	**2g**
1b	"Coolant supply line" socket, **blue**	"Coolant supply line" plug, **blue**, hose package	**2a**
1c	"Coolant return line" socket, **red**	"Coolant return line" plug, **red**, hose package	**2c**
1d	Socket "Welding current –" (hose package)	Plug "Welding current –", hose package, if necessary with connection adapter*	**2b**
1e	Plug "Welding current +" (ground cable)	Socket "Welding current +", ground cable	**2d**
1f	Socket "Control line"	Plug "control line to power supply"	**2e**
1g	"Strain relief" eye	"Strain relief" snap hook, hose package	**2f**
2	**Hose package**		
2a	Plug "Coolant supply line", blue	Socket "Coolant supply line", blue, power supply	**1b**
2b	Plug "Welding current –"	"Welding current –" socket, power supply	**1d**
2c	"Coolant return line" plug, red	"Coolant return line" socket, red, power supply	**1c**
2d	"Welding current +" socket	Plug "Welding current +", power supply	**1e**
2e	Plug "Control line"	Socket "Control line for power supply"	**1f**
2f	"Strain relief" snap hook	"Strain relief" eye, power supply	**1g**
2g	"Gas" plug (quick lock)	"Gas" socket, power supply	**1a**
3	**Weld head, e.g. type OWX 3.0**		

8.6 Mount clamping inserts

1. Position the weld head flat on the support surface.
2. Open the swivel clamp.
3. Insert the clamping insert (2) with the writing facing outwards. The lock (1) has to latch in



8.7 Set up the electrode

The weld head contains 2 electrode holes for different electrode diameters that are identified by electrode markings on the rotor. The following action steps
apply for both electrode diameters.

DANGER

Electrical hazards due to touching as well as incorrect or damp protective equipment.

Electric shock.

- ► Do **not** touch energized parts (pipe), especially when igniting the arc.
- ► Do **not** allow persons with increased sensitivity to electrical hazards (e.g. cardiac failure) to work with the machine.
- ► Wear dry safety shoes, dry metal-free (grommet-free) leather gloves and dry safety suits to minimize the electrical hazard.
- ► Work on a dry surface.

DANGER

The rotation movement of the rotor can cause hair, jewelry or clothes to be caught and pulled into the enclosure.

- ► Wear tight-fitting clothes.
- ► Do **not** wear open hair, jewelry or other accessories that can be easily drawn in.

CAUTION

The rotor can start up unexpectedly during the setup of the electrode.

Risk of crushing of hands and fingers!

- ► Before mounting the electrodes: Switch off the power supply.
- ► To move the rotor to home position: Close the clamping cassette or the clamping unit and flip cover.

CAUTION

Danger of being pricked by the electrode for the operator as well as for third parties while taking hold of the orbital weld head.

- ► Do **not** grasp the orbital weld head at the position of the electrode.
- ► Wear safety gloves DIN 12477, Type A for welding operation and DIN 388, Class 4 for mounting the electrode.

CAUTION

Unintentional starting up of the weld head!

Crushing at hands and fingers.

- ► Switch off the welding power supply before the weld head is connected.

NOTICE!

Damage to property through electrode in the toothed space!

If the electrode projects into the toothed space, jamming can occur in the transmission.

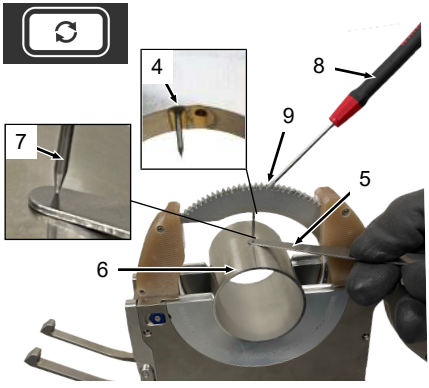
► Shorten the electrode.

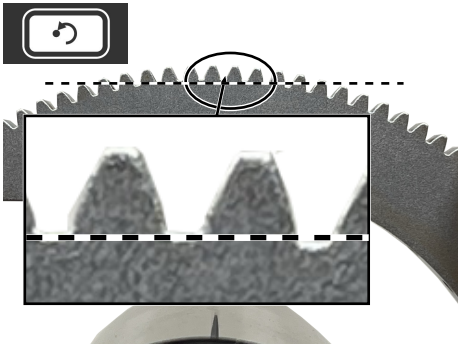
INFO

The OWX weld heads have 2 electrode holes for the electrode diameters 1.6 mm (0.063 in) and 2.4 mm (0.094 in), whIch are marked by electrode markings on the rotor

(*see chapt.* Electrode holders [▶ 26]).

1. Ensure that the welding power supply is switched on.
2. Move the rotor to the home position (0 position) (e.g. by pressing the "END.-0-POS" button on the control panel on the weld head).
3. Tilt lever (1) upward and lock hook (2) outward.
4. Open the swivel brackets (3).
5. Insert the workpiece (6).
6. Press the “MOTOR” button and keep it pressed until the electrode hole (4) has reached the 12 o' clock position (pay attention to markings on the rotor).
7. Switch off the Orbital welding power supply.
8. Loosen the electrode clamping screw (9).
9. Check the electrode (7) for sharpness and geometry (*see chapt.* Grinding electrode) and insert in the corresponding electrode hole (4) .
10. Set the electrode distance with a feeler gage (5) and tighten the electrode clamping screw finger tight using a screwdriver (8).
11. Make sure that the electrode does not project into the toothed space of the rotor; if necessary, shorten the electrode.
12. Switch on the welding power supply.
13. Press the “END.- 0-POS button in order to bring the rotor to the home position (0 position).





8.8 Clamping the workpieces

CAUTION

The orbital weld head or pipe falls down during mounting/dismantling/setup or during unsecured usage in overhead position.

- ► Attach the orbital weld head securely to the workpiece and ensure that it **cannot** fall down.
- ► Wear safety shoes to EN ISO 20345, Class SB.
- ► For usage in overhead position: Wear safety helmet to DIN EN 397.

CAUTION

Danger of cut injuries caused by sharp tube edges when placing the tube in the orbital weld head.

- ► Wear safety gloves to EN 388, Performance level 2.

CAUTION

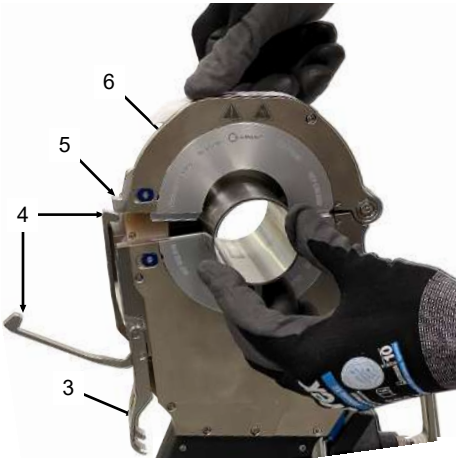
After welding the orbital weld head and the workpiece are hot. Very high temperatures arise in particular after several consecutive welding processes. There is a danger of burns or damage to the points of contact when working on the orbital weld head (for example when changing clamps or mounting/removing the electrodes). Materials without thermal resistance (for example foam inlay of the transport case) can be damaged when coming into contact with the hot orbital weld head.

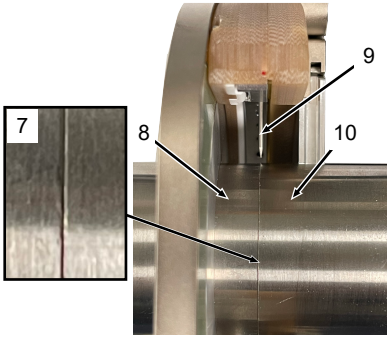
- ► Wear safety gloves to EN 388, Performance level 2.
- ► Wait until the surfaces have cooled down to below 50 °C before working on the orbital weld head or before packing into the transport case.
- ► Position the weld head correctly.
- ► Use only permissible materials in the welding area.

1. Ensure that the welding power supply is switched on.
2. Move the rotor to the home position (0 position) (e.g. by pressing the "END.-0-POS" button on the control panel on the weld head).
3. Tilt lever (3) upward and lock hook (4) outward.
4. Open both swivel clamps (6).

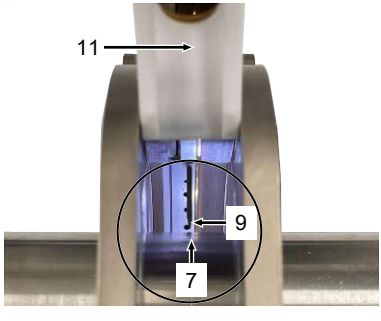
5. Insert workpiece 1 (8) and align pipe end to electrode tip.
   The electrode (9) has to be positioned centrally over the
   workpiece joint (7).
6. Open the swivel clamps (6).
7. Hook lock hook (4) into the metal nose (5) of the swivel clamp (6) above workpiece 1 (8) and tilt lever (3) down as far as the stop.

   => Workpiece 1 (8) is fastened.
8. Place workpiece 2 (10) at pipe end of workpiece 1 (8).
9. Open the swivel clamps (6).
10. Hook lock hook (4) into the metal nose (5) of the swivel clamp (6) above workpiece 2 (10) and tilt lever (3) down as far as the stop.
    => Workpiece 2 (10) is fastened.





11. Open the flip cover (11). If necessary, switch inside light on, *see chapt.* Start menu.
12. Check position of the electrode (9) and workpiece joint (7).
    The electrode (9) has to be positioned centrally over the workpiece joint (7); if necessary, repeat steps 1 to 9.
13. Close the flip cover (11).



8.9 Carry out gas and cooling liquid function test

1. Press the “GAS“ button to start the function test of the gas and cooling liquid supply.
2. At the initial operation or if the weld head is not filled, wait 1 minute until the weld head is filled with cooling liquid.
3. If necessary, repeat the procedure until the error message "Coolant or gas shortage" does not appear anymore.
4. Press the “GAS“ button to terminate the function test.
5. Check the coolant level of the welding power supply and refill if necessary (*see* operating instructions for the welding power supply).

8.10 Configure the welding procedure

► Configure the welding procedure in accordance with the operating instructions of the welding power supply.

8.11 Calibrating the motor

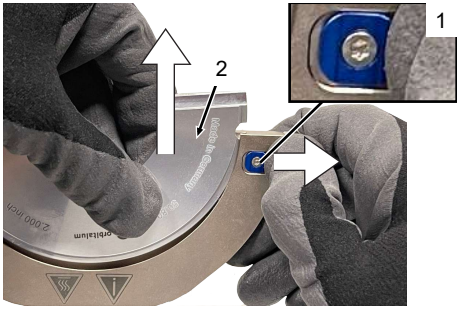
If several weld heads of the same type are in use, Orbitalum Tools recommends that the motors be calibrated before use. The calibration of the motors ensures that saved programs on all the weld heads produce the same result.

