



# ORBITAL WELDING

Orbital welding systems and accessories for high-purity process installations





New innovations  
**New innovations**



## MOBILE WELDER OC PLUS | orbital welding power source

Consistently high quality of the welded seams irrespective of the point of use - The Mobile Welder OC Plus is the first portable orbital welding power source by Orbitalum Tools which can be used in mobile as well as stationary situations. The power source is based on the established Smart Welder Orbimat 180 SW and convinces with its compact and rugged design.

The Mobile Welder OC Plus is delivered together with the cooling unit ORBICOOL MW which is connected with just a few simple steps and thus can be used in mobile and stationary situations in manufacturing with the efficiency of liquid-cooled weld heads.

- Orbital and manual TIG welding
- LAN/IoT/VNC Ready/Industry 4.0 technology
- 100% data storage - fully available at any time and each location
- Intuitive and easy operation via 7" color touch display or rotary knob
- Auto programming via entry of pipe diameter, wall thickness, material and weld gas
- Fully digital welding gas control
- Shorter welding cycles through unique gas "FLOW-FORCE" function
- External cooling unit ORBICOOL MW ensures efficient cooling of the weld head

...More from page 10



## New innovations

### MOBILE HEAD MH 3.0 / MH 4.5 / MH 6.6 | Open orbital welding heads

The open orbital welding heads of the MH series are used wherever thin-walled stainless steel pipes are welded in pipeline manufacturing. They have a compact design and are equipped with a narrow welding head housing with the result that it is possible to weld in even cramped hard-to-access areas. The MOBILE HEAD is compatible with the orbital welding power supplies of the SW series and the Mobile Welder.

- Gas-cooled
- Infinitely variable swiveling torch body
- Fillet welds
- Pipe to pipe, pipe to fitting
- Infinitely variable clamping range
- Integrated control panel
- Swiveling torch body
- Low machine weight

...More from page 60



### TIG manual welding torch MW | manual welding torch for MOBILE WELDER

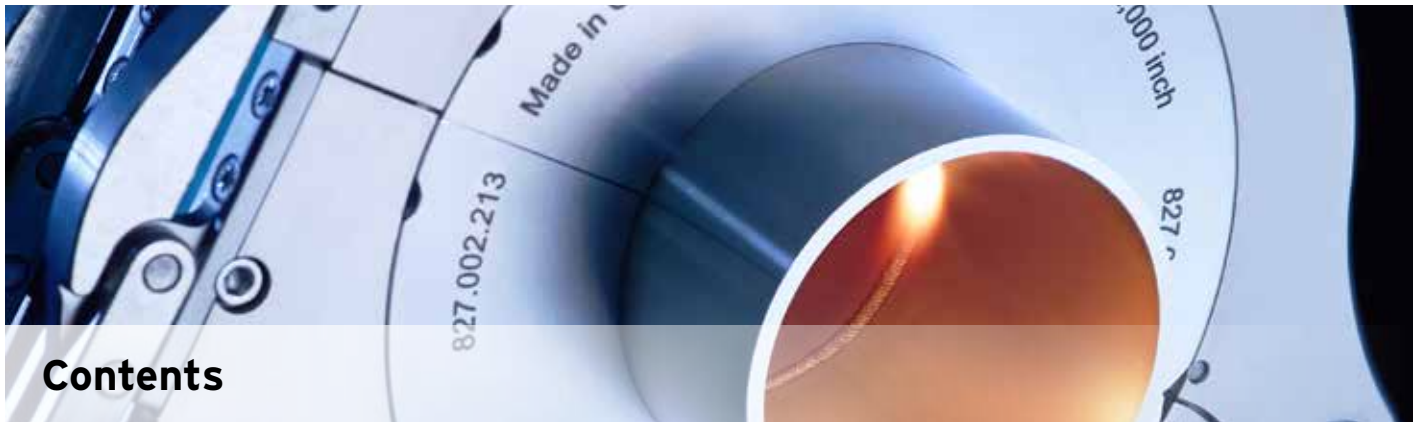
The TIG manual welding torch is suited for the Mobile Welder for manual welding and tacking. The gas-cooled manual welding torch has a fully rubberized hose line that is easy to clean. As a result it is possible to use it in clean room conditions without the slightest hesitation.

What is more the manual welding torch is equipped with an ergonomically designed handle; the plastic components ensure a firm hold and grip. The control panel integrated in the handhold makes for user-friendly use.

- Flexible application thanks to a bendable torch body
- Fully rubberized hose package
- Easy to clean and ideal for clean room conditions as a result
- Ergonomic handhold with soft plastic components for a comfortable and firm hold
- Controlled switching and closed loop control while welding thanks to optimally regulated control elements

...More from page 30





## Contents

<b>New innovations</b> .....	2	<b>P16, P16 AVC</b>	
<b>Markets and applications</b> .....	5	<b>Tube-to-tube-sheet orbital weld heads</b> .....	74
<b>ORBITAL WELDING POWER SOURCES &amp; ACCESSORIES</b> .....	<b>6</b>	Special torches.....	77
<b>Compatibility overview power sources and weld heads</b> .....	7	Quick-change adapter torch equipment.....	77
<b>MOBILE WELDER OC PLUS</b> .....	10	Cold-wire feeds KD (retrofitting kits).....	77
<b>ORBIMAT SW</b>		Balancer spring.....	78
<b>Orbital welding power sources</b> .....	12	Closed gas cover.....	78
<b>Connectivity upgrade for ORBIMAT SW and MW power sources</b> .....	15	Front cage.....	78
<b>ORBIMAT CA AVC/OSC for ORBIMAT SW and MW power sources</b> .....	16	Centering cartridges and arbors.....	79
<b>Cooling systems for ORBIMAT</b> .....	19	<b>WELDING TURNABLES</b> .....	<b>80</b>
ORBICAR W cart with integrated liquid cooling.....	19	<b>DVR</b>	
ORBICOOL Active.....	19	<b>Welding turntables</b> .....	81
<b>Other accessories for ORBIMAT and MOBILE WELDER</b> .....	20	<b>Accessories for DVR</b> .....	83
Welding current connection adapter set.....	20	Three-jaw lathe chuck.....	83
ORBITWIN SW Switching Unit.....	20	Control cable.....	83
ORBICAR S cart.....	20	Ground cable.....	83
Rugged transport case.....	20	Remote control OWH BASIC.....	84
Software/hardware package "CA".....	21	Cold-wire feeds DVR.....	84
Software/hardware package "CA".....	21	<b>ACCESSORIES AND WEAR PARTS FOR ORBITAL WELDING</b> .....	<b>85</b>
Remote control with cable.....	21	<b>ESG Plus, ESG Plus2</b>	
Bar code/QR code scanner.....	21	<b>Electrode grinders</b> .....	86
<b>Consumables for ORBIMAT and MOBILE WELDER</b> .....	22	Diamond grinding wheels.....	88
Replacement paper rolls and ribbon cartridges.....	22	Cut to length device.....	88
OCL-30 cooling liquid.....	22	Electrode holder.....	89
Hose connection set ORBIMAT.....	22	Wall, table, vise mount.....	89
<b>CLOSED ORBITAL WELD HEADS</b> .....	<b>24</b>	Dust protection.....	89
<b>Overview of closed orbital weld heads</b> .....	24	Double-decker kit.....	89
Cold-wire feeds KD (retrofitting kits).....	66	<b>ORBmax</b>	
KD retrofitting kits.....	66	<b>residual oxygen meter</b> .....	90
Expansion clamping jaw kits.....	66	Interface cable ORBmax/ORBIMAT SW.....	91
<b>TUBE-TO-TUBE-SHEET ORBITAL WELD HEADS</b> .....	<b>68</b>	Consumables for ORBmax.....	91
<b>TX 38P</b>		<b>Other accessories orbital welding technology</b> .....	93
<b>Tube-to-tube-sheet orbital weld head</b> .....	70	ORBIPURGE forming set.....	93
Arbors.....	73	Ground cable.....	93
Spring sleeves.....	73	Control cable.....	93
Clamping segments.....	73	Hose package extensions.....	94
Electrode adapters.....	73	Double pressure reducer.....	94
		Bar pressure reducer "Argon".....	94
		WS2 tungsten electrodes.....	94
		Welding current connection adapter set.....	95
		TIG manual welding torch for MOBILE WELDER.....	95
		TIG manual welding torch for ORBIMAT CA/SW.....	96
		<b>Torch and cold wire accessories</b> .....	97





## Markets and applications

Orbitalum is a global leader for portable, powerful pipe cutting, squaring and beveling machines for industrial weld seam preparation. In addition Orbitalum offers a wide range of orbital welding systems for high-purity, process as well as heat exchanger applications. Orbitalum products have a wide range of applications in the following fields:

Application	e.g.	Products
Boilers & heat exchangers	<ul style="list-style-type: none"> <li>• Pipe bundle heat exchangers</li> <li>• Box headers</li> <li>• Boilers</li> <li>• HVAC blade heat exchangers</li> </ul>	<ul style="list-style-type: none"> <li>• RPG tube squaring machines</li> <li>• BRB boiler pipe preparation machines</li> <li>• ORBIMAT welding power sources</li> <li>• ORBIWELD weld heads</li> <li>• P16, pipe-in-sheet weld heads</li> <li>• HX weld heads</li> <li>• TX weld heads</li> <li>• ORBmax residual oxygen meter</li> </ul>
Pharmaceuticals & chemical industry	<ul style="list-style-type: none"> <li>• HP High-Purity</li> <li>• Process lines</li> <li>• Mixing valves</li> <li>• CIP "Cleaning in Place" lines</li> </ul>	<ul style="list-style-type: none"> <li>• GF, PS, RA &amp; GFX pipe cutting and beveling machines</li> <li>• RPG tube squaring machines</li> <li>• ORBIMAT welding power sources</li> <li>• ORBIWELD weld heads</li> <li>• ORBmax residual oxygen meter</li> </ul>
Semi-conductor	<ul style="list-style-type: none"> <li>• HP High-Purity</li> <li>• UHP Ultra High-Purity</li> <li>• Process lines</li> <li>• Gas cabinets</li> <li>• Component production</li> <li>• CFOS gas supply</li> <li>• PCW cooling water supply</li> </ul>	<ul style="list-style-type: none"> <li>• RPG tube squaring machines</li> <li>• ORBIMAT welding power sources</li> <li>• ORBIWELD weld heads</li> <li>• ORBmax residual oxygen meter</li> </ul>
Aerospace technology	<ul style="list-style-type: none"> <li>• Hydraulic</li> <li>• Fuel supply</li> <li>• Engine components</li> <li>• Air conditioning</li> </ul>	<ul style="list-style-type: none"> <li>• GF, PS, RA &amp; GFX pipe cutting and beveling machines</li> <li>• RPG tube squaring machines</li> <li>• ORBIMAT welding power sources</li> <li>• ORBIWELD weld heads</li> <li>• ORBmax residual oxygen meter</li> </ul>
Food processing, dairy and beverage industries	<ul style="list-style-type: none"> <li>• HP High-Purity</li> <li>• Process lines</li> <li>• Mixing valves</li> <li>• CIP "Cleaning in Place" lines</li> </ul>	<ul style="list-style-type: none"> <li>• GF, PS, RA &amp; GFX pipe cutting and beveling machines</li> <li>• RPG tube squaring machines</li> <li>• ORBIMAT welding power sources</li> <li>• ORBIWELD weld heads</li> <li>• ORBmax residual oxygen meter</li> <li>• Mobile Welder power source</li> <li>• MH heads</li> </ul>

# Orbital welding power sources & accessories



# Compatibility overview power sources and weld heads

This quick reference shows the different combination possibilities of our power sources and weld heads and makes it easier for you to combine the correct orbital welding systems. Interested in a personal consultation? Then contact us at +49 (0) 77 31 792-0 or send an email to [tools@orbitalum.com](mailto:tools@orbitalum.com). Our team is happy to find a suitable product for your individual requirements.

	<b>MOBILE WELDER OC PLUS</b> 854 000 011	<b>ORBIMAT 180 SW</b> 850 000 001	<b>ORBIMAT 300 SW</b> 852 000 001	<b>ORBIMAT 300 CA AVC/OSC</b> 872 000 020	<b>ORBITWIN SW</b> 853 000 001
<b>ORBIWELD 12</b> 821 000 010	●	●	●	●	●
<b>ORBIWELD 17</b> 817 000 010	●	●	●	●	●
<b>ORBIWELD 19</b> 822 000 010	●	●	●	●	●
<b>ORBIWELD S</b> 826 000 001 827 000 001 828 000 001 825 000 001	●	●	●	●	●
<b>HX</b> 847 000 010 848 000 010 845 000 010	●	●	●	●	○
<b>MH</b> 803 000 001 804 000 001 805 000 001	●	●	●	○	●
<b>TP (KD)</b> 811 000 001 811 000 005 812 000 011 813 000 001 813 000 005 814 000 001 814 000 005	●	●	●	●	●
<b>TP AVC/OSC</b> 812 000 012 813 000 002 814 000 002	○	○	○	●	○
<b>TX 38P</b> 830 000 005	●	●	●	●	●
<b>P16 (KD)</b> 831 000 001 831 000 003	●	●	●	●	●
<b>P16 AVC</b> 831 000 002	○	○	○	●	○
<b>DVR turntables</b>	●	●	●	●	●
<b>Manual torch SW</b> 890 013 010	○	●	●	●	●
<b>Manual torch MW</b> 854 030 200	●	○	○	○	○

● = Compatible

○ = Not compatible

◐ = Conditionally compatible

\* = Only DC welding

# Overview power sources

This overview of our power sources should simplify the selection of the right orbital welding system for you. Interested in a personal consultation? Then contact us at +49 (0) 77 31 792-0 or send an email to [tools@orbitalum.com](mailto:tools@orbitalum.com). Our team is happy to find a suitable product for your individual requirements.

	<b>MOBILE WELDER OC PLUS</b> 854 000 011	<b>ORBIMAT 180 SW</b> 850 000 001	<b>ORBIMAT 300 SW</b> 852 000 001	<b>ORBIMAT 300 CA AVC/OSC</b> 872 000 020
	<b>TECHNICAL DATA</b>			
Control range	5 - 180 A	5 - 180 A	5 - 300 A	5 - 300 A
Welding current type	DC	DC	DC	DC
Duty cycle	60% - 180 A 100% - 140 A	60% - 180 A 100% - 160 A	40% - 300 A 60% - 260 A 100% - 220 A	40% - 300 A 100% - 220 A
Supply voltage	1~ 100-230 V 50/60 Hz	1~ 100-230V 50/60Hz	3~ 400-480 V 50/60 Hz	3~ 400-480 V 50/60 Hz
Machine weight with cooling unit	21 Kg (46.30 lbs)*	26 Kg (57.32 lbs)*	-	-
Machine weight without cooling unit	15.6 Kg (33.06 lbs)	-	35.4 Kg (78.04 lbs)	37.5 Kg (82.67 lbs)
Cooling	0.4 kW	0.4 kW	-	-
Dimensions (WxDxH)	273 x 546 x 513 mm (10.8 x 21.5 x 20.2 in)	600 x 400 x 310 mm (23.6 x 15.7 x 12.2 in)	600 x 400 x 480 mm (23.6 x 15.7 x 18.9 in)	540 x 420 x 440 mm (21.3 x 16.6 x 17.3 in)
IP standard	IP23S	IP23S	IP23S	IP21
Screen size	7.0 "	12.4 "	12.4 "	10.5 "
Touch	X	X	X	0
Soft keys	X	X	X	X
Rotary knob	X	X	X	X
Digital welding gas control	X	X	X	0
Gas flow sensor	X	X	X	X
Cooling unit	Extended life cooler	Internal	External	External
Coolant flow sensor	X**	X	X	X
Coolant tank capacity	2.1 L	2.2 L	0	0
System printer	Thermal	Stylus	Stylus	Stylus
	<b>CONNECTIONS/INTERFACES</b>			
Power connection	Pluggable	Pluggable	Fix	Fix
Weld head/torch	X	X	X	X
USB	2	4	4	0
LAN	X	X	X	0
HDMI	0	X	X	0
BUP	0	X	X	0
ORB	0	X	X	0
External cooling unit	X***	X	X	X
Remote control	0	X	X	X
VGA	0	0	0	X
LPT	0	0	0	X
PS2	0	0	0	X
	<b>FUNCTIONS</b>			
Software interface orbital welding	X	X	X	X
Software interface TIG manual welding	X	0	0	0
Multilingual	X	X	X	X
Metric and imperial measuring units	X	X	X	X
User levels	X	X	X	0
Password protection	X	X	X	0
Weld head recognition	X	X	X	X
Flow Force function	X	X	X	X
Permanent gas function	X	X	X	0
Cold wire	X	X	X	X
Auto-programming	X	X	X	X
Welding data documentation	X	X	X	X

	<b>MOBILE WELDER OC PLUS</b> 854 000 011	<b>ORBIMAT 180 SW</b> 850 000 001	<b>ORBIMAT 300 SW</b> 852 000 001	<b>ORBIMAT 300 CA AVC/OSC</b> 872 000 020
Welding data documentation	X	X	X	X
Input screen process details	X	X	X	X
Orbital tacking function	X	X	X	X
Weld gas overview	X	X	X	0
Welding process resumption	X	X	X	X
Return delay	X	X	X	X
Electrode replacement warning	X	X	X	X
Cross-sector parameter transfer	X	X	X	0
Cooling lag time	X	X	X	X
AMI parameter import	X	X	X	0
IoT/Industry 4.0 over MQTT	X****	X****	X****	0
Programmable documentation fields	X****	X****	X****	0
VNC remote access	X****	X****	X****	0
LAN integration	X****	X****	X****	0
<b>COMPATIBILITY</b>				
Liquid-cooled weld heads	X	X	X	X
Gas-cooled weld heads	X	X	X	0
Turning gear	X	X	X	X
AVC/OSC	0	0	0	X
TIG manual torch liquid-cooled	0	X	X	X
TIG manual torch gas-cooled	X	0	0	0
Hose package extension	X	X	X	X
ORBITWIN	0	X	X	X
ORBMax	0	X	X	X
Remote control	0	X	X	X
USB keyboard	X	X	X	X
USB code scanner	X	X	X	0
USB storage media	X	X	X	0
USB printer	X	X	X	0
LAN printer	X****	X****	X****	0
Welding programs	CB/CA/SW/MW	CB/CA/SW/MW	CB/CA/SW/MW	CB/CA
<b>UPGRADE OPTIONS</b>				
Connectivity UPGRADE LAN/IoT/VNC	X	X	X	0
<b>APPLICATION AREA</b>				
Main application area	Assembly/installation	Preproduction/mass production	Preproduction/mass production	Preproduction/mass production
Portability	+++	++	+	+
Ease of use	++	+++	+++	++
Flexibility	+++	++	+	+
<b>MARKETS</b>				
Foods	+++	+++	+	+
Pharmaceuticals	++	+++	+	+
Semi-conductor	+++	+++	+	+
Aerospace technology	++	+++	+	+
Oil and gas	+	+	+++	+++
Heat exchanger	+	++	+++	+++
HVAC heat exchanger	++	+++	+	+

X = Compatible

\*Without tank capacity

0 = Not compatible

\*\* In cooling unit

\*\*\* Only ORBICOOL MW

\*\*\*\* via LAN/IoT/VNC connectivity UPGRADE



# MOBILE WELDER OC PLUS

Consistently high quality of the welded seams independently of the point of use -

The Mobile Welder OC Plus is the first portable orbital welding power source by Orbitalum Tools which can be used in mobile as well as stationary situations. The power source is based on the established Smart Welder Orbimat 180 SW and convinces with its compact and rugged design.



**NEW.**  
**MOBILE WELDER OC PLUS**

<b>Simple and intuitive</b> can be operated with minimum training and instruction requirements	✓
<b>Portable</b> - lightweight and ready for any tasks and any location	✓
<b>Modular</b> - flexible and with a wide range of applications through extendable components	✓
<b>Future oriented connectivity</b> through IoT/Industry 4.0 technology (Connectivity IoT/4.0 Package 1 required)	✓

**The Mobile Welder OC Plus is the first portable orbital power welding source by Orbitalum Tools which has been developed specifically for pipeline installations. The Mobile Welder OC Plus allows the usual high and consistent quality of the orbital welding to be maintained even in work areas which are difficult to access.**

**Light and rugged construction**

The light and rugged construction is equipped with state-of-the-art information and communications technology and is based on the strengths of the ORBIMAT 180 SW (OM 180 SW) - our established Smart Welder.

**Intuitive and easy operation**

Furthermore the Mobile Welder OC Plus convinces with its easy handling and with minimum training and instruction requirements. The Mobile Welder OC Plus is based on the same software platform as our OM 180 SW. This allows

immediate transition of trained personnel and furthermore makes seamless program exchange between the machines possible.

**Cooling unit ORBICOOL MW**

The Mobile Welder OC Plus is delivered together with the cooling unit ORBICOOL MW which is connected with just a few simple steps and thus can be used in mobile and stationary situations in manufacturing with the efficiency of liquid-cooled weld heads. When using gas-cooled weld heads the cooling unit can be removed to reduce the weight of the machine and to increase mobility.

**Manual TIG welding**

The usage of a "Manual welding mode" is also possible in combination with a TIG manual welding torch thus extending the application possibilities in order to perform flexible tacking work and to easily produce manual welding connections with orbital welding heads at

inaccessible parts - one power source for all challenges in modern pipeline manufacturing.

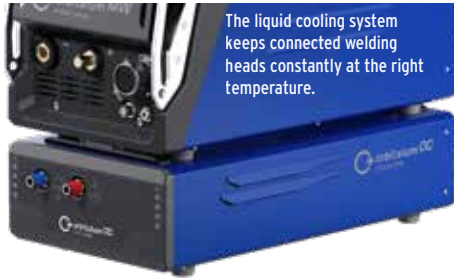


MOBILE WELDER OC PLUS  
Front and rear view



Elegant and practical housing with carrier handle and shoulder strap.

MOBILE WELDER OC PLUS



The liquid cooling system keeps connected welding heads constantly at the right temperature.



Hinged protective cover for display and control elements.



Interface  
Orbital welding



Interface  
Manual welding



Gas-cooled TIG manual welding torch  
with 6 m hose package (optional)

## Orbital welding power supply

### MOBILE WELDER OC PLUS

Properties, application area, technical specifications and delivery scope, see from page 8.

ITEM	VERSION	CODE	MACHINE WEIGHT KG
MOBILE WELDER OC PLUS	1~ 110-230V 50/60Hz, 1-phase	854 000 001	21.00
LAN/IoT/VNC connectivity UPGRADE		850 080 001	

WELDING POWER SOURCE	MOBILE WELDER OC PLUS
<b>CODE</b>	<b>854 000 011</b>
<b>TECHNICAL SPECIFICATIONS</b>	
Control range	5 - 180 A
Welding current type	DC
Duty cycle	60% - 180 A 100% - 140 A
Supply voltage (Supply voltage > 160 V)	1~ 110-230 V 50/60 Hz
Weight	20.9 kg*
Dimensions (WxDxH)	273 x 546 x 513 mm (10.8 x 21.5 x 20.2 in)
IP standard	IP23S
Screen size	7 "
Touch	●
Soft keys	●
Rotary knob	●
Gas flow sensor	●
Cooling liquid sensor	●**
USB ports	2
LAN	●
Internal printer	Thermal
<b>LIQUID COOLING UNIT</b>	<b>ORBICOO MW</b>
<b>TECHNICAL SPECIFICATIONS</b>	
Compatibility	MOBILE WELDER
Supply voltage	24 V DC
Weight*	5.5 kg
Dimensions (WxDxH)	539 x 273 x 149 mm (21.2 x 10.8 x 5.9 in)
IP standard	IP23S
Cooling type	Recirculation cooler
Max. pump pressure	7.5 bar
Max. feed rate	0.9 l/min
Tank volume	2.1 L
Flow sensor	●
Temperature sensor	●

SCOPE OF DELIVERY	MOBILE WELDER OC PLUS
ORBICOO MW	●
Connection line MW-OCMW	●
Cooling liquid OCL-30 3.5 l/118.3 fl oz	●
Shoulder strap MW	●
Power cable DE	●
Hose connection set	●
Quick Start Guide	●
General safety instructions welding power sources	●
Calibration certificate	●
<b>FURTHER FEATURES</b>	
Wide Range input power range	●
Cooling liquid and welding gas monitoring	●
Fully digital welding gas man- agement	●
Auto programming	●
Welding data logging	●
Multi lingual	●
Metric and imperial measuring units	●
User levels	●
Access control	●
LAN/IoT/VNC Ready	●

Technical specifications are non-binding.  
They do not constitute any assurance of properties.

\* = Without tank capacity (2.1 L)

\*\* = ORBICOO MW

### Suitable accessories (optionally available):

- Gas-cooled TIG manual welding torch MW
- Connectivity upgrade LAN/IoT/VNC
- Bar code/QR code scanner SW
- ORBmax residual oxygen meter
- Double pressure reducer
- Ground cable
- ESG electrode grinding machine

# ORBIMAT SW

## Orbital welding power sources

**World premiere:**

**Intelligent  
welding power source**

More quality, safety and flexibility through Industry 4.0 technology during orbital welding: This intelligent power source connects the orbital welding process with state-of-the-art information and communication technology, and makes for the best welding results, high efficiency and sustainable quality management.

The ORBIMAT 180 SW (here with weld head ORBIWELD 76S) – an innovative welding power supply, which sets new standards in the matter of welding result, handling and communication



**Future-oriented connectivity** through IoT-/Industry 4.0 technology (Connectivity IoT/4.0 Package 1 required)



**Longer-term welding data documentation** thanks to centralized data storage



**100% data storage** - available at any time and at any place



**Cost-saving** through digital and precise "PERMANENT-GAS" welding gas control



**More safety** and higher product life thanks to the rotor stop function



**Intuitive and easy operation** via 12,4" color touch display or rotary knob



**Auto programming** via entry of pipe diameter, wall thickness, material and weld gas



**Integrated liquid cooling** for constantly low weld head temperatures



**The new generation of orbital welding power supplies combines the known and successful characteristics of the predecessor models with the newest technical innovations:**

### Centralized access to projects and parameters

With the integrated LAN interface the ORBIMAT SW power sources can be integrated into the network: All welding data and programs for each individual welding process can be called up and documented in full, analyzed and used and optimized for future welding processes. This way, production sequences can be planned better and are also safer and less time-consuming.

### Intuitive operation and a multilingual menu interface

The ORBIMAT SW power sources are operated using the 12.4" color touch display screen, or alternatively with the multifunctional rotary knob, as is familiar from premium automobiles and the ORBIMAT CA

series. The multilingual menu interface with graphic support makes operation and parametrization of the welding power supply simple and intuitive. Soft keys provide direct access to important commands.

### More quality and safety

The ORBIMAT SW power sources achieve more quality thanks to the digital and precise welding gas control, the "PERMANENT-GAS" function. It makes it possible to perform welding processes with the highest level of purity and a low gas requirement, reducing the costs for each welding process. The gas quantity values saved with the welding program thus make for easily reproducible welding results.

### Shorter welding cycles and more productivity

In order to minimize the gas pre-flow and post-flow times, ORBITALUM has incorporated the unique Flow-Force function. It shortens the welding process considerably when using closed welding heads: The digital gas control supplies protective gas at a very

high volumetric flow rate directly from the pressure reducer to the welding head - the unwanted residual oxygen is flushed out abruptly in the process. The resultant reduced pre-flow and post-flow times make for much shorter processing times and thus a higher level of productivity and an increased duty cycle.

The high volumetric flow rate in the post-flow time and the optionally activatable cooling circuit delay reduce the temperature of the welding head - ideal for a high duty cycle. The benefits include a longer service life for the welding electrode. The optionally activatable permanent gas function prevents the penetration of oxygen in the welding head, even during secondary processing times. As a result, the ORBIMAT system achieves almost completely oxidation-free seams with simultaneously short processing times.

### Elegant housing for good handling

The ORBIMAT SW power supplies feature an elegant as well as practical housing with carrier handles integrated at the side. The ports on the front of the



Elegant and practical housing (IP23) with carrier handles integrated at the side



The integrated liquid cooling system keeps connected welding heads constantly at the right temperature



Hinged lid with display protects the control elements, the system printer and the rotary knob

device are set back for protection from mechanical damage. The hinged lid with display screen, when closed, protects the operating controls, the system printer and the control dial if the device is offline or is being transported.

The ORBIMAT 180 SW operates with a wide input voltage range of 110 V to 230 V AC 50/60 Hz, and offsets mains fluctuations of 90 V to 260 V AC. At 180 A, the output welding current is suitable for most applications.

The ORBIMAT power supply automatically detects and includes the connected system components. The integrated liquid cooling system keeps connected welding heads constantly at the right temperature.

#### Upgradeable with "LAN/IoT/VNC connectivity

#### UPGRADE"

The optionally available "Connectivity Package 1" allows saving and calling up of welding programs via a central network storage location. To increase the process security of the documentation the log files can be stored centrally.

Detailed information on "Connectivity package 1" starting on page 15.

TECHNICAL SPECIFICATIONS	ORBIMAT 180 SW
ORBIMAT 180 SW	Code 850 000 001
LAN/IoT/VNC connectivity UPGRADE	Code 850 080 001
Supply voltage	1~ 110 - 230 V, 50/60 Hz
Control range (Supply voltage > 160 V)	5 - 180 A
Duty cycle	60 % at 180 A 100 % at 160 A
Dimensions	600 x 400 x 310 mm 23.6 x 15.7 x 12.2 in
Weight	26.0 kg 57.32 lbs
SCOPE OF DELIVERY	ORBIMAT 180 SW
Orbital welding power supply ORBIMAT 180 SW	1 PIECE
Hose connection set ORBIMAT (Code 875 030 018)	1 PIECE
USB stick (Code 850 030 001)	1 PIECE
External keyboard (Code 875 012 057)	1 PIECE
Dummy plug for remote control socket (Code 850 050 004)	1 PIECE
3.5 liter OCL-30 cooling liquid (Code 850 030 010)	1 canister
Operating instructions with calibration certificate	1 set
Quick Start guide	1 PIECE

TECHNICAL SPECIFICATIONS	ORBIMAT 300 SW
ORBIMAT 300 SW	Code 852 000 001
Connectivity UPGRADE LAN/IoT/VNC	Code 850 080 001
Supply voltage	3~ 400 - 480 V, 50/60 Hz
Control range (Supply voltage > 160 V)	5 - 300 A
Duty cycle	40 % at 300 A 60 % at 260 A 100 % at 220 A
Dimensions	600 x 400 x 480 mm 23.6 x 15.7 x 18.9 in
Weight	35.40 kg 78.04 lbs
SCOPE OF DELIVERY	ORBIMAT 300 SW
Orbital welding power supply ORBIMAT300 SW	1 PIECE
Hose connection set ORBIMAT (Code 875 030 018)	1 PIECE
USB stick (Code 850 030 001)	1 PIECE
External keyboard (Code 875 012 057)	1 PIECE
Dummy plug for remote control socket (Code 850 050 004)	1 PIECE
Operating instructions with calibration certificate	1 set

Technical specifications are non-binding. They do not constitute any assurance of properties.





ORBIMAT 180 SW



ORBIMAT 300 SW

## Orbital welding power supply

### ORBIMAT 180 SW (SmartWelder)

Properties, application area, technical specifications and delivery scope, see from page 8.

ITEM	VERSION	CODE	MACHINE WEIGHT KG
ORBIMAT 180 SW	1 - 110 - 230 V 50/60 Hz	850 000 001	26.00
LAN/IoT/VNC connectivity UPGRADE		850 080 001	

### ORBIMAT 300 SW (SmartWelder)

Properties, application area, technical specifications and delivery scope, see from page 8.

ITEM	VERSION	CODE	MACHINE WEIGHT KG
ORBIMAT 300 SW	3 - 400 - 480 V, 50/60 Hz	852 000 001	35.400
LAN/IoT/VNC connectivity UPGRADE		850 080 001	

### Suitable accessories (optionally available):

- ORBICAR W cart with integrated liquid cooling, see page 19
- ORBICOOL Active compressor cooling unit, see page 19
- ORBITWIN SW switching unit, see page 20
- Remote control with cable, see page 21
- Bar code/QR code scanner, see page 21
- ORBmax residual oxygen meter, see page 90
- SW manual torch, see page 96
- Double pressure reducer, see page 94



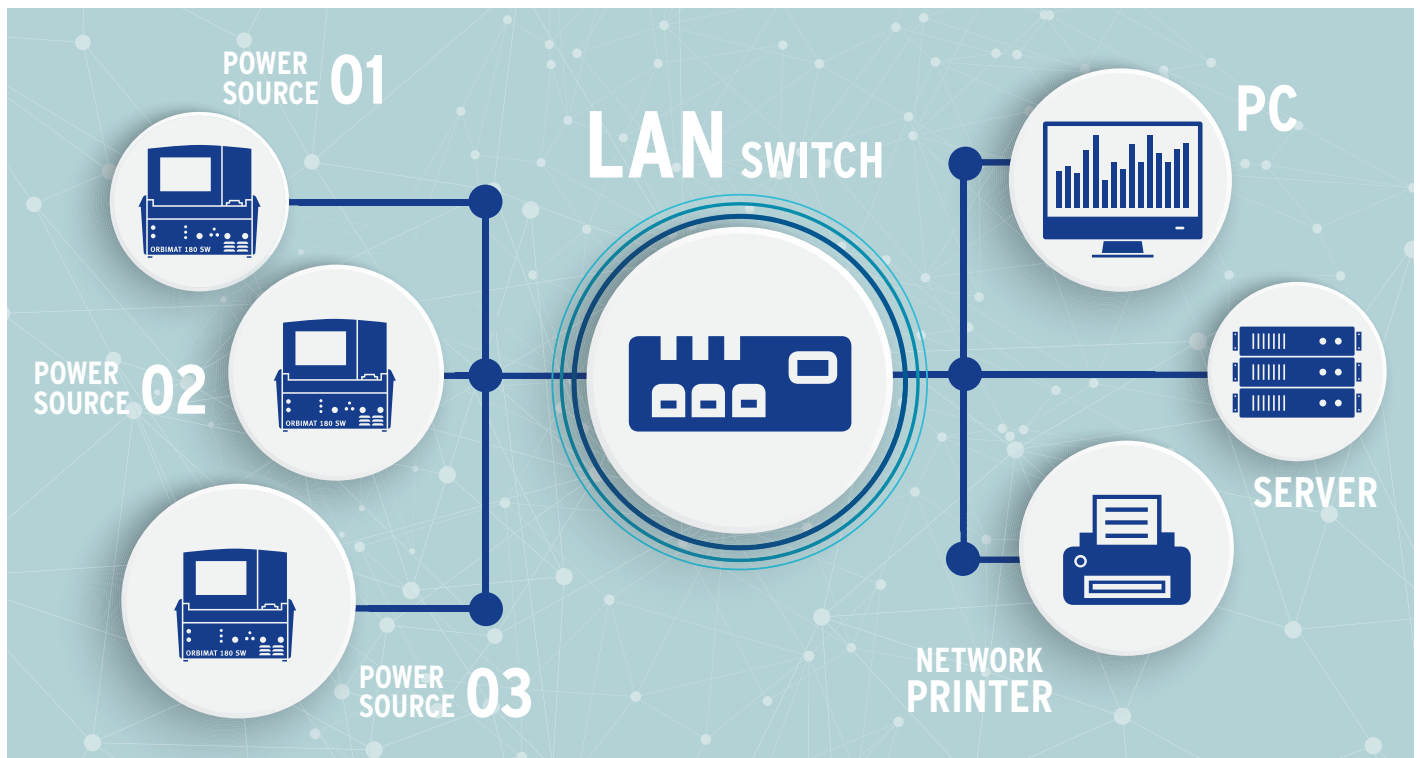
# Connectivity upgrade

## for ORBIMAT SW and MW power sources

Welding parameters  
in local network environments

Backing up and further processing

The optionally available connectivity upgrade enables integration of the ORBIMAT SW and MW power sources into a local network environment (LAN). Welding programs can thus be saved to centralized network storage locations and managed & backed up for the long term there. Power supplies integrated into the network can access the centrally saved programs and their folder structure at the same time. This ensures that all power supplies always have access to the latest version of the data, even if subsequent adjustments are made to programs.



