

ORBITAL WELDING



DIN EN ISO
9001 certified



CATALOGUE
November 2016

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Orbitec was founded in 1984.

Orbitec designs, develops and manufactures orbital welding equipment for domestic hire and sales worldwide.

Orbitec aims to provide high-quality and easy-to-use products at a reasonable price.

Orbitec supplies products and services to industries such as: Pharmaceutical, Biotechnology, Semiconductor, Food & Dairy and Aerospace.



Australia / Austria / Baltic States / Belgium / Bosnia-Herzegovina / Brazil / Bulgaria / China / Croatia / Czech Republic / Denmark / France / Hong Kong / India / Indonesia / Israel / Italy / Luxembourg / Macedonia / Malaysia / Netherlands / Norway / Poland / Portugal / Russia / Saudi Arabia / Serbia / Slovenia / South Korea / Spain / Sweden / Switzerland / Taiwan / Thailand / Turkey / USA / United Arab Emirates / Vietnam

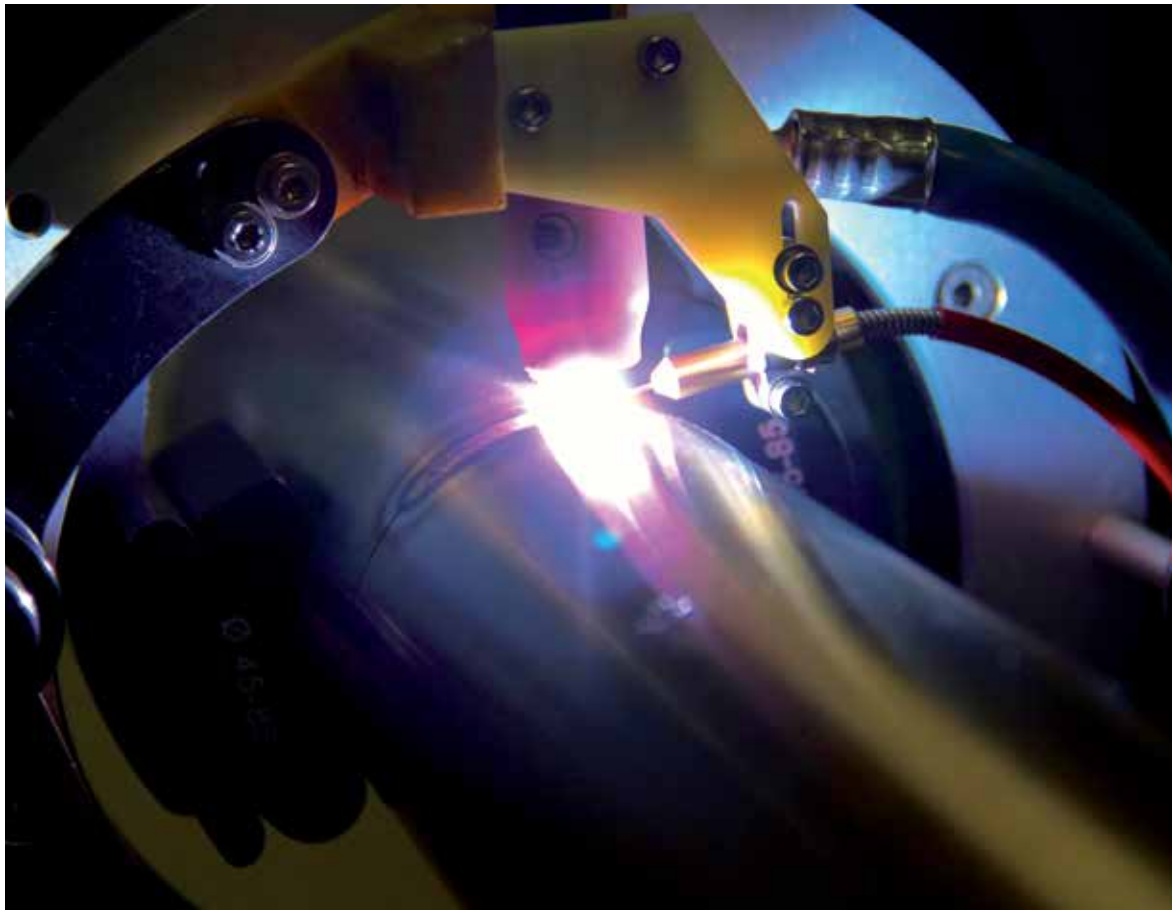
APPLICATION COMPETENCE

Especially customers new to buying an Orbital welding system will be initially confronted by a wealth of pertinent questions and problems. It's not all simply done by the "press of a button"!

There are a whole host of conditions that need to be in place if orbital welding technology is to be used economically. In this respect, Orbitec can provide you with application competence and customer proximity. The quickest reaction times and high availability of products of course go without saying.

Orbital welding is a mechanised version of the tungsten inert gas arc welding (TIG) process and is used to weld stationary tube or pipe; the tungsten electrode contained in the weld head rotor rotates or “orbits” around the weld joint circumference.

The TIG process can be either a fusion (autogenous) process in which the edges of the weld joint are heated by the arc and fused together without the addition of filler material to the weld pool. Or filler, usually in the form of a solid wire can be added.



EXAMPLE: OPEN-FRAME OSW WELD HEAD

INNOVATIVE, PRACTICAL AND AFFORDABLE!

Orbitec's equipment technology is focused on the particular practical needs of its customers, whether they specialise in tube and pipe fabrication or you have a one-off requirement to join tubular components. Key factors on our list of design considerations are safe and easy to use, modular where possible, with a form and construction that reduces manufacturing costs to a minimum.