► Calibrate motors in accordance with the operating instructions for the welding power supply.

⇨ The weld head is ready to use.

8.12 Dismantling the clamping inserts

1. Open the swivel clamp.
2. Push lock (1) outward.
   ⇨ Clamping insert (2) is unlocked.
3. Remove the clamping insert.



9 Operation

9.1 Operator button panel

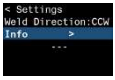
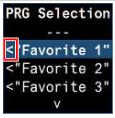
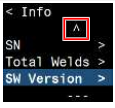
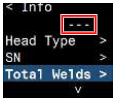
OPERATOR CONTROL	FUNCTION
Display 	• Display of weld head menu.
Arrow keys 	• For navigation in the control menu: up, down, right, left.
START/ STOP 	• Pressing once: Starts the welding process. **NOTICE! The welding process starts with a short delay < 2 seconds. In case you are unsure if pushing the button has worked, wait 2 seconds before pushing again.**
	• Press during the welding process: Welding process is stopped and gas post purge time is started.
	• Press during the gas post purge time: Gas post purge time and cooling are stopped.
GAS 	• Pressing once: Function test of the gas and cooling-liquid supply is started.
	• Pressing again: Function test is terminated.
	• Pressing and holding the key in welding mode or in test mode of welding power supply: Mode is switched.
END.-0-POS 	• Pressing and holding: The rotor rotates until it has reached its "0-position" home position.
MOTOR 	• Pressing and holding: Rotor can be moved manually, for example to set up the electrode or to check the electrode position.

9.2 Menu control

The navigation in the menu and changes in settings is done using the four arrow keys on the operator button panel.

The following table shows the screen elements, describes their function and the actions that can be carried out using the four arrow keys.

NOTICE! The functions of the weld head menu are supported by the Smart Welder and Mobile Welder power supplies only.

SCREEN ELEMENT		FUNCTION	ACTION	ARROW KEY
Menu cursor		Highlights the current position in the menu with a blue background.	To the top	
			To the bottom	
Arrow to the right		Indicates that the menu item has a submenu.	Open submenu	
Arrow to the left		Indicates that a menu is superordinate to the menu item.	Open superordinate menu	
Arrow to the top		Indicates that the list of menu items continues at the top.	Follow list at the top	
Arrow at the bottom		Indicates that the list of menu items continues at the bottom.	Follow list at the bottom	
Dashed line at the top		Indicates the upper end of the ribbon.		
Dashed line at the bottom		Indicates the lower end of the ribbon.		

SCREEN ELEMENT		FUNCTION	ACTION	AR-ROW KEY
Slide controls		Control element for selecting between two or more options.	Switch to the next option	
Information field		Shows service-relevant information like serial number, number of weldings and software version.		
Progress bar		Shows the welding procedure progress in %		

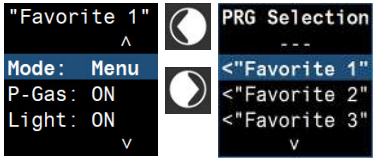
9.3 Start menu

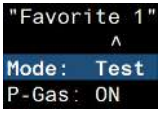
NOTICE! **The Start menu is only available outside of the welding process running.**

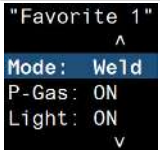
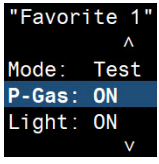
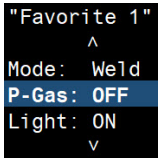
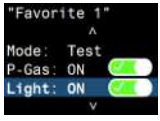
The Start menu appears immediately after the start of the power supply on the weld head display (*see* menu item “PRG Selection” screen image).

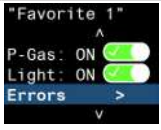
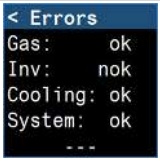
It provides setting options relevant to the welding process and is the starting point for switching to the settings (“Settings”).

The following table gives an overview of the menu items, their functions and setting options.

MENU ITEM	SCREEN IMAGE	SUBMENU	FUNCTION
PRG Selection			Display of the welding procedure currently loaded. Arrow key to the right opens the welding procedure selection (“PRG Selection”). *See chap.* Menu control [▶ 59] Every welding procedure from the “Favorites” procedure folders of the power supplies and the “DEFAULT” procedure are listed in the procedure selection. <u>Loading the welding procedure:</u> ✓ Favored welding procedures were highlighted as Favorites by the power supply’s procedure manager. 1. Highlight welding procedure using the menu cursor. 2. Confirm selection using “Arrow to the left” button.

MENU ITEM	SCREEN IMAGE		SUBMENU	FUNCTION
Mode: Menu				"Menu" mode (idle): Switches the power supply in its main menu. • The power supply and weld head are idle. • In this mode the START/STOP button of the weld head operator button panel is deactivated. • Neither a welding process nor a test process can be started. • The GAS, END.-0-POS and MOTOR button functions continue to be available. **If the weld head is not being used, NOTICE! always switch to the "Idle" mode or to the power supply's main menu. In this way the welding/test mode is prevented from starting inadvertently by means of the operator button panel.**
Mode: Test				"Test" mode: Switches the power supply to the test mode. In the test mode, a simulation process can be started and all welding-relevant functions can be controlled in order to check and adjust the sequence of the currently loaded welding procedure. The entire welding process is started, but without: • Arc ignition / welding current • Flow of welding gas • Coolant flow Except for the features mentioned above, the test mode is identical to the "Weld" mode. ► Press the START/STOP button to start the simulation process.

MENU ITEM	SCREEN IMAGE		SUBMENU	FUNCTION
Mode: Weld				“Weld” mode: Switches the power supply to the “Weld“ mode. In the “Weld” mode, the welding menu is activated and the welding process can be started. ► Press the START/STOP button to start the welding process. *See chapt.* Welding menu [▷ 67] *and chapt.* Welding [▷ 68]
P-Gas				Permanent Gas is activated. The Permanent Gas function continuously pressurizes the weld head with a constant flow of welding gas to prevent oxygen from entering the weld head. Prerequisite: Permanent Gas volume is configured in the “system settings” of the power supply.
				Permanent Gas is deactivated.
Light				Weld head inside light on. The Light function switches the illumination in the weld head’s welding chamber on. The illumination serves to better visually assess the alignment and offset of the workpieces to the electrode.
				Weld head inside light off. **NOTICE! The “Light” function is switched to “ON” automatically after every welding in order to facilitate the insertion of new workpieces.**

MENU ITEM	SCREEN IMAGE		SUBMENU	FUNCTION
Errors				Status overview of the “Gas”, “Inv” (Inverter), “Cooling” and “System” system components. • “OK” = okay • “NOK” = not okay
Settings				Leads to the settings. *See chapt.* Settings [▶ 65]

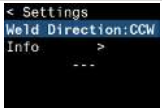
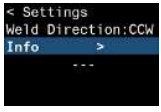
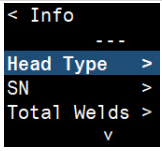
9.4 Settings

NOTICE! **The Start menu is only available outside of the welding process.**

Open from the start menu from “Settings”:

1. Move cursor to "Settings” menu item.
2. Press arrow key to the right.

Overview of the menu items, their functions and setting options:

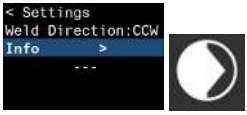
MENU ITEM	SCREEN IMAGE	SUBMENU/ SETTING	FUNCTION
Weld Direction			Selection option of the direction of the weld head rotor’s rotation. “Weld Direction:CW”: Rotor rotation starts welding upward clockwise.
			“Weld Direction:CCW”: Rotor rotation starts welding downward counterclockwise.
Info			Leads to the Info menu. *See chap.* Info menu [▶ 66]

9.5 Info menu

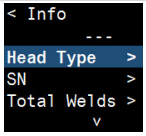
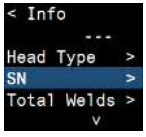
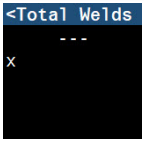
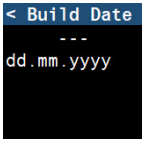
NOTICE! **The Info menu is only available outside of the welding process.**

Open the “Info” menu item from the “Settings”:

1. Move cursor to "Info” menu item.
2. Press arrow key to the right.



Overview of the information types and their functions:

MENU ITEM	SCREEN IMAGE		SUBMENU	FUNCTION
Head Type				Display of the weld head type.
SN				Display of the weld head serial number.
Total Welds				Display of the total number of weldings successfully completed up to now using the weld head.
SW version				Display of the software version of the weld head.
Build Date				Display of the date of manufacture of the weld heat in day-month-year format.

9.6 Welding menu

NOTICE! **The Info menu is only available during the welding process.**

Open the welding menu:

► Start the welding process.

⇨ The welding menu appears on the display. *See chapt.* Welding [▸ 68].
It indicates the name of the currently loaded welding procedure and also the process progress.

Overview of the displays and functions:

PARAMETER	SCREEN IMAGE	FUNCTION
Favorite		Display of the welding procedure currently loaded.
Progress bar		Graphic display of the welding procedure progress in [%].
Welding process active		The red bar signals the active welding process.

9.7 Welding

DANGER

Fatal electrocution when user generates contact between electrode and ground potential (enclosure/workpiece or the like) and welding process is started.

Fatal electrocution due to live parts.

- ► Switch power supply off before connecting or disconnecting a weld head or manual welding torch.
- ► If the weld head or manual welding torch is not ready for operation, switch to test mode.
- ► Keep weld head closed.
- ► Do not generate any contact between electrode and ground potential (enclosure/workpiece or the like).

DANGER

Electromagnetic fields arise during the welding process.

- ► 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.

DANGER

If the argon share in the air rises above 50 %, lasting damage or risk of death can arise through suffocation.

- ► Ensure sufficient ventilation in rooms.
- ► If necessary, monitor the oxygen level in the air.

WARNING

UV and infrared radiation arises during the welding process.

Damage to skin and eyes.

- ► Close the clamping unit completely.
- ► Immediately replace defective clamping inserts that do not fit exactly.

WARNING

Thermal problems can arise in the case of incorrect positioning of the forming system or the use of impermissible materials in the welding area.

In the worst case a fire will be started.

- ► Observe the local general fire protection measures.

WARNING

Poisonous vapors and substances during the welding process and handling of the electrodes!

Health problems, including cancer.

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

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.