**The ORBIMAT SW and MW power sources feature an extensive, user-supporting documentation solution for digitally recording documentation parameters ahead of the welding process, e.g. the material and gas batch number, isometric number, weld seam position and the welder ID.**

The documentation parameters to be entered are queried before the respective start of the welding process. Whether a parameter value can or must be entered once or for each weld can be individually defined.

This entry can be made either using the virtual keyboard, an external USB keyboard or efficiently using the separately available bar code/QR code scanner. The option of documentation of the general conditions applicable for the welding programs, e.g. forming and welding gas types and volumes, elec-

trode geometries, weld head alignment and operator comments round out the documentation process.

All recorded parameters can be recorded together with the generated welding data in a welding data log and saved digitally. These welding data logs can then be saved at the network storage location automatically, backed up for the long term and edited from there.

This makes it possible to considerably reduce and simplify the documentation effort for users.

In addition to network storage locations, other network resources like network printers can also be accessed. In this way, welding logs and programs can be directly output locally via a printer over the network upon request.

Using the "Industry 4.0/IoT" data protocol "MQTT", the ORBIMAT SW and MW power sources can be

integrated into industrial environments 4.0 and "Machine-to-Machine" (M2M) communication can be established between devices and controllers. In this way, subscribers can exchange various different telemetry data, measurement values and parameters with one another and receive control commands for automation solutions.

The connectivity upgrade is activated using a license key which can be entered directly into the power source software. In this way, all relevant functions and interfaces can be immediately activated. A separate connectivity package is required for the release of each welding power source.

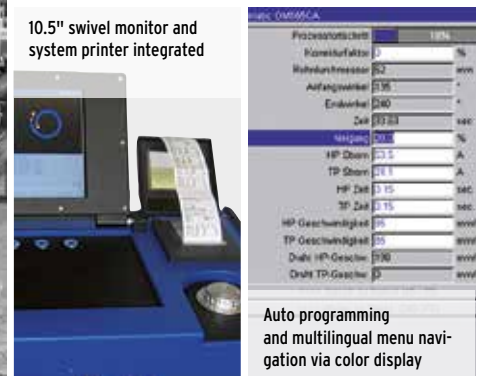
# ORBIMAT CA AVC/OSC

## Orbital welding power supply

Compact power source for mechanized TIG orbital welding with unique operating concept (human machine interface HMI) and a series of further technical features such as electronic **arc gap control (AVC)** and **oscillation (OSC)**. In connection with an orbital weld head from ORBITALUM TOOLS the user receives an especially innovative as well economical welding system.



Simple and convenient operation by multifunctional rotary knob



10.5" swivel monitor and system printer integrated

Auto programming and multilingual menu navigation via color display

**In addition to tried-and-tested Orbitalum auto-programming via entry of the pipe diameter, wall thickness, material and welding gas using a programming aid, it disposes of a "Flow Force" function for reducing the gas pre-purge time with closed weld heads.**

The operating concept of the power sources differs significantly from common operation variants: The operator guidance with display and single-knob operation (rotary knob) stems from car manufacturing and has proven itself worldwide in infotainment systems of modern luxury vehicles. The main advantage is that the operator's view remains focused on the screen.

Further technical refinements of the ORBIMAT CA AVC/OSC are soft keys for significant, quick-to-activate superordinate commands, for example "Start/Stop". The operating system RTOS (Real Time Operating System) used has the advantage in contrast to Windows-based systems that a direct, abrupt switch-

off of the systems does not lead to any problems. This is particularly important for the operation at vulnerable power supplies, such as on construction sites. In contrast to Windows, RTOS always focuses on the control and regulation of the welding process, which is ultimately decisive for the quality of the welding result.

Also unique on the market is the Flow Force function which significantly reduces the processing procedure when using closed weld heads. Through a second channel for protective gas, the protective gas flows directly from the pressure reducer to the chamber of the welding head before the start of the weld process - the unwanted residual oxygen is flushed out abruptly in the process. The ORBIMAT power source automatically detects and includes the system components connected for the course of the process, from closed or opened weld head with automatic control of the arc gap\* (AVC = Arc Voltage Control) and/or integrated oscillation of the torch\* (OSC = Oscillation) up to the oxygen analysis device.

In contrast to conventional orbital welding control systems setting and controlling the torch distances to the weld seam are done directly via the arc gap.

\* only for ORBIMAT 300 AVC/OSC

PROPERTIES ORBITAL ORBITAL WELDING POWER SOURCES:		300 CA AVC/OSC
Easy and convenient operation using a multi-functional rotary knob		●
DC current welding source		●
AC power source for aluminum materials		○
"Flow Force" function to reduce the gas pre-flow and post-flow time		●
"Permanent gas" function		●
Monitoring of cooling water and weld gas		●
Control option for cold wire feed		●
Possibility of connecting an external remote control		●
Constant or pulsed wire feed motion and rotation		●
Optimal visual and operating conditions thanks to clearly laid-out 10.5" swivel monitor		●
Graphically-supported operating interface and multilingual menu navigation via color display		●
Metric and imperial measuring units		●
Process-oriented, stable and real-time operating system without power-down sequence		●
Automatic weld head recognition and resulting parameter modification		●
Capacity to store over 5,000 welding procedures, providing systematic and clear procedure management thanks to the creation of folder structures		●
Welding data logging and printout of actual values		●
Integrated system printer		●
Possibility of connecting a monitor or printer (via VGA/LPT)		●
Integrated multi card reader for transfer of log files and welding programs via CompactFlash Card (CF), SD, MMC, SM, Sony Memory Stick		●
Optional PC software (OrbiProg CA) for welding procedure management and logging		●
Integrated, folding carrying grips		●
PSS (Pro Service System) for external performance check of the system as well as easy maintenance and fast replacement of parts thanks to system component design		●
Option to program up to 99 sectors		●
Power and motor slope adjustment between the individual sectors		●
Can only be used in combination with a separately available liquid cooling system		●
AC setting option of positive and negative half-cycle with a 20 - 80% ratio		○
AC frequency setting 50 - 200 Hz		○
AVC electronic arc gap control: Arc gap programmable in "mm" or via the arc voltage in "V", OSC oscillation with sampling function for automated determination of the tube joint between the sides of the pipe		●
SCOPE OF DELIVERY		300 CA AVC/OSC
Orbital welding power source of the ORBITAL CA series	PCS.	1
Hose connection set ORBITAL (Code 875 030 018)	PCS.	1
Dummy plug for remote control socket (Code 875 050 006)	PCS.	1
Welding current connection adapter	PCS.	1
External operating keyboard (Code 875 012 057)	PCS.	1
External remote control (Code 875 050 001)	PCS.	1
Key for key switch (for re-ordering of 1 key; Code 875 012 058)	PCS.	2
Operating instructions with calibration certificate	set	1
QuickStart guide	PCS.	1

● = Function included      ○ = Function not included      ◐ = Function only conditionally included      \* = Only DC welding

SUITABLE ACCESSORIES (optionally available):	TECHNICAL SPECIFICATIONS	300 CA AVC/OSC
<ul style="list-style-type: none"> <li>• ORBICAR W trolley with integrated liquidcooling</li> <li>• ORBICOOL Active compressor cooling unit</li> <li>• ORBICAR S carriage</li> <li>• Rugged transport case</li> <li>• ORBITWIN SW Switching Unit</li> <li>• Remote control with cable</li> <li>• Software/Hardware Package "CA"</li> <li>• ORBmax residual oxygen meter</li> <li>• Double pressure reducer</li> <li>• TIG manual welding torch for ORBITAL</li> </ul>	Code Supply voltage Control range (Supply voltage > 160 V) Duty cycle Dimensions (LxDxH) Weight	872 000 020 400 - 480 V +/- 10 %, 50/60 Hz, 3-phase 5 - 300 A 40 % at 300 A 60 % at 260 A 100 % at 220 A 540 x 420 x 440 mm 21.3 x 16.5 x 17.3 in 37.5 kg 82.67 lbs



Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



ORBIMAT 300 CA AVC/OSC

## Orbital welding power sources

### ORBIMAT CA AVC/OSC

Properties, application area, technical specifications and delivery scope, see from page 16.

ITEM	VERSION	CODE	MACHINE WEIGHT KG
ORBIMAT 300 CA AVC/OSC	3 - 400 - 480 V +/- 10%, 50/60 Hz	872 000 020	37.5

### Suitable accessories (optionally available):

- ORBICAR W cart with integrated liquid cooling, see page 19
- ORBICOOL Active compressor cooling unit, see page 19
- Rugged transport case, see page 20
- Remote control with cable, see page 21
- Software/hardware package "CA", see page 21
- ORBmax residual oxygen meter, see page 90
- TIG manual torch, see page 96
- Double pressure reducer, see page 94
- Welding current connection adapter set, see page 95

## Cooling systems for ORBIMAT

### ORBICAR W cart with integrated liquid cooling

Thanks to its integrated liquid cooling function, the ORBICAR W cart is the perfect complement to Orbitalum power sources\*. Beside the liquid cooling, the cart is equipped with a practical holder for gas bottles. On delivery the tank already includes 8 liters (2.11 gal) of the OCL-30 cooling liquid (see page 22).

TECHNICAL SPECIFICATIONS	ORBICAR W TROLLEY
Input voltage	400 V, 50 Hz, 3-phase
Rated output	450 VA
Cooling type	Circulation cooling
Tank volume	8 l/2.11 gal
Water pressure max.	3.1 bar / 45 PSI
Dimensions (LxDxH)	96 x 54 x 113 cm / 37.8 x 21.3 x 44.5 in
Dimensions storage area (LxDxH)	65 x 38 x 65 cm / 26.6 x 15 x 26.6 in

ITEM	SUITABLE FOR ORBIMAT	CODE	KG
ORBICAR W 300 trolley	300 SW, 300 CA	<b>884 000 002</b>	58.200
ORBICAR W 165 trolley	165 CA*	<b>884 000 004</b>	58.200
ORBICAR W 180 trolley	180 SW	<b>884 000 005</b>	58.200

\* ORBIMAT 165 power source must be modified in the factory.



ORBICAR W trolley with integrated liquid cooling

### ORBICOOL Active

Very efficient compressor cooling device. Particularly suitable for welding units in series production.

#### Including:

- Stainless steel housing
- Adjustable digital thermostat with temperature hysteresis
- Low-noise
- Metal filter cell
- Water level indicator
- Pump protection
- Flow rate monitoring in combination with ORBIMAT current sources

2 canisters each 3.5 liters (0.92 gal) are included in the scope of delivery of the OCL-30 cooling liquid (see page 22). Suitable for all\* ORBIMAT orbital welding power supplies. Not usable in combination with the ORBICAR S trolley.

TECHNICAL SPECIFICATIONS	ORBICOOL ACTIVE
Cooling (at ambient temp. +32 °C/water +20 °C)	1.025 kW / 1.37 hp
Setting range inlet temperature	18 - 25 °C
Input voltage	230 V, 50 Hz
Connected load (at ambient temp. +42 °C/water +20 °C)	900 W / 1.21 hp
Maximum current consumption (depending on the design)	4.6 A
Tank volume	6 l/1.59 gal
Water pressure max.	2.2 bar
Pump output	2.3 l/min
Air output	800 m <sup>3</sup> /h
Sound pressure	65 dB(A)
Cooling type	Compressor cooling
Dimensions (LxDxH)	560 x 475 x 355 mm / 22.0 x 18.7 x 14.0 in

ITEM	VERSION	CODE	KG
ORBICOOL Active for ORBIMAT 165 CA*	230 V, 50 Hz	<b>889 000 011</b>	42.000
ORBICOOL Active for ORBIMAT 300 CA/SW	230 V, 50 Hz	<b>889 000 012</b>	42.000
ORBICOOL Active for ORBIMAT 180 SW	230 V, 50 Hz	<b>889 000 015</b>	42.000

\* ORBIMAT 165 power sources must be modified in the factory.



ORBICOOL Active (front view)



ORBICOOL Active (rear view)





Welding current connection adapter set



ORBITWIN SW Switching Unit



ORBICAR S carriage



Transport case 165/300



180 SW transport case

## Other accessories for ORBIMAT and MOBILE WELDER

### Welding current connection adapter set

See page 95.

### ORBITWIN SW Switching Unit

To increase productivity, the ORBITWIN Switching Unit is available which allows the alternately operation with 2 weld heads on the ORBIMAT. By pressing the respective Start button of the used weld head the previously assigned program is called up from the memory. The respective weld head which is not being used is locked and can be prepared for the next welding task in advance.

Incl. all connecting lines and hoses.

ITEM	SUITABLE FOR ORBIMAT	CODE	KG
ORBITWIN SW Switching Unit	180 SW, 165 CA*, 300 CA*, 300 SW, 300 CA AC/DC*	<b>853 000 001</b>	15.00
Connection set ORBITWIN SW at ORBIMAT CA	165 CA, 300 CA, 300 CA AC/DC	<b>853 050 010</b>	0.100
Connection extension set 1.1m (3.6 ft)	180 SW	<b>853 050 011</b>	2.585

\* Use of ORBITWIN SW with ORBIMAT 165 CA, 300 CA and 300 CA AC/DC only possible in combination with the "connection set ORBITWIN SW to ORBIMAT CA" (available separately, see table above).

### ORBICAR S cart

The ORBICAR S is a practical cart with shelf and fastening possibility for a gas bottle and the ideal supplement for the Orbitalum 165 A and 180 SW orbital welding power sources.

Not usable in combination with ORBICOOL Active compressor cooling unit.

TECHNICAL SPECIFICATIONS	ORBICAR S CARRIAGE
Dimensions (LxDxH)	96 x 54 x 113 cm/37.8 x 21.3 x 44.5"
Dimensions storage area (LxDxH)	65 x 38 x 65 cm/26.6 x 15 x 26.6"

ITEM	CODE	KG
ORBICAR S carriage	<b>884 000 001</b>	19.100

### Rugged transport case

With roles. Protects the power source during transport. Ideal for construction site usage.

ITEM	SUITABLE FOR ORBIMAT	CODE	KG
165 transport case	165 CA	<b>875 050 002</b>	17.500
300 transport case	300 CA, 300 CA AC/DC	<b>874 050 001</b>	20.800
180 SW transport case	180 SW	<b>850 030 020</b>	18.700

## Software/hardware package "CA"

Suitable for all ORBIMAT CA orbital welding power supplies.  
For external programming and data documentation, consisting of:

- 1 CompactFlash card for data transfer between machine and PC.  
For saving welding data logs or expanding the program memory. Storage capacity of up to 5,000 welding programs.
- 1 USB card reading device for reading out the CompactFlash Card at the PC.
- Software ORBIPROG CA. Allows saving and printing of programs and log files at the PC. Conversion of all data into PDF and Excel format. Programs from the Orbitalum machine the C series (e.g. ORBIMAT 160 C) can also be converted into the CA format by means of the software. The parameters of the CA programs can be edited with the software and can be transferred back to the machine after editing and used there.

ITEM	CODE	KG
Software/Hardware Package "CA"	<b>875 050 003</b>	0.488



Software/Hardware Package "CA"

## Storage media

For saving welding data logs or expanding the program memory. Storage capacity of up to 5,000 welding programs.

ITEM	CODE	KG
CompactFlash Card ORBIMAT CA	<b>875 012 056</b>	0.010
USB stick ORBIMAT SW / MW	<b>850 030 001</b>	0.002



CompactFlash / USB stick

## Remote control with cable

Suitable for all ORBIMAT orbital welding power supplies (the remote control is already included in the scope of delivery with the ORBIMAT 300 CA AVC/OSC).  
It is not required when working with enclosed orbital weld heads.

Remote including "**Remote control adapter OM CA to ORBIMAT SW**" (Code 850 040 030). This adapter can be retrofitted at any time and allows the connection of older remote control units to the new SW generation.

ITEM	CABLE LENGTH [M]	CABLE LENGTH [INCH]	CODE	KG
Remote control with cable	7.5	24.6	<b>875 050 001</b>	1.350
OM CA remote control adapter for OM 180 SW (upgrade)	-	-	<b>850 040 030</b>	0.118



Remote control with cable

## Bar code/QR code scanner

Compatible with the ORBIMAT SW and MW power sources.  
For welding data documentation or recording.  
Rapid scanning in of the parameters stored in the bar code/QR code (e.g. weld seam number, isometry number, welder ID, etc.) into the power source.

ITEM	CODE	KG
Bar code/QR code scanner	<b>850 030 005</b>	0.250



Bar code/QR code scanner SW



Replacement paper rolls and ribbon cartridges



OCL-30 cooling liquid



Hose connection set ORBIMAT

## Consumables for ORBIMAT and MOBILE WELDER

### Replacement paper rolls and ribbon cartridges

For internal system printer.

1 paper roll and 1 ribbon cartridge (only SW) are already included in the scope of delivery of the ORBIMAT power sources.

ITEM	CODE	KG
Panel printer paper rolls CA/SW, 3-pack	<b>875 050 017</b>	0.150
Panel printer ink ribbon cartridge CA/SW	<b>875 030 004</b>	0.010
Panel printer paper rolls MW, 3-pack	<b>854 030 001</b>	0.150

### OCL-30 cooling liquid

Anti-freeze pre-mix for ORBIMAT power sources and cooling units to prevent the cooling water from freezing. Protects up to  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ) outside temperature. Increased service life of components of the cooling system through very high corrosion protection and high pH-value. Excellent ignition characteristics due to low conductivity. Clear cooling liquid.

Usable with ORBICAR W, ORBICOOL Active, ORBIMAT 165 CA and 180 SW, ORBICOOL MW.

ITEM	VERSION	CODE	KG
OCL-30 cooling liquid	Canister each 3.5 l (0.92 gal)	<b>850 030 010</b>	3.715

### Hose connection set ORBIMAT

1 connection set is already included in the scope of delivery of the ORBIMAT power sources.

Consisting of every hose and connection piece required for operation.

ITEM	CODE	KG
Hose connection set SW	<b>875 030 018</b>	0.445
Hose connection set MW	<b>854 030 003</b>	

### Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Double pressure reducer, see page 94
- WS2 tungsten electrodes, see page 94
- TIG manual welding torch for ORBIMAT, see page 96
- Welding current connection adapter set, see page 95



## Comprehensive service and maintenance offer

We not only care about your concerns before the purchase. You can rely completely on us after your purchase as well.

### Our products are extremely robust and reliable.

To ensure the performance in the long run, the recommended service and maintenance intervals should be performed regularly. All service and maintenance work is performed with great care by qualified and motivated employees. They analyze your situation to find the best long-term solution.

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

## Why maintenance?

### "Prevention is better than cure"

Better not wait until your machine sooner or later breaks down completely because of a lack of service or maintenance! Small causes can often have large effects, and failures or malfunctions could have been avoided with timely control or maintenance.

When did you have your machine serviced the last time?  
Better to arrange a meeting now:



+49 (0) 77 31 792-786



customerservice@itw-ocw.com

### Do not forget: Fill out the service form!

The service form can be downloaded under: [www.orbitalum.de/service.html](http://www.orbitalum.de/service.html)

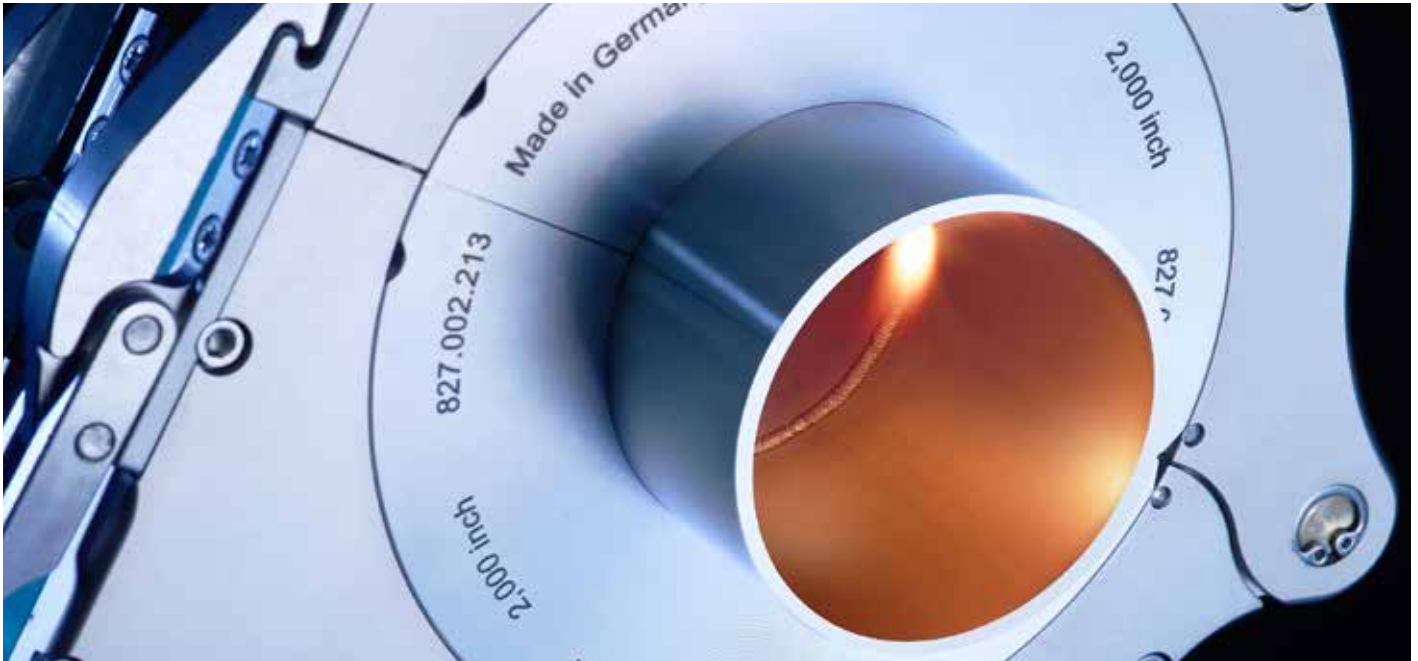
## Our services:

- Repairing, replacing
- Cost quotation
- Proactive maintenance
- Service training for customers
- Rental machines for bridging repair periods with special conditions
- Collection service for machines
- Visual and functional test
- Determination and measurement technical parameters
- Discussion with customer about maintenance result
- Functional test of the system components
- Cleaning and maintenance work
- Exchange defined wear parts as well as defective components
- Implementation of modifications, in as far as this serves the technical improvements of the device
- Required adjustment and set-up tasks including calibration and new inspection

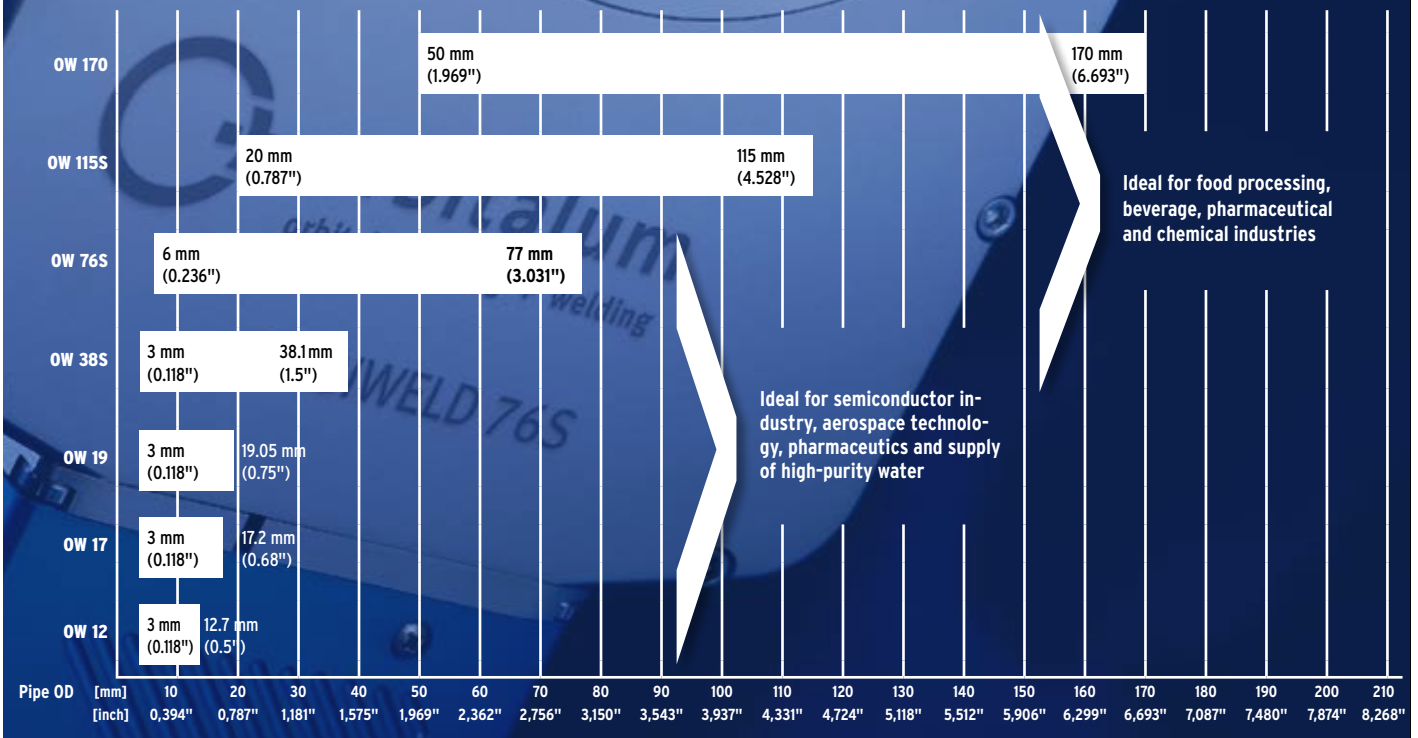
## Your advantages:

- Service directly by the manufacturer or authorized partner
- Reduced downtimes
- Long-term functioning of your machines and plants
- Ensuring high availability
- Wear discovered at an early stage avoids unnecessary and expensive repairs
- Reducing the failure susceptibility
- Value preservation of your machines and plants
- Regular services ensure reliable machine operation - even after years
- Relief of in-house service employees

# Closed orbital weld heads



## Overview of closed orbital weld heads





# Electrode lengths/Ø for closed orbital weld heads

WELD HEAD ▶		OW 12		OW 17		OW 19		OW 38S		OW 76S		OW 115S		OW 170	
ROTOR Ø ▶		40.0 MM/1.575"		51.2 MM/2.016"		55.0 MM/2.165"		79.0 MM/3.110"		116.4 MM/4.583"		180.2 MM/7.094"		245.6 MM/9.669"	
PIPE Ø ▼		[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
3.17	0.125	13.90	0.547	19.52	0.768	21.40	0.843	33.40	1.315						
6.00	0.236	12.50	0.492	18.10	0.713	20.00	0.787	32.00	1.260	50.70	1.996				
6.35	0.250	12.30	0.484	17.93	0.706	19.80	0.780	31.80	1.252	50.50	1.988				
8.00	0.315	11.50	0.453	17.10	0.673	19.00	0.748	31.00	1.220	49.70	1.957				
9.53	0.375	10.70	0.421	16.34	0.643	18.20	0.717	30.20	1.189	48.90	1.925				
10.00	0.394	10.50	0.413	16.10	0.634	18.00	0.709	30.00	1.181	48.70	1.917				
10.20	0.402	10.40	0.409	16.00	0.630	17.90	0.705	29.90	1.177	48.60	1.913				
12.00	0.472	9.50	0.374	15.10	0.594	17.00	0.669	29.00	1.142	47.70	1.878				
12.70	0.500	9.20	0.362	14.75	0.581	16.70	0.657	28.60	1.126	47.30	1.862				
13.00	0.512			14.60	0.575	16.50	0.650	28.50	1.122	47.20	1.858				
13.50	0.531			14.35	0.565	16.30	0.642	28.20	1.110	46.90	1.846				
15.88	0.625			13.16	0.518	15.10	0.594	27.00	1.063	45.70	1.799				
16.00	0.630			13.10	0.516	15.00	0.591	27.00	1.063	45.70	1.799				
17.20	0.677			12.50	0.492	14.40	0.567	26.40	1.039	45.10	1.776				
18.00	0.709					14.00	0.551	26.00	1.024	44.70	1.760				
19.00	0.748					13.50	0.531	25.50	1.004	44.20	1.740				
19.05	0.750					13.50	0.531	25.40	1.000	44.20	1.740				
20.00	0.787							25.00	0.984	43.70	1.720	75.60	2.976		
21.30	0.839							24.30	0.957	43.00	1.693	75.00	2.953		
22.00	0.866							24.00	0.945	42.70	1.681	74.60	2.937		
23.00	0.906							23.50	0.925	42.20	1.661	74.10	2.917		
25.40	1.000							22.30	0.878	41.00	1.614	72.90	2.870		
26.90	1.059							21.50	0.846	40.20	1.583	72.20	2.843		
28.00	1.102							21.00	0.827	39.70	1.563	71.60	2.819		
29.00	1.142							20.50	0.807	39.20	1.543	71.10	2.799		
30.00	1.181							20.00	0.787	38.70	1.524	70.60	2.780		
31.75	1.250							19.10	0.752	37.80	1.488	69.70	2.744		
33.70	1.327							18.10	0.713	36.80	1.449	68.80	2.709		
35.00	1.378							17.50	0.689	36.20	1.425	68.10	2.681		
38.10	1.500							15.90	0.626	34.60	1.362	66.60	2.622		
40.00	1.575									33.70	1.327	65.60	2.583		
41.00	1.614									33.20	1.307	65.10	2.563		
42.40	1.669									32.50	1.280	64.40	2.535		
44.50	1.752									31.40	1.236	63.40	2.496		
48.30	1.902									29.50	1.161	61.50	2.421		
50.80	2.000									28.30	1.114	60.20	2.370	92.90	3.657
51.00	2.008									28.20	1.110	60.10	2.366	92.80	3.654
52.00	2.047									27.70	1.091	59.60	2.346	92.30	3.634
53.00	2.087									27.20	1.071	59.10	2.327	91.80	3.614
54.00	2.126									26.70	1.051	58.60	2.307	91.30	3.594
60.30	2.374									23.50	0.925	55.50	2.185	88.20	3.472
63.50	2.500									21.90	0.862	53.90	2.122	86.60	3.409
70.00	2.756									18.70	0.736	50.60	1.992	83.30	3.280
76.10	2.996									15.60	0.614	47.60	1.874	80.30	3.161
76.20	3.000									15.60	0.614	47.50	1.870	80.20	3.157
85.00	3.346											43.10	1.697	75.80	2.984
88.90	3.500											41.20	1.622	73.90	2.909
101.60	4.000											34.80	1.370	67.50	2.657
104.00	4.094											33.60	1.323	66.30	2.610
108.00	4.252											31.60	1.244	64.30	2.531
114.30	4.500											28.50	1.122	61.20	2.409
127.00	5.000													54.80	2.157
129.00	5.079													53.80	2.118
139.70	5.500													48.50	1.909
152.40	6.000													42.10	1.657
154.00	6.063													41.30	1.626
163.00	6.417													36.80	1.449
165.10	6.500													35.80	1.409
168.30	6.626													34.20	1.346

## FORMULA:

Electrode length =

$$\frac{\text{Rotor } \varnothing - \text{Hose } \varnothing}{2} - \text{Electrode gap (as a rule 1.5 mm)} - 3$$

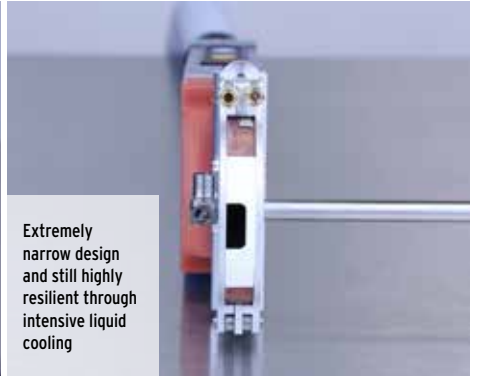
# ORBIWELD 12

Compact TIG weld head  
- ideal for tight spaces

## Micro weld head

It doesn't get any smaller or more effective than this: Thanks to its extremely narrow construction the OW 12 offers a unique diversity of functions as well as a high duty cycle previously unknown in weld heads of this size through its liquid cooling. This micro weld head is a compact space-saving marvel and guarantees continually reproducible, high-quality weld seams, even with high currents. Ideal for welding all common micro fittings!

Small-sized modules – base machine, clamping cartridges and clamping inserts – specially for applications in very tight spaces



Extremely narrow design and still highly resilient through intensive liquid cooling



Removable clamping cartridges for exact aligning of the parts to be welded

**The OW 12 with its small-sized modules – basic machine, clamping cartridges and clamping inserts – is the ideal tool for work under tight spaces such as in the semi-conductor industry, aerospace technology, pharmaceuticals and supply of high-purity water.**

With a control panel integrated in the robust and stable aluminum handle of the weld head, all commands which are important for the welding process can be transferred to the power source so that no additional remote control is required.

Removable clamping cartridges allow exact aligning of the parts to be welded, even under tight spaces.