CAUTION

Coolant leakage during weld head change

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

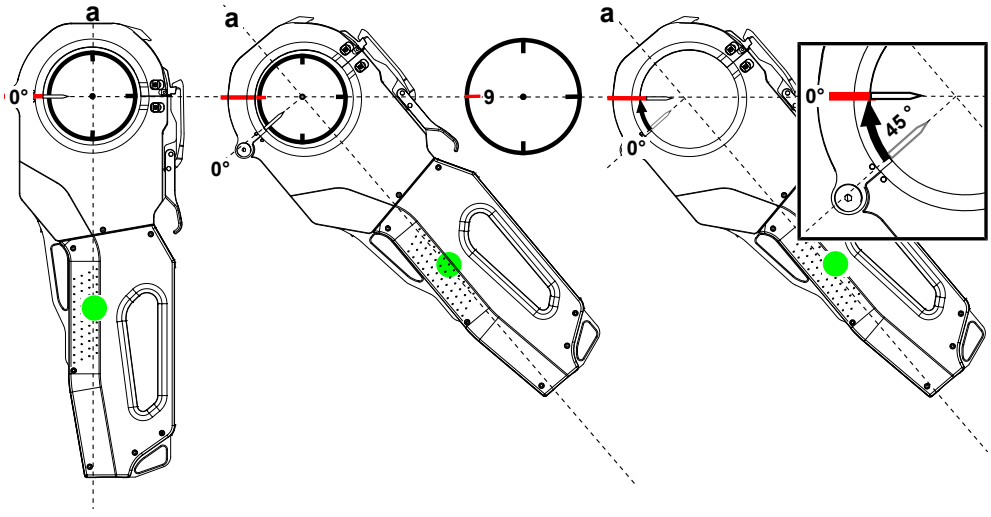
- ► Switch power supply off when changing weld head.

The effects of gravitational force on the melt change with the rotation of the electrode during the welding process. To offset them, different parameters can be set for each sector in the power supply's welding procedure.

The regular physical start position of the electrode in the weld head is the 9 o'clock position (home position/End.-0-Position).

It necessary to ensure that the start position of the electrode corresponds to the programmed start position (0° position) of the welding procedure.

To do this, there are two options:



1.) The weld head is clamped on the pipe in such a way that the 9 o'clock position of the electrode **corresponds** to the start position in the welding procedure (0° position).

2.) The weld head is clamped on the pipe in such a way that the 9 o'clock position of the electrode **does not correspond** to the start position in the welding procedure (0° position).

► Adjustment of the "start position" welding parameter in the welding procedure, here by 45°.

⇨ After pressing the Start button, the rotor moves the electrode to the start position programmed in the welding procedure (0° position) before the welding process starts.

Prerequisite:

- Welding power supply and weld head are ready for operation.
- Weld head is clamped.

Procedure:

► Press "END.-0-POS" button.

⇨ Rotor is moved to the 0/start position.

► Press the "START/STOP button to start the welding process.

► Observe the welding process.

⇨ The welding process ends automatically after the gas post purge time has expired.

⇨ The electrode returns automatically to home position/0° position.

9.7.1 Welding with autopositioning

The **“Autoposition” function** is available in the **power supply settings** of the Mobile Welder and Smart Welder series.
See also the power supply operating instructions.

NOTICE!

The “autoposition” function prevents welding from starting in the event of vertical pipe routing or inclination too steep.

“Autoposition” function is only effective when welding horizontally routed pipes.

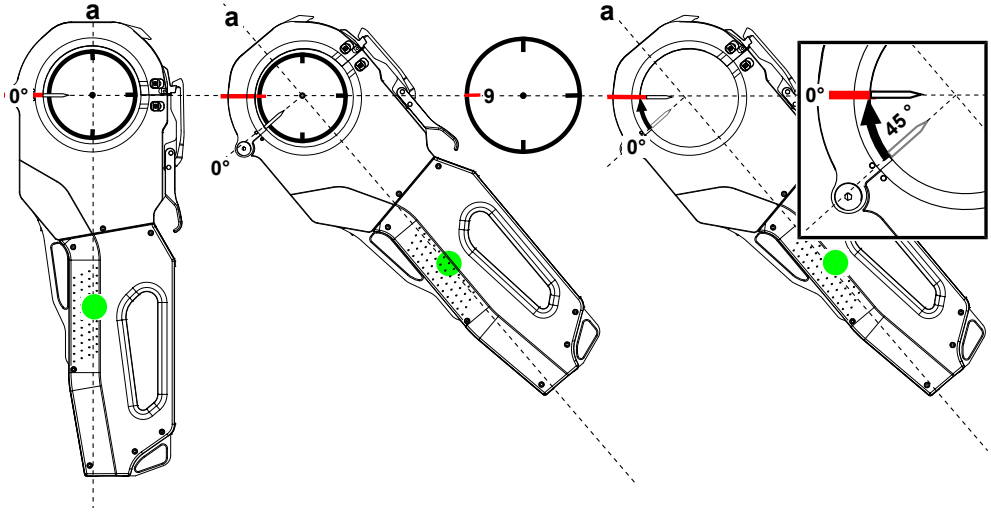
- ► Activate “autoposition” function only in the event of horizontal pipe routing.
- ► Deactivate “autoposition” function in the event of vertical pipe routing or inclination too steep.

The effects of gravitational force on the melt change with the rotation of the electrode during the welding process. To offset them, different parameters can be set for
each sector in the power supply’s welding procedure.

The regular physical start position of the electrode in the weld head is the 9 o’clock position (home position/End.-0-Position).

With **”autoposition”** activated, it is assured that the electrode always moves to the start position programmed in the welding procedure automatically prior to ignition, irrespective of the direction of the head.

When **"autoposition"** activated:



1.) The weld head is clamped on the pipe in such a way that the electrode 9 o'clock position **corresponds** to the start position in the welding procedure (0° position).

► No adjustment by the "autoposition" function because the electrode position corresponds to the programmed start position.

2.) The weld head is clamped on the pipe in such a way that the electrode 9 o'clock position **does not correspond** to the start position in the welding procedure (0 °-Position).

► After pushing the start button, the rotor automatically moves the electrode to the start position (0° position), programmed in the welding procedure, before the welding process begins.

In the **power supply process graph** the **position of the handle** is indicated by the dot (2) and the **position of the electrode** by the light-colored bar (1). If the weld head turns around the axis of the pipe , the position indicators move along with it.

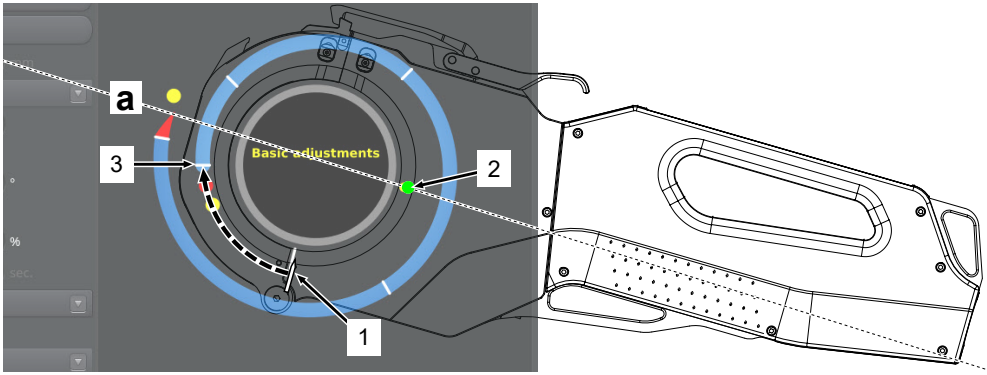
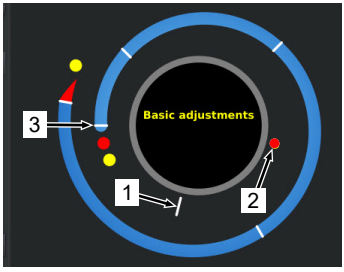
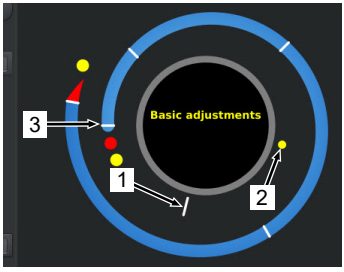
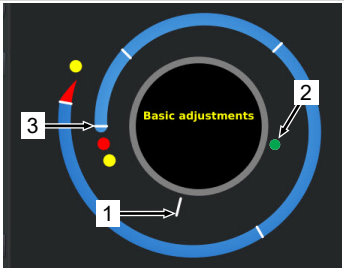
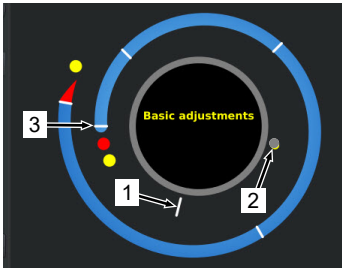
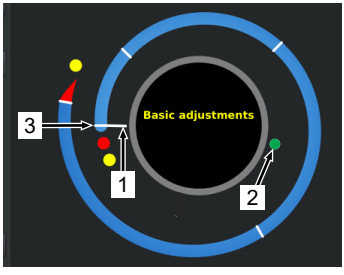
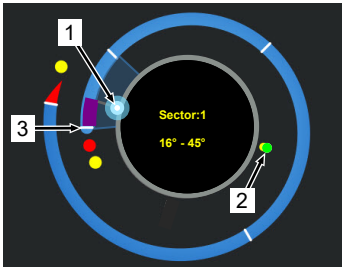


Illustration: Autopositioning of the electrode to the 9 o'clock position

The dot (2) indicates by its color whether it is possible to start the welding process in the current position or not, **between** red, yellow and green.

Color legend if the handle position indicator:

COLOR	STATUS	INDICATOR IN THE PROCESS GRAPH
	✓ Pipe routing deviates too steeply from the horizontal. ► Welding is not possible.	
	✓ Weld head in motion. ► Clamp the weld head onto the workpiece.	

COLOR	STATUS	INDICATOR IN THE PROCESS GRAPH
●	✓ Weld head is clamped in possible welding position. ► The “END.-0-POS” can be pressed to move the electrode to the 9 o’clock position.	
●	✓ Electrode moves to the 9 o’clock position = 0° position. ► Wait until the electrode has reached the 9 o’clock position.	
●	✓ Electrode at the 9 o’clock position. ► Press the “START/STOP button to start the welding process.	
●	✓ Welding process is running. ► Monitor the welding process. ⇨ After ignition the electrode symbol changes to a blue illuminated dot. ⇨ The welded path is lightly highlighted.	

Prerequisite:

- Welding power supply of the Mobile Welder or Smart Welder series is connected and ready for operation.

- The “autoposition” function of the power supply is activated.
- The workpieces proceed horizontally; the symbol for the handle indicates readiness for welding (green).

Procedure:

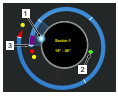
► Press ”END.-0-POS” button.

⇨ Electrode is moved to home position/0° position.

► Press the "START/STOP" button.

⇨ Welding process starts; the progress can be monitored in the power supply process graph.

► Observe the welding process.



⇨ The welding process ends automatically after the gas post purge time has expired.

⇨ The electrode returns to home position/0° position automatically.

10 Maintenance and troubleshooting

10.1 Instructions for care

CAUTION

The use of cleaning agents may cause sensitization.

► Wear protective clothing to prevent contact with cleaning agents.

► **Do not** use lubricants or sliding agents.

► Ensure that dirt particles or small items **do not** get into the transmission (head inside) (the transmission is open at the head end for design reasons).

► If the surfaces are soiled, use only residue-free cleaning agents for cleaning.

► Clean the welding chamber, rotor, basic body and remove residues. Depending on the soiling by using, for example, a wipe/alcohol/isopropyl, cleaning fleece or vacuum cleaner (do not use aggressive cleaning agents since the surfaces might be damaged otherwise).

10.2 Maintenance and care

The following instructions for care depend, if not stated otherwise, strongly on the usage of the weld head.

Shorter cleaning intervals influence the equipment service life positively.

INTERVAL	RESPECTIVE COMPONENT	ACTIVITY
Before every use	Weld head, hose package	► Check for damage and ease of operation of all moving parts (e.g. defective functional surfaces, leakages, cracks, defective screw heads, etc.).
	Weld head	► Perform motor calibration (permissible tolerance of the TARGET speed of rotation: < 2%), *see* operating instructions for the orbital welding power supply.
	Remote control	► Check the keys for functionality.
	Clamping cassette	► Check the lock and clamping mechanism for ease of use, function and clamping.

INTERVAL	RESPECTIVE COMPONENT	ACTIVITY
Before every use	Rotor	► Check the correct home position ("0 position"): The rotor must be completely covered by the enclosure.
	Rotor / electrode	► Check the correct electrode position/rotor setting before each welding. To avoid arcing the rotor must be in the "0 position" before each welding.
	Electrodes	► Ensure electrode gap 0.8 – 1.3 mm (0.031 – 0.051") (*see chapt.* Set up the electrode [▶ 53])
		► Only use cleanly partially ground quality electrodes. Recommendation: Type WS2, grinding angle 30.0° (*see chapt.* Grinding electrode)
	Protective gas for welding	► Only use protective gases that are classified for the TIG welding process according to EN ISO 14175 (e.g. Argon 4.6 or purer protective gas for welding).
		► Set the flow rate: 12 - 18 l/min.
		► Set the gas pre-flow time to at least 30 seconds, with flow force to at least 15 seconds.
	Coolant pump	► To ensure efficient cooling of the head, also between the welding processes: Activate the "pump follow-up time" at the power supply (*see* operating instructions of the orbital welding power supply).
	Workpiece/hose	► Ensure a straight hose cut of 90° (with Orbital hose saw) (burred and planed).
		► I-seam (hose-to-hose) without gap or axle offset.
		► Hose surfaces have to be metallically bright and completely free of greases and other soiling.
Every 60 weldings or daily	Welding chamber, rotor, basic body	► Clean and remove residues. Depending on the soiling by using, for example, a wipe/alcohol/isopropyl, cleaning fleece or vacuum cleaner (do not use aggressive cleaning agents since the surfaces might be damaged otherwise).
		► Wipe out the rotor with a lint-free cotton cloth. **CAUTION Attention: Danger due to rotating rotor!**
Min. every 250 weldings or every week	Weld head	► Perform the standard cleaning process (*see chapt.* Standard cleaning process [▶ 80]). A shorter cleaning interval can prolong the service life of the weld head and the clamping inserts.

INTERVAL	RESPECTIVE COMPONENT	ACTIVITY
Min. every 30,000 weldings or every 24 months	Weld head	► Send in weld head to Orbitalum service for basic cleaning or have cleaning performed by an authorized expert trained by Orbitalum.
Every 2 years	Hose package	► Have it replaced by certified Orbitalum service center.

10.2.1 Standard cleaning process

DANGER

The rotation movement of the rotor can cause hair, jewelry or clothes to be caught and pulled into the enclosure.

- ► Wear tight-fitting clothes.
- ► Do not wear open hair, jewelery or other accessories that can be easily drawn in.

CAUTION

Risk of crushing due to unexpected start of the rotor when setting up the electrode.

Risk of crushing of hands and fingers!

- ► Before connecting the weld head and before mounting the electrode: Switch off orbital welding system.
- ► Before moving the rotor with closed weld heads, fit clamping cassette or clamping inserts and close clamping unit and flip cover.

NOTICE!

Cleaning work on the welding tongs may only be carried after it has cooled down completely!

NOTICE!

Cleaning of the welding tongs should be carried out at least every 500 welding processes. Shorter cleaning intervals influence the equipment service life positively.

CAUTION

The use of lubricants can severely influence the function and cause damage.

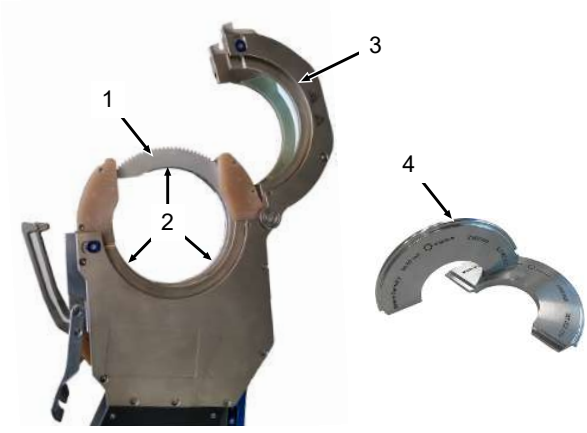
- ► Never spray lubricant **into** the welding tongs!

Required cleaning materials:

- Compressed-air vacuum unit or vacuum cleaner
- Nylon brush
- Lint-free cotton cloth
- Contact spray cleaner (e.g. LOCTITE 7039). Observe safety data sheet of the spray cleaner used!

Preparation:

1. Make sure that the orbital welding power supply is switched on.
2. Remove electrode if necessary (*see chapt.* Set up the electrode [▶ 53]).
3. Move the rotor into the basic setting (0 position) (e.g. by pressing the key "END.-0-POS" in the control panel at the weld head).
4. Remove clamping insert (*see chapt.* Mount clamping inserts [▶ 52]).



Coarse cleaning procedure:

1. Spray the rotor (1) with contact cleaner spray.
2. Spray all exterior/interior surfaces of the swivel clamp (3) and the clamping inserts (4) with contact spray cleaner (see symbols below).
3. Then remove coarse dirt from the rotor (1), swivel clamp (3) and clamping inserts (4) using a nylon brush.
4. Vacuuming of the carbon-like deposits by using a compressed-air vacuum unit or vacuum cleaner.

Fine cleaning procedure:

1. Spray the rotor (1) (both front surfaces of the rotor in particular), swivel clamp (3) and clamping inserts (4) again with contact cleaner. Let the rotor rotate by 360° while spraying (press MOTOR button).
2. Fine cleaning of all treated surfaces with a lint-free cotton cloth.
3. Vacuuming of the carbon-like deposits by using a compressed-air vacuum unit or vacuum cleaner.
4. Next, wipe both front surfaces of the rotor clean using a lint-free cotton cloth. Apply the cloth only when the rotor is at a complete stop.
   ⇨ If necessary, repeat coarse and fine cleaning.
5. Let cleaning agents evaporate completely.
6. Mounting clamping insert again.

10.3 Troubleshooting

WARNING

Electrostatic discharges when opening the weld head!

Damage to electronic components, fires and explosions may be the result.

- ► Send the weld head in to Service or as an experienced user contact Technical Support.
- ► Use ESD-suitable workplace and ground all conductive components.
- ► Wear ESD-suitable clothing, shoes and gloves.
- ► Use ESD protective mat on work surface.
- ► Use ionizers to neutralize static charges in the air.
- ► Use ESD-safe packaging for sensitive components.
- ► Train employees regularly in dealing with ESD and instruct them in the corresponding protective measures.

NOTICE!

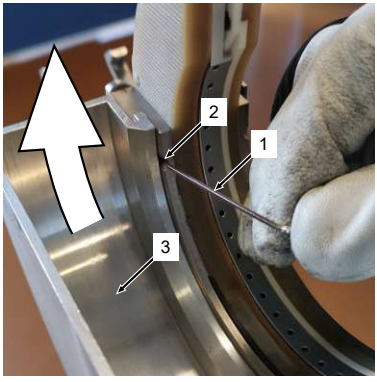
Opening or altering the weld head is prohibited, except for the purpose of removing foreign matter from the transmission.

- ► Follow malfunction correction instructions.

PROBLEM	POSSIBLE CAUSE	REMEDY
Welding process does not start.	No signal, gas, coolant or welding power supply.	► Check the connections at the welding power supply.
Weld head does not clamp correctly on the workpiece.	Workpiece outside the tolerance range.	► Use adapted clamping inserts.
	Lock tension too low due to worn lock hook.	► Replace lock hook
Continuously large and constantly different speed deviations.	Defect at power supply or on weld head.	► Contact Service.

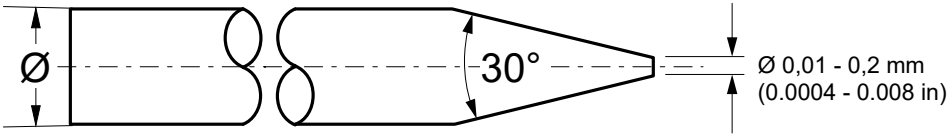
PROBLEM	POSSIBLE CAUSE	REMEDY
Arc does not ignite.	Contact fault between workpiece and clamping insert.	1. Clean the workpiece and clamping insert. 2. Remove isolating intermediate layers.
	Workpieces soiled.	► Clean the workpiece.
	Welding gas concentration too low.	► Check welding gas supply and quantity.
	Electrode distance too large.	► Set the electrode distance.
	Electrode tip worn.	► Regrind the electrode.
	Cable break.	► Replace the hose package.
	Conductivity of the cooling liquid too high.	► Use only Orbitalum cooling liquid OCL-30.
Arc tends to one side.	Electrode worn.	► Regrind the electrode.
	Electrode ground incorrectly.	► Regrind the electrode.
	Poor electrode quality.	► Use Orbitalum electrodes.
	Wrong or different workpiece materials (sulfur content).	► Change workpiece material.
Arc ignites against parts of the weld head.	Electrode not OK.	► Replace the electrode.
	Electrode distance too high.	► Set the electrode distance.
	Weld head soiled.	► Clean the weld head.
	Gas pre-purge time too short.	► Increase the gas pre-purge time.
	Electrode not installed.	► Install electrode.
No menu appears on the display	Control line plug	► Check for tight seat.
	Power supply software version	► Perform SW/MW software update.
	Power supply type	► Function only compatible with SW/MW power supplies.