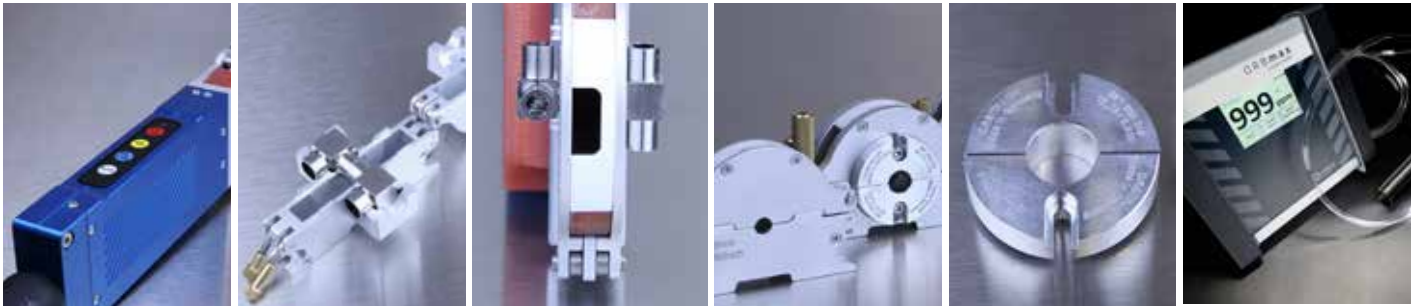
### FURTHER PROPERTIES:

- Toolless quick change system for clamping cartridges and clamping inserts
- Wide clamping cartridges (Type "B") with changeable clamping inserts for standard applications
- Extremely narrow clamping cartridge (Type "A") for welding of micro fittings and for other applications with very limited clamping lengths
- The head is 5.7 kg (12.6 lbs) light. All connections for electricity, gas and cooling water are firmly integrated in the OW 12
- To increase productivity, the optional ORBITWIN switching unit allows working with up to two heads in an alternating fashion, thus reducing conversion times and downtimes considerably
- Including highly flexible hose package (length: 7.5 m/24.6 ft) with strain relief to the power source - optionally extendable to up to 20.0 m (64 ft)

**The OW 12 success model has been optimized!**

**The result: A well-engineered weld head with unequalled robustness, high ease of use and even higher performance, for example through:**

- ✓ Higher temperature stability
- ✓ Improved ignition characteristics
- ✓ Optimized rotor guidance
- ✓ Optimized weld gas control
- ✓ Liquid-cooled
- ✓ Integrated control panel
- ✓ 7.5 m (24.6 ft) hose package



Robust and stable aluminum handle with integrated control panel

Quick change system for clamping cartridges

Ideal for welding all common micro fittings

Diameter-specific clamping cartridges – available separately

Aluminum clamping inserts for OW 12, type "B" (wide) – available separately

Wide accessories program, e.g. ORBmax residual oxygen meter

SCOPE OF APPLICATION OW 12:	MICRO FITTING AT MICRO FITTING	MICRO FITTING AT HOSE	HOSE AT HOSE	ADVANTAGES:
Clamping cassettes, Type "A" (narrow)	x	x	x	High flexibility through narrow design
Clamping cassettes, Type "B" (wide)			x	Low costs through exchangeable cartridges

APPLICATION AREA	ORBIWELD 12
Code	<b>821 000 010</b>
Pipe OD, min. - max.	3.0 - 12.7 mm 0.118 "- 0.500"
Electrode diameter	1.0 mm 0.039"
Machine weight including hose package	4.8 kg 10.6 lbs
Hose package length	7.5 m 24.6 ft
SCOPE OF DELIVERY	
Including:	<ul style="list-style-type: none"> <li>• 1 micro weld head ORBIWELD 12</li> <li>• 1 transport case</li> <li>• 1 tool set</li> <li>• 1 feeler gauge</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Clamping cassettes for OW 12, Type "A" (small)</li> <li>• Clamping cassette for OW 12, Type "B" (wide)</li> <li>• Clamping inserts for OW 12, Type "B" (wide)</li> <li>• ESG electrode grinders</li> <li>• ORBmax residual oxygen meter</li> <li>• ORBIPURGE forming set</li> <li>• Hose package extensions</li> <li>• WS2 tungsten electrodes</li> </ul>

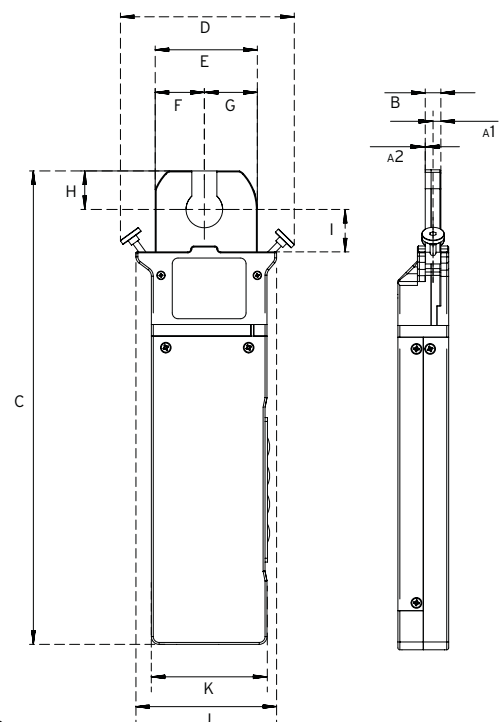
DIMENSIONS ORBIWELD 12	ELECTRODE GAP					
	DIMENSION		CASSETTE TYPE "A"		CASSETTE TYPE "B"	
	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]
Dimension "A1"	4.25	0.167	6.35	0.250	15.60	0.614
Dimension "A2"	3.75	0.148	5.85	0.230	15.10	0.594
Dimension "B"	8.00	0.315	12.20	0.480	30.70	1.209
Dimension "C"	245.70	9.673				
Dimension "D"	90.00	3.543				
Dimension "E"	53.00	2.087				
Dimension "F"	25.50	1.004				
Dimension "G"	27.50	1.083				
Dimension "H"	20.00	0.787				
Dimension "I"	22.00	0.866				
Dimension "J"	73.00	2.874				
Dimension "K"	60.00	2.362				



ORBIWELD 12 with narrow clamping cassette (Type "A")



ORBIWELD 12 with wide clamping cassette (Type "B")



Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



OW 12 with narrow clamping cassette (Type "A")



OW 12 with wide clamping cassette (Type "B")  
And changeable clamping inserts



Clamping cassettes for OW 12, Type "A" (small)



Clamping cassette for OW 12, Type "B" (wide)

## Micro weld head OW

### ORBIWELD 12

Properties, application area, technical specifications and delivery scope, see page 26.

Clamping cassettes and clamping inserts are not included in the scope of delivery (see from page 28).

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Micro weld head OW 12	821 000 010	4.800	11.000

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Clamping cassettes for OW 12, Type "A" (narrow), see page 28
- Clamping cassette for OW 12, Type "B" (wide), see page 28
- Clamping inserts for OW 12, Type "B" (wide), see page 29
- Welding current connection adapter set, see page 95

### Clamping cassettes for OW 12, Type "A" (narrow)

Made of stainless steel with folding cover "FlipCover" - allows control and, if necessary, readjustment of the electrode position before welding. For welding of micro fittings and other applications with very limited clamping lengths, clamping cartridges with an overall width of only 12.2 mm (0.48") can be supplied (Type "A"). A separate clamping cassette is required for each hose diameter for Type "A".

ITEM	PIPE OD [MM]	PIPE OD [INCH]	CODE	KG
Clamping cassette VA for OW 12, Type "A" (narrow), V3	2.00	0.079	821 050 200	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	3.00	0.118	821 050 201	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	3.18	0.125	821 050 202	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	6.00	0.236	821 050 203	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	6.35	0.250	821 050 204	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	8.00	0.315	821 050 205	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	9.53	0.375	821 050 206	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	10.00	0.394	821 050 207	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	12.00	0.472	821 050 208	0.100
Clamping cassette VA for OW 12, Type "A" (narrow), V3	12.70	0.500	821 050 209	0.100

### Clamping cassette for OW 12, Type "B" (wide)

When using clamping cassette Type "B", an additional clamping insert, Type "B" (wide) is required for each hose diameter.

ITEM	CODE	KG
Clamping cassette for OW 12, Type "B" (wide)	821 050 002	0.095

#### CLOSED ORBITAL WELD HEADS

## Clamping inserts for OW 12, Type "B" (wide)

Made of aluminum. Can only be used if the Type "B" clamping cartridge is used.  
 A clamping insert consists of 4 individual parts (2 inserts per side).



Clamping inserts for OW 12, Type "B" (wide), 4-part

ITEM	PIPE OD [MM]	PIPE OD [INCH]	CODE	KG
Clamping insert for OW 12, Type "B" (wide), 4-part	3.00	0.118	<b>821 002 220</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	3.18	0.125	<b>821 002 222</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	4.00	0.157	<b>821 002 224</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	6.00	0.236	<b>821 002 228</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	6.35	0.250	<b>821 002 229</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	7.00	0.276	<b>821 002 230</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	7.94	0.313	<b>821 002 232</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	8.00	0.315	<b>821 002 233</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	9.00	0.354	<b>821 002 234</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	9.53	0.375	<b>821 002 235</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	10.00	0.394	<b>821 002 237</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	12.00	0.472	<b>821 002 243</b>	0.050
Clamping insert for OW 12, Type "B" (wide), 4-part	12.70	0.500	<b>821 002 245</b>	0.050

## Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Hose package extensions, see page 94
- WS2 tungsten electrodes, see page 94
- Welding current connection adapter set, see page 95



# ORBIWELD 17

Extremely short production cycles  
thanks to integrated control elements  
and active cooling

## Micro weld head

Active-cooled orbital weld head for tubes in semi-conductor production:

With its removable clamping cartridge, integrated control elements and active cooling, the ORBIWELD 17 - or OW 17, for short - clearly stands out in comparison to conventional systems from the competition. This makes it possible to weld thin tubes like those used in semi-conductor production easily, quickly, reliably and - above all - with high quality.



Compatibility with market standards enables trouble-free transitioning to the latest Orbitalum technology	✓
An extremely narrow design for use in confined spaces, such as in the semi-conductor industry	✓
Removable clamping cartridge specifically for inline assembly or prefab production of modules	✓
For small tube diameters 3.0 mm to 17.2 mm (0.118" - 0.677")	✓
COAX tube systems can be welded with wall thicknesses up to 1.62 mm (0.064")	✓
Highly resilient thanks to their integrated active liquid cooling	✓
Integrated control panel for operation of the power source	✓

**Following intensive research, this orbital weld head was improved in comparison to commonly available weld heads in crucial areas so as to optimize handling, welding results and production times.**

As the OW 17 is compatible with the current market standard, users can easily switch over to the new technology.

The orbital weld head is specially designed for small tube diameters from 3.0 mm to 17.2 mm (0.118" - 0.677") and wall thicknesses up to 1.62 mm (0.064") like those used in production systems from the semi-conductor industry.

The OW 17 features a removable clamping cartridge which can be very easily positioned around the tubes to be welded in inline assembly at the construction site or prefab production of modules in the workshop.

Thanks to its compact, handy design, it can be neatly positioned and perfectly aligned to the weld point, thus enabling use in confined spaces.

When the cartridge is in place, the weld head is inserted and secured in the cartridge and welding can begin. The operating elements required for starting, stopping, gas flow and electrode changes are integrated in the handle of the head. An LED informs the welder of the operating conditions, like readiness to weld and the active process. During installation work, a second operator is not required at the welding power supply, which may not be located nearby.

Integrated active liquid cooling protects the OW 17 head from overheating and enables a long operating duration and therefore shorter work cycles.

The head of the OW 17 is designed for 1.0 mm (0.039") and 1.6 mm (0.063") electrodes and thus ensures a

consistently high electrode service life when welding thicker walls. This orbital weld head can also be used with COAX tube systems, for example. This saves the user a second orbital weld head.

The included adjustable electrode distance gage makes it easier for the operator to set up the electrode; an insertion gage which is permanently attached to the cartridge and thus cannot be lost ensures precise positioning to the tube joint to be welded.





Rugged, compact and handy design.

Integrated control panel – this way all commands which are important for welding can be transferred, so that no additional remote control is required.

An insertion gage which is permanently attached to the clamping cartridge and thus cannot be lost ensures precise positioning to the tube joint to be welded.

Compatibility with market standards enables trouble-free transitioning to the latest Orbitalum technology.

Removable clamping cartridge, which is ideal for inline assembly at the construction site or prefab production of modules in the workshop.

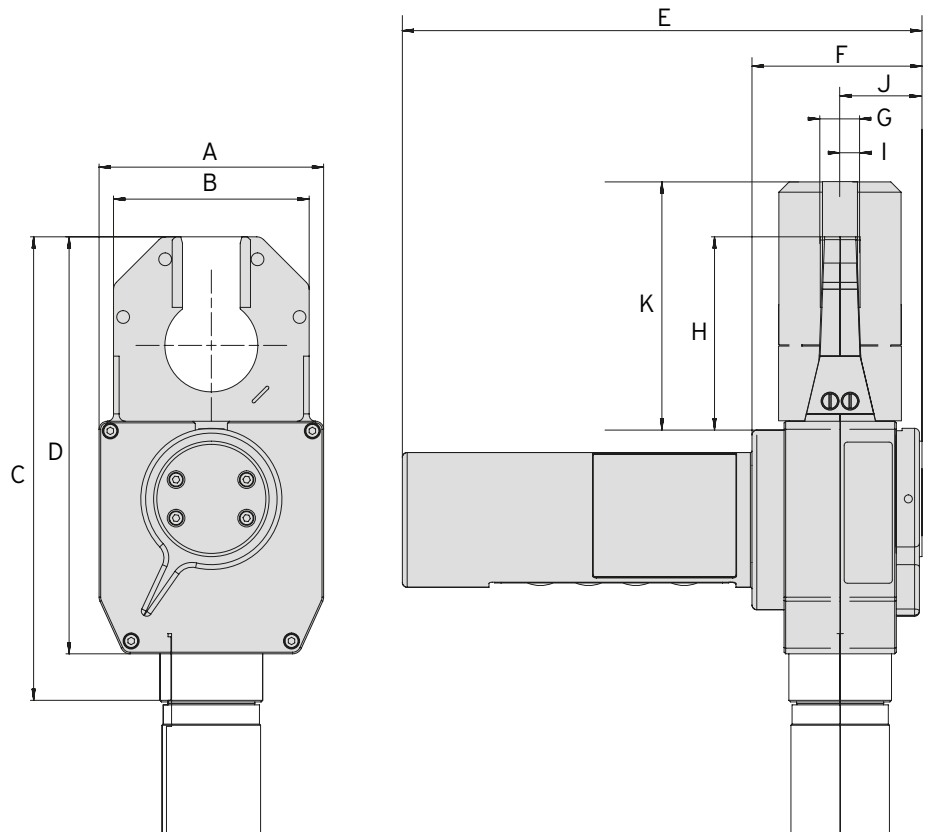
An extremely narrow design for use in confined spaces, such as in the semi-conductor industry.

APPLICATION AREA	ORBIWELD 17
Code	<b>817 000 001</b>
Pipe OD, min. - max.	3.0 - 17.2 mm 0.118 - 0.677 in
Electrode diameter	1.0/1.6 mm 0.039 / 0.063 in
Machine weight including hose package	5.5 kg 12.1 lbs
Hose package length	7.5 m 24.6 ft
SCOPE OF DELIVERY	
Including:	<ul style="list-style-type: none"> <li>• 1 micro weld head ORBIWELD 17</li> <li>• 1 transport case</li> <li>• 1 tool set</li> <li>• 1 safety clamp hose assembly</li> <li>• 1 electrode distance gage</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Clamping cassette for OW 17</li> <li>• Clamping inserts for OW 17</li> <li>• ESG electrode grinders</li> <li>• ORBmax residual oxygen meter</li> <li>• ORBIPURGE forming set</li> <li>• Hose package extensions</li> <li>• WS2 tungsten electrodes</li> </ul>



DIMENSIONS	ORBIWELD 17	
	DIMENSION	
	[MM]	[INCH]
Dimension "A"	70.00	2.756
Dimension "B"	61.00	2.402
Dimension "C"	144.50	5.689
Dimension "D"	130.00	5.118
Dimension "E"	162.00	6.378
Dimension "F"	53.00	2.087
Dimension "G"	12.40	0.488
Dimension "H"	60.25	2.372
Dimension "I"	5.00	0.120
Dimension "J"	26.80	1.055
Dimension "K"	75.20	2.961

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



## Micro weld head OW

### ORBIWELD 17

Properties, application area, technical specifications and delivery scope, see page 30.

Clamping cassette and clamping inserts are not included in the scope of delivery.



ORBIWELD 17



Clamping cassette for OW 17  
(clamping inserts are not included in the scope of delivery)

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Micro weld head OW 17	817 000 001	5.500	13.900

\* Machine weight including hose package

### Clamping cassette for OW 17

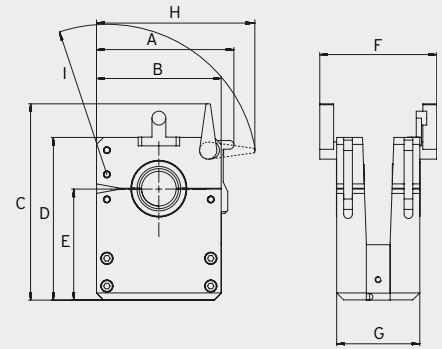
Made of stainless steel. Removable clamping cartridge specifically for inline assembly or prefab production of modules. For the mounting of clamping inserts. An insertion gage which is permanently attached to the cartridge and thus cannot be lost ensures precise positioning to the tube joint to be welded. The clamping cartridges are supplied in a rugged, lockable plastic box.

Scope of delivery:

- 1 x insertion gage for standard applications
- 1 x insertion gage for COAX applications
- 1 x 3/32" hexagon wrench
- 1 x 1/16" hexagon wrench
- 1 x plastic box

Suitable clamping inserts for different tube diameters must be ordered separately.

DIMENSIONS	[MM]	[INCH]
Dimension "A"	63.00	2.480
Dimension "B"	57.20	2.252
Dimension "C"	90.00	3.543
Dimension "D"	74.60	2.937
Dimension "E"	50.90	2.004
Dimension "F"	53.60	2.110
Dimension "G"	38.10	1.500
Dimension "H"	72.60	2.858
Dimension "I"	70.00	2.756
Dimension "J"	19.05	0.750



ITEM	CODE	KG
Clamping cassette for OW 17	817 050 010	0.442

#### CLOSED ORBITAL WELD HEADS

## Clamping inserts for OW 17

Made of stainless steel. Can only be used when clamping cassette OW17 as well as other common or compatible clamping cassettes are used.

1 clamping insert consists of 2 half shells.

Per clamping side of the clamping cassette you require 1 clamping insert (= 2 half shells). Thus you have to use 2 clamping inserts (=4 half shells) per clamping cassette.

In the case of COAX connections, 2 tubes with different tube diameters are usually welded together, e.g. a tube with a 12.7 mm (1/2") diameter and a tube with a 15.88 mm (5/8") diameter. For such applications 2 clamping inserts with correspondingly different hose diameters have to be inserted.

Further dimensions on request.

PIPE OD [MM]	PIPE OD [INCH]	CODE
3.00	0.118	817 002 209
3.18	0.125	817 002 201
4.00	0.157	817 002 210
4.76	0.188	817 002 202
5.00	0.196	817 002 211
6.00	0.236	817 002 212
6.35	0.250	817 002 203
7.94	0.313	817 002 204
8.00	0.314	817 002 213
9.00	0.354	817 002 214
9.53	0.375	817 002 205
10.00	0.393	817 002 215
11.00	0.433	817 002 216
12.00	0.472	817 002 217
12.70	0.500	817 002 206
14.00	0.551	817 002 218
14.29	0.563	817 002 207
15.00	0.590	817 002 219
15.88	0.625	817 002 208
16.00	0.629	817 002 220
17.20	0.677	817 002 221



Clamping insert for OW 17

## Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Hose package extensions, see page 94
- WS2 tungsten electrodes, see page 94
- Welding current connection adapter set, see page 95

# ORBIWELD 19

Micro weld head  
with additional advantages

## Micro weld head

Small, robust and efficient: The OW 19 is the perfect tool when the task involves connections of ultra-high-purity tubes and high-performance tubes, such as are used for example in the semiconductor industry or applications in branches in which high purity and maximum performance are imperative. Even under extremely difficult conditions and in tight spaces the OW 19 produces excellent and reliable quality!

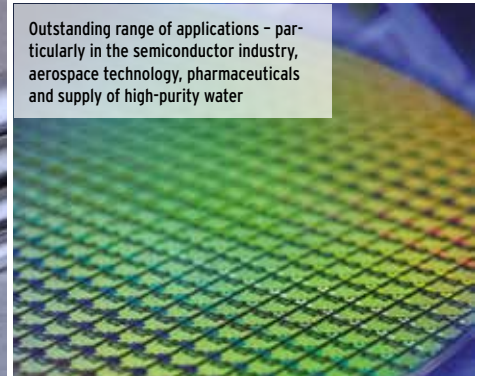
Can be used in all positions, irrespective of whether the tubes to be connected are positioned horizontally, vertically or inclined



Three-part clamping mechanism - no parts project beyond the head outline even in the opened position



Outstanding range of applications - particularly in the semiconductor industry, aerospace technology, pharmaceuticals and supply of high-purity water



**Its extremely high endurance thanks to the intensive liquid cooling as well as its high-quality robust construction are characteristics which distinguish this micro weld head.**

Thanks to the three-part clamping mechanism the head can be spread in very tight spaces since no parts project beyond the head outline even in the opened position. In addition an exact and offset-free alignment of the parts to be welded is ensured.

With a control panel integrated in the robust and stable aluminum handle of the weld head, all commands which are important for the welding process can be transferred to the power source so that no additional remote control is required.

All orbital welding power sources from Orbitalum automatically detect the head and its properties so that, before beginning to weld, the operator only has to call up their specified welding program and start the welding process.

The matching clamping inserts are available in narrow and broad versions and can be inserted into the weld head with just a few simple steps.

The head is 7.5 kg (16.5 lbs) light. All connections for electricity, gas and cooling water are firmly integrated in the OW 19.

To increase productivity, the optional ORBITWIN switching unit allows working with up to two heads in an alternating fashion, thus reducing conversion times and downtimes considerably.

Including highly flexible hose package (length: 7.5m/24.6ft) with strain relief to the power source - optionally extendable to up to 20.0m (64ft).

### The OW 19 - with many additional advantages:

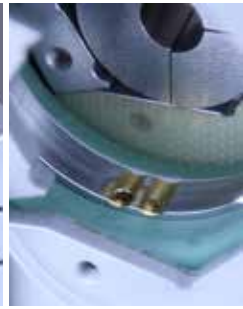
- ✓ Optimized scissors clamping system
- ✓ Flip-up weld head cover "FlipCover"
- ✓ Optimized weld gas control
- ✓ One-hand operation
- ✓ Completely liquid-cooled
- ✓ Integrated control panel
- ✓ 7.5 m (24.6 ft) hose package



Robust and stable aluminum handle with integrated control panel



Practical clamping locks allowing single-hand operation



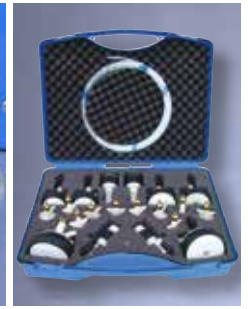
Simpler inserting of the electrodes by markings for 1.0/1.6 mm (0.039"/0.063")



Folding weld head cover "FlipCover"



Diameter-specific clamping inserts (each 6-part, wide and narrow) available separately

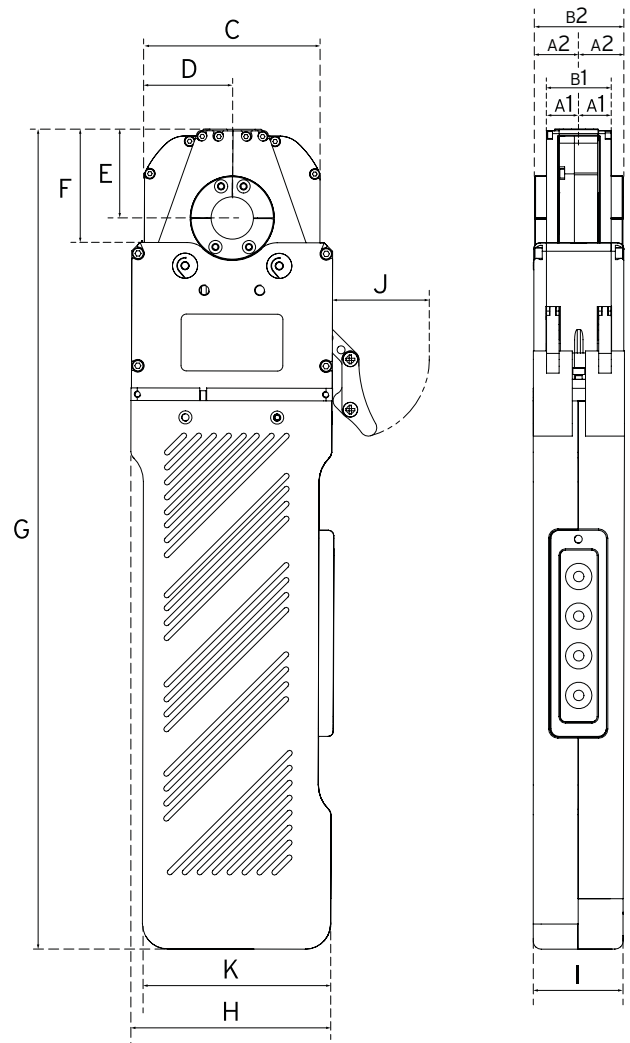


Wide accessories program, e.g. ORBIPURGE forming set

APPLICATION AREA	ORBIWELD 19
Code	<b>822 000 010</b>
Pipe OD, min. - max.	3.0 - 19.05 mm 0.118 - 0.750 in
Electrode diameter	1.0/1.6 mm 0.039 / 0.063 in
Machine weight including hose package	6.5 kg 14.3 lbs
Hose package length	7.5 m 24.6 ft

SCOPE OF DELIVERY	
Including:	<ul style="list-style-type: none"> <li>• 1 micro weld head ORBIWELD 19</li> <li>• 1 transport case</li> <li>• 1 tool set</li> <li>• 1 feeler gauge</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Clamping inserts for OW 19</li> <li>• ESG electrode grinders</li> <li>• ORBmax residual oxygen meter</li> <li>• ORBIPURGE forming set</li> <li>• Hose package extensions</li> <li>• WS2 tungsten electrodes</li> </ul>

ORBIWELD 19	DIMENSION		ELECTRODE GAP			
	[MM]	[INCH]	CLAMPING INSERT TYPE "S"		CLAMPING INSERT TYPE "W"	
	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]
Dimension "A1"	12.00	0.472	12.00	0.472		
Dimension "A2"	17.00	0.669			17.00	0.669
Dimension "B1"	24.00	0.945	24.00	0.945		
Dimension "B2"	34.00	1.339			34.00	1.339
Dimension "C"	66.50	2.618				
Dimension "D"	33.25	1.309				
Dimension "E"	35.20	1.386				
Dimension "F"	44.50	1.752				
Dimension "G"	313.50	12.343				
Dimension "H"	76.00	2.992				
Dimension "I"	34.00	1.339				
Dimension "J"	35.00	1.378				
Dimension "K"	71.00	2.795				



Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.







ORBIWELD 19

## Micro weld head OW

### ORBIWELD 19

Properties, application area, technical specifications and delivery scope, see page 34.

Clamping inserts are not included in the scope of delivery (see from page 37).

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Micro weld head OW 19	822 000 010	6.500	14.800

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Clamping inserts for OW 19, see page 37
- Welding current connection adapter set, see page 95

#### CLOSED ORBITAL WELD HEADS

## Clamping inserts for OW 19

A clamping insert consists of 6 individual parts (3 inserts per side).

Type "W" (wide) for standard applications.

Type "S" (small) for applications in extremely confined spaces.



Clamping insert for OW 19 "W" (wide) 6-part

ITEM	PIPE OD		TYPE "W" (WIDE)		TYPE "S" (SMALL/ NARROW)	
	[MM]	[INCH]	CODE	KG	CODE	KG
Clamping insert for OW 19, 6-part	3.00	0.118	822 002 120	0.100	822 002 320	0.044
Clamping insert for OW 19, 6-part	3.18	0.125	822 002 122	0.100	822 002 322	0.044
Clamping insert for OW 19, 6-part	3.95	0.156	822 002 123	0.099	822 002 323	0.044
Clamping insert for OW 19, 6-part	4.00	0.157	822 002 124	0.099	822 002 324	0.044
Clamping insert for OW 19, 6-part	4.78	0.188	822 002 126	0.099	822 002 326	0.043
Clamping insert for OW 19, 6-part	5.95	0.234	822 002 127	0.097	-	-
Clamping insert for OW 19, 6-part	6.00	0.236	822 002 128	0.097	822 002 328	0.043
Clamping insert for OW 19, 6-part	6.35	0.250	822 002 129	0.097	822 002 329	0.043
Clamping insert for OW 19, 6-part	7.00	0.276	822 002 130	0.096	-	-
Clamping insert for OW 19, 6-part	7.94	0.313	822 002 132	0.094	-	-
Clamping insert for OW 19, 6-part	8.00	0.315	822 002 133	0.094	822 002 333	0.042
Clamping insert for OW 19, 6-part	9.00	0.354	822 002 134	0.092	822 002 334	0.041
Clamping insert for OW 19, 6-part	9.53	0.375	822 002 135	0.091	822 002 335	0.040
Clamping insert for OW 19, 6-part	9.95	0.392	822 002 136	0.090	822 002 336	0.040
Clamping insert for OW 19, 6-part	10.00	0.394	822 002 137	0.090	822 002 337	0.040
Clamping insert for OW 19, 6-part	12.00	0.472	822 002 143	0.083	822 002 343	0.038
Clamping insert for OW 19, 6-part	12.10	0.476	-	-	822 002 344	0.038
Clamping insert for OW 19, 6-part	12.70	0.500	822 002 145	0.081	822 002 345	0.037
Clamping insert for OW 19, 6-part	13.00	0.512	822 002 146	0.080	-	-
Clamping insert for OW 19, 6-part	13.50	0.531	822 002 148	0.078	822 002 348	0.036
Clamping insert for OW 19, 6-part	14.00	0.551	822 002 150	0.076	822 002 350	0.035
Clamping insert for OW 19, 6-part	15.00	0.591	822 002 153	0.071	822 002 353	0.034
Clamping insert for OW 19, 6-part	15.30	0.602	-	-	822 002 354	0.033
Clamping insert for OW 19, 6-part	15.88	0.625	822 002 157	0.066	822 002 357	0.032
Clamping insert for OW 19, 6-part	16.00	0.630	822 002 158	0.066	822 002 358	0.032
Clamping insert for OW 19, 6-part	17.20	0.677	822 002 162	0.058	-	-
Clamping insert for OW 19, 6-part	17.30	0.681	822 002 163	0.058	822 002 363	0.030
Clamping insert for OW 19, 6-part	18.00	0.709	822 002 164	0.053	822 002 364	0.029
Clamping insert for OW 19, 6-part	19.00	0.748	822 002 165	0.044	822 002 365	0.027
Clamping insert for OW 19, 6-part	19.05	0.750	822 002 166	0.044	822 002 366	0.027



Clamping insert for OW 19 "S" (small/narrow) 6-part

## Other accessories for orbital welding

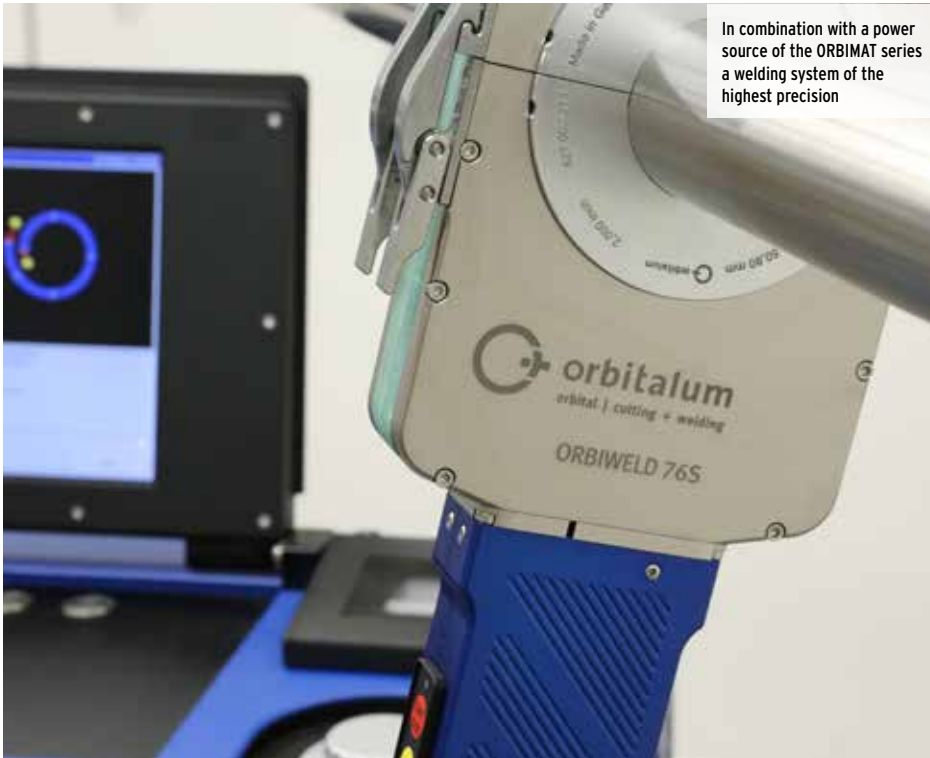
- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Hose package extensions, see page 94
- WS2 tungsten electrodes, see page 94
- Welding current connection adapter set, see page 95

### CLOSED ORBITAL WELD HEADS

# ORBIWELD 38S, 76S, 115S

## Closed orbital weld heads

Handier, more efficient, effective - closed TIG orbital weld head with outstanding specifications: The ORBIWELD "S" series from Orbitalum convinces by its extremely narrow design and highly resilient through efficient liquidcooling.