PROBLEM	POSSIBLE CAUSE	REMEDY
Rotation movement does not start.	Connection faulty.	► Check the plug and welding power supply.
	Electrode or other foreign matter in the transmission.	► Disconnect the weld head from the power supply.
		► If possible, remove the foreign matter by means of a vacuum unit. Otherwise send the weld head in to Service or as an experienced user contact Technical Support, see Service/Kundendienst [▸ 86].
Holding pin and spiral spring have fallen off the table mount.	Clamping lever was turned too much from the base of the table mount.	► Slide spring onto the thread of the holding pin and screw clockwise with pressure into the thread of the table mount base. Then tighten the bush. Make sure that the clamping lever can still tilt with noticeable resistance. *See also chapt.* Fastening the weld head on the table mount [▸ 44]

PROBLEM	POSSIBLE CAUSE	REMEDY
The locking mechanism for unfastening the clamping insert cannot be reached with the finger.	Chamber inserts for fittings for OW 76S have been inserted (Code 827 050 007).	► With a 1.5 mm hexagonal angle screwdriver (not included in the scope of delivery) (1) move into the recess (2) between chamber insert (3) and outside of the weld head and push locking mechanism outward. *See also chapt.* Dismantling the clamping inserts [▸ 57] 

10.4 Grinding electrode

1. Grind the electrode only in the longitudinal direction.
2. After the electrode has been ground, break the tip in accordance with the following sketch.



10.5 Service/Kundendienst

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

The following data are required to order spare parts:

- Machine model: (example: OWX 3.0)
- Machine No.: (See type plate)

► For ordering spare parts, see the spare part list.

► Contact your local branch directly in order to eliminate problematic situations.

11 Storage and decommissioning

Carry out the following steps before storage:

1. Remove the electrode.
2. If appropriate, remove the clamping inserts.
3. Disconnect the weld head from the welding power supply.
4. Place the end caps for cooling liquid over the cooling liquid connections.
5. Store the weld head in the transport case. Ensure that the hose package is not twisted or squeezed.

Carry out the following steps additionally before longer storage periods:

1. Remove the coolant completely from the hose package and the weld head.
2. *Clean the surfaces, see chapt.* Instructions for care.

12 Accessories (optional)

WARNING

Danger presented by using accessories that have not been approved.

Various injuries and damage to property.

► Use only genuine tools, spare parts, operating materials and accessories from Orbitalum Tools.

► See product catalog "Orbital Welding" for a comprehensive overview of suitable accessories.

Download links PDF:

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

► Connect suitable accessories, see operating instructions of accessories.

Clamping inserts

- Made of aluminum.
- A clamping insert consists of 2 half shells for one clamping side.
- 2 clamping inserts (= 4 half shells) are required for each pipe diameter.

Chamber inserts for fittings

Clamping inserts for welding of fittings (e.g. flanges, flanged wheels and screw joints in the food processing industry).

1 chamber insert consists of 2 half shells.

See "Orbital Welding" product catalog for dimensions.

T-piece clamping inserts

Clamping inserts with holding possibility of the collared hose and the hose to be welded.

The following are required for each task and dimension:

- 1 T-piece clamping insert
- 1 electrode adapter set
- 1 clamping insert

Inserts for arc welding

For welding with standard arcs without straight leg root at tubes.

When using these inserts on a weld head side (right or left) only the gas protection around the arc is ensured; clamping does not take place so that the arc has to be crimped.

Consisting of:

• 2 basic retainer halves, independent of pipe diameter

• 2 cover disk halves, dependent on pipe diameter

The covers are inserted into the basic retainers and can be turned so that the side of the elbow can exit at any angle from the weld head. The tube to be welded on the other side of the weld head is held via a standard clamping insert.

The following are required for each task and dimension:

- 1 insert for arc welding
- 1 clamping insert

Electrode adapters made of brass

Robust brass adapter for lateral offset of the tungsten electrode.

The brass electrode adapter reduces the maximum weldable pipe diameter:

MODEL	[MM]	[INCH]
OWX 3.0	48.00	1,890

Electrode adapter for front seam welding

The electrode adapter for front seam welding is used to join two workpieces along the front end.

Electrode adapter for internal welding

Electrode adapter for internal welding.

Hose package extensions

Through the hose package extension the hose package can be extended by up to 20 m.

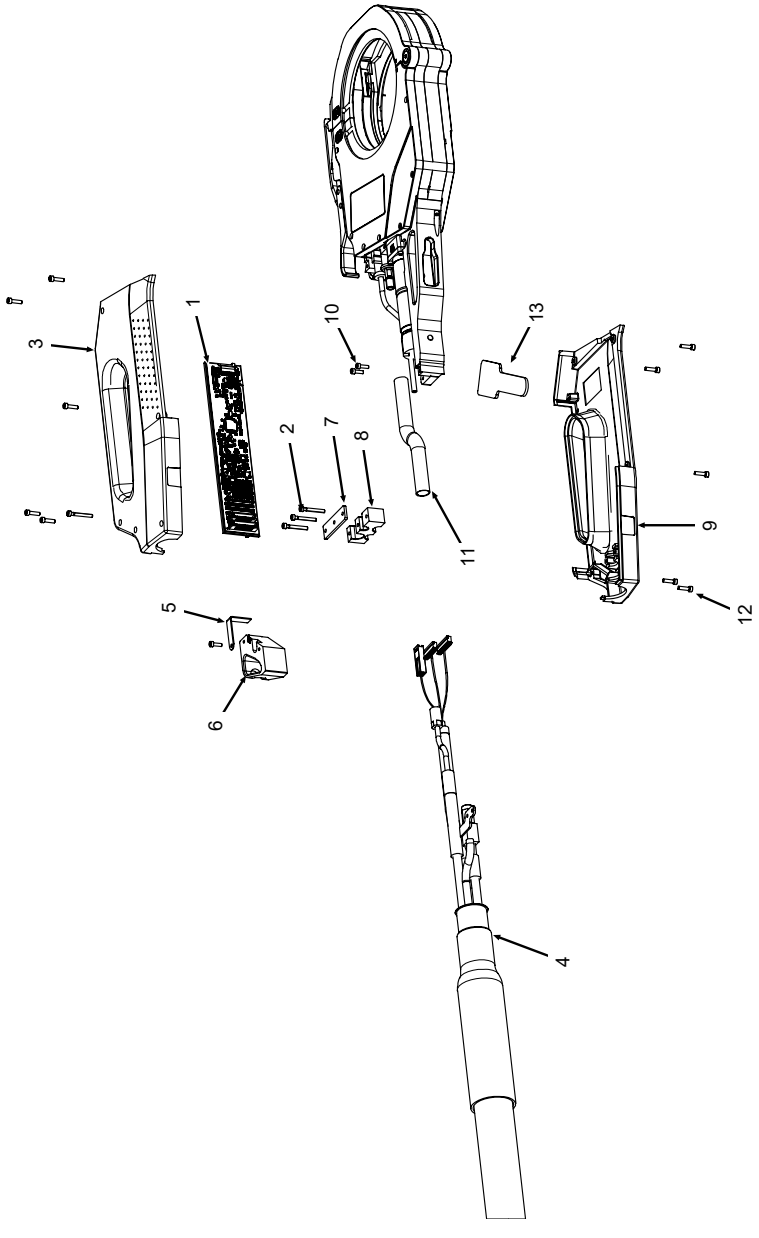
OWX table mount, aluminum (anodized)

The mount allows a convenient and secure placing and fixating of the ORBIWELD orbital weld heads.

The mount can be mounted rapidly and easily on the worktop by means of the integrated table clamp. As a result, the weld head can be firmly fastened to the mount — also ideal for short-term retention of the weld head between individual weldings.

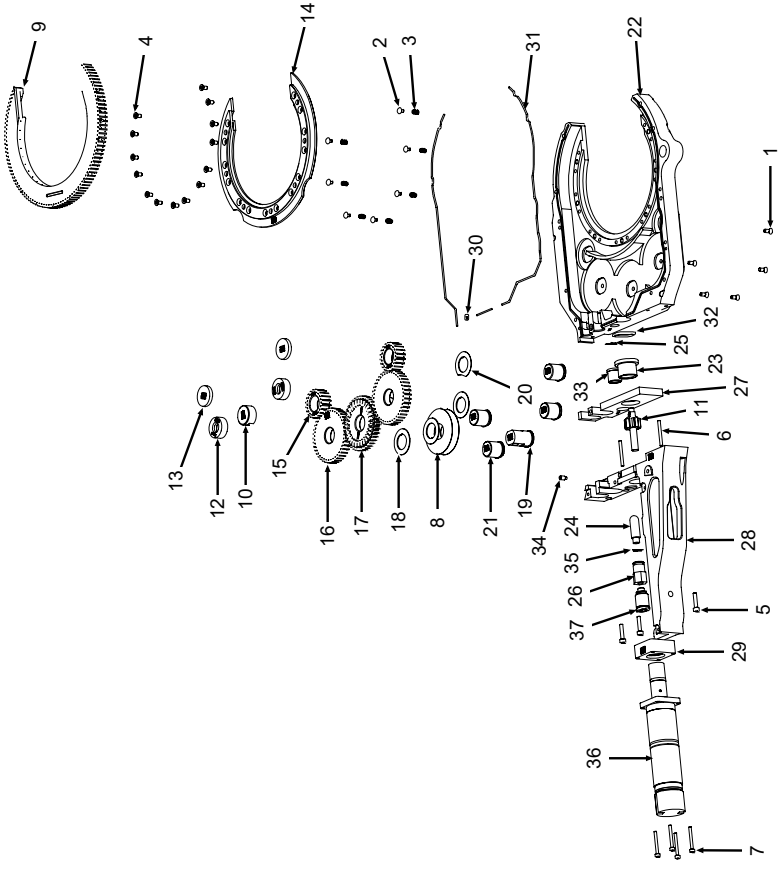
13 ERSATZTEILLISTE | SPARE PARTS LIST

13.1 OWX 3.0 | OWX 3.0

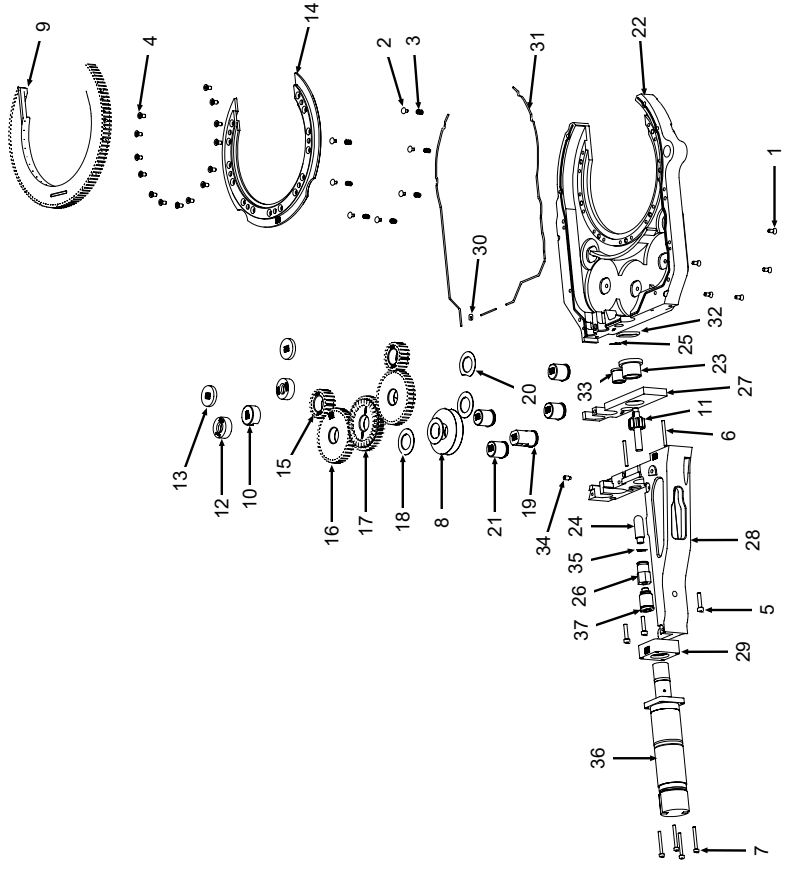


POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	837 050 020	1	Bedienpanel OWX3.0 Control panel OWX3.0	11	836 070 002	1	Isolationsschlauch OWX Insulation hose OWX
2	305 501 097	4	Zylinderschraube ISO4762-M2.5x20-A2 Cylinder screw ISO4762-M2.5x20-A2	12	305 501 076	10	Zylinderschraube ISO4762-M2.5x10-A2 Cylinder screw ISO4762-M2.5x10-A2
3	837 020 026	1	Handgriff, Hinterteil OWX3,0/4.5 Handle, rear part OWX3.0/4.5	13	836 070 006	1	Mini-Klettbandhalter selbstklebend Mini Velcro fastener self-adhesive
4	836 050 020	1	Schlauchpaket OWX Hose package OWX				
5	836 020 062	1	Fixierblech, Steuerleitung OWX1.5/3/4 Fixing plate, control cable OWX1.5/3/4				
6	837 020 060	1	Endstück, Handgriff OWX3.0/4.5 End piece, handle OWX3.0/4.5				
7	836 020 061	1	Fixierblech, Zugentl. SP OWX1.5/3/4 Fixing plate, strain relief CS OWX1/3/4				
8	836 020 059	1	Zugentl., Handgriff OWX1.5/3/4 Strain relief, handle OWX1.5/3/4				
9	837 020 027	1	Handgriff, Vorderteil OWX3.0/4.5 Handle, front part OWX3.0/4.5				
10	305 501 054	3	Zylinderschraube ISO4762-M2.5x8-A2 Cylinder screw ISO4762-M2.5x8-A2				

13.2 Grundkörper Basisteil OWX 3.0 | Base body OWX 3.0

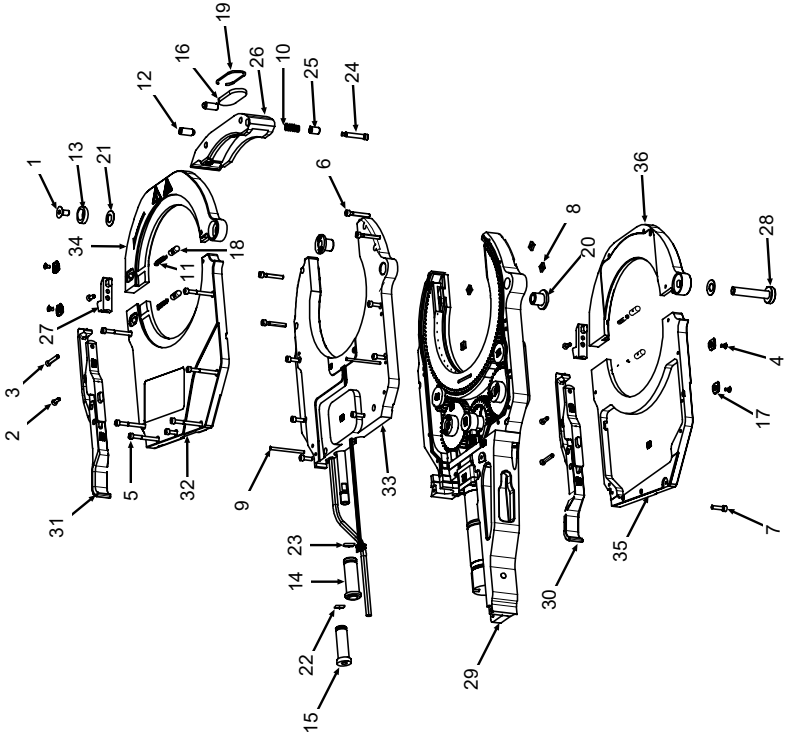


POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	305 501 016	5	Senkschraube ISO14581 M2x8 Countersunk screw ISO14581 M2x8	11	836 020 019	1	Antriebsritzel OWX Drive pinion OWX
2	826 007 011	7	Kugelkopfdruckstück OWX Spherical head pressure piece OWX	12	837 020 004	2	Abstandshalter, Typ B 6.5 OWX3.0 Spacer, type B 6.5 OWX3.0
3	826 020 009	7	Feder für Kugelkopfdruckstück OWS/X Spheric. head press.piece, spring OWS/X	13	836 020 004	2	Abstandshalter,Typ A 2.8 OWX1.5/3.0 Spacer, type A 2.8 OWX1.5/3.0
4	305 501 021	14	Senkschraube ISO14581-M2.5x5-A2 Countersunk screw ISO14581-M2.5x5-A2	14	837 020 005	1	Teflonring OWX3.0 Teflon ring OWX3.0
5	305 501 051	3	Zylinderschraube ISO4762-M2.5x12-A2 Cylinder screw ISO4762-M2.5x12-A2	15	837 020 024	2	Stirnzahnrad, Z20 OWX3/4/6 Spur gear, Z20 OWX3/4/6
6	565 808 193	2	Zylinderstift ISO 2338-2m6x18-A2 Cylinder pin ISO2338-2m6x18-A2	16	837 020 023	2	Stirnzahnrad, Z40 OWX3/4/6 Spur gear, Z40 OWX3/4/6
7	305 501 047	4	Zylinderschraube ISO4762-M2x18-A2 Cylinder screw ISO4762-M2x18-A2	17	836 020 010	1	Kombinationszahnrad OWX Combination gear OWX
8	836 020 016	2	Distanzscheibe, Kronenrad OWX Spacer, crown wheel OWX	18	836 020 002	3	Teflonscheibe, Typ A OWX Teflon washer, type A OWX
9	837 050 004	1	Rotor OWX3.0 Rotor OWX3.0	19	836 020 013	1	Lagerzapfen, lang OWX Bearing journal, long OWX
10	836 020 012	1	Axialsicherung, Kronenrad OWX Axial lock, crown wheel OWX	20	836 020 003	2	Teflonscheibe, Typ B OWX Teflon washer, type B OWX

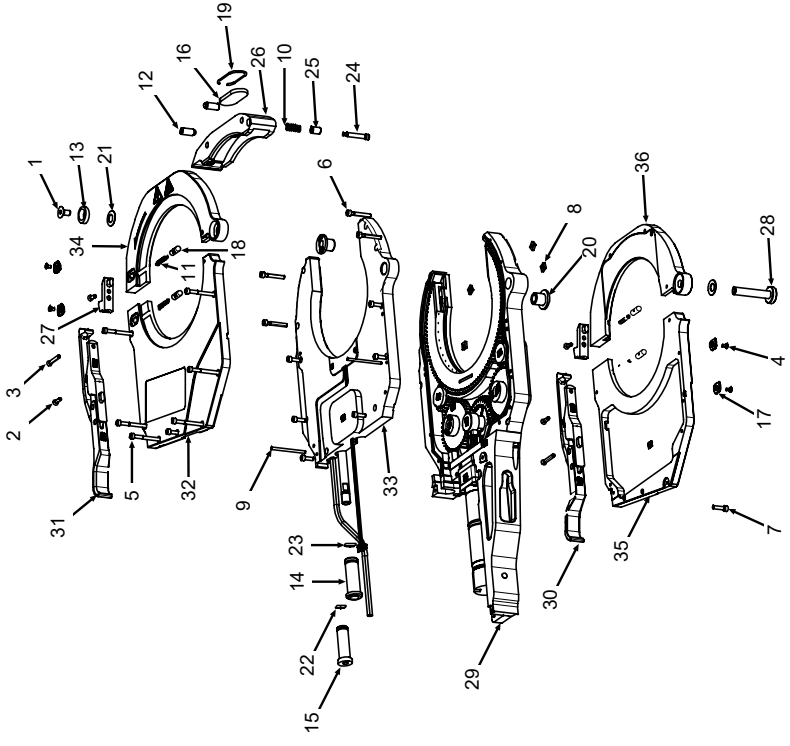

9
4
14
2
3
31
22
1
30
32
25
23
27
11
6
33
20
13
12
10
15
16
17
18
8
21
19
34
24
35
26
37
28
5
29
36
7

POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
21	836 020 014	4	Lagerzapfen, kurz OWX Bearing journal, short OWX	31	826 020 013	1	Rundschnurdichtung 1 mm Round cord seal 1 mm
22	837 020 001	1	Basisteil, Grundkörper OWX3.0 Base part, main body OWX3.0	32	826 020 012	1	O-Ring 14.00 x 1.78 O-ring 14.00 x 1.78
23	836 020 001	1	Isolierbuchse, Motorwelle OWX Insulating bush, motor shaft OWX	33	836 020 063	1	Bundbuchse, Gasausströmer OWX Collar bushing, gas outlet OWX
24	827 020 011	1	Schweißgasausströmer OWX Welding gas diffuser OWX	34	827 020 001	1	Elektrodenklemmschraube Electrode clamping screw
25	836 020 030	2	O-Ring DIN3771-7.0x1 O-Ring DIN3771-7.0x1	35	836 020 029	1	O-Ring DIN3771-6x1 -farbig- O-ring DIN3771-8.5x1
26	836 020 006	1	Gas-Verbinder OWX Gas connector OWX	36	836 050 025	1	Motor OWX3.0 Motor OWX3.0
27	837 020 019	1	Isolierplatte Kronenrad OWX3.0 Insulating plate, crown wheel OWX3.0	37	817 020 011	1	Steckverschraubung QSM-M5-6-I Push-in fitting QSM-M5-6-I
28	837 020 020	1	Hauptträger OWX3.0 Main carrier OWX3.0				
29	837 020 025	1	Distanzplatte Motor OWX Spacer plate motor OWX				
30	836 020 064	1	O-Ring 3x1-75Sh-FKM-Viton O-ring 3x1-75Sh-FKM-Viton				