In combination with a power source of the ORBIMAT series a welding system of the highest precision



Extremely narrow design



Secure and offset-free clamping and centering of the parts to be welded

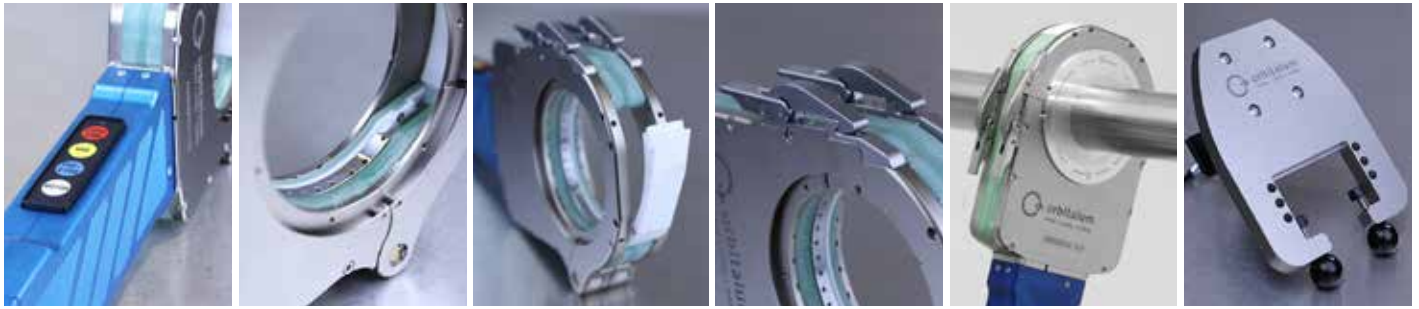
**Thanks to its compact dimensions, the ORBIWELD "S" series is ideal for applications, under tight spaces as they often occur in the pharmaceuticals, chemical, semiconductor and food processing industry as well as in aerospace technology.**

All closed weld heads of the ORBIWELD series are manufactured from outstanding materials and characterized by a unique cooling system. The fitting clamping inserts are designed to be of high-quality, functional and durable and do not wear as rapidly as those of many of the competitors. The clamping inserts are available in small (narrow) and wide versions and can be inserted into the weld head rapidly and easily.

### FURTHER PROPERTIES:

- Thanks to the extremely narrow design, parts with short welding lengths can also be processed
- High quality, robust housing and handles
- Highly resilient through completely liquid-cooled weld head housing
- Highly flexible hose package (length: 7.5 m/24.6 ft) with strain relief to the power source
- With a control panel integrated in the robust and stable aluminum handle of the weld head, all commands which are important for the welding can be transferred to the power source so that no additional remote control is required
- Quick change system for clamping inserts allows simple locking and releasing without tools

- Cost-effective clamping inserts
- Stable clamping locks in connection with the clamping inserts available for all pipe dimensions ensure a secure and offset-free clamping and centering of the parts to be welded
- Comprehensive and customer-specific accessories program
- A folding cover at the weld head - allows checking and, if necessary, readjustment of the electrode position before welding



Robust and stable aluminum handle with integrated control panel

Simpler inserting of the electrodes by markings for  $\varnothing$  1.6/2.4 mm (0.063"/0.094")

Flip-up weld head cover "FlipCover"

Stable clamping locks

Diameter-specific aluminum clamping inserts (each of 2 half-shells) available separately

Wide accessories program, e.g. table mounts

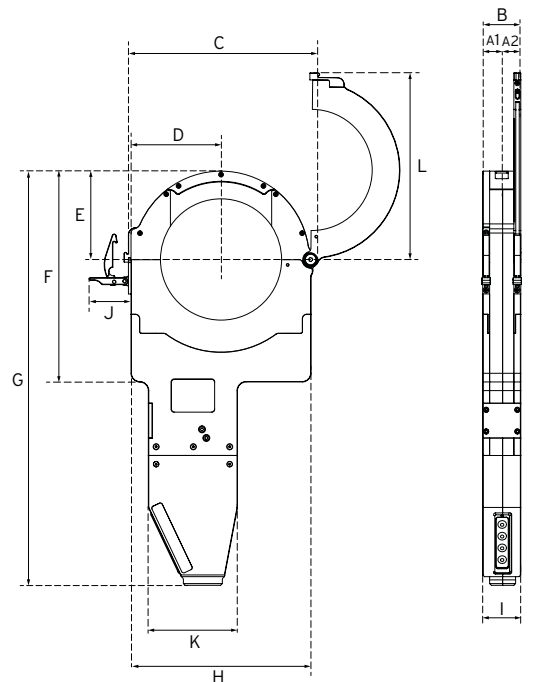
DIMENSIONS	ORBIWELD 38S				ORBIWELD 76S				ORBIWELD 115S					
	DIMENSION		ELECTRODE GAP CLAMPING INSERT*		DIMENSION		ELECTRODE GAP CLAMPING INSERT*		DIMENSION		ELECTRODE GAP CLAMPING INSERT+ TYPE "S"			
	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]
Dimension "A1"	17.00	0.669	17.50	0.689	19.00	0.748	19.00	0.748	22.75	0.896	25.00	0.984	45.75	1.801
Dimension "A2"	17.00	0.669	17.50	0.689	19.00	0.748	19.00	0.748	21.25	0.837	25.00	0.984	44.25	1.742
Dimension "B"	34.00	1.339	35.00	1.378	38.00	1.496	38.00	1.496	44.00	1.732	50.00	1.969	90.00	3.543
Dimension "C"	112.00	4.409			159.00	6.260			220.00	8.661				
Dimension "D"	47.50	1.870			67.50	2.657			104.00	4.094				
Dimension "E"	47.00	1.850			66.00	2.598			102.00	4.016				
Dimension "F"	144.00	5.669			187.00	7.362			244.00	9.606				
Dimension "G"	357.00	14.055			400.00	15.748			480.00	18.898				
Dimension "H"	95.00	3.740			135.00	5.315			208.00	8.189				
Dimension "I"	34.00	1.339			34.00	1.339			44.00	1.732				
Dimension "J"	55.00	2.165			55.00	2.165			55.00	2.165				
Dimension "K"	71.00	2.795			71.00	2.795			102.00	4.016				
Dimension "L"	110.00	4.331			153.00	6.024			216.00	8.504				

\* 2 pairs

APPLICATION AREA	ORBIWELD 38S	ORBIWELD 76S	ORBIWELD 115S
Code	826 000 001	827 000 001	828 000 001
Pipe OD, min. - max.	3 - 38.1 mm 1/8" - 1.5"	6 - 77 mm 1/4" - 3.0"	20 - 115 mm 3/4" - 4.5"
Electrode diameter	1.6/2.4 mm .063"/.094"	1.6/2.4 mm .063"/.094"	1.6/2.4 mm .063"/.094"
Machine weight including hose package	6.9 kg 15.2 lbs	7.5 kg 16.5 lbs	9.7 kg 21.4 lbs
Hose package length	7.5 m/24.6 ft	7.5 m/24.6 ft	7.5 m/24.6 ft

**SCOPE OF DELIVERY**

Including:	<ul style="list-style-type: none"> <li>• 1 orbital weld head OW 38S, OW 76S or OW 115S</li> <li>• 1 transport case</li> <li>• 1 tool set</li> <li>• 1 feeler gauge</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Clamping inserts, narrow and wide</li> <li>• Chamber insert for fittings</li> <li>• Inserts for arc welding</li> <li>• T-piece clamping inserts</li> <li>• Electrode adapters</li> <li>• Table mounts</li> <li>• ESG electrode grinders</li> <li>• ORBmax residual oxygen meter</li> <li>• ORBIPURGE forming set</li> <li>• Hose package extensions</li> <li>• WS2 tungsten electrodes</li> </ul>



Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



## Closed orbital weld heads OW S

### ORBIWELD 38S, ORBIWELD 76S, ORBIWELD 115S

Properties, application area, technical specifications and delivery scope, see page 38.

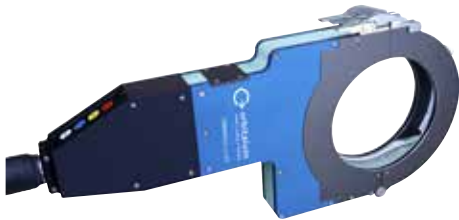
Clamping inserts are not included in the scope of delivery (see from page 45).



ORBIWELD 38S



ORBIWELD 76S



ORBIWELD 115S

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Orbital weld head OW 76S	827 000 001	7.500	16.900
Orbital weld head OW 115S	828 000 001	9.700	18.600

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Clamping inserts for ORBIWELD S and ORBIWELD, see page 45
- Chamber inserts for fittings, see page 48
- Inserts for arc welding, see page 49
- T-piece clamping inserts, see page 49
- Electrode adapters, see page 49
- Table mounts, see page 51
- Welding current connection adapter set, see page 95



## Just rent and stay flexible.

We offer rental machines for short-term and long-term rental - as a cost-effective alternative to purchasing.

Our rental machines are serviced regularly and are thus always in top condition. We are happy to help to find suitable machines for your individual application. By the way renting is an excellent opportunity to test a machine before you buy it.

Advantages of renting:

- Lower storage costs
- No repair costs
- Small investment
- Always the newest technology in use
- Minimum downtimes

Our rental and used machine service includes:

- Rental tariffs on a weekly basis
- Hire purchase
- Long-term rental

Ask us for our low rental and hire purchase conditions:

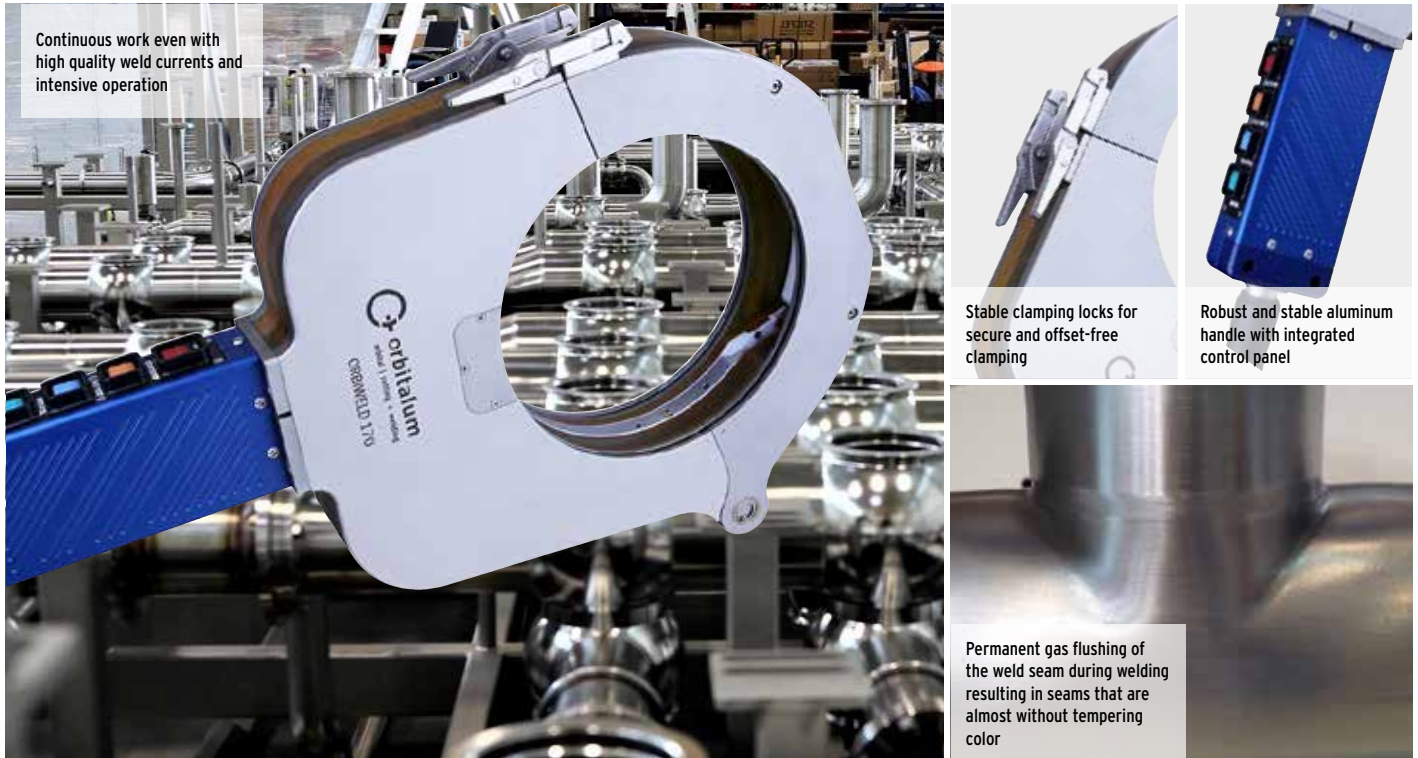
Phone: +49 (0) 77 31 792-0

Or via email under  
[tools@orbitalum.com](mailto:tools@orbitalum.com)

# ORBIWELD 170

## Closed orbital weld head

The ORBIWELD 170 is characterized by a very high thermal load. This means it is particularly suitable for applications in the pharmaceutical, chemical, semiconductor and food processing industry or aerospace technology, where, due to ever increasing diameters and wall thicknesses of the pipes to be welded, higher and higher requirements are placed on the closed weld heads.



Continuous work even with high quality weld currents and intensive operation

Stable clamping locks for secure and offset-free clamping

Robust and stable aluminum handle with integrated control panel

Permanent gas flushing of the weld seam during welding resulting in seams that are almost without tempering color

**With cooling channels running through the entire weld head body, excellent heat dissipation has been ensured which allows for continuous work with the ORBIWELD weld head even with high quality weld seams and intensive operation.**

The closed design of the ORBIWELD 170 as well as the gas flow system ensure permanent flushing of the weld seam during welding with protective gas resulting in seams that are almost without tempering color.

### CHARACTERISTICS:

- Quick change system for clamping inserts allows simple locking and releasing without tools
- Highly resilient through completely liquid-cooled weld head housing
- Stable clamping locks in connection with the clamping inserts available for all pipe dimensions ensure a secure and offset-free clamping and centering of the parts to be welded
- With a control panel integrated in the robust and stable aluminum handle of the weld head, all

- commands which are important for the welding can be transferred to the power source so that no additional remote control is required
- High quality, robust housing and handles
- Highly flexible hose package (length: 7.5 m/24.6 ft) with strain relief to the power source
- Cost-effective clamping inserts
- Comprehensive and customer-specific accessories program

**Comprehensive and customer-specific accessories program (optionally available):**



Hose package length extensions up to max. of 20m (64ft)

Cost-effective clamping inserts

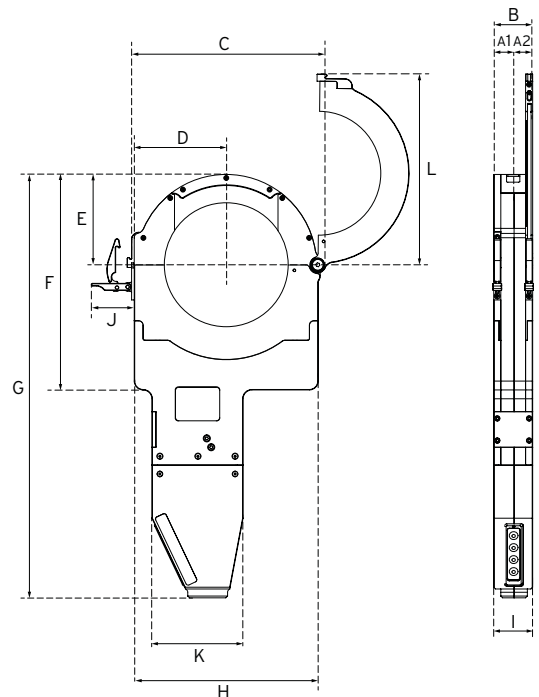
Chamber inserts for fittings for welding of fittings

T-piece clamping inserts with absorption possibility of the collared hose and the hose to be welded

Electrode adapter for lateral offset of the tungsten electrode

Practical and sturdy aluminum table mount

APPLICATION AREA	ORBIWELD 170
Code	825 000 001
Pipe OD, min. - max.	50 - 170 mm 2 - 6in
Electrode diameter	1.6/2.4 mm 0.063/0.094 in
Machine weight including hose package	18.9 kg 41.7 lbs
Hose package length	7.5 m 24.6 ft
SCOPE OF DELIVERY	
Including:	<ul style="list-style-type: none"> <li>• 1 orbital weld head OW 170</li> <li>• 1 transport case (code 821 030 001)</li> <li>• 1 tool set</li> <li>• 1 feeler gauge</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Clamping inserts, narrow and wide</li> <li>• Chamber insert for fittings</li> <li>• Inserts for arc welding</li> <li>• T-piece clamping inserts</li> <li>• Electrode adapters</li> <li>• Table mounts</li> <li>• ESG electrode grinders</li> <li>• ORBmax residual oxygen meter</li> <li>• ORBIPURGE forming set</li> <li>• Hose package extensions</li> <li>• Double pressure reducer</li> <li>• WS2 tungsten electrodes</li> </ul>



ORBIWELD 170	DIMENSION		ELECTRODE GAP			
			CLAMPING INSERT TYPE "S" [2 PAIRS]		CLAMPING INSERT TYPE "W" [2 PAIRS]	
	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]
Dimension "A1"	30.00	1.181	32.00	1.260	50.00	1.969
Dimension "A2"	41.00	1.614	43.00	1.693	61.00	2.402
Dimension "B"	70.00	2.756	72.00	2.835	110.00	4.331
Dimension "C"	345.00	13.583				
Dimension "D"	160.00	6.299				
Dimension "E"	140.00	5.512				
Dimension "F"	365.00	14.370				
Dimension "G"	585.00	23.031				
Dimension "H"	285.00	11.220				
Dimension "I"	50.00	1.969				
Dimension "J"	67.00	2.638				
Dimension "K"	88.00	3.465				
Dimension "L"	332.00	13.071				



ORBIWELD 170

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



ORBIWELD 170

## Closed orbital weld head OW

### ORBIWELD 170

Properties, application area, technical specifications and delivery scope, see page 42.

Clamping inserts are not included in the scope of delivery (see from page 45).

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Orbital weld head OW 170	825 000 001	18.900	36.200

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Clamping inserts for ORBIWELD S and ORBIWELD, see page 45
- Chamber inserts for fittings, see page 48
- Inserts for arc welding, see page 49
- T-piece clamping inserts, see page 49
- Electrode adapters, see page 49
- Table mounts, see page 51
- Welding current connection adapter set, see page 95

#### CLOSED ORBITAL WELD HEADS

## Accessories for ORBIWELD S and ORBIWELD

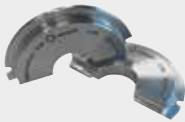
### Clamping inserts

Made of aluminum. One clamping insert is comprised of two half shells for one clamping side.

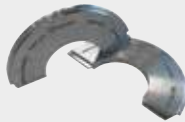
Two clamping inserts (i.e. 4 half shells) are required for each pipe diameter.

For ORBIWELD 115S and 170 you can select between the wide "W" and small (narrow) "S" clamping inserts which can be combined randomly with each other.

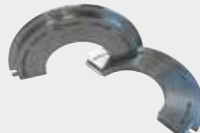
Clamping insert blanks for unscrewing, see page 48.



Clamping insert  
for OW 38S, 2-part  
for a clamping insert



Clamping insert  
for OW 76S, 2-part  
for a clamping side



Clamping insert "S" (small/  
narrow)  
for OW 115S, 2-part  
for a clamping side



Clamping insert "W" (wide)  
for OW 115S, 2-part  
for a clamping side



Clamping insert "S" (small/  
narrow)  
for OW 170, 2-part  
for a clamping side



Clamping insert "W" (wide)  
for OW 170, 2-part  
for a clamping side

PIPE OD		OW 38S	OW 76S	OW 115S "S" (SMALL/NAR- ROW)	OW 115S "W" (WIDE)	OW 170 "S" (SMALL/NAR- ROW)	OW 170 "W" (WIDE)
[MM]	[INCH]	CODE	CODE	CODE	CODE	CODE	CODE
3.00	0.118	826 002 120	-	-	-	-	-
3.18	0.125	826 002 122	-	-	-	-	-
4.00	0.157	826 002 124	-	-	-	-	-
4.76	0.187	826 002 125	-	-	-	-	-
4.78	0.188	826 002 126	-	-	-	-	-
5.95	0.234	826 002 127	-	-	-	-	-
6.00	0.236	826 002 128	827 002 120	-	-	-	-
6.35	0.250	826 002 129	827 002 121	-	-	-	-
7.00	0.276	826 002 130	-	-	-	-	-
7.50	0.295	826 002 131	-	-	-	-	-
7.94	0.313	826 002 132	827 002 124	-	-	-	-
8.00	0.315	826 002 133	827 002 125	-	-	-	-
9.00	0.354	-	827 002 126	-	-	-	-
9.53	0.375	826 002 135	827 002 127	-	-	-	-
9.95	0.392	826 002 136	-	-	-	-	-
10.00	0.394	826 002 137	827 002 129	-	-	-	-
10.10	0.398	826 002 138	827 002 130	-	-	-	-
10.20	0.402	826 002 139	827 002 131	-	-	-	-
11.00	0.433	826 002 140	827 002 132	-	-	-	-
11.95	0.470	826 002 142	827 002 134	-	-	-	-
12.00	0.472	826 002 143	827 002 135	-	-	-	-
12.10	0.476	826 002 144	827 002 136	-	-	-	-
12.70	0.500	826 002 145	827 002 137	-	-	-	-
13.00	0.512	826 002 146	827 002 138	-	-	-	-
13.20	0.520	-	827 002 139	-	-	-	-
13.50	0.531	826 002 148	827 002 140	-	-	-	-
13.70	0.539	826 002 149	827 002 141	-	-	-	-
14.00	0.551	826 002 150	827 002 142	-	-	-	-
14.30	0.563	826 002 151	-	-	-	-	-
14.70	0.579	826 002 152	-	-	-	-	-
15.00	0.591	826 002 153	827 002 145	-	-	-	-
15.30	0.602	826 002 154	827 002 146	-	-	-	-
15.60	0.614	826 002 155	827 002 147	-	-	-	-
15.70	0.618	826 002 156	827 002 148	-	-	-	-
15.88	0.625	826 002 157	827 002 149	-	-	-	-
16.00	0.630	826 002 158	827 002 150	-	-	-	-
16.70	0.657	826 002 159	-	-	-	-	-
17.00	0.669	-	827 002 152	-	-	-	-
17.20	0.677	826 002 162	827 002 154	-	-	-	-
17.30	0.681	826 002 163	827 002 155	-	-	-	-
18.00	0.709	826 002 164	827 002 156	-	-	-	-

### CLOSED ORBITAL WELD HEADS



PIPE OD		OW 38S	OW 76S	OW 115S "S" (SMALL/NAR- ROW)	OW 115S "W" (WIDE)	OW 170 "S" (SMALL/NAR- ROW)	OW 170 "W" (WIDE)
[MM]	[INCH]	CODE	CODE	CODE	CODE	CODE	CODE
19.00	0.748	826 002 165	827 002 157	-	-	-	-
19.05	0.750	826 002 166	827 002 158	-	-	-	-
19.50	0.768	826 002 167	827 002 159	-	-	-	-
20.00	0.787	826 002 168	827 002 160	824 002 120	-	-	-
21.00	0.827	-	827 002 161	-	-	-	-
21.30	0.839	826 002 170	827 002 162	824 002 122	824 002 322	-	-
21.70	0.854	826 002 171	827 002 163	824 002 123	-	-	-
22.00	0.866	826 002 172	827 002 164	824 002 124	-	-	-
22.22	0.875	826 002 173	827 002 165	-	-	-	-
22.23	0.875	826 002 174	827 002 166	-	-	-	-
22.55	0.888	826 002 175	-	-	-	-	-
23.00	0.906	826 002 176	827 002 168	824 002 128	824 002 328	-	-
24.00	0.945	826 002 177	827 002 169	-	-	-	-
25.00	0.984	826 002 179	827 002 171	824 002 131	824 002 331	-	-
25.25	0.994	-	827 002 172	-	-	-	-
25.40	1.000	826 002 181	827 002 173	824 002 133	824 002 333	-	-
26.00	1.024	826 002 182	827 002 174	-	-	-	-
26.70	1.051	826 002 183	827 002 175	824 002 135	-	-	-
26.90	1.059	826 002 184	827 002 176	824 002 136	824 002 336	-	-
27.00	1.063	826 002 185	827 002 177	-	-	-	-
27.20	1.071	826 002 186	827 002 178	824 002 138	-	-	-
28.00	1.102	826 002 187	827 002 179	824 002 139	-	-	-
29.00	1.142	826 002 188	827 002 180	824 002 140	824 002 340	-	-
30.00	1.181	826 002 189	827 002 181	824 002 141	-	-	-
30.53	1.202	826 002 190	-	-	-	-	-
31.75	1.250	826 002 191	827 002 183	824 002 143	824 002 343	-	-
31.80	1.252	826 002 192	827 002 184	824 002 144	-	-	-
32.00	1.260	826 002 193	827 002 185	824 002 145	824 002 345	-	-
33.00	1.299	-	827 002 186	-	-	-	-
33.40	1.315	826 002 195	827 002 187	824 002 147	-	-	-
33.70	1.327	826 002 196	827 002 188	824 002 148	824 002 348	-	-
34.00	1.339	826 002 197	827 002 189	824 002 149	-	-	-
35.00	1.378	826 002 198	827 002 190	824 002 150	824 002 350	-	-
36.00	1.417	826 002 199	-	-	-	-	-
38.00	1.496	826 002 200	827 002 192	824 002 152	824 002 352	-	-
38.10	1.500	826 002 201	827 002 193	824 002 153	824 002 353	-	-
40.00	1.575	-	827 002 194	824 002 154	-	-	-
41.00	1.614	-	827 002 195	824 002 155	824 002 355	-	-
42.00	1.654	-	827 002 196	824 002 156	-	-	-
42.16	1.660	-	827 002 197	824 002 157	-	-	-
42.30	1.665	-	827 002 198	-	-	-	-
42.40	1.669	-	827 002 199	824 002 159	824 002 359	-	-
42.70	1.681	-	827 002 200	824 002 160	-	-	-
43.00	1.693	-	827 002 201	824 002 161	824 002 361	-	-
44.00	1.732	-	827 002 203	-	-	-	-
44.45	1.750	-	827 002 204	824 002 164	824 002 364	-	-
44.50	1.752	-	827 002 205	824 002 165	-	-	-
45.00	1.772	-	827 002 206	-	-	-	-
48.00	1.890	-	827 002 208	-	-	-	-
48.26	1.900	-	827 002 209	824 002 169	-	-	-
48.30	1.902	-	827 002 210	824 002 170	824 002 370	-	-
48.60	1.913	-	827 002 211	824 002 171	-	-	-
50.00	1.969	-	827 002 212	824 002 172	824 002 372	825 002 120	-
50.80	2.000	-	827 002 213	824 002 173	824 002 373	825 002 121	825 002 321
51.00	2.008	-	827 002 214	824 002 174	824 002 374	-	-
52.00	2.047	-	827 002 215	824 002 175	824 002 375	-	-
53.00	2.087	-	827 002 216	824 002 176	824 002 376	825 002 124	-
54.00	2.126	-	827 002 217	824 002 177	824 002 377	-	-
57.00	2.244	-	827 002 218	824 002 178	-	-	-
60.00	2.363	-	827 002 219	824 002 179	-	-	-
60.10	2.366	-	827 002 220	-	-	-	-
60.30	2.374	-	827 002 221	824 002 181	824 002 381	825 002 129	825 002 329
60.45	2.380	-	827 002 222	824 002 182	-	-	-
60.50	2.382	-	827 002 223	824 002 183	-	-	-
63.00	2.480	-	827 002 224	824 002 184	824 002 384	-	-
63.20	2.488	-	827 002 225	-	-	-	-

**CLOSED ORBITAL WELD HEADS**

PIPE OD		OW 38S	OW 76S	OW 115S "S" (SMALL/NAR- ROW)	OW 115S "W" (WIDE)	OW 170 "S" (SMALL/NAR- ROW)	OW 170 "W" (WIDE)
[MM]	[INCH]	CODE	CODE	CODE	CODE	CODE	CODE
63.50	2.500	-	827 002 226	824 002 186	824 002 386	825 002 134	825 002 334
65.00	2.559	-	827 002 227	-	-	-	-
70.00	2.756	-	827 002 228	824 002 188	824 002 388	825 002 136	825 002 336
70.20	2.764	-	-	824 002 189	824 002 389	-	-
73.00	2.874	-	827 002 230	824 002 190	-	-	-
73.03	2.875	-	827 002 231	824 002 191	-	-	-
75.00	2.953	-	827 002 233	824 002 193	-	-	-
76.00	2.992	-	827 002 234	824 002 194	-	-	-
76.10	2.996	-	827 002 235	824 002 195	824 002 395	825 002 143	825 002 343
76.20	3.000	-	827 002 236	824 002 196	824 002 396	825 002 144	825 002 344
76.30	3.004	-	827 002 237	824 002 197	824 002 397	-	-
80.00	3.150	-	-	824 002 198	824 002 398	-	825 002 346
82.00	3.228	-	-	824 002 199	-	-	-
82.30	3.240	-	-	824 002 200	-	-	-
85.00	3.346	-	-	824 002 201	824 002 401	-	825 002 349
88.90	3.500	-	-	824 002 203	824 002 403	825 002 151	825 002 351
89.00	3.504	-	-	824 002 204	-	-	-
89.10	3.508	-	-	824 002 205	824 002 405	-	-
90.00	3.543	-	-	824 002 206	-	-	-
100.00	3.937	-	-	824 002 209	-	-	-
101.60	4.000	-	-	824 002 210	824 002 410	825 002 158	825 002 358
104.00	4.094	-	-	824 002 211	824 002 411	825 002 159	825 002 359
108.00	4.252	-	-	824 002 212	-	825 002 160	-
110.00	4.331	-	-	824 002 213	-	-	-
114.00	4.488	-	-	824 002 215	-	-	-
114.30	4.500	-	-	824 002 216	824 002 416	825 002 164	825 002 364
115.00	4.528	-	-	824 002 217	824 002 417	825 002 165	-
127.00	5.000	-	-	-	-	825 002 167	825 002 367
127.05	5.002	-	-	-	-	-	-
129.00	5.079	-	-	-	-	825 002 169	825 002 369
133.00	5.236	-	-	-	-	825 002 170	-
139.70	5.500	-	-	-	-	825 002 171	825 002 371
152.40	6.000	-	-	-	-	825 002 173	825 002 373
154.00	5.063	-	-	-	-	825 002 174	825 002 374
159.00	6.260	-	-	-	-	825 002 175	-
165.20	6.504	-	-	-	-	825 002 177	-
168.30	6.626	-	-	-	-	825 002 178	825 002 378
170.00	6.693	-	-	-	-	825 002 179	825 002 379

## CLOSED ORBITAL WELD HEADS



Clamping insert blanks

## Clamping insert blanks

Ideal for special applications.

Completely closed clamping inserts for turning out yourself to customer-specific diameter areas.

ITEM	CODE	KG
Clamping insert blank for OW 38S, 2-part	<b>826 002 210</b>	0.066
Clamping insert blank for OW 76S, 2-part	<b>827 002 241</b>	0.280
Clamping insert blank for OW 115S "S" (small/narrow), 2-part	<b>824 002 220</b>	0.590
Clamping insert blank for OW 115S "W" (wide), 2-part	<b>824 002 420</b>	1.445
Clamping insert blank for OW 170 "S" (small/narrow), 2-part	<b>825 002 185</b>	1.010
Clamping insert blank for OW 170 "W" (wide), 2-part	<b>825 002 385</b>	1.000



Packagings for clamping inserts

## Packagings for clamping inserts

All clamping inserts are delivered as pairs in a plastic cover.

In case of a loss of the original packaging it can be reordered as a replacement.

ITEM	CODE	KG
Packaging clamping insert OW 38S	<b>826 002 010</b>	0.019
Packaging clamping insert OW 76S	<b>827 002 010</b>	0.065
Packaging clamping insert OW 115S "S" (small/narrow)	<b>824 002 010</b>	0.101
Packaging clamping insert OW 115S "W" (wide)	<b>824 002 011</b>	0.129



Chamber insert for fittings

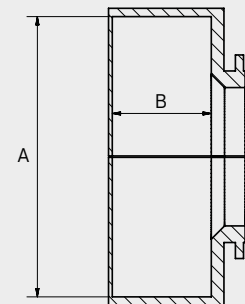
## Chamber inserts for fittings

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.

Dimensions of the different chamber inserts:

ORBIWELD		DIMENSION "A"(Ø)	DIMENSION "B"
<b>38S</b>	[mm]	85.0	30.0
	[inch]	3.346	1.181
<b>76S</b>	[mm]	130.0	35.0
	[inch]	5.118	1.378
<b>115S</b>	[mm]	179.0	39.0
	[inch]	7.047	1.535
<b>170</b>	[mm]	214.0	44.0
	[inch]	8.425	1.732



ITEM	CODE	KG
Chamber inserts for fittings for OW 38S	<b>826 050 010</b>	0.146
Chamber inserts for fittings for OW 76S	<b>827 050 007</b>	0.266
Chamber inserts for fittings for OW 65	<b>823 050 010</b>	0.612
Chamber inserts for fittings for OW 115S	<b>824 050 003</b>	0.660
Chamber inserts for fittings for OW 170	<b>825 050 002</b>	0.852

### CLOSED ORBITAL WELD HEADS

## T-piece clamping inserts

Clamping inserts with holding possibility of the collared hose and the hose to be welded. One complete T-piece clamping insert, 1 electrode adapter (page 49) as well as 1 standard clamping insert (from page 45) (to be ordered separately) are required per task and dimension.

**Please request respective questionnaire for order and submit together with a drawing.**

Special clamping inserts for other orbital weld heads on request.  
**Internal centering with simultaneous shaping device** on request.



T-piece clamping inserts

ITEM	PIPE OD MAX. [MM]	PIPE OD MAX. [INCH]	CODE	KG
T-piece clamping insert for OW 38S	25.0	0.984	<b>826 050 038</b>	
T-piece clamping insert for OW 76S	48.0	1.890	<b>827 050 005</b>	0.720
T-piece clamping insert for OW 115S	85.0	3.346	<b>824 050 004</b>	1.825
T-piece clamping insert for OW 170	144.0	5.669	<b>825 050 003</b>	3.700

## 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.

Insert consisting of:

- 2 basic retainer halves, independent of tube diameter
- 2 cover retainer halves, dependent of tube diameter\*

### Basic retainers/covers

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 (standard clamping inserts are not included in the scope of delivery).

### Arc covers for OW 38S

With the weld head OW 38S the customer-specifically manufactured covers (2 halves) are inserted directly in the head without basic retainer. A basic retainer is therefore not required.

Please specify or submit at order:

- The desired tube outer diameter and arc inner radius.
- **Drawing of the arc or sample part – a corresponding drawing template for this can be requested in advance.** We subsequently check whether an electrode adapter can additionally be used, if necessary.