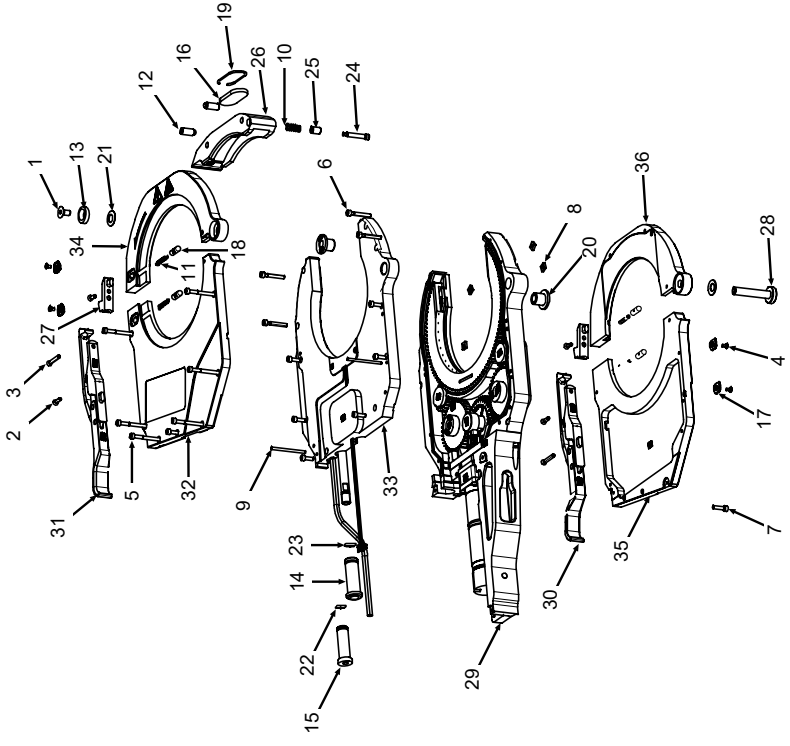
13.3 Kopfbaugruppe OWX 3.0 | Head assembly OWX 3.0



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	302 303 112	1	Senkschraube M4x8-A2 Tuflok Countersunk screw M4x8-A2 Tuflok	11	837 020 071	4	Druckfeder Arretierungsstift OWX3.0 Pressure spring locking pin OWX3.0
2	305 501 016	4	Senkschr. ISO14581-M2.5x8-A2-TX Count. s. ISO14581-M2.5x8-A2-TX	12	827 020 014	2	Druckstück GN 615-M5-KN Pressure piece GN 615-M5-KN
3	305 501 017	2	Senkschr. ISO14581-M2.5x16-A2-TX Count. s. ISO14581-M2.5x16-A2-TX	13	836 0020 008	1	Andruckscheibe Scharnier OWX1.5/3 Pressure disc, hinge OWX1.5/3
4	305 501 022	4	Senkschraube ISO14581-M2x4-A2 Countersunk screw ISO14581-M2x4-A2	14	836 020 017	1	Buchse, Elektr. Anschl.-nippel OWX Socket, electr. Connect. nipple OWX
5	305 501 059	6	Zylinderschr.e ISO4762-M2.5x30-A2 Cylinder screw ISO4762-M2.5x30-A2	15	836 020 018	1	Buchse, Rücklauf Kühlplatte OWX Bushing, return Cooling plate OWX
6	305 501 073	4	Zylinderschr. ISO4762-M2.5x18-A2 Cylinder screw ISO4762-M2.5x18-A2				
7	305 501 076	8	Zylinderschr. ISO4762-M2.5x10-A2 Cylinder screw ISO4762-M2.5x10-A2				
8	500 602 315	4	Vierkantmutter DIN562-M2.5-A2 Square nut DIN562-M2.5-A2				
9	565 808 180	2	Zylinderstift ISO2338-2m6x30-A2 Cylinder pin ISO2338-2m6x30-A2				
10	812 020 016	1	Druckfeder, DV Pressure spring, WA				

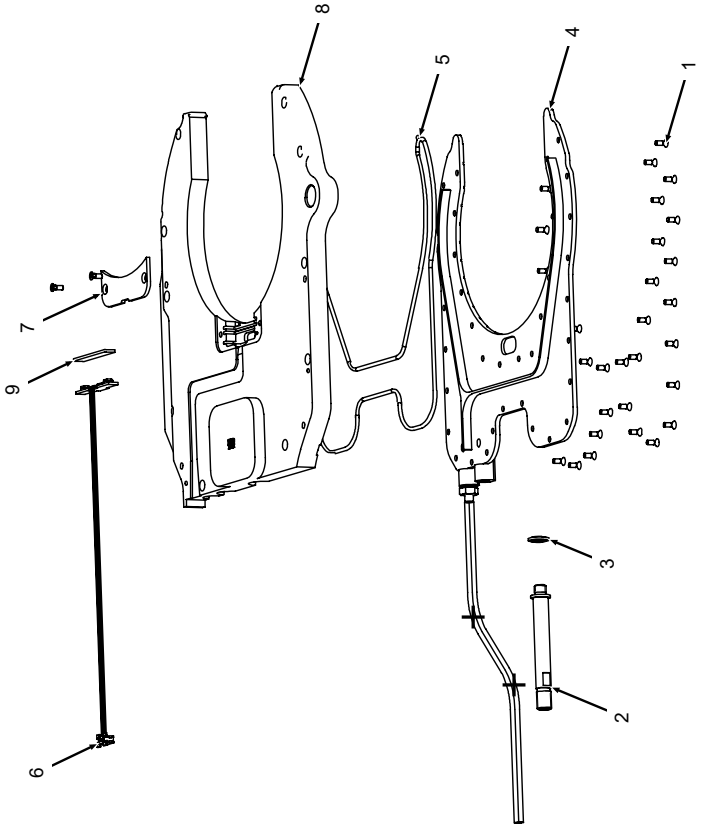

1
13
21
34
27
3
2
31
5
32
18
11
12
16
19
26
10
25
24
6
9
33
23
14
22
15
8
20
29
30
36
35
28
4
17
7

POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION	POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
16	836 020 020	1	Sichtfenster OWX1.5/3 Inspection window OWX1.5/3	26	837 020 008	1	FlipCover OWX3.0 FlipCover OWX3.0
17	836 020 021	4	Bedienscheibe, SPE Arretier. OWX Op. disk, SPE Locking device OWX	27	837 020 016	2	Gegenhaken OWX3.0 Counter hook OWX3.0
18	836 020 022	4	Arretierungsstift, Spanneinsatz OWX Locking pin, clamping insert OWX				
19	836 020 023	1	Fixierklemme, Sichtfenst. OWX1.5/3 Fix. clamp, view. window OWX1.5/3				
20	836 020 024	2	Gleitl.-buchse, Scharnier OWX1.5/3 Sl. bearing bushing, hinge OWX1.5/3				
21	836 020 028	2	Tellerfeder DIN16983 12x6.2x0.5 Belleville washer DIN16983 12x6.2x0.5				
22	836 020 029	1	O-Ring DIN3771-8.5x1 O-ring DIN3771-8.5x1				
23	836 020 030	1	O-Ring DIN3771-7.0x1 O-Ring DIN3771-7.0x1				
24	836 020 037	1	Passschulterschraube OWX1.5/3.0/4.5 Fitting shoulder screw OWX1.5/3.0/4.5				
25	837 020 038	1	Lagerbuchse, Flipcover OWX3.0/4.5 Bearing bush, flip cover OWX3.0/4.5				


1
13
21
34
27
3
2
31
5
32
18
11
12
16
19
26
10
25
24
6
9
33
23
14
22
15
29
8
20
30
36
35
28
4
17
7

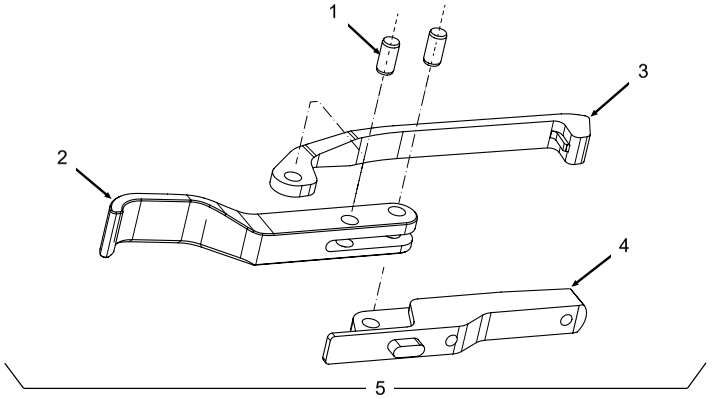
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
28	837 020 021	1	Gelenkbolzen OWX3.0 Hinge pin OWX3.0
29	837 050 002	1	(MBG) Grundkörper Basisteil OWX3.0 (ASG) Main body base part OWX3.0
30	837 050 006	1	Verschluss, vorne OWX3.0 Closure, front OWX3.0
31	837 050 007	1	Verschluss, hinten OWX3.0 Closure, rear OWX3.0
32	837 050 008	1	Seitenplatte, hinten (inkl. Pos.33) Side plate, rear (incl. Pos.33)
33	837 050 009	1	(MBG) Grundkörper Deckel OWX3.0 (ASG) Main body cover OWX3.0
34	837 050 015	1	Schwenkbügel, hinten OWX3.0 m.Isolierung Swivel bracket, rear OWX3.0 w. insul.
35	837 050 016	1	Seitenplatte, vorne OWX3.0 Side plate, front OWX3.0
36	837 050 014	1	Schwenkbügel, vorne OWX3.0 m.Isolierung Swivel bracket, front OWX3.0 w. insul.