Insert for arc welding  
(Basic retainers/covers)

ITEM	CODE	KG
Arc covers OW 38S complete*	<b>826 050 031</b>	0.017
Basic retainer for arc insert for OW 76S	<b>827 002 018</b>	0.150
Cover for arc insert for OW 76S	<b>827 050 021</b>	0.030
Basic retainer for arc insert for OW 115S	<b>824 050 006</b>	0.150
Cover for arc insert for OW 115S*	<b>828 050 016</b>	0.054
Basic retainer for arc insert for OW 170	<b>825 050 005</b>	0.250
Cover for arc insert for OW 170*	<b>825 050 020</b>	0.045

\* Please submit drawing of the arc or sample part at order.

## CLOSED ORBITAL WELD HEADS



Electrode adapters for OW 38S, OW 76S



Electrode adapter for OW 170



Front seam adapter (without rotor)



Internal welding adapter (without rotor)

## Electrode adapters

Robust brass adapter for lateral offset of the tungsten electrode.  
Can be ordered as a set or individually. Please note that the maximum weldable tube diameter is reduced during the use of an electrode adapter.

Complete sets consisting of:

- Basic part for extension
- 1 extension each for 15°, 30°, 45° and 90°

ELECTRODE ADAPTERS USABLE UP TO MAX. TUBE DIAMETER	[MM]	[INCH]
OW 38S	25.0	0.984
OW 76S	48.0	1.890
OW 115S	85.0	3.346
OW 170	144.0	5.669

ELECTRODE ADAPTER SETS	CODE	KG
Electrode adapter set OW 38S, standard	<b>826 050 034</b>	0.033
Electrode adapter set OW 76S, standard	<b>827 050 027</b>	0.089
Electrode adapter set OW 115S, standard	<b>828 050 022</b>	0.064
Electrode adapter set OW 170, standard	<b>825 050 022</b>	0.094

INDIVIDUAL PARTS FOR OW 38S		
Basic part electrode adapter OW 38S	<b>826 004 003</b>	0.013
Extension 10 mm/0.394", 15° for electrode adapter OW 38S	<b>823 004 008</b>	0.003
Extension 10 mm/0.394", 30° for electrode adapter OW 38S	<b>823 004 009</b>	0.003
Extension 10 mm/0.394", 45° for electrode adapter OW 38S	<b>823 004 010</b>	0.003

INDIVIDUAL PARTS FOR OW 76S		
Basic part electrode adapter OW 76S	<b>827 004 003</b>	0.024
Extension 15 mm/0.591", 15°/90° for electrode adapter OW 76S	<b>823 004 002</b>	0.005
Extension 15 mm/0.591", 30°/90° for electrode adapter OW 76S	<b>823 004 003</b>	0.005
Extension 15 mm/0.591", 45°/90° for electrode adapter OW 76S	<b>823 004 004</b>	0.005

INDIVIDUAL PARTS FOR OW 115S		
Basic part electrode adapter OW 115S	<b>828 004 004</b>	0.037
Extension 25 mm/0.984", 15°/90° for electrode adapter OW 115S	<b>823 004 006</b>	0.009
Extension 25 mm/0.984", 30°/90° for electrode adapter OW 115S	<b>823 004 005</b>	0.009
Extension 25 mm/0.984", 45°/90° for electrode adapter OW 115S	<b>823 004 007</b>	0.009

INDIVIDUAL PARTS FOR OW 170		
Basic part electrode adapter OW 170	<b>825 004 001</b>	0.067
Extension 25 mm/0.984", 15°/90° for electrode adapter OW 170	<b>823 004 006</b>	0.009
Extension 25 mm/0.984", 30°/90° for electrode adapter OW 170	<b>823 004 005</b>	0.009
Extension 25 mm/0.984", 45°/90° for electrode adapter OW 170	<b>823 004 007</b>	0.009

ELECTRODE ADAPTER FOR FRONT SEAM WELDING*		
Electrode adapter set OW 38S front seam	<b>826 050 036</b>	0.045
Electrode adapter set OW 76S front seam	<b>827 050 038</b>	0.045
Electrode adapter set OW 115 S front seam	<b>828 050 023</b>	0.070

ELECTRODE ADAPTER FOR INTERNAL WELDING*		
Electrode adapter set OW 38S internal welding	<b>826 050 037</b>	0.071
Electrode adapter set OW 76S internal welding	<b>827 050 039</b>	0.071
Electrode adapter set OW 115 S internal welding	<b>828 050 024</b>	0.193
Electrode adapter set OW 170 internal welding	<b>825 050 026</b>	

\* Further electrode adapters for other weld heads on request.

### CLOSED ORBITAL WELD HEADS



## Table mounts

Practical and sturdy aluminum table mount (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 at the worktop by means of the integrated table clamp. Thus the weld head can be firmly fixed in the mount – also ideal for temporary placement of the weld head between individual weldings.

TECHNICAL SPECIFICATIONS	TABLE MOUNTS
Dimensions (LxDxH)	180 x 140 x 185 mm 7.1" x 5.5" x 7.3"
Clamping range (from bottom surface of table to maximum extended screw clamp)	max. 65 mm / 2.56"

ITEM	CODE	KG
Table mount for OW 38S, OW 76S	<b>826 030 006</b>	1.250
Table mount for OW 65, OW 115S, OW 170	<b>823 030 006</b>	1.070



Table mounts

## Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Hose package extensions, see page 94
- WS2 tungsten electrodes, see page 94
- Welding current connection adapter set, see page 95

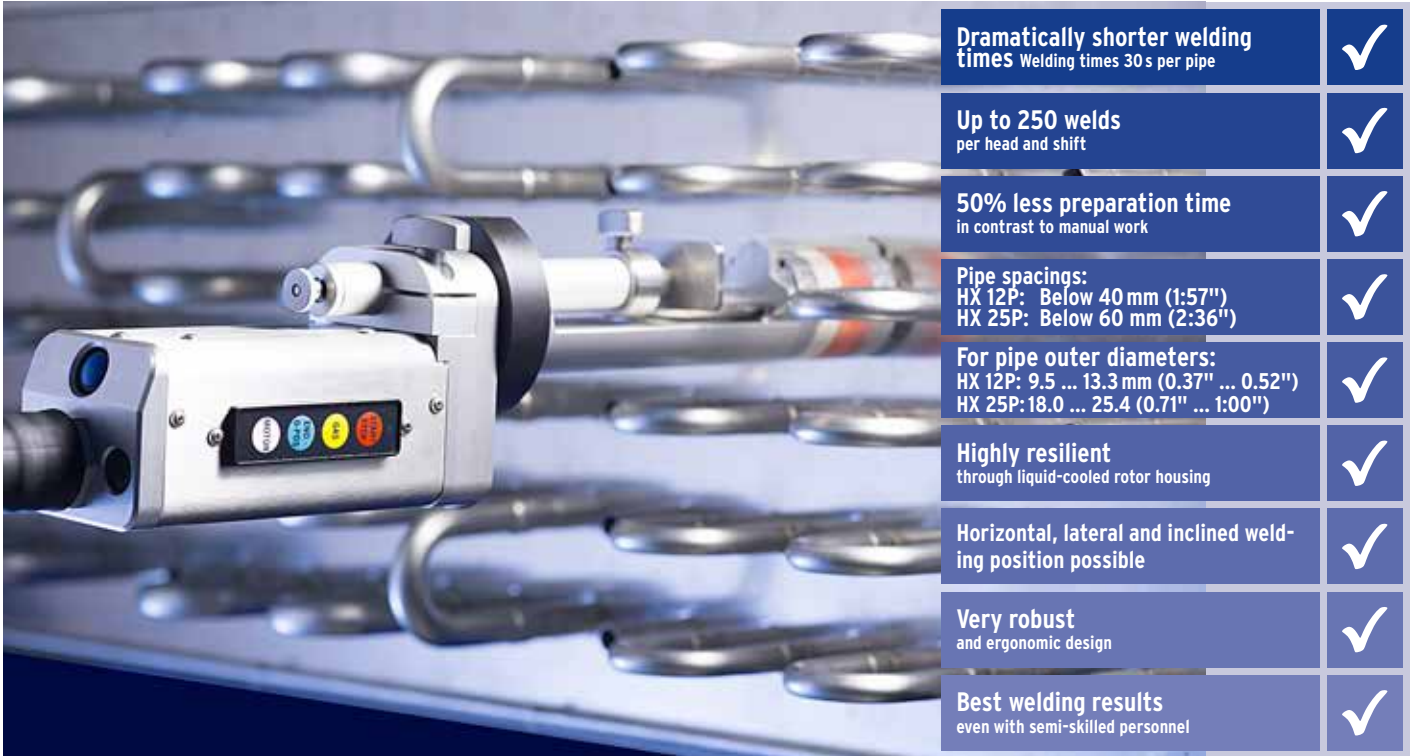
# HX 12P, HX 25P

**NEW**

## Closed orbital weld heads

Weld stainless steel pipes economically and with high quality with the TIG procedure:

The worldwide unique HX orbital weld heads with their automated welding technology are THE solution for an efficient as well as high-quality production. Pre-mounted tube elbows such as in heat exchanger production, even in narrow pipe bundles, can be connected reliably, quickly and securely with stainless steel pipes.



**Dramatically shorter welding times**  
Welding times 30 s per pipe



**Up to 250 welds**  
per head and shift



**50% less preparation time**  
in contrast to manual work



**Pipe spacings:**  
HX 12P: Below 40 mm (1:57")  
HX 25P: Below 60 mm (2:36")



**For pipe outer diameters:**  
HX 12P: 9.5 ... 13.3 mm (0.37" ... 0.52")  
HX 25P: 18.0 ... 25.4 (0.71" ... 1:00")



**Highly resilient**  
through liquid-cooled rotor housing



**Horizontal, lateral and inclined welding position possible**



**Very robust**  
and ergonomic design



**Best welding results**  
even with semi-skilled personnel



**In addition to the HX 12P and HX 25P, this series also includes the HX 16P.**

The welding of tube elbows in heat exchanger production is laborious for a manual welding procedure. In the long run it is also not ensured that the welder reaches a constantly high quality and thus achieves sealing of all tube elbows. This results in expensive rework and high reject rates.

While conventional welding heads require a lot of space between the tubes for positioning, the narrow HX heads allow for very compact heat exchangers with high tube density and thus a high degree of effectiveness to be achieved. Pipe spacings under 40 mm (1.57") are possible with the HX 12P and under 60 mm (2.36") with the HX 25P.

Handling is also easy: The HX head is swiveled open, laid around the pipe and fixated pneumatically self-retaining at the push of a button. A limit stop with rough and fine adjustment helps with secure

positioning at the tube. After the starting process the water-cooled head is flooded with argon gas and welding takes place automatically in consistent quality. The Orbitalum system ensures a clean weld penetration completely without recess, gaps or grates inside the tube. Clamping and starting is carried out via the button at the weld head.

### **Best welding results - even with semi-skilled personnel**

The Orbitalum welding power sources automatically detect the connected HX head with its provided parameters, so that the operator only has to call up their specified welding program and start the process before beginning to weld. Working with the Orbitalum system is so easy and reliable that even semi-skilled operators achieve top welding results. Practice has shown that with the Orbitalum system the reject rate is reduced from 4% to below 0.7%. Another advantage: An operator can operate multiple weld heads at the same time – which significant-

ly increases the manufacturing efficiency. The closed weld chamber and continuous process also result in no annealing colors arising, so that expensive rework such as pickling or passivating is generally not required.

### **Compact design results in simple handling.**

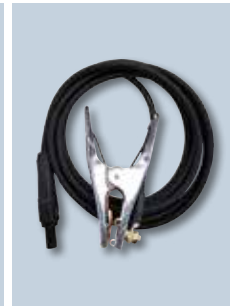
In contrast to open welding heads, all connections for current, gas and cooling water are integrated in the HX head. For good handling the Orbitalum heads are connected with a 7.5 m long, flexible hose with the welding power supply. The HX 12P and HX 25P furthermore impresses with a very straight design, which allows for easy rotation of the head at the heat exchanger. The entire unit can be hung on a balancer to relieve the operator.



Extremely narrow design - ideal for welding pre-mounted arcs in narrow pipe bundles  
 Including pneumatic box



Optionally available:  
 Diameter-specific  
 Clamping inserts



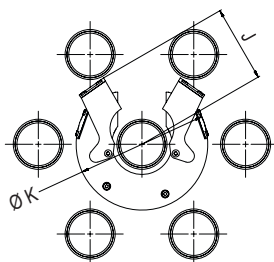
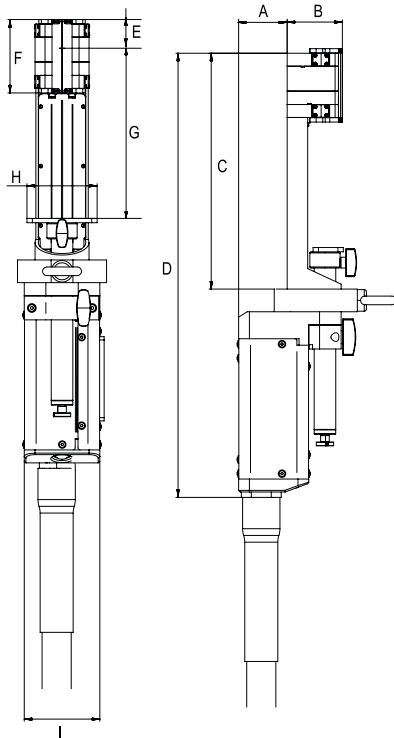
Optionally available:  
 Ground cable



Optionally available:  
 Adjustable bar pressure reducer  
 for argon



The perfect supplement: Orbital  
 welding power sources ORBIMAT  
 for argon



APPLICATION AREA	HX 12P	HX 25P	
Code	847 000 010	845 000 010	
Pipe OD, min. - max.*	9.5 - 13.3 mm/0.374" - 0.524"	18.0 - 25.4 mm/0.708" - 1.000"	
Wall thickness, min. - max.	0.5 - 0.8 mm/0.02" - 0.03"	0.5 - 1.0 mm/0.016" - 0.039"	
TECHNICAL SPECIFICATIONS	HX 12P	HX 25P	
Electrode diameter	1.6 mm/0.063"	1.6 mm/0.063"	
Machine weight including hose package	6.4 kg/14.1 lbs	18.5 kg/40.8 lbs	
Hose package length	7.5 m/24.6 ft	7.5 m/24.6 ft	
TECHNICAL SPECIFICATIONS	PNEUMATICS BOX	PNEUMATICS BOX	
Input medium	Argon	Argon	
Recommended input pressure	6 bar / 87 PSI	6 bar / 87 PSI	
DIMENSIONS	HX 12P	HX 25P	
	[mm]	[inch]	[mm]
Dimension "A"	45.0	1.772	62.0
Dimension "B"	52.0	2.047	68.0
Dimension "C"	219.0	8.622	278.0
Dimension "D"	412.0	16.220	496.0
Dimension "E" (electrode), min.	30.0	1.181	35.0
Dimension "F"	70.0	2.756	80.0
Dimension "G" to max.	155.0	7.283	210.0
Dimension "H"	65.0	2.559	80.0
Dimension "I"	70.0	2.756	100.0
Dimension "J" (Ø)	33.0	1.299	43.0
Dimension "K"	50.0	1.969	72.0
SCOPE OF DELIVERY	HX 12P	HX 25P	
Orbital weld head of the HX series	PCS. 1	1	
transport case	PCS. 1	1	
Pneumatics box	PCS. 1	1	
Supply hose (2 m/6.56 ft) for pneumatics box	PCS. 1	1	
Swivel bracket pair	Pair 1	1	
Elbow stop	PCS. 1	1	
Tool set	set 1	1	
Operating instructions and spare part list	set 1	1	
SUITABLE ACCESSORIES:			
Optionally available:	<ul style="list-style-type: none"> <li>• Clamping inserts</li> <li>• Bar pressure reducer "Argon"</li> <li>• Ground cable</li> <li>• WS2 tungsten electrodes</li> <li>• ESG electrode grinders</li> </ul>		

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.

\* Other dimensions on request

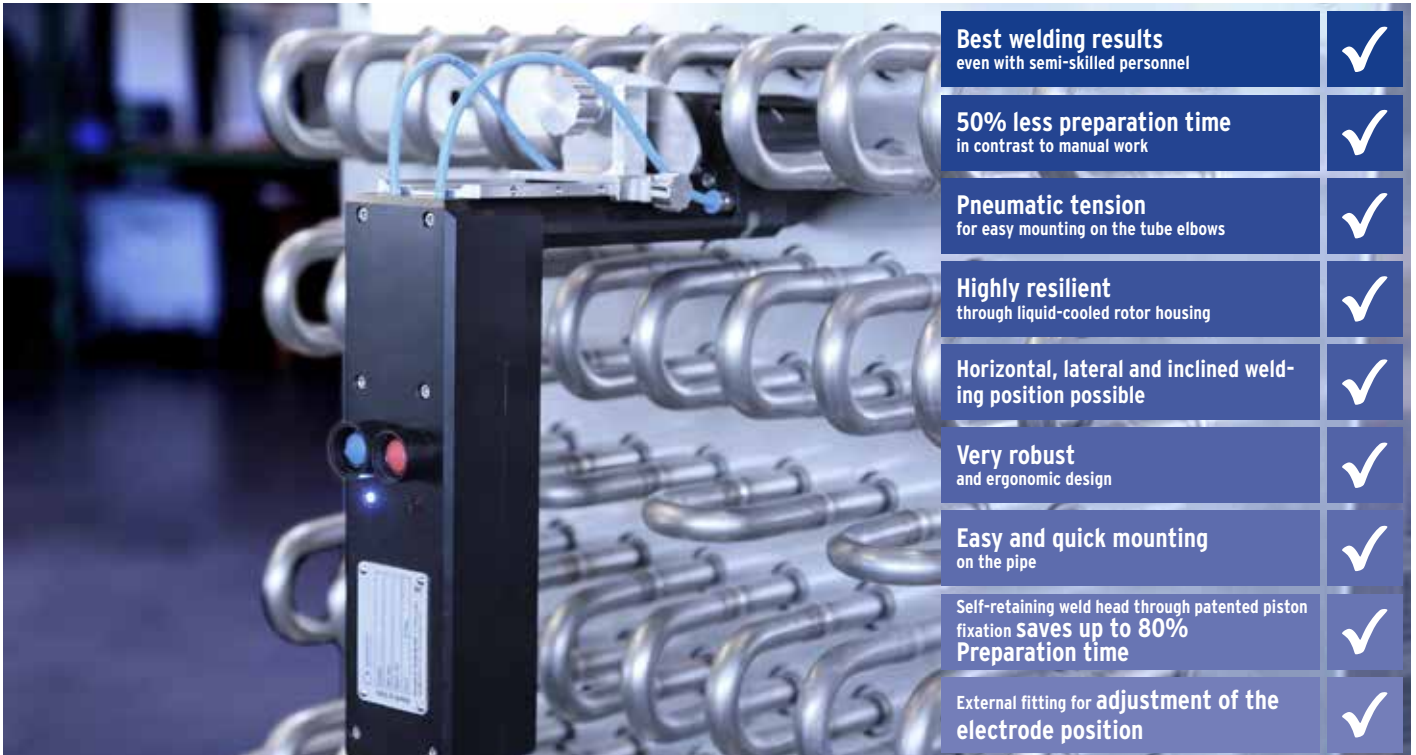


# HX 16P

## Closed orbital weld head

The orbital weld heads HX for compact cooling systems set new standards!

HX stands for heat exchanger and for the welding of pre-mounted elbows in tight pipe bundles of fin heat exchangers. There is no other solution as effective as this one in the world!



**All common closed or open welding heads are not suitable for their positioning between individual pipes of fin heat exchangers because of their size.**

The HX series impresses in terms of economy and efficiency when compared to conventional machines in several ways: The pipe ends of the heat exchanger can be fully fitted with elbows before welding and then welded in any order. For conventional orbital welding heads, the principle of fit elbow, weld, fit elbow, weld etc. applies, always starting from the center of the pipe sheet and working outward. If quality testing reveals a faulty weld later on, all elbows must be disconnected and new ones must be welded on in the worst case scenario (fault in the middle of the bundle) due to the accessibility factor. With the HX head, only the affected elbow would have to be replaced. This design-based advantage also makes the Orbitalum system the ideal tool for unbeatably cost-effective repairs.

In contrast to open welding heads with a cumbersome hose assembly, all connections for power, gas and cooling water are permanently integrated in the HX.

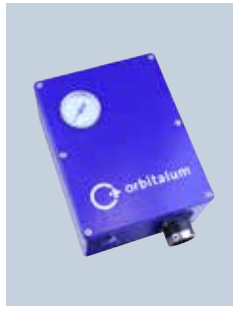
All orbital welding power sources from Orbitalum automatically detect the head and its properties so that, before beginning to weld, the operator only has to call up their specified welding program and start the welding process.

Traditionally, complex heat exchangers for cooling systems were made of copper, and soldered with the pipe elbows. The high price of copper prompted manufacturers to switch over to stainless steel for production. Stainless steel can only be joined economically, reliably and in high quality with tungsten inert gas (TIG) welding in conjunction with mechanized orbital welding.

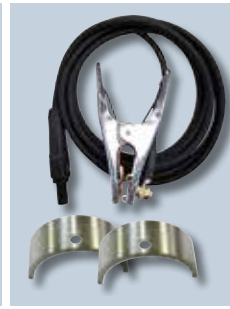


Extremely narrow design - ideal for welding pre-mounted arcs in narrow pipe bundles

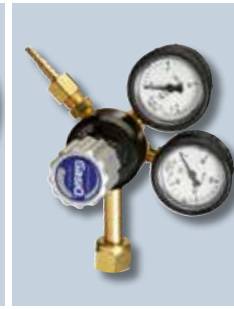
All connections for electricity, gas and cooling water are firmly integrated



Including pneumatic box



Optionally available: Diameter-specific clamping inserts and ground cable



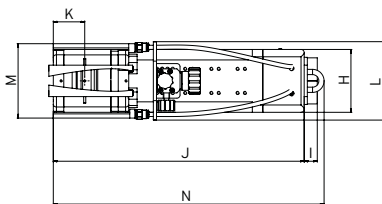
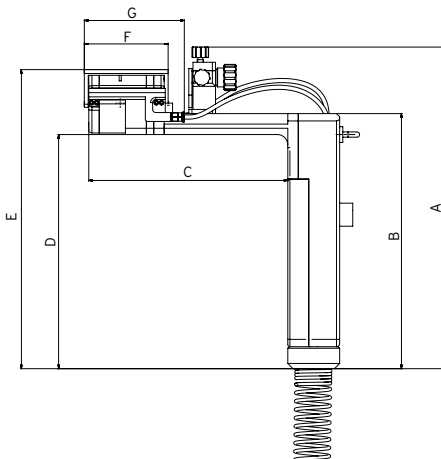
Adjustable bar pressure reducer for argon for pneumatic clamping of the HX 16P - available separately



The perfect supplement: Orbital welding power sources ORBIMAT



HX 16P



APPLICATION AREA		HX 16P	
Code		848 000 010	
Pipe OD, min. - max.*	[mm]	15.0 - 16,8	
	[inch]	0.591 - 0.661	
TECHNICAL SPECIFICATIONS		HX 16P	
Electrode diameter	[mm]	1.6	
	[inch]	0.063	
Machine weight	[kg]	5.9	
including hose package	[lbs]	13.0	
Hose package length	[m]	7.5	
	[ft]	24.6	
TECHNICAL SPECIFICATIONS		PNEUMATICS BOX	
Input medium		Argon	
Recommended input pressure	[bar]	8	
	[PSI]	116	
DIMENSIONS		HX 16P	
		[mm]	[inch]
Dimension "A"		307.00	12.087
Dimension "B"		243.50	9.587
Dimension "C"		190.00	7.480
Dimension "D"		223.50	8.799
Dimension "E"		285.50	11.240
Dimension "F"		80.00	3.150
Dimension "G"		95.45	3.758
Dimension "H"		60.00	2.362
Dimension "I"		12.50	0.492
Dimension "J"		239.50	9.429
Dimension "K" (electrode)		30.00	1.181
Dimension "L"		74.85	2.947
Dimension "M"		71.00	2.795
Dimension "N"		258.50	10.177
SCOPE OF DELIVERY		HX 16P	
Orbital weld head of the HX series	PCS.	1	
transport case	PCS.	1	
Pneumatics box	PCS.	1	
Supply hose (2m/6.56ft) for pneumatics box	PCS.	1	
Swivel bracket pair	Pair	1	
Elbow stop	PCS.	1	
Sheet stop alignment kit	PCS.	1	
Tool set	set	1	
Operating instructions and spare part list	set	1	
SUITABLE ACCESSORIES:			
Optionally available:		<ul style="list-style-type: none"> <li>• Clamping inserts</li> <li>• Bar pressure reducer "Argon"</li> <li>• Ground cable</li> <li>• WS2 tungsten electrodes</li> <li>• ESG electrode grinders</li> </ul>	

\* Other dimensions on request

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.





HX 12P / HX 25P



HX 16P



Pneumatics box  
(included in the scope of delivery of the HX heads)

## Closed orbital weld heads

### HX 12P, HX 16P, HX 25P

Properties, application area, technical specifications and delivery scope, see page 52 and page 54.

**The following accessories are mandatory for the use of the HX orbital weld heads and must be ordered separately:**

- Clamping inserts, see page 57
- Ground cable, see page 93
- Bar pressure reducer "Argon", see page 57

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Orbital weld head HX 12P	847 000 010	6.400	14.100
Orbital weld head HX 16P	848 000 010	5.900	16.600
Orbital weld head HX 25P	845 000 010	18.500	40.800

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Clamping inserts, see page 57
- Bar pressure reducer "Argon", see page 57
- Ground cable, see page 93
- WS2 tungsten electrodes, see page 94
- ESG electrode grinders, see page 86
- Welding current connection adapter set, see page 95

#### CLOSED ORBITAL WELD HEADS

## Accessories for HX

### Clamping inserts

Made of stainless steel.

Two clamping inserts are required for each pipe diameter.

Further dimensions on request.



Clamping inserts

ITEM	PIPE OD		FOR HX 12P		FOR HX 16P		FOR HX 25P	
	[MM]	[INCH]	CODE	KG	CODE	KG	CODE	KG
Clamping insert	9.50	0.374	847 002 020	0.018	-	-	-	-
Clamping insert	11.00	0.433	847 002 027	0.003	-	-	-	-
Clamping insert	12.00	0.472	847 002 021	0.018	-	-	-	-
Clamping insert	12.40	0.488	847 002 026	0.002	-	-	-	-
Clamping insert	12.43	0.489	847 002 024	-	-	-	-	-
Clamping insert	12.70	0.500	847 002 023	0.018	848 002 301	0.006	-	-
Clamping insert	13.30	0.524	847 002 025	0.002	848 002 302	0.006	-	-
Clamping insert	15.00	0.591	-	-	848 002 303	0.005	-	-
Clamping insert	15.75	0.620	-	-	848 002 305	0.004	-	-
Clamping insert	15.88	0.625	-	-	848 002 306	0.002	-	-
Clamping insert	16.00	0.630	-	-	848 002 307	0.002	-	-
Clamping insert	16.20	0.638	-	-	848 002 308	0.002	-	-
Clamping insert	16.30	0.642	-	-	848 002 309	0.002	-	-
Clamping insert	16.50	0.650	-	-	848 002 310	0.002	-	-
Clamping insert	16.60	0.654	-	-	848 002 311	0.002	-	-
Clamping insert	18.00	0.709	-	-	-	-	-	-
Clamping insert	19.05	0.750	-	-	-	-	-	-
Clamping insert	20.00	0.787	-	-	-	-	845 002 210	-
Clamping insert	22.00	0.866	-	-	-	-	845 002 208	-
Clamping insert	22.22	0.875	-	-	-	-	845 002 214	-
Clamping insert	23.00	0.906	-	-	-	-	845 002 211	-
Clamping insert	25.00	0.984	-	-	-	-	845 002 209	-
Clamping insert	25.40	1.000	-	-	-	-	845 002 212	-

### Bar pressure reducer "Argon"

Adjustable bar pressure reducer for argon for pneumatic clamping of the HX.

TECHNICAL SPECIFICATIONS	BAR PRESSURE REDUCER "ARGON"
Max. input pressure	230 bar
Output pressure	0 - 10 bar
Bottle connection	W21.8x1/14"
Hose connection	G 1/4"



Bar pressure reducer "Argon"

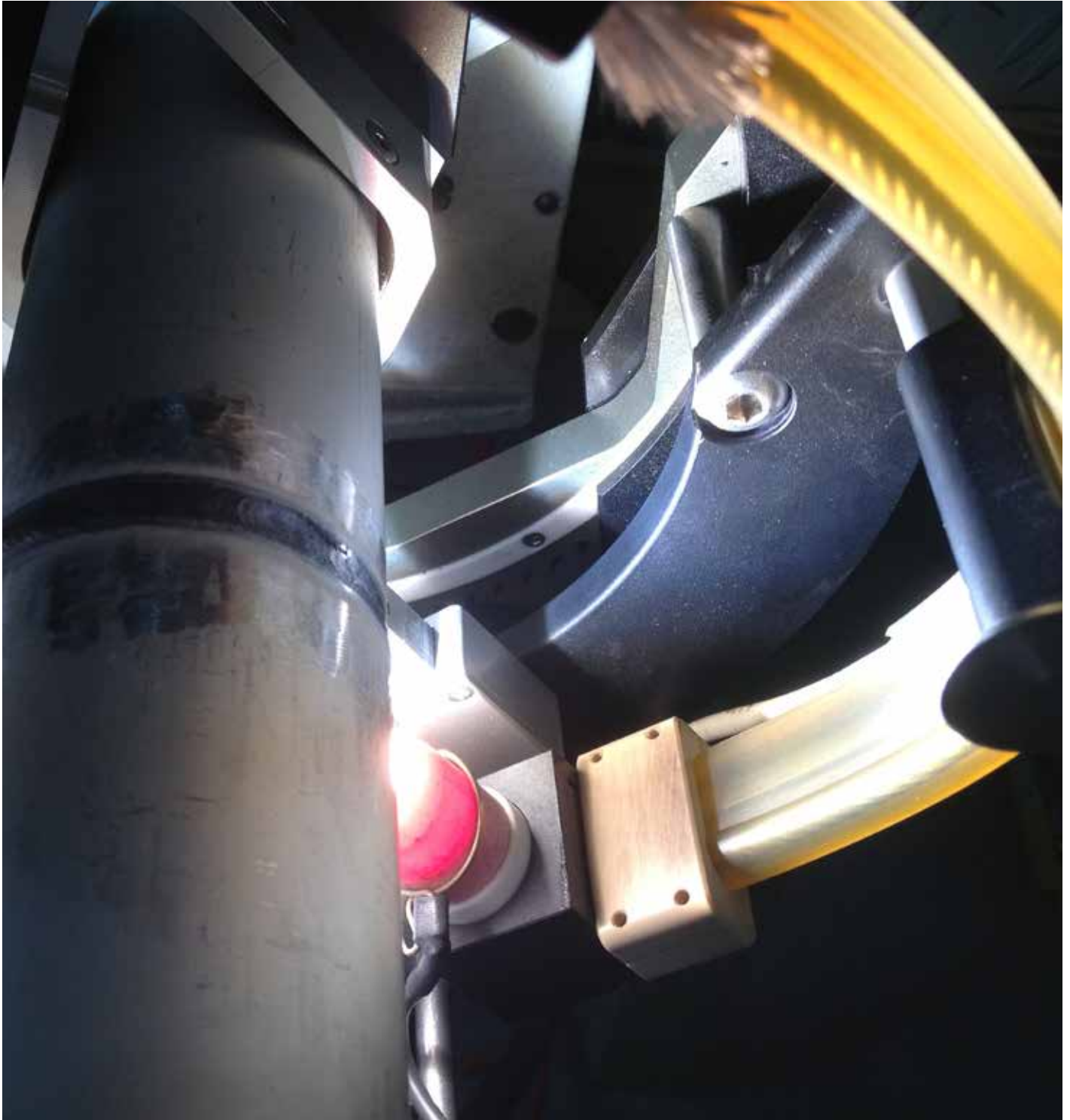
ITEM	CODE	KG
Bar pressure reducer "Argon"	888 000 006	1.428

### Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- WS2 tungsten electrodes, see page 94
- Welding current connection adapter set, see page 95

#### CLOSED ORBITAL WELD HEADS

# Open orbital welding heads

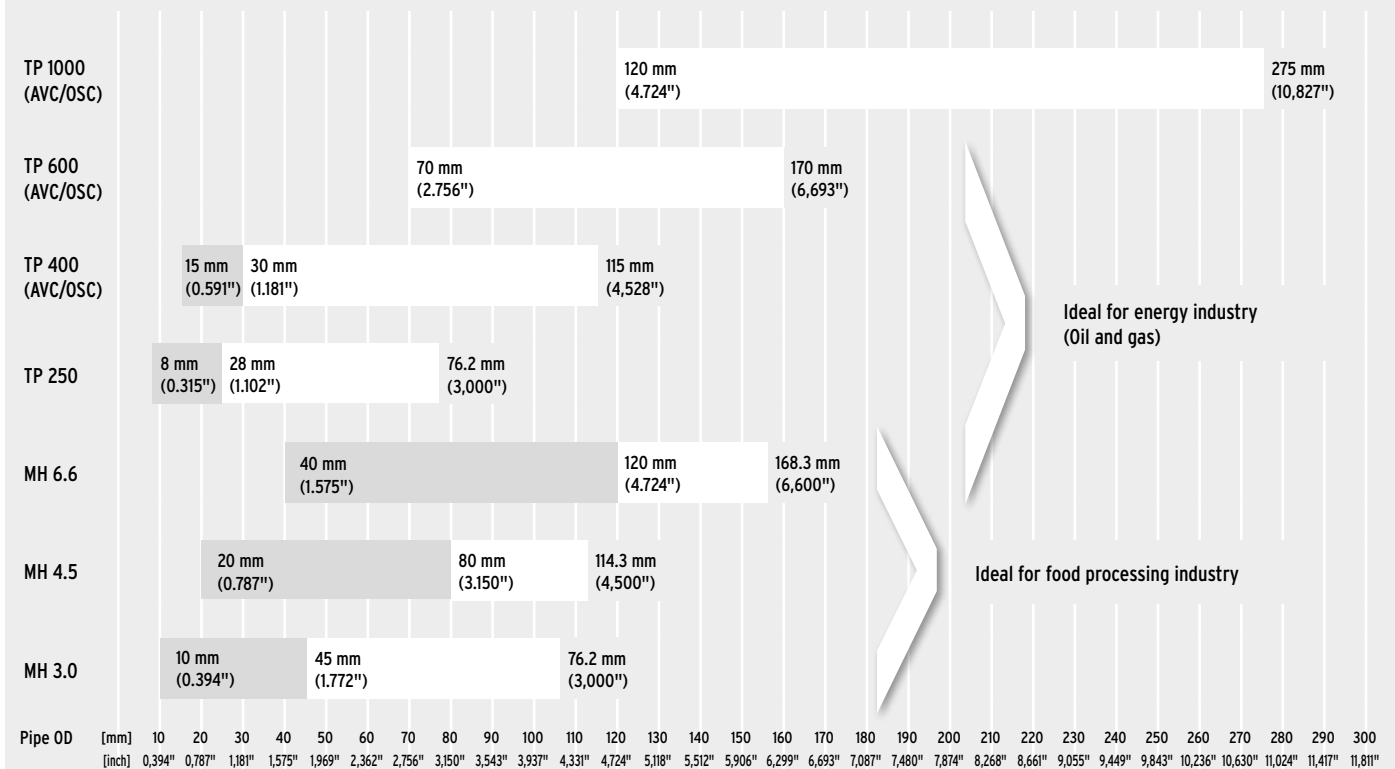


# Overview of open orbital welding heads

MODEL	TP 250	TP 250	TP 400	TP 400	TP 400	TP 600	TP 600	TP 600	TP 1000	TP 1000	TP 1000	
WITH COLD WIRE UNIT (KD):		KD 4		KD3-100	KD3-100		KD3-100	KD3-100		KD3-100	KD3-100	
WITH ARC GAP CONTROL (AVC) AND OSCILLATION (OSC):					AVC/OSC			AVC/OSC			AVC/OSC	
CODE	811 000 001	811 000 005	812 000 010	812 000 011	812 000 012	813 000 001	813 000 005	813 000 002	814 000 001	814 000 005	814 000 002	
APPLICATION AREA	[mm]	8 - 28 28 - 76.2		(15)** 30 - 115			70 - 170			120 - 275		
	[inch]	0.315 - 1.102 1.102 - 3.000		(0.591)** 1.181 - 4.528			2.756 - 6.693			4.724 - 10.827		
ELECTRODE LENGTHS	[mm]	18 - 32		30 - 55			30 - 55			30 - 55		
	[inch]	0.709 - 1.260		1.181 - 2.165			1.181 - 2.165			1.181 - 2.165		
WIRE DIAMETER*	[mm]	0.8*		0.8*			0.8*			0.8*		
	[inch]	0.031*		0.031*			0.031*			0.031*		
WEIGHT	[kg]	7.0	8.9	11.0	12.5	15.2	13.7	15.2	18.9	22.5	24.0	28.7
	[lbs]	15.4	19.6	24.3	27.6	33.5	30.2	33.5	41.7	49.6	52.9	63.3
MAX. WELD CURRENT	[A]	200					250					

\* Wire diameter 1.0 mm (0.039") is available separately.

MODEL	MH 3.0	MH 4.5	MH 6.6	
CODE	803 000 001	804 000 001	805 000 001	
APPLICATION AREA	[mm]	10 - 30 30 - 45 45 - 76.2	20 - 40 40 - 80 80 - 114.30	40 - 80 80 - 120 120 - 168.30
	[inch]	0.394 - 1.181 1.181 - 1.772 1.772 - 3.000	0.787 - 1.575 1.575 - 3.150 3.150 - 4.500	1.575 - 3.150 3.150 - 4.724 4.724 - 6.600
ELECTRODE LENGTHS	[mm]	30 - 55		30 - 55
	[inch]	1.181 - 2.165		1.181 - 2.165
WEIGHT	[kg]	4.24	5.42	6.11
	[lbs]	9.35	11.95	13.47
MAX. WELD CURRENT	[A]	140		



# MOBILE HEAD MH

## Open orbital welding heads

Pipe to pipe, pipe to fitting - The open orbital welding heads of the MH series are impressive with a diverse range of applications. What is more, they have a narrow and very lightweight design. As a result, the MOBILE HEAD series is perfectly suitable for use at construction sites.



**The open orbital welding heads of the MH series are used wherever thin-walled stainless steel pipes are welded in pipeline manufacturing. They have a compact design and are equipped with a narrow welding head housing with the result that it is possible to weld in even cramped hard-to-access areas. The MOBILE HEAD is compatible with the orbital welding power supplies of the SW series and the Mobile Welder.**

### Flexible in application

The gas-cooled, infinitely variable swiveling torch body can be adjusted in position and angle and in addition to the classic pipe I-seam applications, among others, makes it possible to weld fillet welds as well. The welding heads can be used flexibly, without additional accessories, in the widest range of applications, e.g.

Pipe to pipe, pipe to fitting and pipe to extrusion.

The mechanically adjustable electrode scanning guarantees in addition a consistent electrode gap during the entire welding process.

### Mobile in use

The MOBILE HEAD series is impressive, with a light (4-6 kg) and as a result is ideally suited for mobile use in the assembly environment. Every relevant operating function can be accessed right on the welding heads via the control panel integrated in the handhold. What is more, the open orbital welding heads are easy to operate. All of the main mechanical adjustments can be made without any tools.

### Different pipe diameters

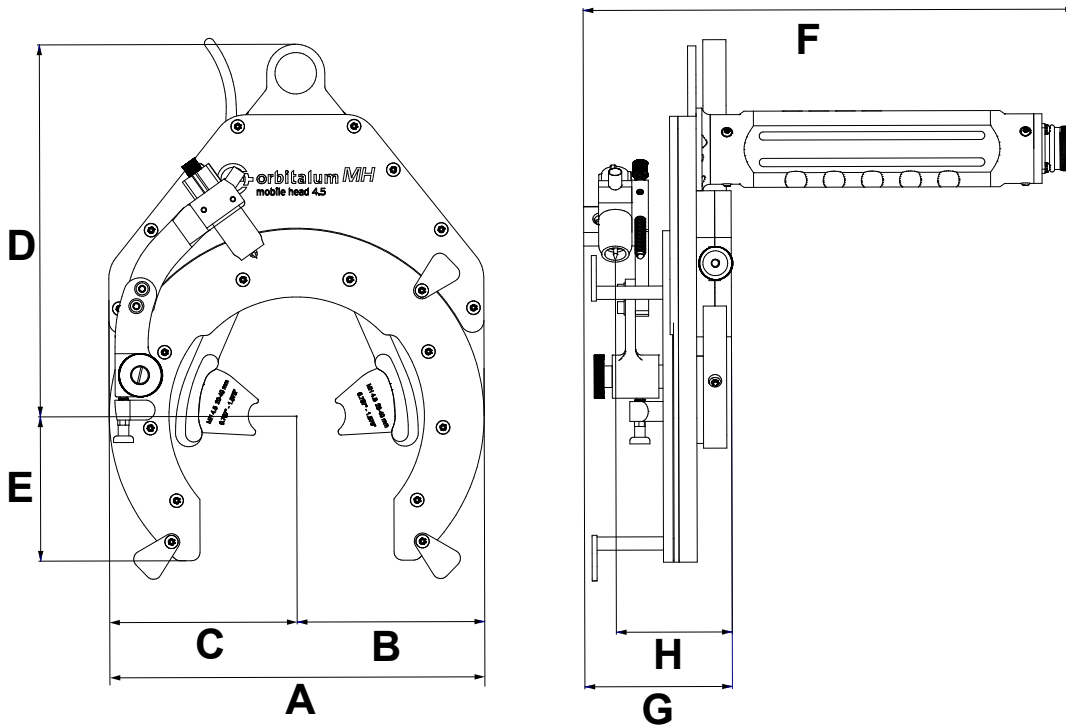
The open orbital welding heads of the MH series can be adjusted to the desired pipe diameter via an infinitely variable clamping mechanism in order to fix the welding heads in place on the pipe securely and free of play.

The clamping range can be easily expanded by using the reduction jaws included in the scope of delivery.

The MH series consists of three different sizes and as a result covers a broad range of pipe dimensions: MH3.0, MH4.5, MH6.6.



## DIMENSIONS (VALUES, SEE TABLE):



ORBITAL WELDING HEADS		MH 3.0	MH 4.5	MH 6.6
Code		803 000 001	804 000 001	805 000 001
<b>TECHNICAL SPECIFICATIONS</b>				
Application area	[mm]	10 - 76.20	20 - 114.30	40 - 168.30
	[inch]	0,394 - 3,000	0,787 - 4,500	1,575 - 6,626
Electrode lengths	[mm]	30 - 55	30 - 55	30 - 55
	[inch]	1,181 - 2,165	1,181 - 2,165	1,181 - 2,165
Machine weight including power/gas cable	[kg]	4.24	5.42	6.11
	[lbs]	9.35	11.95	13.47
Power/gas hose length	[m]	7.00	7.0	7.0
	[ft]	23.00	23.0	23.0
Dimension "A":	[mm]	150.00	226.00	290.00
	[inch]	5.91	8.90	11.42
Dimension "B":	[mm]	75.00	113.00	145
	[inch]	2.95	4.45	5.71
Dimension "C":	[mm]	75.00	113.00	145
	[inch]	2.95	4.45	5.71
Dimension "D":	[mm]	172.50	224.5	2525.00
	[inch]	6.79	8.84	99.41
Dimension "E":	[mm]	60.99	87.00	110
	[inch]	2.40	3.43	4.33
Dimension "F":	[mm]	296.70	296.70	296.70
	[inch]	11.68	11.68	11.68
Dimension "G":	[mm]	88.90	88.90	88.90
	[inch]	3.50	3.50	3.50
Dimension "H":	[mm]	69.90 - 74.90	69.90 - 74.90	69.90 - 74.90
	[inch]	2.75 - 2,949	2.75 - 2,949	2.75 - 2,949

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.

ORBITAL WELDING HEADS		MH 3.0	MH 4.5	MH 6.6
Code		803 000 001	804 000 001	805 000 001
<b>SCOPE OF DELIVERY</b>				
Transport box		●	●	●
Consumables/set of tools		●	●	●
MH 3.0 reduction jaws 10 - 30 mm (0.394 - 1.181 in)		●	○	○
MH 3.0 reduction jaws 30 - 45 mm (1.181 - 1.772 in)		●	○	○
MH 4.5 reduction jaws 20 - 40 mm (0.787 - 1.575 in)		○	●	○
MH 4.5 reduction jaws 40 - 80 mm (1.575 - 3.150 in)		○	●	○
MH 6.6 reduction jaws 40 - 80 mm (1.575 - 3.150 in)		○	○	●
MH 6.6 reduction jaws 80 - 120 mm (3.150 - 4.724 in)		○	○	●
Operating instructions with spare parts list		●	●	●
<b>OTHER FEATURES</b>				
Electrode angle adjustment		●	●	●
Electrode gap spacer		●	●	●
Infinitely variable adjustable clamping system		●	●	●
Swiveling torch body		●	●	●
Integrated control panel		●	●	●
Safety eyelet		●	●	●
Torch arm bracket adjustable		●	●	●
Torch fine-tuning		●	●	●
Torch arm latch		●	●	●

● = Function included

○ = Function not included



MOBILE HEAD MH 4.5



MOBILE HEAD MH 6.6

## Open orbital welding heads MH

### MOBILE HEAD MH 3.0 MOBILE HEAD MH 4.5 MOBILE HEAD MH 6.6

Properties, application area, technical specifications and delivery scope, see page 63.

**The following accessories are mandatory for the use of the MH orbital welding heads and must be ordered separately:**

- Control cable, see page 93
- Ground cable, see page 93

ITEM	CODE	MACHINE WEIGHT KG*
MOBILE HEAD MH 3.0	803 000 001	4.240
MOBILE HEAD MH 4.5	804 000 001	5.420
MOBILE HEAD MH 6.6	805 000 001	6.110

\* Machine weight including power/gas cable.

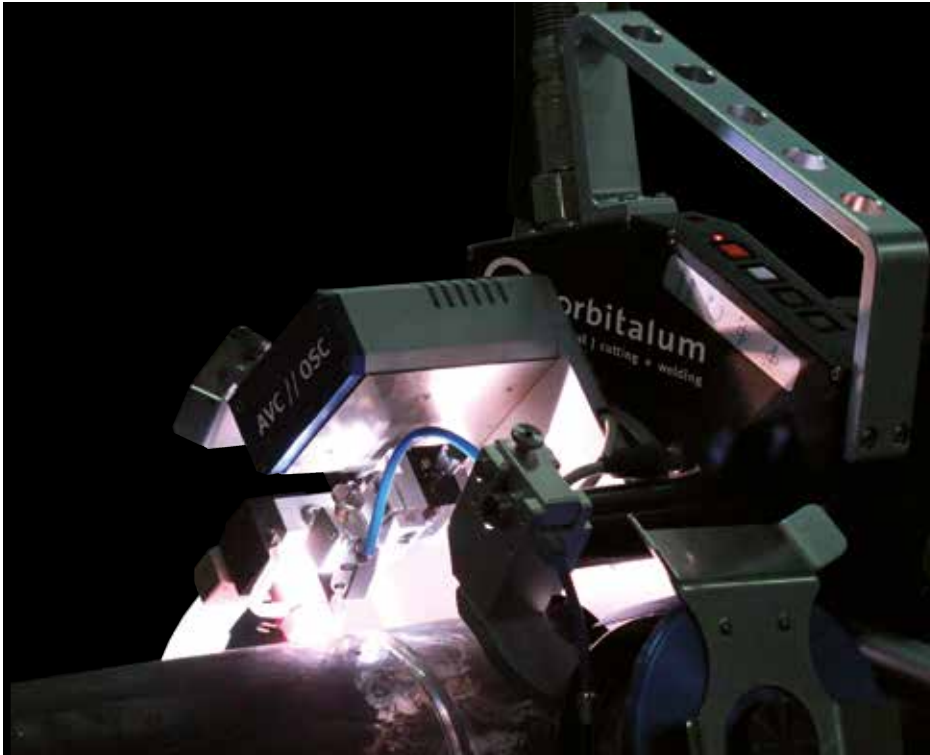
### Suitable accessories (optionally available):

- Ground cable, see page 93
- Control cable, see page 93
- Hose package extensions
- ORBmax residual oxygen meter
- ORBIPURGE forming set
- WS2 tungsten electrodes

# ORBIWELD TP

## Open orbital weld heads

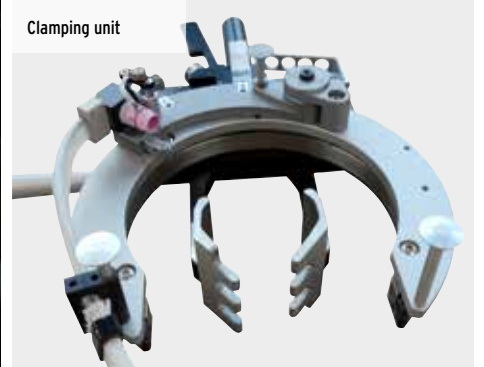
The ORBIWELD TP series is unique in design and functionality: Through the drive motor completely integrated into the housing an extremely compact design is realized. The drive concept furthermore makes the large and laborious gearing of conventional welding heads superfluous. This compact design offers huge advantages at mobile construction site operations.



TP 400 AVC/OSC



Clamping unit



### PROPERTIES OF THE TP SERIES:

- Compact design without interfering protrusions
- Can be used with and without cold wire feeding
- Cold wire unit can be retrofitted at all TP heads
- Wire coil for mounting of the filler wire at TIG cold wire welding is mounted on the weld head housing for KD3 variants. This prevents disruptive twisting of the wire during welding
- Wire feed nozzle exactly adjustable vertically and horizontally
- Open arc system
- Infinitely variable adjustable clamping mechanism
- Liquid-cooled steplessly swiveling TIG torch head allows the welding of fillet welds or short tube collards
- TIG torch head is attached on an adjustable slide which allows precise fine-tuning of the electrode position even during the welding process
- Simple, toolless adjustment of the clamping unit onto the tube diameter

- By default TP 1000 weld heads are equipped with clamping plates made of tool steel which secure an optimum support on the pipe surface. The pipe clamping for ORBIWELD TP 250, TP 400 and TP 600 is effected by means of clamping jaws made of stainless steel (1.4305). In addition to more clamping power this new clamping system offers an even easier and more precise alignment of the weld heads on the tube. Clamping jaws for clamping range extension (TP 400) are available optionally. The new clamping unit can be retrofitted for older TP 250, TP 400- and TP 600 models
- TP heads can be easily centered at the tube and are clamped via clamping levers
- Through the operating buttons integrated directly in the weld head housing no additional remote control is required

### ADDITIONAL CHARACTERISTICS TP AVC/OSC:

- With oscillation (OSC) and electronic arc gap con-

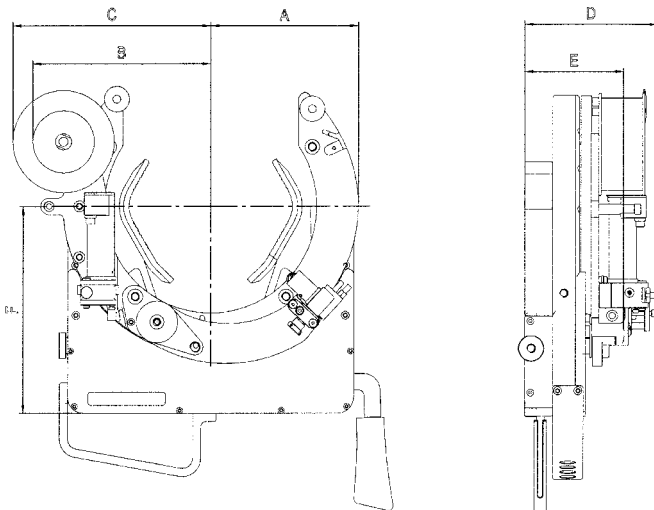
- trol (AVC) – only in combination with the welding power supply ORBIMAT 300 CA AVC/OSC
- The arc length is kept mechanically at a constant distance; for AVC/OSC versions the constant distance spacing is effected automatically
- Can be used for thick-walled tubes (multi-layer weldings)
- Motor drive possibility ranging across the entire nominal diameter range of the TIG torch so that no additional mechanical basic default value is necessary a changed pipe diameter
- Max. oscillation path of the torch: 20 mm (0,787")
- Complete with cold wire feed unit mounted directly on the weld head with mount for a D 100 mm/1 kg (3.937"/2.2 lbs) standard coil

MODEL		TP 250	TP 250	TP 400	TP 400	TP 400	TP 600	TP 600	TP 600	TP 1000	TP 1000	TP 1000
With cold wire unit (KD):			KD4			KD3-100				KD3-100		KD3-100
With arc gap control (AVC) and oscillation (OSC):						AVC/OSC				AVC/OSC		AVC/OSC
Code		811 000 001	811 000 005	812 000 010	812 000 011	812 000 012	813 000 001	813 000 005	813 000 002	814 000 001	814 000 005	814 000 002
Application area	[mm]	8 - 28 28 - 76.2	8 - 28 28 - 76.2	(15)*/30 - 115	(15)*/30 - 115	(15)*/30 - 115	70 - 170	70 - 170	70 - 170	120 - 275	120 - 275	120 - 275
	[inch]	0.315 - 1.102 1.102 - 3.000	0.315 - 1.102 1.102 - 3.000	(0.591)*/ 1.181 - 4.528	(0.591)*/ 1.181 - 4.528	(0.591)*/ 1.181 - 4.528	2.756 - 6.693	2.756 - 6.693	2.756 - 6.693	4.724 - 10.827	4.724 - 10.827	4.724 - 10.827
Electrode lengths	[mm]	18 - 32	18 - 32	30 - 55	30 - 55	30 - 55	30 - 55	30 - 55	30 - 55	30 - 55	30 - 55	30 - 55
	[inch]	0.709 - 1.260	0.709 - 1.260	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165	1.181 - 2.165
Wire diameter*	[mm]	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**	0.8/ 1.0**
	[inch]	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**	0.031/ 0.039**
Machine weight including hose package	[kg]	7.0	8.9	11.0	12.5	15.2	13.7	15.2	18.9	22.5	24.0	28.7
	[lbs]	15.4	19.6	24.3	27.6	33.5	30.2	33.5	41.7	49.6	52.9	63.3
Hose package length	[m]	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
	[ft]	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Dimension "A":	[mm]	86.00	86.00	108.00	108.00	150.00	147.00	147.00	185.00	215.00	215.00	245.00
	[inch]	3.386	3.386	4.252	4.252	5.906	5.787	5.787	7.283	8.465	8.465	9.646
Dimension "B" without cold wire KD:	[mm]	86.00	86.00	108.00	-	-	147.00	-	-	215.00	-	-
	[inch]	3.386	3.386	4.252	-	-	5.787	-	-	8.465	-	-
Dimension "C": with cold wire KD:	[mm]	-	-	-	180.00	175.00	-	196.00	215.00	-	237.00	274.00
	[inch]	-	-	-	7.087	6.890	-	7.717	8.465	-	9.331	10.787
Dimension "D":	[mm]	85.00	85.00	120.00	182.00	182.00	140.00	140.00	186.00	170.00	170.00	206.00
	[inch]	3.346	3.346	4.724	7.165	7.165	5.512	5.512	7.323	6.693	6.693	8.110
Dimension "E":	[mm]	74.00	74.00	90.00	165.00	165.00	97.00	97.00	172.00	146.00	146.00	191.00
	[inch]	2.913	2.913	3.543	6.496	6.496	3.819	3.819	6.772	5.748	5.748	7.520
Dimension "F":	[mm]	125.00	125.00	200.00	200.00	200.00	202.00	202.00	202.00	270.00	270.00	270.00
	[inch]	4.921	4.921	7.874	7.874	7.874	7.953	7.953	7.953	10.630	10.630	10.630
Integrated remote control		●	●	●	●	●	●	●	●	●	●	●
Liquid-cooled torch body		●	●	●	●	●	●	●	●	●	●	●
Swiveling torch body		●	●	●	●	●	●	●	●	●	●	●
Fine-tuning of the electrode position		●	●	●	●	●	●	●	●	●	●	●
Coupling of manual rotation of the rotor		●	●	●	●	●	●	●	●	●	●	●
Infinitely variable adjustable clamping system		●	●	●	●	●	●	●	●	●	●	●
Optional clamping range extension		●	●	●	●	●	○	○	○	○	○	○
Integrated cold-wire feed		○	○	●	●	●	●	●	●	●	●	●
External cold-wire feed		○	●	○	○	○	○	○	○	○	○	○
Fine-tuning of the wire position		○	●	○	●	●	○	●	●	○	●	●
AVC electronic arc gap control***		○	○	○	○	●	○	○	●	○	○	●
OSC oscillation unit***		○	○	○	○	●	○	○	●	○	○	●

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.

- = Function included    ○ = Function not included    ○ with a dot = Function only conditionally included (can be retrofitted)    \* with accessories    \*\* KD conversion sets optionally available (page 66)    \*\*\* Can only be used in combination with the orbital welding power supply ORBITAT 300 CA AVC/OSC

**DIMENSIONS (VALUES, SEE TABLE):**



**SCOPE OF DELIVERY**

- Including:
- 1 welding head ORBIWELD TP
  - 1 transport case
  - 1 handle (TP 1000: 2 pieces)
  - 1 expansion jaw set of size 8 - 28 mm/0.315" - 1.102" (TP 250 only)
  - 1 tool set
  - 1 set of operating instructions and spare parts list
- Suitable accessories (optionally available):
- Clamping unit "V2" (retrofitting kits)
  - Cold-wire feeds KD (retrofitting kits)
  - Expansion jaw sets for TP 400
  - Control cable
  - Remote control
  - ESG electrode grinders
  - ORBmax residual oxygen meter
  - ORBIPURGE forming set
  - Ground cable
  - Hose package extensions
  - WS2 tungsten electrodes

## Open orbital welding heads OW TP

### ORBIWELD TP 250 ORBIWELD TP 400 (AVC/OSC) ORBIWELD TP 600 (AVC/OSC) ORBIWELD TP 1000 (AVC/OSC)

Properties, application area, technical specifications and delivery scope, see page 63.

The following accessories are mandatory for the use of the TP orbital welding heads and must be ordered **separately**:

- Control cable, see page 93
- Ground cable, see page 93

ITEM	WITH COLD WIRE UNIT (KD)	CODE	MACHINE WEIGHT KG**	SHIPPING WEIGHT KG
Open orbital weld head TP 250	-	811 000 001	7.000	15.600
Open orbital weld head TP 250	KD 4	811 000 005	8.900	20.000
Open orbital weld head TP 400	-	812 000 010	11.000	20.000
Open orbital weld head TP 400	KD3-100	812 000 011	12.500	20.000
Open orbital weld head TP 400 AVC/OSC*	KD3-100	812 000 012	15.200	24.800
Open orbital weld head TP 600	-	813 000 010	13.700	23.600
Open orbital weld head TP 600	KD3-100	813 000 011	15.200	30.000
Open orbital weld head TP 600 AVC/OSC*	KD3-100	813 000 012	18.900	33.300
Open orbital weld head TP 1000	-	814 000 001	22.500	38.000
Open orbital weld head TP 1000	KD3-100	814 000 005	24.000	40.900
Open orbital weld head TP 1000 AVC/OSC*	KD3-100	814 000 002	28.700	45.300

\* Only usable in connection with an ORBIMAT CA AVC/OSC power source (see from page 16).

\*\* Machine weight including hose package

### Suitable accessories (optionally available):

- Cold-wire feeds KD (retrofitting kits), see page 66
- Extension clamping jaw kits for TP 400, see page 66
- Ground cable, see page 93
- Control cable, see page 93
- Remote control, see page 21



ORBIWELD TP 250



ORBIWELD TP 400 KD3-100



ORBIWELD TP 400 AVC/OSC



ORBIWELD TP 600



ORBIWELD TP 1000

#### OPEN ORBITAL WELDING HEADS





KD 4 with opened cover



KD3-100 with Ø 100 standard coil



KD retrofitting kit



Expansion clamping jaw kit for TP 400

## Accessories for ORBIWELD TP

### Cold-wire feeds KD (retrofitting kits)

The scope of delivery includes:

- 1 feed motor for wire Ø 0.8 mm (0.031")
- 1 wire adjusting unit
- 1 wire nozzle with core (for wire Ø 0.8 mm (0.031"))
- 1 wire coil mounting for Ø 100 mm/1kg (3.937"/2.2 lbs) standard coils.
- 1 external cold-wire box (only for KD 4)

ITEM	CAN BE USED WITH	CODE	KG
Cold-wire feed KD 4	TP 250	<b>811 050 001</b>	2.110
Cold-wire feed KD3-100*	TP 400*	<b>812 050 061</b>	0.680
Cold-wire feed KD3-100	TP 600	<b>813 050 001</b>	0.680
Cold-wire feed KD3-100	TP 1000	<b>814 050 008</b>	0.720

\* Welding heads must be sent in for the retrofitting.

### KD retrofitting kits

For retrofitting the cold-wire feed to wire Ø 1.0 mm (0.039").

ITEM	CAN BE USED WITH	CODE	KG
KD retrofitting kit to wire Ø 1.0 mm (0.039")	TP 250	<b>811 050 046</b>	0.115
KD retrofitting kit to wire Ø 1.0 mm (0.039") V2*	TP 400/600/1000 incl. AVC/OSC	<b>812 050 076</b>	0.115

\* Please note series no., see above.

### Expansion clamping jaw kits

The **expansion jaw kits made of stainless steel** are only available for TP 400 for the extension of the clamping range to a min. of 15.00 mm (0.591").

ITEM	VERSION	PIPE OD [MM]	PIPE OD [INCH]	CODE	KG
Expansion clamping jaw kit for TP 400	Stainless steel	15.00 - 30.00	0.591 - 1.181	<b>812 002 005</b>	0.520

### Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- Hose package extensions, see page 94
- WS2 tungsten electrodes, see page 94
- Torch and cold wire accessories, see page 97
- Ground cable, see page 93

#### OPEN ORBITAL WELDING HEADS



Standard-compliant, precise and reproducible weld seam preparation.

For more than 50 years installation manufacturers have been relying on the standard set by Orbitalum in industrial pipe end preparation: With the pipe saws for the precise cutting in seconds.

Request the following catalog from us to receive more information about this and other products for orbital weld seam preparation:

**>>Catalog "Orbital pipe cutting and beveling machines for high-purity process installations"**

# Tube-to-tube-sheet orbital weld heads







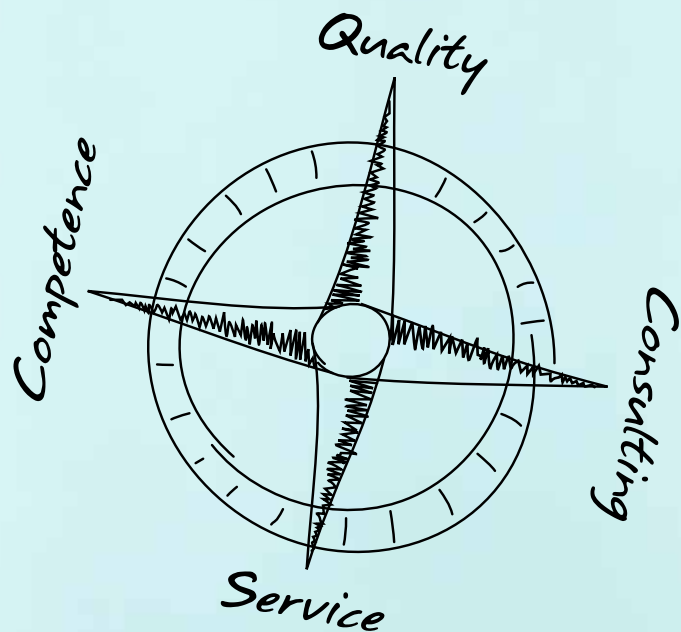
Quality  
made in  
Germany

## Quality products from Orbitalum Tools - always a good decision!

For our products we select the best materials and suitable production processes and already during development place particular on a high degree of quality and durability.

Our machines and tools are assembled, set, controlled and packed by hand by qualified and motivated employees with great care in Singen/Htwl. (Germany).

Our employees guarantee this with their knowledge and their experience.



# TX 38P

Orbital TIG orbital weld head for  
tube-to-tube sheet connections

## Tube-to-tube-sheet orbital weld head

The orbital TIG weld head from Orbitalum for manufacturing pipe-to-pipe-sheet connections guarantees extremely short production times of industrial heat exchangers at constantly high reproducible quality. Also excellently suitable for repair, maintenance and servicing work.



**Process heat exchanger tubes particularly effectively and simply: With the TX 38P for automated TIG orbital welding you can in the future weld the base plate and heat exchanger tubes precisely and highly accurately, for example, for thousands of connection at cooling tubes.**

In combination with an orbital weld head from ORBITALUM TOOLS the user holds an especially innovative as well economical welding system in their hands: The power sources detect the head automatically, so that before beginning welding only the specified welding program has to be called up and the welding process can be started.

To increase productivity, the optional ORBITWIN switching unit allows working with up to two heads in an alternating fashion, thus reducing conversion times and downtimes considerably.

**THE ADVANTAGES AT A GLANCE:**

- Handy TIG orbital weld head for welding of tubes

in tube sheets

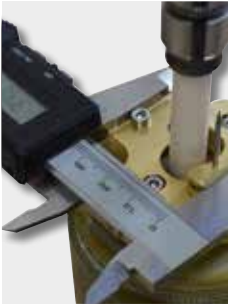
- Precise work in every position, thus high-quality results at horizontal or vertical tube sheets
- Can be used at flush, slightly offset and protruding tubes
- Compatible with AMI arbors, model 96
- Service-friendly design of the clamping and drive system in the housing
- Self-supporting at tube sheet through stable arbor designs (balancer anchorage point available)
- Limit switch for electrode position; thus start position can be selected freely
- Integrated express setting of the electrode position to the tube diameter
- Constant or pulsed rotor rotation possible (CONT-STEP mode)
- Robust, tachometer-regulated 24 volt drive motor with reduction gears
- Liquid-cooled sliding contact for weld current transfer. As a result no rotary transmission and no leaks
- Including highly flexible hose package

(length: 7.5 m/24.6 ft) with strain relief to the power source - optionally extendable to up to 20.0 m (64 ft)

**The highlights of the TX 38P:**

- ✓ Pneumatic clamping and centering
- ✓ Liquid-cooled weld head housing
- ✓ One-hand operation
- ✓ Quick change system for arbors
- ✓ Integrated control panel
- ✓ Chambered protective gas cover





Simple and precise setting of the electrode position



One-hand operation through remote control and pneumatics operation integrated in handle



High-quality results at horizontal or vertical pipe sheets



Rapid changing of clamping elements



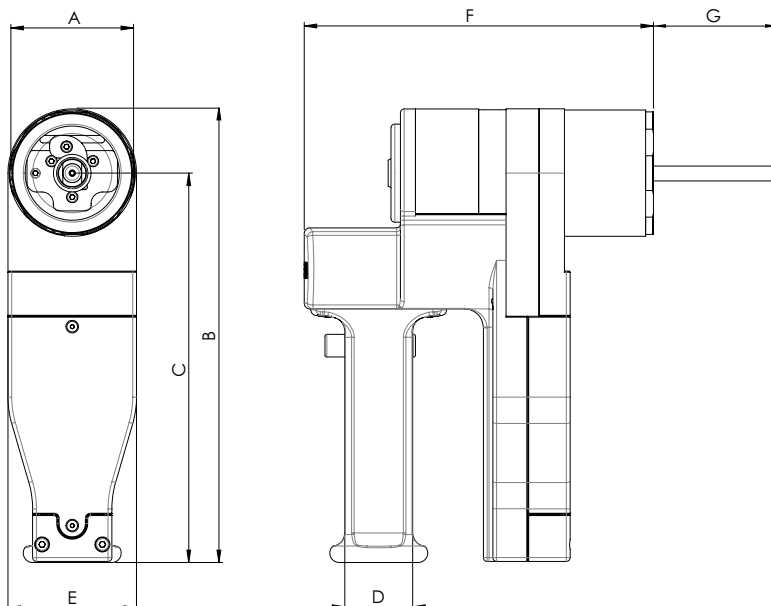
Optionally available: Ground cable, spring sleeves and diverse clamping segment sizes



The perfect supplement: Orbital welding power sources of the ORBIMAT series

APPLICATION AREA		TX 38P	
Code		830 000 005	
Pipe OD, min. - max.	[mm]	10 - 40	
	[inch]	0.394 - 1.575	
TECHNICAL SPECIFICATIONS			
Weld current, max.	[Amp DC]	150	
Rotation speed, max.	[rpm]	10	
Drive motor with tachometer regulation	[VDC]	24	
Electrode diameter	[mm]	1.6 (optional 2.4)	
	[inch]	0.063 (optional 0.094)	
Gas flow	[l/min]	5 - 20	
Gas type		Argon/argon-helium/argon-hydrogen	
Water pressure max.	[bar]	2.5	
Pneumatics pressure	[bar]	5 - 7	
Hose package length	[m]	7.5	
	[ft]	25	
Machine weight including	[kg]	7.5	
Hose package	[lbs]	16.5	
Connection type		Fully compatible to all Orbitalum power sources	
DIMENSIONS			
Dimension "A"	[mm]	65.0	[inch] 2.559
Dimension "B"	[mm]	241.0	[inch] 9.488
Dimension "C"	[mm]	207.0	[inch] 8.150
Dimension "D"	[mm]	36.0	[inch] 1.417
Dimension "E"	[mm]	68.0	[inch] 2.677
Dimension "F"	[mm]	185.0	[inch] 7.283
Dimension "G"	[mm]	110.0	[inch] 4.331

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



The tube-to-tube-sheet orbital weld head TX 38P:  
 Ideal for the repair, maintenance and servicing of industrial heat exchanging systems

#### SCOPE OF DELIVERY

- Including:
- 1 tube-to-tube-sheet orbital weld head TX 38P (Code 830 000 005)
  - 1 hose package, length 7.5 m (25 ft)
  - 1 integrated remote control
  - 1 transport case
  - 1 tool set
  - 1 set of operating instructions and spare parts list

#### MANDATORY FOR THE USE OF THE TUBE-TO-TUBE-SHEET ORBITAL WELD HEAD:

- Please order separately:
- Arbors
  - Spring sleeves
  - Clamping segments
  - Electrode support

#### FURTHER ACCESSORIES

- Optionally available:
- Balancer springs
  - ESG electrode grinders
  - Ground cable
  - Hose package extensions 5 m/10 m/15 m
  - Double pressure reducer
  - WS2 tungsten electrodes

#### EQUIPMENT

- Integrated remote control, function keys:
- START/STOP welding process
  - ON/OFF gas
  - Motor (rotor rotation)
  - Approaching of the end position (home position)
  - Actuation of arbor pneumatics



TX 38P

## Tube-to-tube-sheet orbital weld head

### TX 38P

Properties, application area, technical specifications and delivery scope, see from page 74.