13.4 Grundkörper Deckel OWX 3.0 | Main body cover OWX 3.0



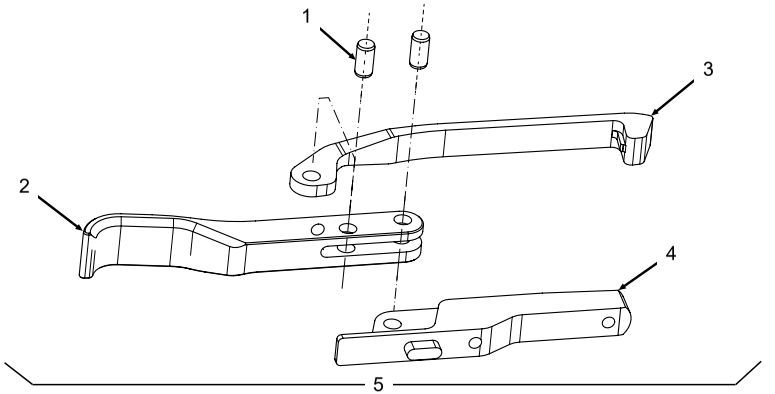
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	305 501 014	39	Senkschraube ISO14581-M2x5-A2-TX Countersunk screw ISO14581-M2x5-A2-TX
2	836 020 011	1	Elektroden Anschlussnippel OWX Electrode connection nipple OWX
3	836 020 015	1	U-Seal Ring M5 8.9x5.2x1.8 U-Seal ring M5 8.9x5.2x1.8
4	837 050 005	1	Kühlplatte OWX3.0 Cooling plate OWX3.0
5	837 020 022	1	Grundkörperdichtung OWX3.0 Base body seal OWX3.0
6	836 010 007	1	Platine, LED-Endlagenschalter OWX Circuit board, LED limit switch OWX
7	837 020 007	1	Abdeckung, LED-Platine OWX3.0 Cover, LED board OWX3.0
8	837 020 002	1	Deckel, Gründkörper OWX3.0 Cover, main body OWX3.0
9	836 020 007	1	LED-Glas OWX LED glass OWX

13.5 Verschluss, vorne OWX 3.0 | Closure, front OWX 3.0



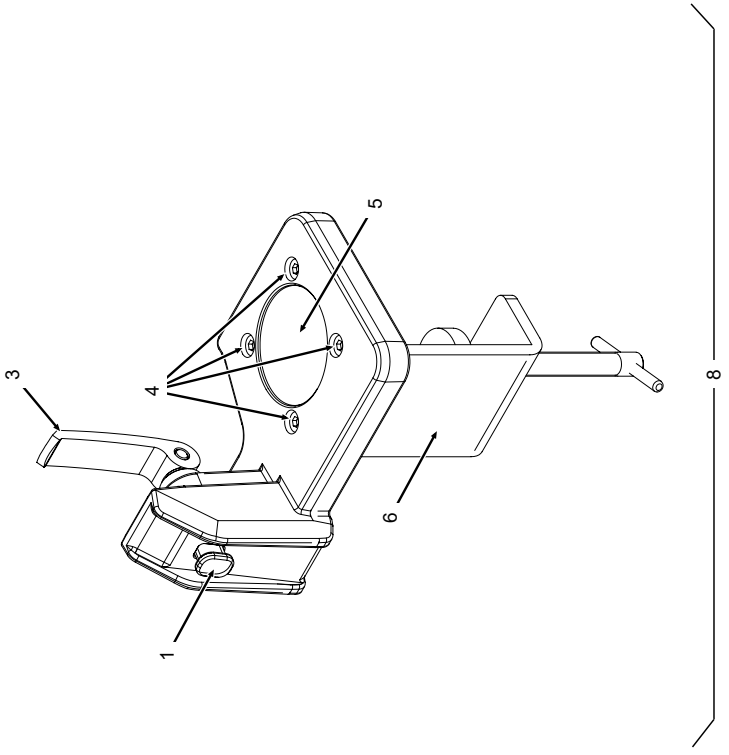
POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	836 025 002	2	Zylinderstift 4x8 h6 vernickelt (OWX) Cylinder pin 4x8 h6 nickel-plated (OWX)
2	836 020 026	1	Hebel vorne, Verschluss OWX Lever left, catch OWX
3	837 020 014	1	Federhaken OWX3.0 Spring hook OWX3.0
4	837 020 015	1	Aufnahme, Seitenplatte OWX3.0 Mounting, side plate OWX3.0
5	837 050 006	1	Verschluss, vorne OWX3.0 Closure, front OWX3.0

13.6 Verschluss, hinten OWX 3.0 | Closure, back OWX 3.0



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	836 025 002	2	Zylinderstift 4x8 h6 vernickelt (OWX) Cylinder pin 4x8 h6 nickel-plated (OWX)
2	836 020 025	1	Hebel hinten, Verschluss OWX Lever right, lock OWX
3	837 020 014	1	Federhaken OWX3.0 Spring hook OWX3.0
4	837 020 015	1	Aufnahme, Seitenplatte OWX3.0 Mounting, side plate OWX3.0
5	837 050 007	1	Verschluss, hinten OWX3.0 Closure, rear OWX3.0

13.7 Tischhalterung OWX | Table mount OWX



POS. NO.	CODE PART NO.	STK. QTY.	BEZEICHNUNG DESCRIPTION
1	836 020 202	1	Aufnahmebolzen, Tischhalterung OWX Mounting bolt, table mount OWX
2	836 020 203		Druckfeder, Tischhalterung OWX Pressure spring, table mount OWX
3	836 020 201	1	Spannhebel, Tischhalterung OWX Clamping lever, table mount OWX
4	305 501 096	4	Zylinderschraube ISO4762-M5x8-A2 Cylinder screw ISO4762-M5x8-A2
5	836 020 204	1	Gummi Pad, Tischhalterung OWX Rubber pad, table mount OWX
6	826 030 002	1	Montagewinkel, Tischhalterung Mounting bracket, table mount
7	836 030 200		Tischhalterung OWX Table mount OWX

** Ohne Abbildung / Without figure*

14 Konformitätserklärungen

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
pl Deklaracja zgodności WE

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): / Maszyna i typ (wraz z opcjonalnie dostępnymi akcesoriami firmy Orbitalum):

Orbitalschweißköpfe
(*inkl. Orbitalschweißstromquelle)
Orbital weld heads
(*incl. orbital welding power source):

- **OW 12**
- **OW 19 (HD)**
- **OW 17 (GC)**
- **OW 25 GC**
- **OW 38 S**
- **OW 76 S**
- **OW 115 S**
- **OW 170**
- **OWX 3.0**

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

Baujahr: / Year: / Année: / Anno: / Año: / Bouwjaar: / Rok výroby: / Rok výroby:

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 standards: / 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: / Niniejszym potwierdzamy, że powyższa maszyna została wyprodukowana i przetestowana zgodnie z wymienionymi poniżej wytycznymi:

- **Maschinen-Richtlinie 2006/42/EG**
- **EMV-Richtlinie 2014/30/EU**
- **RoHS-Richtlinie 2011/65/EU**

Folgende harmonisierte Normen sind angewandt: / The following harmonized norms 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: / Stosowane są następujące normy zharmonizowane:

- **DIN EN ISO 12100:2011-03**
- **DIN EN ISO 13849-2:2013-02**
- **DIN EN 60204-1:2019-06**
- **DIN EN 60974-1:2018-12**
- **DIN EN 60974-2:2013-11**
- **DIN EN 50445:2009-02**

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: / Uprawniony do sporządzania dokumentacji technicznej:

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, 06.01.2025:

Jürgen Jäckle - Product Compliance Manager

ORIGINAL

de UKCA-Konformitätserklärung
en UKCA Declaration of conformity

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):	**Orbitalschweißköpfe (*inkl. Orbitalschweißstromquelle) Orbital weld heads (*incl. orbital welding power source):** • **OW 12** • **OW 19 (HD)** • **OW 17 (GC)** • **OW 25 GC** • **OW 38 S** • **OW 76 S** • **OW 115 S** • **OW 170** • **OWX 3.0**
Seriennummer: / Series number:	
Baujahr: / Year:	
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 regulations:	• **S.I. 2008/1597 Supply of Machinery (Safety)** • **S.I. 2016/1091 Electromagnetic Compatibility** • **S.I. 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment**
Schutzziele folgender Richtlinien werden eingehalten: / Protection goals of the following guidelines are observerd:	• **S.I. 2016/1101 Electrical Equipment (Safety)**
Folgende harmonisierte Normen sind angewandt: / The following harmonized standards have been applied:	• **EN ISO 12100:2010** • **EN ISO 13849-1:2015** • **EN ISO 13849-2:2012** • **EN 60204-1:2018** • **EN IEC 60974-1:2018+A1:2019** • **EN 60974-10:2014+A1:2015** • **EN 60204-1:2018**
Bevollmächtigt für die Zusammenstellung der technischen Unterlagen: / Authorised to compile the technical file:	
Bestätigt durch: / Confirmed by:	
Singen, 06.01.2025:	Jürgen Jäckle - Product Compliance Manager

Orbitalum Tools GmbH provides global customers one source for the finest in pipe & tube cutting, beveling and orbital welding products.

worldwide | sales + service

NORTH AMERICA

USA

E.H. Wachs
600 Knightsbridge Parkway
Lincolnshire, IL 60069
USA
Tel. +1 847 537 8800
Fax +1 847 520 1147
Toll Free 800 323 8185

Northeast
Sales, Service & Rental Center
E.H. Wachs
1001 Lower Landing Road, Suite 208
Blackwood, New Jersey 08012
USA
Tel. +1 856 579 8747
Fax +1 856 579 8748

Southeast
Sales, Service & Rental Center
E.H. Wachs
171 Johns Road, Unit A
Greer, South Carolina 29650
USA
Tel. +1 864 655 4771
Fax +1 864 655 4772

Northwest
Sales, Service & Rental Center
E.H. Wachs
2079 NE Aloclek Drive, Suite 1010
Hillsboro, Oregon 97124
USA
Tel. +1 503 941 9270
Fax +1 971 727 8936

Gulf Coast
Sales, Service & Rental Center
E.H. Wachs
2220 South Philippe Avenue
Gonzales, LA 70737
USA
Tel. +1 225 644 7780
Fax +1 225 644 7785

Houston South
Sales, Service & Rental Center
E.H. Wachs
3327 Daisy Street
Pasadena, Texas 77505
USA
Tel. +1 713 983 0784
Fax +1 713 983 0703

CANADA

Wachs Canada Ltd
Eastern Canada Sales, Service & Rental Center
1250 Journey's End Circle, Unit 5
Newmarket, Ontario L3Y 0B9
Canada
Tel. +1 905 830 8888
Fax +1 905 830 6050
Toll Free: 888 785 2000

Wachs Canada Ltd
Western Canada Sales, Service & Rental Center
5411 82 Ave NW
Edmonton, Alberta T6B 2J6
Canada
Tel. +1 780 469 6402
Fax +1 780 463 0654
Toll Free 800 661 4235

EUROPE

GERMANY

Orbitalum Tools GmbH
Josef-Schuettler-Str. 17
78224 Singen
Germany
Tel. +49 (0) 77 31 - 792 0
Fax +49 (0) 77 31 - 792 500

UNITED KINGDOM

Wachs UK
UK Sales, Rental & Service Centre
Units 4 & 5 Navigation Park
Road One, Winsford Industrial Estate
Winsford, Cheshire CW7 3 RL
United Kingdom
Tel. +44 (0) 1606 861 423
Fax +44 (0) 1606 556 364

ASIA

CHINA

Orbitalum Tools
New Caohejing International Business Centre
Room 2801-B, Building B
No 391 Gui Ping Road
Shanghai 200052
China
Tel. +86 (0) 512 5016 7813
Fax +86 (0) 512 5016 7820

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 7

AFRICA & MIDDLE EAST

UNITED ARAB EMIRATES

Wachs Middle East & Africa Operations
PO Box 262543
Free Zone South FZS 5, AC06
Jebel Ali Free Zone (South-5), Dubai
United Arab Emirates
Tel. +971 4 88 65 211
Fax +971 4 88 65 212

orbitalum
orbital | cutting + welding

An ITW Company