**The following accessories are mandatory for the use of the tube-to-tube-sheet orbital weld head and must be ordered separately:**

- Arbors, see page 73
- Spring sleeves, see page 73
- Clamping segments, see page 73
- Ground cable, see page 93

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Tube-to-tube-sheet orbital weld head TX 38P	830 000 005	7.500	15.600

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Arbors, see page 73
- Spring sleeves, see page 73
- Clamping segments, see page 73
- Electrode adapters, see page 73
- Ground cable, see page 93
- Balancer spring, see page 78
- Hose package extensions, see page 94
- Welding current connection adapter set, see page 95

## Accessories for TX 38P

### Arbors

Base arbor including insulation sleeve and clamping cone.

ITEM	SUITABLE FOR	CODE	KG
Arbor TX 38P, Type A	Spring sleeves, Type A	<b>830 020 020</b>	0.130
Spring sleeves TX 38P, Type B	Clamping segments, Type B	<b>830 020 021</b>	0.130



Arbor TX 38P

### Spring sleeves

Suitable for arbor, Type A.

ITEM	PIPE ID [MM]	PIPE ID [INCH]	CODE	KG
Spring sleeve TX 38P, Type A1	10.0 - 11.3	0.394 - 0.445	<b>830 020 022</b>	0.030
Spring sleeve TX 38P, Type A2	11.0 - 12.7	0.433 - 0.500	<b>830 020 019</b>	0.030
Spring sleeve TX 38P, Type A3	12.5 - 14.0	0.492 - 0.551	<b>830 020 023</b>	0.030



Spring sleeve

### Clamping segments

Suitable for arbor, Type B.  
 Consisting of 1 set each with 2 clamping segments.  
 Differing dimensions on request.

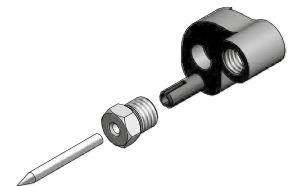
ITEM	PIPE ID [MM]	PIPE ID [INCH]	CODE	KG
Clamping segments TX 38P, Type B1	13.8 - 16.8	0.543 - 0.661	<b>830 020 024</b>	0.025
Clamping segments TX 38P, Type B2	16.6 - 19.6	0.654 - 0.772	<b>830 020 025</b>	0.045
Clamping segments TX 38P, Type B3	19.4 - 22.4	0.764 - 0.882	<b>830 020 026</b>	0.065
Clamping segments TX 38P, Type B4	22.2 - 25.2	0.874 - 0.992	<b>830 020 027</b>	0.085
Clamping segments TX 38P, Type B5	25.0 - 28.0	0.984 - 1.102	<b>830 020 028</b>	0.105
Clamping segments TX 38P, Type B6	28.0 - 31.0	1.102 - 1.220	<b>830 020 029</b>	0.130
Clamping segments TX 38P, Type B7	31.0 - 34.0	1.220 - 1.339	<b>830 020 030</b>	0.160
Clamping segments TX 38P, Type B8	34.0 - 37.0	1.339 - 1.457	<b>830 020 031</b>	0.200
Clamping segments TX 38P, Type B9	37.0 - 40.0	1.457 - 1.575	<b>830 020 032</b>	0.200



Clamping segments

### Electrode adapters

ITEM	CODE	KG
Electrode adapter TX 38P cpl., 2.4 mm (0.094")	<b>830 013 010</b>	0.020



Electrode support

### Other accessories for orbital welding

- Ground cable, see page 93
- Double pressure reducer, see page 94
- ESG electrode grinders, see page 86
- WS2 tungsten electrodes, see page 94
- Torch and cold wire accessories, see page 97
- Welding current connection adapter set, see page 95

#### TUBE-TO-TUBE-SHEET ORBITAL WELD HEADS

# P16, P16 AVC

## Tube-to-tube-sheet orbital weld heads

Easy handling for high efficiency and functionality is a feature of the Orbitalum P-series: These TIG tube-to-tube-sheet orbital weld heads produce several thousand weld seams of consistent seam quality with maximum precision.

Tube-to-tube-sheet weldings at generously dimensioned heat exchangers with highest precision and efficiency



Easy handling with maximum diversity of functions



Liquid-cooled torch head swiveled steplessly up to 30°

**With these TIG tube-to-tube-sheet weld heads a welding of tubes in tube sheets with highest precision and continuous quality is no problem.**

The liquid cooling of the P-series runs up to the TIG head torch which provides for a precise process and continuous quality of the welding process and extends the duty cycle. The torch head can be swiveled steplessly up to 30° - this function is, for example, valuable for tubes entering diagonally into the tube sheets and in tight spaces.

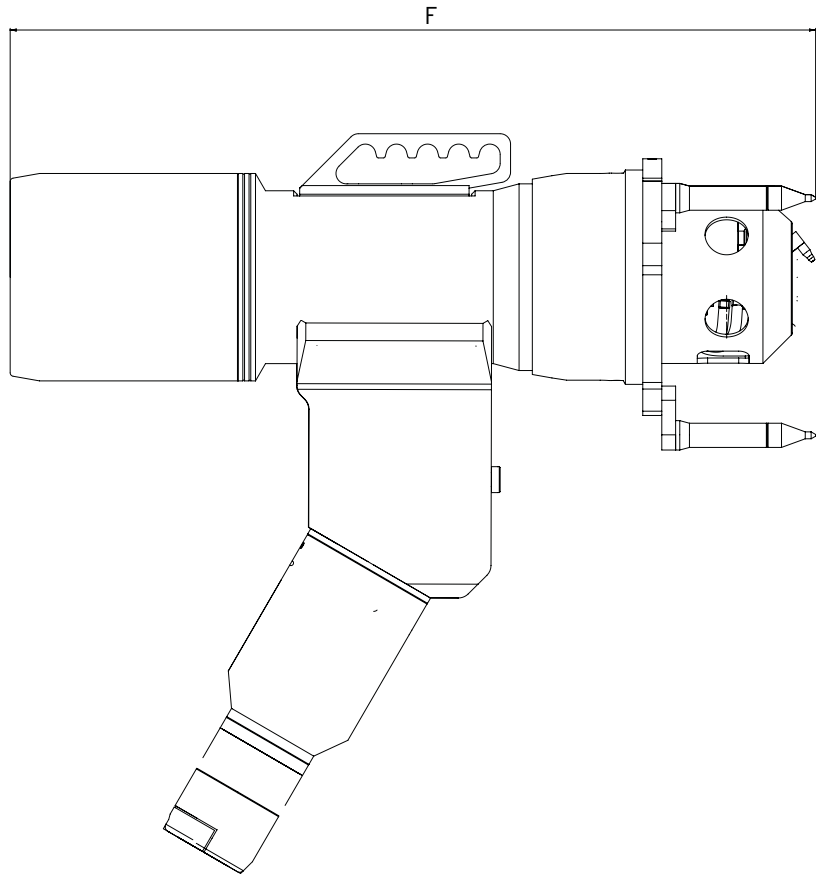
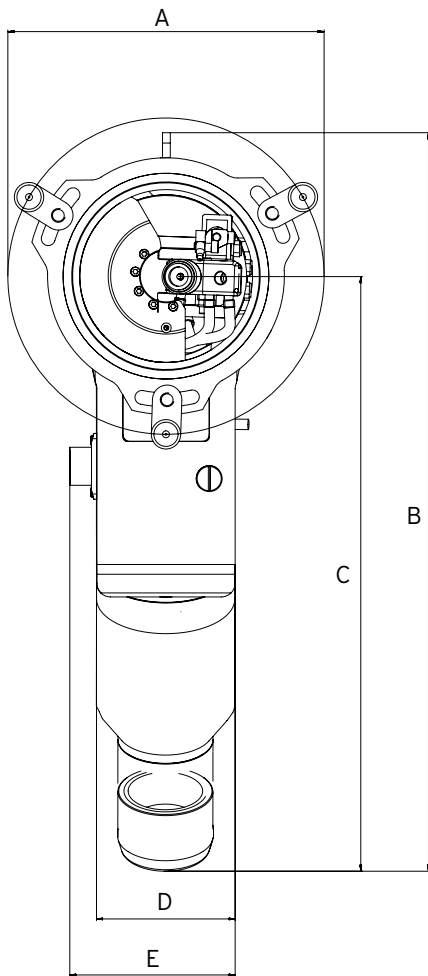
### FURTHER PROPERTIES:

- Completely liquid-cooled welding head housing
- Torch head can be swiveled steplessly up to 30° (reduced diameter area)
- Weld seam geometries: Recessed, flush and protruding tubes
- Current transfer: Multi-plate clutch
- Gas water transfer: Rotating coupling
- Three-point support made of stainless steel
- Manual electrode position setting: Stroke +/- 5 mm
- Adaptable to special torches, e.g. box header, inner torch (with/without cold wire)
- Positioning in tube to be welded per centering cartridge, which is placed on an arbor (optionally available)
- Weld heads with cold wire unit are additionally equipped with a cold-wire feed mounted directly

- on the weld head, including a mounting gear for a D 100 mm/1kg (3.937"/2.2 lbs) standard wire coil
- Wire feeder following on the rotating axis of the TIG torch to prevent spin of the filler wire while running out of the wire nozzle
- Including three-point support
- Including 7.5 m (24.6 ft) hose package and tool set

### ADDITIONAL CHARACTERISTICS P16 AVC:

- With electronic arc gap control (AVC) - only usable in combination with welding power supply ORBITMAT 300 CA AVC/OSC



DIMENSIONS		P16	P16 AVC
Dimension "A"		182.97 mm 7.204 in	187.05 mm 7.364 in
Dimension "B"		427.25 mm 16.821 in	427.25 mm 16.821 in
Dimension "C"		344.00 mm 13.543 in	344.00 mm 13.543 in
Dimension "D"		80.00 mm 3.150 in	80.00 mm 3.150 in
Dimension "E"		95.50 mm 3.760 in	95.50 mm 3.760 in
Dimension "F"		466.00 mm 18.346 in	582.00 mm 22.913 in
APPLICATION AREA		P16	P16 AVC
Code	with cold wire	831 000 001	831 000 002
	Without cold wire	831 000 003	-
From pipe ID to pipe OD		10 - 78 mm* 0.394 - 3.071 in*	12 - 100 mm* 0.470 - 3.937 in*
TECHNICAL SPECIFICATIONS		P16	P16 AVC
Weight machine including hose package	with cold wire	17.5 kg 38.6 lbs	18.3 kg 40.3 lbs
	Without cold wire	16.2 kg 35.7 lbs	-
Weight additional wire unit		1.0 kg 2.2 lbs	1.0 kg 2.2 lbs
		0.8 mm 0.03 in	0.8 mm 0.03 in

Hose package length	7.5 m 24.6 ft	7.5 m 24.6 ft
SCOPE OF DELIVERY		
Including:	<ul style="list-style-type: none"> <li>• 1 tube-to-tube-sheet orbital weld head P16, or P16 AVC</li> <li>• 1 three-point support</li> <li>• 1 transport case</li> <li>• 1 tool set</li> <li>• 1 set of operating instructions and spare parts list</li> </ul>	
Suitable accessories (optionally available):	<ul style="list-style-type: none"> <li>• Centering cartridges and arbors</li> <li>• Special torch (box header torch, rear sheet torch)</li> <li>• Quick-change adapter torch equipment</li> <li>• Cold-wire feeds KD</li> <li>• Balancer spring</li> <li>• Closed gas cover</li> <li>• Front cage</li> <li>• ESG electrode grinders</li> <li>• Ground cable</li> <li>• Hose package extensions</li> <li>• Double pressure reducer</li> <li>• WS2 tungsten electrodes</li> </ul>	

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.



## Tube-to-tube-sheet orbital weld heads

### P16, P16 AVC

Properties, application area, technical specifications and delivery scope, see page 74.

**The following accessories are mandatory for the use of the tube-to-tube-sheet orbital weld heads and must be ordered separately:**

- Arbors and centering cartridges (see page 79)
- Ground cable (see page 93)



P16



P16 AVC

ITEM	CODE	MACHINE WEIGHT KG*	SHIPPING WEIGHT KG
Tube-to-tube-sheet orbital weld head P16 with cold wire	831 000 001	17.500	26.500
Tube-to-tube-sheet orbital weld head P16 without cold wire	831 000 003	16.200	25.100
Tube-to-tube-sheet orbital weld head P16 AVC with cold wire	831 000 002	18.300	27.300

\* Machine weight including hose package

### Suitable accessories (optionally available):

- Centering cartridges and arbors, see page 79
- Ground cable, see page 93
- Special torch (box header/rear sheet), see page 77
- Quick-change adapter torch equipment, see page 77
- Balancer spring, see page 78
- Closed gas cover, see page 78
- Front cage, see page 78
- Remote control, see page 21

## Accessories for P16, P16 AVC

### Special torches

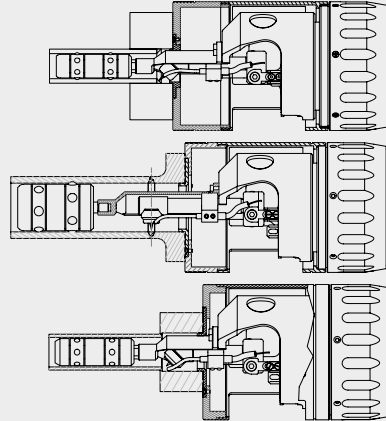
Individual special torches for following welding positions are available on request:



Box header torch



Inner torch:  
For welding of recessed tubes and rear sheet applications

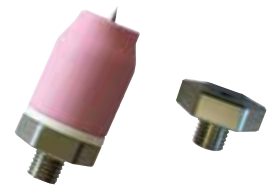


ITEM	CODE	EUR	KG
Box header torch	on request		
Inner torch	on request		

### Quick-change adapter torch equipment

Through this quick-change adapter the torch equipment of the tube-to-tube-sheet orbital weld heads P16 and P16 AVC, can be set up comfortably and exchanged faster, irrespective of the torch.

ITEM	CODE	KG
Quick-change adapter torch equipment	831 050 019	0.012



Quick-change adapter torch equipment

### Cold-wire feeds KD (retrofitting kits)

For refitting of tube-to-tube-sheet orbital weld heads without wire unit.  
Wire coil mounting for  $\varnothing$  100 mm/1 kg (3.937"/2.2 lbs) standard coils.

ITEM	CODE	KG
Cold-wire feed P16/P16 AVC	831 001 116	1.500

#### TUBE-TO-TUBE-SHEET ORBITAL WELD HEADS



Balancer spring



Closed gas cover



Front cage

## Balancer spring

For load-free hanging of tube-to-tube-sheet orbital weld heads.

ITEM	TENSILE LOAD MAX. [KG]	CODE	KG
Balancer spring for P16	10 - 14	<b>832 030 002</b>	3.800

## Closed gas cover

For welding of titanium tubes under full gas cover.

ITEM	CODE	KG
Closed gas cover for P16	<b>831 001 101</b>	1.300
Forming gas cover P16 AVC	<b>831 030 004</b>	

## Front cage

With bearing ring.  
Ideal for welding of tube-to-tube-sheet applications with flush or recessed tubes.

ITEM	CODE	KG
Front cage for P16	<b>831 050 001</b>	0.360
Front cage with support	<b>831 050 003</b>	0.965

## Centering cartridges and arbors

The inner diameter of the pipe is definitive for the selection of the correct centering cartridge. Smaller and larger dimensions on request.

Please ensure matching centering cartridge/arbor combination.

ITEM	GROUP	CARTRIDGE SIZE/ NO.	PIPE ID* [MM]	PIPE ID* [INCH]	CODE	KG
Arbor for centering cartridge for group A					<b>832 020 003</b>	0.060
Centering cartridge	A	1	10.0 - 10.5	0.394 - 0.413	<b>832 020 004</b>	0.040
Centering cartridge	A	2	10.5 - 11.0	0.413 - 0.433	<b>832 020 005</b>	0.050
Centering cartridge	A	3	11.0 - 11.5	0.433 - 0.452	<b>832 020 006</b>	0.070
Centering cartridge	A	4	11.5 - 12.0	0.452 - 0.472	<b>832 020 007</b>	0.070
Centering cartridge	A	5	12.0 - 12.5	0.472 - 0.492	<b>832 020 008</b>	0.080
Centering cartridge	A	6	12.5 - 13.0	0.492 - 0.512	<b>832 020 009</b>	0.100
Centering cartridge	A	7	12.8 - 14.0	0.504 - 0.551	<b>832 020 011</b>	0.110
Arbor centering cartridge for group B					<b>832 020 010</b>	0.070
Centering cartridge	B	8	13.8 - 15.0	0.543 - 0.591	<b>832 020 012</b>	0.120
Centering cartridge	B	9	14.8 - 16.0	0.583 - 0.630	<b>832 020 013</b>	0.140
Centering cartridge	B	10	15.8 - 17.0	0.622 - 0.669	<b>832 020 014</b>	0.150
Centering cartridge	B	11	16.8 - 18.0	0.661 - 0.709	<b>832 020 015</b>	0.180
Centering cartridge	B	12	17.8 - 19.0	0.701 - 0.748	<b>832 020 016</b>	0.190
Centering cartridge	B	13	18.8 - 20.5	0.740 - 0.807	<b>832 020 017</b>	0.200
Centering cartridge	B	14	19.8 - 22.5	0.780 - 0.886	<b>832 020 018</b>	0.250
Grub screw for arbor for group B					<b>832 001 025</b>	
Arbor centering cartridge for group C					<b>832 020 019</b>	0.115
Centering cartridge	C	15	22.3 - 24.6	0.878 - 0.969	<b>832 020 020</b>	0.340
Centering cartridge	C	16	24.5 - 27.0	0.965 - 1.063	<b>832 020 021</b>	0.350
Centering cartridge	C	17	26.5 - 29.0	1.043 - 1.142	<b>832 020 022</b>	0.360
Centering cartridge	C	18	28.5 - 31.0	1.122 - 1.220	<b>832 020 023</b>	0.400
Centering cartridge	C	19	30.5 - 33.0	1.201 - 1.299	<b>832 020 024</b>	0.500
Centering cartridge	C	20	32.5 - 36.0	1.280 - 1.417	<b>832 020 025</b>	0.510
Centering cartridge	C	21	35.5 - 39.0	1.397 - 1.535	<b>832 020 026</b>	0.530
Centering cartridge	C	22	38.5 - 42.0	1.516 - 1.654	<b>832 020 027</b>	0.550
Centering cartridge	C	23	41.5 - 45.0	1.634 - 1.772	<b>832 020 028</b>	0.560
Centering cartridge	C	24	44.5 - 48.0	1.752 - 1.890	<b>832 020 029</b>	1.000
Centering cartridge	C	25	47.5 - 51.0	1.870 - 2.008	<b>832 020 030</b>	1.200
Threaded screw DIN913-M5x5-A2 for group C					<b>445 005 222</b>	
Arbor for centering cartridge for group D					<b>832 020 031</b>	0.215
Centering cartridge	D	26	50.5 - 54.0	1.988 - 2.126	<b>832 020 032</b>	1.500
Centering cartridge	D	27	53.5 - 58.0	2.106 - 2.283	<b>832 020 033</b>	1.800
Centering cartridge	D	28	57.5 - 62.0	2.264 - 2.441	<b>832 020 034</b>	1.900
Centering cartridge	D	29	61.5 - 66.0	2.421 - 2.598	<b>832 020 035</b>	2.100
Centering cartridge	D	30	65.5 - 70.0	2.579 - 2.756	<b>832 020 036</b>	2.400
Centering cartridge	D	31	69.5 - 74.0	2.736 - 2.913	<b>832 020 037</b>	2.600
Centering cartridge	D	33	77.5 - 82.0	3.051 - 3.228	<b>832 020 039</b>	3.100
Centering cartridge	D	34	82.0 - 87.0	3.228 - 3.425	<b>832 020 045</b>	3.100
Centering cartridge	D	36	91.0 - 95.0	3.582 - 3.740	<b>832 020 047</b>	3.300
Centering cartridge	D	37	95.0 - 99.0	3.740 - 3.897	<b>832 020 048</b>	3.960

\* Smaller tube diameters on request.



Centering cartridges



Arbor

## Other accessories for orbital welding

- Ground cable, see page 93
- ESG electrode grinders, see page 86
- WS2 tungsten electrodes, see page 94
- Torch and cold wire accessories, see page 97

# DVR

Turning devices for  
TIG orbital welding

## Welding turntables

The turning gears of Orbitalum for the mechanical TIG orbital welding are a reliable and efficient solution for the welding of rotating workpieces, short fittings and fittings.



Welding turntable DVR 100 with ORBIMAT 165 CA power source



Ideal for welding fittings



Welding turntable DVR 50

Three-jaw chuck for exact positioning and fixating of the workpiece

**Compact turntables for industrial manufacturing or for flexible workshop use - in combination with a power source of the ORBIMAT series a welding system of the highest precision and nevertheless extremely simple handling.**

All orbital welding power sources from Orbitalum automatically detect the turntables and their properties so that the operator only has to call up their specified welding program and start the process before beginning to weld.

The welding turntables are available in different versions and can be equipped with various options as required. Thanks to the stable construction even massive workpieces can be positioned without any problems. In the process the powerful clamping is carried out without any deformation of the workpiece.

While the quality of the weld seam remains at a constantly high level, the physical burden for the operator is reduced significantly.

The result: maximum reliability and productivity.

### The advantages at a glance:

- Turntable can be tilted steplessly from 0 to 90°
- Centered clamping three-jaw chuck made of hardened and polished steel
- Three-jaw lathe chuck available for different clamping ranges
- Robust steel structure, excellently suited for use even under extreme process conditions
- Stable, swivel torch stand
- Three-coordinate torch support
- Ball-joint holder for TIG machine welding torch
- Liquid-cooled 250 A TIG machine welding torch
- Remote controls for higher operator comfort (available optionally)
- Cold-wire feed for wire Ø 0.8 mm (0.031") and 1.0 mm (0.039") for welding with cold wire (available optionally)
- Modern functional design
- Arc gap control unit for automatic controlling and holding of the arc gap (AVC = Arc Voltage Control)

- Shorter welding times at constant high quality
- Compatible with all power sources of the ORBIMAT series

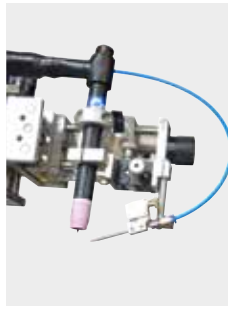
### The most important advantages of the DVR turning devices:

- ✓ Infinitely variable swiveling up to 90°
- ✓ High-quality three-jaw chuck
- ✓ 3-axis torch support
- ✓ Modular extendable structure
- ✓ Direction of rotation selection
- ✓ Cold wire retrofitted optionally
- ✓ Wire equipping quick-change system
- ✓ Liquid-cooled torch

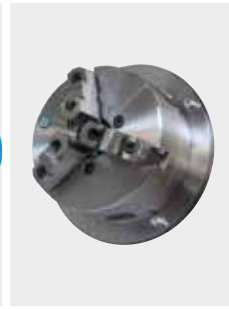




Robust steel structure, excellently suited for use even under extreme process conditions



Liquid-cooled torch



Three-jaw lathe chuck (available separately)



Control cable and ground cable (available separately)



Remote controls for higher operator comfort (available separately)



Cold-wire feeds DVR (retrofitting kits) for welding with cold wire including feed motor and wire adjusting unit

PROPERTIES & TECHNICAL SPECIFICATIONS		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Code		855 000 011	855 000 012	855 000 001	855 000 002
TURNTABLE		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Max. load in horizontal position (workpiece + lathe chuck), max.:		50 kg (110 lbs)	50 kg (110 lbs)	100 kg (220 lbs)	100 kg (220 lbs)
Dimensions:		300 x 300 x 395 mm (11.8 x 11.8 x 15.6 in)	300 x 300 x 395 mm (11.8 x 11.8 x 15.6 in)	600 x 570 x 695 mm (23.6 x 22.4 x 27.4 in)	600 x 570 x 695 mm (23.6 x 22.4 x 27.4 in)
Distance floor to rotating axis:		279 mm (11in)	279 mm (11in)	590 mm (23.2in)	590 mm (23.2in)
Turntable can be tilted steplessly from 0 to 90°		●	●	●	●
Locking via two clamping levers		●	●	●	●
Turning plate-Ø OD:		300 mm (11.81in)	300 mm (11.81in)	400 mm (15.75in)	400 mm (15.75in)
Hollow shaft Ø ID:		30 mm (1.18in)	30 mm (1.18in)	125 mm (4.9in)	125 mm (4.9in)
Built-in weld power coupling for mass transfer to turning plate		●	●	●	●
Weld current built-in plug for ground cable connection		●	●	●	●
Limit switch for zero setting and speed calibration		●	●	●	●
Stand console for mounting the stand directly on the turntable		○	○	●	●
Mounting holes for floor fastening		●	●	●	●
Signal distribution box with connecting option for control cable ORBIMAT-DVR, turntable motor, limit switch, cold wire feed and remote control OWH BASIC		●	●	●	●
Tilt lever for selecting the direction of rotation		●	●	●	●
STAND		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Weld torch stand mounted on console		○	○	●	●
Weld torch stand to be fastened separately		●	●	○	○
Base clamp with mounting holes for fastening at point of use		●	●	○	○
Dimensions stand tube OD x L:		50 x 1200 mm (2 x 47.2 in)	50 x 1200 mm (2 x 47.2 in)	50 x 1200 mm (2 x 47.2 in)	50 x 1200 mm (2 x 47.2 in)
Dimensions extension arm OD x L:		50 x 800 mm (2 x 31.5 in)	50 x 800 mm (2 x 31.5 in)	50 x 800 mm (2 x 31.5 in)	50 x 800 mm (2 x 31.5 in)
Extension swivel unit with magnetic stop for locking the welding position		●	●	●	●
Rough adjustment possible without tools via clamping lever, incl. cross-clamping unit		●	●	●	●
Three-coordinate support for torch fine adjustment. Linear adjustment path: each 50 mm (2in)		●	●	●	●
Torch holder with ball head		●	○	●	○
MACHINE TORCH		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Liquid-cooled machine torch with hose package length 4 m (13.12 ft)		●	●	●	●
Current carrying capacity DC: 250 A, AC: 180 A at 100% ED		●	●	●	●
Incl. standard torch equipment for electrode diameter 2.4 mm (0.09 in)		●	●	●	●
AVC LINEAR UNIT*		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Arc gap control unit for automatic controlling and holding of the arc gap		○	●	○	●
Linear stroke: 55 mm		○	●	○	●
SCOPE OF DELIVERY		DVR 50	DVR 50 AVC	DVR 100	DVR 100 AVC
Welding turntable of the DVR series (without lathe chuck)	PCS.	1	1	1	1
Stand	PCS.	1	1	1	1
Signal distribution box	PCS.	1	1	-	-
Machine torch with equipment	PCS.	1	1	1	1
AVC linear unit	PCS.	-	1	-	1
Welding current connection adapter	PCS.	1	1	1	1
Operating instructions and spare part list	set	1	1	1	1

● = Function included

○ = Function not included

◐ = Function only conditionally included

\* Can only be used in combination with the orbital welding power sources ORBIMAT 300 CA AVC/OSC as well as ground cable for 300 CA AVC/OSC power sources

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.

## Welding turntables

### DVR

Properties, application area, technical specifications and delivery scope, see from page 80.

**The following accessories are mandatory for the use of the welding turntables and must be ordered separately:**

- Control cable (see page 83)
- Ground cable (see page 83)
- Three-jaw lathe chuck (see page 83)



Welding turntable DVR 50



Welding turntable DVR 100

ITEM	CODE	MACHINE WEIGHT KG	SHIPPING WEIGHT KG
Welding turntable DVR 50	855 000 011	45.00	
Welding turntable DVR 50 AVC*	855 000 012	50.00	
Welding turntable DVR 100	855 000 001	100.00	
Welding turntable DVR 100 AVC*	855 000 002	105.00	
Welding turntable DVR 100 AVC/OSC*	855 000 003	105.00	

\* Can only be used in connection with an ORBIMAT CA AVC/OSC power source (see from page 16).

### Suitable accessories (optionally available):

- Three-jaw lathe chuck, see page 83
- Control cable, see page 83
- Ground cable, see page 83
- Remote control OWH BASIC, see page 84
- Remote control ORBIMAT, see page 21
- Cold-wire feeds DVR, see page 84
- Welding current connection adapter set, see page 95

#### WELDING TURNTABLES

## Accessories for DVR

### Three-jaw lathe chuck

Centered clamping three-jaw chuck made of hardened and polished steel. With cylindrical retainer for clamping the pipe.

#### The scope of delivery includes:

- 1 three-jaw lathe chuck
- 1 adapter plate for the clamping turning plate
- 1 chuck key
- 1 set each of turning and drilling jaws, graded to the inside and outside
- 1 set of fastening screws

CLAMPING RANGE	D1		D2		D3 MAX.		D4 MAX.		D5 MAX.	
	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]	[MM]	[INCH]
Three-jaw lathe chuck DVR 50	4 - 90	0.16 - 3.54	52 - 135	2.05-5.31	120 - 202	4.72 - 7.95	60 - 145	2.36-5.71	130 - 200	5.12-7.87
Three-jaw lathe chuck DVR 100	5 - 118	0.20 - 4.65	62 - 174	2.44-6.85	145 - 256	5.71 - 10.18	77 - 188	3.03-7.40	160 - 250	6.30-9.84
Three-jaw lathe chuck DVR 100	10 - 131	0.39 - 5.16	78 - 200	3.07-7.87	172 - 299	6.77 - 11.77	90 - 215	3.54-8.46	190 - 315	7.48-12.40

ITEM	OUTER Ø CHUCK		INNER Ø HOLE		CODE	KG
	[MM]	[INCH]	[MM]	[INCH]		
Three-jaw lathe chuck DVR 50	200.0	7.874	55.0	2.165	<b>890 030 050</b>	14.50
Three-jaw lathe chuck DVR 100	250.0	9.842	76.0	2.992	<b>890 030 054</b>	25.70
Three-jaw lathe chuck DVR 100	315.0	12.402	103.0	4.055	<b>890 030 051</b>	44.20

### Control cable

Required for use with DVR welding turntables.

ITEM	LENGTH [M]	LENGTH [FT]	CODE	KG
Control cable for welding turntable DVR	5.0	16.4	<b>890 030 022</b>	1.170

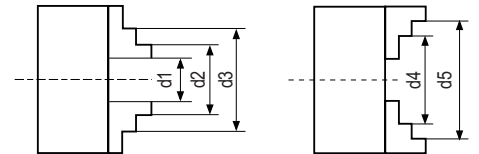
### Ground cable

Required for use with DVR welding turntables.

ITEM	SUITABLE FOR ORBITALUM	LENGTH [M]	LENGTH [FT]	CODE	KG
Ground cable for welding turntable DVR	165/180/300	5.0	16.4	<b>890 030 015</b>	2.500
Ground cable for welding turntable DVR	300 AVC	5.0	16.4	<b>890 030 017</b>	2.885



Three-jaw lathe chuck



Clamping range three-jaw lathe chuck



Control cable for turning gear DVR



Ground cable for turning gear DVR



Remote control OWH BASIC

## Remote control OWH BASIC

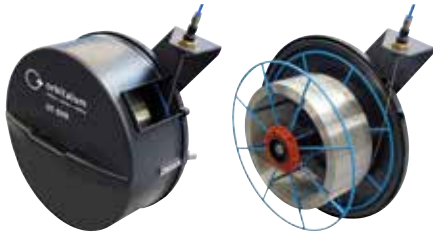
Can be used with all DVR turntables without AVC/OSC function.

For advanced functions such as the **AVC/OSC control**, etc., please order our **remote control ORBIMAT**, see page 21.

For even more operator comfort the DVR welding turntables can be controlled with this "OWH BASIC" remote control. The remote control is connected directly to the turntable and disposes of the following standard functions:

- Start/Stop button
- Direction of rotation
- Wire feed
- Wire withdrawal

ITEM	CABLE LENGTH [M]	CABLE LENGTH [INCH]	CODE	KG
Remote control OWH BASIC	7.5	24.6	<b>871 050 035</b>	0.368



Cold wire feed DVR 100 (with or without cover)

## Cold-wire feeds DVR

**For welding with cold wire. Can be retrofitted to all DVR turntables.**

The cold wire unit can be adjusted individually in four axes.

Retooling of the wire diameter is carried out completely without tools.

**The scope of delivery includes:**

- 1 feed motor
- 1 wire adjusting unit
- 2 wire nozzles with wire core
- 1 wire coil mounting
- Fastening material



Adjusting unit and feed motor

TECHNICAL SPECIFICATIONS	WIRE FEED QUANTITY MAX.		WIRE Ø		WIRE COIL Ø		WEIGHT WIRE COIL	
	[MM/MIN.]	[MM]	[MM]	[INCH]	[MM]	[INCH]	[KG]	[LBS]
Cold-wire feed DVR 50/100	1300	0.8/1.0	0.031 / 0.039		100.0	3.937	1.0	2.2
Cold-wire feed DVR 100	1300	0.8/1.0	0.031 / 0.039		300.0	11.811	15.0	33.0

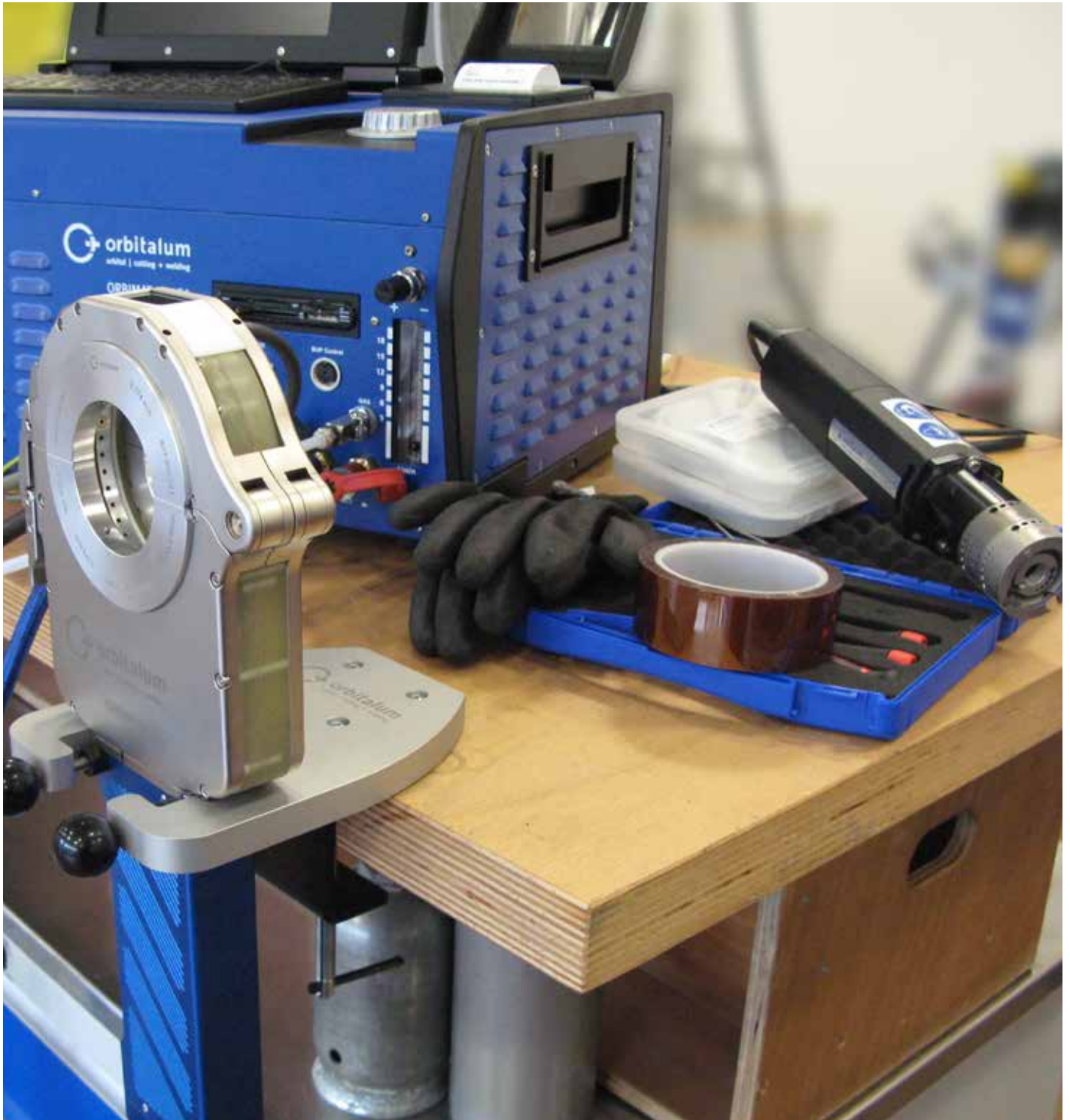
ITEM	CAN BE USED WITH	CODE
Cold-wire feed DVR 50	DVR 50 (AVC)*	<b>855 050 008</b>
Cold-wire feed DVR 100	DVR 100 (AVC)	<b>855 050 005</b>

\* Can also be used with DVR 100

## Other accessories for orbital welding

- ESG electrode grinders, see page 86
- ORBmax residual oxygen meter, see page 90
- ORBIPURGE forming set, see page 93
- WS2 tungsten electrodes, see page 94
- Torch and cold wire accessories, see page 97
- Welding current connection adapter set, see page 95

# Accessories and wear parts for orbital welding





# ESG Plus, ESG Plus<sup>2</sup>

## Electrode grinders

The optimum solution for precise and quick working of weld electrodes.

For working, grinding and cutting weld electrodes which are used in the TIG welding machines.



High angular precision through preset grinding angle for all electrodes	✓
Light and rapid processing	✓
Optimum preparation for orbital or manual welding	✓
Grinding in the longitudinal direction for optimal arc ignition and high arc stability	✓
Guarantees a higher service life and ignition ease of the tungsten electrode	✓
Specially for small batch production directly on the building site	✓
Compact version, optimal resistance and perfect repeatability	✓
Functional design	✓
Precise cylindrical grinding	✓

### The powerful hand-held electrode grinding units for grinding, squaring and cutting.

One unit - complete electrode machining:

- Grinding electrodes:
  - 4 different angles
  - 6 different electrode diameters
- Squaring an electrode tip
- Cutting electrodes

The devices are equipped with a high-quality, powerful drive in 230 or 110 Volt design. Machine and accessories are supplied in a robust transport case.

### ADDITIONAL ADVANTAGES:

- Device for easy cutting of the electrodes (optional)
- External vacuum cleaners can be adapted easily
- Short machining times through the high grinding capacity
- Reduced work required without setup time

### ADDITIONAL CHARACTERISTICS ESG PLUS<sup>2</sup>:

- Portable electrode grinders with 2 different grinding wheels. This way the electrode can be pre-sanded with the rough diamond grinding wheel without any effort and sharpened with the fine diamond grinding wheel.



Grinding electrodes: - 4 different angles, 6 different electrode diameters

Squaring an electrode tip

Cutting electrodes

Interchangeable, diamond grinding wheels coated on both sides for an optimum operational performance



SCOPE OF DELIVERY/AREA OF APPLICATION		ESG PLUS	ESG PLUS <sup>2</sup>
Code	[230 V]	790 052 485 (15°/18°/22.5°/30°) 790 052 545 (15°/30°/45°/60°)	790 052 585 (15°/18°/22.5°/30°) 790 052 546 (15°/30°/45°/60°)
	[110 V]	790 052 486 (15°/18°/22.5°/30°) 790 052 645 (15°/30°/45°/60°)	790 052 586 (15°/18°/22.5°/30°) 790 052 646 (15°/30°/45°/60°)
	Electrode grinder	PCS. 1	1
	transport case	PCS. 1	1
Weld head for electrode Ø 1.0 - 1.6 - 2.0 - 2.4 - 3.2 - 4.0 mm (0.04" - 1/16" - 0.08" - 3/32" - 1/8" - 5/32")	PCS. 1	1	1
Weld head for grinding angle 15° - 18° - 22.5° - 30° or 15° - 30° - 45° - 60°	PCS. 1	1	1
Diamond grinding wheel fine (790 052 487)	PCS. -	-	1
Diamond grinding wheel medium (790 052 488)	PCS. 1	1	-
Diamond grinding wheel rough (790 052 550)	PCS. -	-	1
Table mount	PCS. -	-	-
Tool to change the grinding wheel	PCS. 1	1	1
Operating instructions and spare part list	set 1	1	1
TECHNICAL SPECIFICATIONS		ESG PLUS	ESG PLUS <sup>2</sup>
Dimensions (with drive)	[mm]	Ø 65 x 350	Ø 65 x 350
	[inch]	Ø 2.56 x 13.78	Ø 2.56 x 13.78
Power	[W]	500	500
Duty cycle	[%]	100	100
Speed (idle speed)	[rpm]	30.000	30.000
Power cable (length)	[m]	3	3
	[inch]	118.1	118.1
Vibration level (EN 28662, part 1)	[m/s <sup>2</sup> ]	< 2.5	< 2.5
Noise pressure level at the workplace (during idling), approx.	[dB (A)]	83	83

Technical specifications are non-binding. They do not constitute any assurance of properties. We reserve the right to make changes.

## ESG electrode grinders

### ESG Plus, ESG Plus<sup>2</sup>

Properties, application area, technical specifications and delivery scope, see from page 86.



ESG Plus



ESG Plus<sup>2</sup>



Diamond grinding wheels



Cutting device

ITEM	VERSION	GRINDING ANGLE [°]	CODE	MACHINE WEIGHT KG	SHIPPING WEIGHT KG
ESG Plus	230 V, 50/60 Hz EU	15/18/22.5/30	<b>790 052 485</b>	1.430	3.560
ESG Plus	110 V, 50/60 Hz EU/US	15/18/22.5/30	<b>790 052 486</b>	1.430	3.560
ESG Plus	230 V, 50/60 Hz EU	15/30/45/60	<b>790 052 545</b>	1.430	3.560
ESG Plus	110 V, 50/60 Hz EU/US	15/30/45/60	<b>790 052 645</b>	1.430	3.560
ESG Plus <sup>2</sup>	230 V, 50/60 Hz EU	15/18/22.5/30	<b>790 052 585</b>	1.520	3.825
ESG Plus <sup>2</sup>	110 V, 50/60 Hz EU/US	15/18/22.5/30	<b>790 052 586</b>	1.520	3.825
ESG Plus <sup>2</sup>	230 V, 50/60 Hz EU	15/30/45/60	<b>790 052 546</b>	1.520	3.825
ESG Plus <sup>2</sup>	110 V, 50/60 Hz EU/US	15/30/45/60	<b>790 052 646</b>	1.520	3.825

### Diamond grinding wheels

**Interchangeable, diamond grinding wheels coated on both sides for an optimum operational performance.**

For 1.0 and 1.6 mm electrodes we recommend the fine grinding wheel grains.

For 2.0 mm and 2.4 mm electrodes an average grinding wheel grain is recommended and for 3.2 mm and 4.0 mm a rough grinding wheel grain.

ITEM	CAN BE USED WITH	GRAIN	WHEEL Ø		S		CODE	KG
			[MM]	[INCH]	[MM]	[INCH]		
Diamond grinding wheel	ESG 4	Standard	32.00	1.290	1.2	0.047	<b>790 052 460</b>	0.005
Diamond grinding wheel	ESG Plus, ESG Plus <sup>2</sup>	Fine	33.50	1.319	2.2	0.087	<b>790 052 487</b>	0.010
Diamond grinding wheel	ESG Plus, ESG Plus <sup>2</sup>	Medium	33.50	1.319	2.2	0.087	<b>790 052 488</b>	0.011
Diamond grinding wheel	ESG Plus, ESG Plus <sup>2</sup>	Rough	33.50	1.319	2.2	0.087	<b>790 052 550</b>	0.011

### Cut to length device

**For simple separating of the electrodes.**

Can be used up to an electrode diameter of 2.4 mm (0.094").

ITEM	SETTING	CUTTING LENGTHS		CODE	KG
		[MM]	[INCH]		
Cutting device	fix	12.0	0.472	<b>790 052 513</b>	0.030
		13.0	0.512		
		15.0	0.591		
		17.0	0.669		

## Electrode holder

### For processing smaller electrodes.

The electrode holder is delivered including 1 flexible collet.

ITEM	SETTING	ELECTRODE Ø		CODE	KG
		[MM]	[INCH]		
Electrode holder with collet	continuous	1.0 - 3.2	0.039 - 0.126	<b>790 052 457</b>	0.023
Spare collet	continuous	1.0 - 3.2	0.039 - 0.126	<b>790 052 481</b>	0.002



Electrode holder with collet



Spare collet

## Wall, table, vise mount

For stationary use of the ESG Plus and ESG Plus<sup>2</sup>.

Simple and rapid mounting to a wall, a table or a vice.

ITEM	CODE	KG
Wall, table, vise mount	<b>790 052 483</b>	0.102



Wall, table, vise mount

## Dust protection

Easy to mount on the ESG grinding head.  
With integrated mounting for extraction systems.  
To be used for electrodes containing thorium.

Country-specific regulations, standards and guidelines have to be observed.

ITEM	CODE	KG
Dust protection ESG Plus	<b>790 052 496</b>	0.170
Dust protection ESG Plus <sup>2</sup>	<b>790 052 596</b>	0.220



Dust protection

## Double-decker kit

Easy to mount for the ESG Plus. This mount allows simultaneous working with 2 different grinding wheels.

Including:

- 1 grinding head
- 1 diamond grinding wheel (rough)
- 1 cylinder-head screw with collar (M4x34)
- 1 shaft extension

ITEM	CAN BE USED WITH	GRINDING ANGLE [°]	CODE	KG
Double-decker kit	ESG Plus	15/18/22.5/30	<b>790 052 490</b>	0.160
Double-decker kit	ESG Plus	15/30/45/60	<b>790 052 390</b>	0.100



Double-decker kit

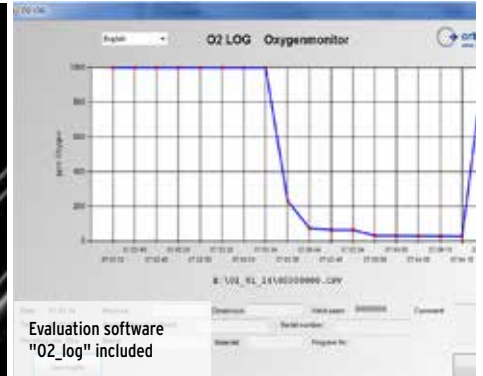
### ELECTRODE PROCESSING TECHNOLOGY

# ORBmax

## residual oxygen meter

The ORBmax residual oxygen meter sets a milestone for fast, exact detection of residual oxygen, and with it for complete documentation of this parameter. At the same time, the new measuring method results in greater efficiency and higher quality.

The ORBmax does not require any heating-up time. It recognizes the oxygen percentage reliably, rapidly and precisely during the entire welding process.



Evaluation software  
"O2\_log" included



Wide range of accessories,  
including robust transport  
case

**The "Optical oxygen measurement via fluorescence extinction" method for welding technology is far superior to the conventional methods using zirconium sensors: It requires no warm-up time whatsoever; reliably, quickly and precisely detects the oxygen share in the gas; unchecked alleged increasing of the measured value due to the formation of ozone is eliminated; the measurement is possible in all gas mixtures without manual switch-over (even with forming gas with a variable percentage of hydrogen).**

The exact, fast detection of the oxygen content reduces the otherwise long flooding time of the forming gas. The operator can start the safe welding process considerably earlier: As a result, precious working time is saved and the gas consumption reduced. In addition, ORBmax requires no maintenance of any kind: Calibration once a year in accordance with the standard ISO 9001 is totally sufficient. Comprehensive quality assurance is required for welding pipes in plant and apparatus engineering for

the food processing, beverage, cosmetics and pharmaceuticals industries, medical and bio-technology as well as fine chemicals, and a welding procedure qualification is often specified for the welded seams: As quality certification, not only the values from the power source, but also the residual oxygen values can be documented with the ORBmax.

When used as a stand-alone solution, ORBmax records a digital log with a time stamp. In conjunction with the ORBIMAT welding current source, the welding process can be monitored in real-time and automatically switched off when an increased oxygen content occurs.

- No heating period required
- Rapid reaction times
- High measuring precision
- Measuring of the residual oxygen value during the welding process
- No uncontrolled increase in measurement values during the welding process

- Measuring of forming gas with variable hydrogen content without switching over
- Measuring of the residual oxygen value in all gas mixtures
- SD-card storage of the measured value
- User-friendly touch screen
- Moisture-resistant sensor
- Alarm mode with signal (beeper) as well as change in display color (green/red)
- Degree of protection IP32
- Configurable alarm or limit value and storage interval
- Multi-range voltage supply
- Software for data evaluation
- Connection possibility to ORBIMAT orbital welding power sources
- Maintenance-free sensor
- Appealing and compact design



# Residual oxygen meter

## ORBmax

Characteristics, see page 90.

TECHNICAL SPECIFICATIONS	ORBMAX
Dimensions (LxDxH)	203 x 204 x 82 mm 7.99 x 8.03 x 3.23 in
Weight, approx.	1.65 kg 3.64 lbs
Protection class device	IP32
Protection class transport case	IP67
Power connection	100 - 240 V AC, 50 - 60 Hz
Measuring range	1 - 999 ppm
<b>SCOPE OF DELIVERY</b>	<ul style="list-style-type: none"> <li>• 1 ORBmax residual oxygen meter</li> <li>• 1 transport case</li> <li>• 1 power unit supply set 100 - 240 VAC/12 VDC</li> <li>• 1 measuring hose (with test tip and filter)</li> <li>• 1 SD card incl. PC evaluation software "O2_log"</li> <li>• 1 interface cable ORBmax/ORBIMAT CA</li> <li>• 1 interface cable ORBmax/ORBIMAT SW</li> <li>• 2 reserve filter inserts</li> <li>• 1 operating instructions</li> </ul>

ITEM	VERSION	CODE	MACHINE WEIGHT KG	SHIPPING WEIGHT KG
ORBmax	100 - 240 V, 50/60 Hz	882 000 010	1.65	4.665



ORBmax



including practical mounting eye

## Interface cable ORBmax/ORBIMAT SW

For retrofitting older ORBmax devices.

Allows the connection to ORBIMAT SW power sources.

At newer ORBmax devices this interface cable is already included in the scope of delivery.

ITEM	CODE	KG
Interface cable ORBmax - ORBIMAT SW	850 040 031	0.065

## Consumables for ORBmax

All individual parts are already included in the scope of delivery of the ORBmax.

ITEM	CODE	KG
Measuring hose set, including: • 1 hose* • 1 filter housing including filter insert (1 unit) • 1 test tip • 1 hose connector	882 050 006	0.081
Hose*	882 012 010	0.050
Filter housing including filter insert (1 unit)	882 020 003	0.021
Filter inserts (5 piece per packing unit)	882 030 002	0.003
Test tip	882 012 011	0.004
Plastic connector test tip - hose	882 012 012	0.001

\* Please specify the hose length in meters when ordering.



Measuring hose (individual parts)

### OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY

# Comprehensive training program.

We attach great importance to the safe operation of our machines - this has the highest priority for us. Therefore we recommend participation in a product training to learn correct and safe handling of our machines and avoid possible dangers and accidents already in advance.



If you would like to learn more about our comprehensive training program or would like information on upcoming dates for users, please contact our training team under the phone number:

+49 (0) 77 31 792-200

Or send us an e-mail to:

[training@itw-ocw.com](mailto:training@itw-ocw.com)

## Other accessories orbital welding technology

### ORBIPURGE forming set

Complete with Teflon gas hose and quick-release couplers. The ORBIPURGE forming set for inner diameter of the pipe 12 - 110 mm (0.472" - 4.331") includes all accessories for a quick and efficient internal forming during orbital welding.

Forming plugs for larger diameters are available separately.

- Suitable for all common materials
- Different forming plugs adapt precisely to the inner diameter of the pipe and thus ensure complete sealing
- The complete set is delivered in a rugged plastic case
- The standard scope of delivery includes 2 forming plugs each per size, a Teflon gas hose as well as protective gas vents made of sinter metal with quick-release couplers.
- Is especially suitable for very high cleanliness requirements for the forming atmosphere and is the ideal supplement to the ORBmax residual oxygen meter (see from page 90)
- The included, self-closing quick-release couplers allow a simple connecting and disconnecting of the gas hose

#### Replacement protective gas vents for ORBIPURGE forming plugs:

Fitting for all ORBIPURGE forming plugs.



ORBIPURGE forming set



Replacement protective gas vents

ITEM	CODE	KG
ORBIPURGE forming set	<b>881 000 001</b>	3.150
Replacement protective gas vents for ORBIPURGE 3/8"	<b>881 020 014</b>	0.030
Replacement protective gas vents for ORBIPURGE M5	<b>881 020 015</b>	0.005
Forming plugs pair ID 114 - 130 mm (4.488" - 5.118"), 3/8"	<b>881 050 030</b>	0.220
Forming plugs pair ID 121 - 142 mm (4.764" - 5.591"), 3/8"	<b>881 050 031</b>	0.230
Forming plugs pair ID 148 - 162 mm (5.827" - 6.378"), 3/8"	<b>881 050 032</b>	0.250

### Ground cable

For utilization in combination with an Orbital welding power source of the ORBIMAT series.

ITEM	LENGTH [M]	LENGTH [FT]	CODE	KG
Ground cable for ORBIMAT and MW power sources	5.0	16.4	<b>811 050 005</b>	2.400
Ground cables for ORBIMAT 300 CA AVC/OSC power sources	5.0	16.4	<b>812 050 046</b>	2.850

\*With ORBIMAT 165 power sources the welding current connection adapter for socket (Code 850 030 003) is also required.



Ground cable

### Control cable

Matching for all ORBIWELD TP and MH orbital welding heads

ITEM	LENGTH [M]	LENGTH [INCH]	CODE	KG
Control cable TP/MH	7.5	24.6	<b>811 050 003</b>	1.202



Control cable

#### OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY



Hose package extensions



Double pressure reducer "Argon"



Bar pressure reducer "Argon"



WS2 tungsten electrodes

## Hose package extensions

Fitting for all weld heads of Orbitalum, with exception of the AVC/OSC versions of the ORBIWELD TP series. The weld current connection adapter set may be required for usage with older Orbital welding power sources and heads with green Superior connections (see page 97). Newer machine models are already equipped with DINSE-compatible connections.

Further lengths on request.

ITEM	LENGTH [M]	LENGTH [FT]	CODE	KG
Hose package extension 5 m (16 ft)	5	16	<b>871 050 011</b>	7.600
Hose package extension 10 m (32 ft)	10	32	<b>871 050 012</b>	14.600
Hose package extension 15 m (49 ft)	15	49	<b>871 050 013</b>	22.000
Hose package extension 20 m (64 ft)	20	64	<b>871 050 016</b>	28.700

## Double pressure reducer

With 2 adjustable flow displays and possibility of connection of weld and forming gas.

TECHNICAL SPECIFICATIONS	ARGON/HYDROGEN	ARGON
Max. input pressure	200 bar	230 bar
Flow display	Up to 50 l/min.	Up to 30 l/min.
Bottle connection	W21.8x1/4" LH	W21.8x1/4"
Hose connection	G 3/8 LH	G 1/4

ITEM	VERSION	CODE	KG
Double pressure reducer	Argon	<b>888 000 001</b>	1.850
Double pressure reducer	Argon/hydrogen	<b>888 000 002</b>	1.870
Replacement seals for double pressure reducer		<b>888 000 005</b>	0.002

## Bar pressure reducer "Argon"

For HX 16P, see page 57.

## WS2 tungsten electrodes

WS electrodes are used for direct current and alternating current welding and are an adequate replacement for WT electrodes.

### Advantages:

- High spark reliability
- Low combustion
- Long service life
- High arc quality

Contents: 10 pcs. Length: 175 mm (6,890").

Composition: WS2 = Rare earths (mixed oxides)

Identification color: Turquoise

ITEM	ELECTRODE Ø [MM]	ELECTRODE Ø [INCH]	CODE	KG
WS2 tungsten electrodes	1.0	0.039	<b>826 004 018</b>	0.006
WS2 tungsten electrodes	1.6	0.063	<b>826 004 019</b>	0.010
WS2 tungsten electrodes	2.4	0.094	<b>826 004 020</b>	0.018

## OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY

## Welding current connection adapter set

Simple, safe, robust and durable.

For use with older Orbitalum welding power sources and heads with green Superior connections. Newer machine models are already equipped with DINSE-compatible connections.

ITEM	CODE	KG
Welding current connection adapter set for socket & plug	<b>850 030 004</b>	0.326
Welding current connection adapter for plug	<b>850 030 002</b>	0.130
Welding current connection adapter for socket	<b>850 030 003</b>	0.195



Welding current connection adapter set

## TIG manual welding torch for MOBILE WELDER

High-performance TIG manual welding torch for MOBILE WELDER orbital welding power supplies for manual welding and tacking. The liquid-cooled manual welding torch provides optimum heat dissipation and high service life. Thanks to the handy design and the switching function integrated in the handle, the manual welding torch provides optimum user-friendliness.

The fully rubberized hose package can be easily cleaned and as a result is well suited for use in clean environments.

Characteristics:

- Gas-cooled DC 140 A / 35% ED
- Fully rubberized hose package
- Flexible torch body
- Ergonomic handle

**The scope of delivery includes:**

- 1 TIG manual welding torch MW
- Torch pre-fitted

**The following accessories are mandatory for the use of the TIP manual welding torch and must be ordered separately:**

- Ground cable, see page 93

ITEM	HOSE PACKAGE [M]	HOSE PACKAGE [FT]	CODE	MACHINE WEIGHT KG	SHIPPING WEIGHT KG
TIG manual welding torch MW	6.0	19.7	<b>854 030 200</b>	3.350	3.665



TIG manual welding torch MW



2-rocker control panel

### OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY





TIG manual welding torch CA/SW



2-button control panel

## TIG manual welding torch for ORBIMAT CA/SW

High-performance TIG manual welding torch for ORBIMAT orbital welding power supplies for manual welding and tacking. The liquid-cooled manual welding torch offers optimum heat dissipation and high service life. Thanks to the handy design and the switching function integrated in the handle, the manual welding torch provides optimum user-friendliness.

The fully rubberized hose package can be easily cleaned and as a result is well suited for use in clean environments.

### Characteristics:

- Liquid-cooled DC 250 A, AC 175 A / 10% ED
- Fully rubberized hose package
- Flexible torch body
- Ergonomic handle

### The scope of delivery includes:

- 1 TIG manual welding torch
- Torch pre-fitted

**The following accessories are mandatory for the use of the TIP manual welding torch and must be ordered separately:**

- Ground cable, see page 93


ITEM	HOSE PACKAGE [M]	HOSE PACKAGE [FT]	CODE	MACHINE WEIGHT KG	SHIPPING WEIGHT KG
TIG manual welding torch CA/SW	6.0	19.7	<b>890 013 015</b>	3.010	3.325

### OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY

## Torch and cold wire accessories



ACCESSORIES	CLAMPING SLEEVE ELECTRODES	BACK CAP PRESSURE PIECE	TORCH ISOLATOR
Image			
SUITABLE FOR:	CODE	CODE	CODE
TP 250	811 020 018	812 005 002	811 013 001
TP 400 KD4-100	812 020 024		812 005 001
TP 400 KD3-62 (AVC/OSC)	812 020 024		
TP 600 (AVC/OSC)			
TP 1000 (AVC/OSC)			
P16	831 001 058	-	831 001 007
P16 AVC			
TIG manual welding torch CA/SW	812 020 072	812 020 075	812 020 076
TIG manual welding torch MW	854 030 225	854 030 221*	854 030 220
		854 030 222**	
		854 030 223***	
DVR turntables	890 020 039	890 020 046	890 020 041

\* Short  
 \*\* Medium  
 \*\*\* Long

ACCESSORIES	WIRE CORE			
Image				
Version	TP wire core 0.8 mm (0.031")	TP wire core 1.0 mm/1.2 mm (0.039"/0.047")	Front wire core (long) 0.8 mm (0.031")	Rear wire core (short) 0.8 mm (0.031")
SUITABLE FOR:	CODE	CODE	CODE	CODE
TP 250	811 020 030	811 002 006		
TP 400 KD4-100	812 020 041	811 002 005	-	-
TP 400 KD3-62 (AVC/OSC)				
TP 600 (AVC/OSC)				
TP 1000 (AVC/OSC)				
P16	-	-	831 001 022	831 001 015
P16 AVC				
DVR turntables	890 020 055	890 020 056	-	-
TIG manual welding torch CA/SW	-	-	-	-
TIG manual welding torch MW				

ACCESSORIES	HF SPIRAL	TORCH SEAL	GAS NOZZLE	GAS LENS
Image				
SUITABLE FOR:	CODE	CODE	CODE	CODE
TP 250	831 001 027	811 005 020	811 020 017	811 020 016
TP 400 KD4-100	811 050 011	-	812 020 023	812 020 022
TP 400 KD3-62 (AVC/OSC)	831 001 027			
TP 600 (AVC/OSC)				
TP 1000 (AVC/OSC)				
P16			831 001 060	831 001 161
P16 AVC	811 050 011		812 020 023	812 020 022
DVR turntables			812 020 023	812 020 022
TIG manual welding torch CA/SW			812 020 071	812 020 070
TIG manual welding torch MW		854 030 226	854 030 224	854 030 227

### OTHER ACCESSORIES FOR ORBITAL WELDING TECHNOLOGY

ACCESSORIES		WIRE NOZZLES							
Image									
Version	Wire nozzle for wire Ø 0.8 mm (0.031")		Wire nozzle for wire Ø 1.0 mm (0.039")		Wire nozzle head for wire Ø 0.8 mm (0.031")		Wire nozzle head for wire Ø 1.0 mm (0.039")		
SUITABLE FOR:	CODE	KG	CODE	KG	CODE	KG	CODE	KG	
TP 250	<b>811 018 010</b>	0.004	<b>811 018 011</b>	-	-	-	-	-	
TP 400 KD4-100	<b>812 018 045</b>	0.002	<b>812 018 046</b>	0.002	<b>812 018 050</b>	-	<b>812 018 051</b>	-	
TP 400 KD3-62 (AVC/OSC)									
TP 600 (AVC/OSC)									
TP 1000 (AVC/OSC)									
PI6	<b>831 001 031</b>	0.020	<b>831 001 039</b>	0.005					
PI6 AVC	<b>831 018 051</b>	0.003							
TIG manual welding torch V1	-	-	-	-	-	-	-	-	
TIG manual welding torch V2	-	-							
DVR turntables	<b>855 018 003</b>	-	<b>855 018 004</b>	-	<b>812 018 050</b>	-	<b>812 018 051</b>	-	



## About us

### The best in the field of pipe cutting and beveling as well as orbital welding technology from a single source

For more than 50 years installation manufacturers have been relying on the standard set by the market leader Orbitalum Tools in industrial pipe end preparation.

Orbitalum Tools GmbH (Singen, Germany) and E.H. Wachs (Lincolnshire, Illinois, USA) together form the "ITW Orbital Cutting & Welding" group (for short: ITW OCV), a business division of the US-American industrial group ITW.

Orbitalum Tools is a worldwide provider of complete solutions in industrial preproduction, installation and servicing of pipeline systems for everything from cutting pipes and preparing weld seams to orbital welding in process and plant engineering. E.H. Wachs with its high-quality, nearly indestructible, portable and user-friendly pipe processing machines for cutting and beveling, has established itself in many industries: in the oil and gas industry, the chemical industry and in pipeline and ship construction - in the preproduction, maintenance, repair and dismantling of installations.

ITW (Illinois Tool Works), with headquarters in Glenview, Illinois/US is a US-listed "Fortune 200" company and a manufacturer operating worldwide for special production, special plants as well as provider for related services. Organizationally ITW Orbital Cutting & Welding belongs to the ITW Welding Group which is among the world leading providers for welding units (e.g. MILLER ELECTRIC, HOBART BROTHERS).

With us as a partner you not only work with the industry leader for portable pipe processing machines and orbital welding systems, you also cooperate with ITW the global leader for demanding and future-oriented welding technologies.

### The ITW Orbital Cutting & Welding Group stands for the best, most efficient technology in all aspects of orbital cutting and welding around the globe.

As ITW OCV we offer a nearly unique product availability, technical support worldwide as well as a sales network down to the local level.

A partnership with ITW OCV includes:

- Recognized top technology, competent contact partner
- Quick, comprehensive delivery service
- Reliable product service
- Large inventories on a local level
- Comprehensive OEM spare parts and special production
- Strategically optimized positioned sales locations, service and rental centers
- Excellent technicians trained and certified in the factory
- Practical training courses - at our location or yours
- Certified company

ITW Orbital Cutting & Welding banks on excellent product solutions from Orbitalum and E.H. WACHS company. In combination with excellent service and advisory service, ITW OCV is the primary supplier for machines and tools for cutting, beveling and welding - all from a single source.

### Environment and disposal instructions



Disposal of electric devices

(as per RL 2012/19/EU)

Electrical and electronic devices marked with the symbol above may not be disposed of with household garbage as per EU directive. By actively using the offered return and collection systems, you are doing your part to reuse and recycle used electrical and electronic devices. Used electric and electronic devices contain parts which must be handled specially as per EU directives. Separate collection and selective treatment are the basis for environmentally responsible disposal and protection of human health. We will properly dispose of devices and machines from us purchased from August 13th, 2005 if they are sent to us postage-paid. In the case of used devices which may represent a risk to human health or safety due to contamination during use, we have the option of refusing return. The user is responsible for disposing of used devices purchased before August 13th, 2005. For this purpose, please contact a professional disposal company in your area.

**Important note for Germany:** Our devices and machines may not be disposed of at communal dumps, as they are only used in the commercial sector.



Return of accumulators

Some of our devices are operated with accumulators. Accumulators and batteries that are marked with the above symbol may not be disposed of with household garbage as per EU Directive 2006/66/EC. In the case of accumulators containing hazardous materials the chemical sign for the heavy metal contained is specified below the refuse bin:

Cd = Cadmium  
Hg = Quicksilver  
Pb = Lead

**Applies for Germany:** The end consumer is obliged to return defective or used batteries to the distributor or to the returning facilities set up to this purpose.

The ITW ORBITAL CUTTING & WELDING Group offers global customers the best in the field of pipe cutting and beveling as well as orbital welding technology from a single source.



Orbitalum Tools GmbH  
 Josef-Schuetzler-Str. 17  
 78224 Singen  
 Germany  
 >> tools@orbitalum.com  
 >> www.orbitalum.com



Certified Management System according to ISO 9001:2015



Approved Economic Operator with AEO certification

# 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

### WESTERN CANADA

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-Schuetzler-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  
 Mob. +86 (0) 186 2183 5518  
 Tel. +86 (0) 512 5016 7813  
 Fax +86 (0) 512 5016 7820

### INDIA

ITW India Pvt. Ltd  
 Sr.no. 234/235 & 245  
 Plot no. 8, Gala #7  
 Indialand Global Industrial Park  
 Hinjawadi-Phase-1  
 Tal-Mulshi, Pune 411057  
 India  
 Tel. +91 (0) 20 32 00 25 39  
 Mob. +91 (0) 91 00 99 45 78

## 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



ITW OCW Corporate Locations

★ Sales Locations

© Orbitalum Tools GmbH | EN | 890 700 012 | Rev. 0522 | We reserve the right to make changes. Our general terms and conditions of business apply.



A brand of  
**ITW Orbital Cutting  
 & Welding**