Because of this philosophy Orbitec has been able to offer practical, robust and easy to use products at price levels not previously available to the Orbital market.

To fulfil all customer requests the current controller TIGTRONIC ORBITAL 4 in conjunction with the TETRIX 200 inverter is now also available as a compact system TIGTRONIC COMPACT.

In 1996 Orbitec developed its forward-looking operator guidance which uses symbols and has programming aids in all requested national languages:

- Enter tube outside diameter
- Enter wall thickness
- Enter weld head code
- Start

IT COULD NOT BE SIMPLER!

Our range of OSK weld heads are unique in design – the cable and handle /motor assembly is separate from the weld head itself, so **one handle assembly can run a variety of different sized weld heads**. This concept provides significant cost savings on multiple weld head systems and unmatched flexibility using the same weld heads on different manufacturers' power supplies.

Other products such as oxygen analysers, which are often considered peripheral to the orbital process, but nevertheless key to its successful application, compliment the comprehensive product range available from Orbitec.



EXAMPLE: ENCLOSED WELD HEADS WITH HANDLE AND CABLE ASSEMBLY



//ORBITAL WELDING CONTROLLERS / INVERTERS

TIGTRONIC BASIC 3

BASIC 2:

- OSK
- OSW
- TURN
- RBK
- (AVC)



BASIC 3:

- OSK
- OSW
- TURN
- ORBIFEED
- RBK
- (AVC)



BASIC 4:

- RBK
- (AVC)



TIGTRONIC BASIC 2 CONTROLLER

Low-cost, compact microprocessor-based Orbital controller for applications with open- frame weld heads, enclosed weld heads, tube- to-tubesheet weld heads and turn tables. The controller is based on our tried-and-tested and reliable TIGTRONIC ORBITAL controller.

Can be used with TETRIX 200 or TETRIX 351.

- 5.7" display, fixed
- Simple, multilingual operator guidance through auto programming of weld schedule parameters: tube outside diameter, wall thickness and weld head code
- Gas and water cooling monitoring
- Options for 6 level programming with continuous and step travel modes
- Simple tuning of auto calculated parameters by individual level or overall percentage
- Graphic display of the welding progress
- Real-time monitoring of the welding parameters
- Integrated weld counter (assignment to isometrics and weld numbers)
- Storage of up to 99 programmes
- Weld data recording facility for up to 400 weld records
- Software updates possible
- Diagnostic fault detection system
- Options for connecting a remote control pendant
(Note: The controller can also be operated without a remote pendant)
- Connections for oxygen analysers
- Data transfer of setpoint /actual parameter, as well as programmes via USB interface
- Compact and lightweight with outer dimensions
(L x W x H) 340 x 295 x 150mm and a weight of only 5.5kg
- Auto ranging input voltage 90 – 260 VAC

Optional:

- COOL 50 water cooling unit
- Upgrade kit AVC

TIGTRONIC BASIC 3 CONTROLLER

Specifications as per BASIC 2

- Additional servo PCB for wire feed

TIGTRONIC BASIC 4 CONTROLLER

Specifications as per BASIC 3

- With special software **only** for tube-to-tube-sheet weld heads RBK

Package includes for BASIC 2/3/4:

- Controller
- Power cable
- Interface cable for controller / power source
- USB stick, 1GB

1.3.0200

1.3.0201

1.3.0204

ORBITAL TIGTRONIC

The Reliable



- OSK
- OSW
- TURN
- ORBIFEED
- RBK
- (AVC)

TIGTRONIC ORBITAL 4 CONTROLLER

The 4th generation of our tried-and-tested and reliable standard controller. Can be used with TETRIX 200 or TETRIX 351.

- 5.7" display, collapsible
- Simple, multilingual operator guidance through auto programming of weld schedule parameters: tube outside diameter, wall thickness and weld head code
- Gas and water cooling monitoring
- Tacking mode can be activated
- Options for 6 level programming with continuous and step travel modes
- Simple tuning of auto calculated parameters by individual level or overall percentage
- The output and wire feed parameters can also be changed during welding
- Graphic display of the welding progress
- Real-time monitoring of the welding parameters
- Integrated weld counter (assignment to isometrics and weld numbers)
- Storage of up to 99 programmes
- Storage of up to 400 actual parameters
- Data transfer of weld parameters and programmes via USB interface
- Software updates possible
- Diagnostic fault detection system
- Options for connecting a remote control pendant
(Note: The controller can also be operated without a remote pendant)
- Connection for oxygen analysers
- Servo PCB for wire feed
- Integrated printer
- Compact and lightweight with outer dimensions (L x W x H) 405 x 325 x 170mm and a weight of only 6.5kg
- Auto ranging input voltage 90 – 260VAC

Optional:

- COOL 50 water cooling unit
- AVC upgrade kit

Package includes:

- Controller
- Power cable
- Connection cable controller / power source
- USB stick, 1GB

COMPACT SYSTEM TIGTRONIC COMPACT (AUTO RANGE)

Portable compact system, based on the inverter TETRIX 200 auto range with integrated Controller TIGTRONIC ORBITAL 4.

Dimensions (L x W x H) 624 x 298 x 480mm

Weight 24kg

Technical date: as inverter TETRIX 200

Package includes:

- Compact system
- Power cable
- USB stick, 1GB

Optional:

- COOL 50 water cooling unit, flange connected
- Upgrade kit AVC

AVC UPGRADE KIT FOR TIGTRONIC CONTROLLERS

- Additional integrated AVC card incl. software upgrade for welding in conjunction with wire feed and AVC

COMPACT TIGTRONIC



- OSK
- OSW
- TURN
- ORBIFEED
- RBK
- (AVC)

1.3.0012

1.3.0205

1.3.0031



DOCUTRONIC 2.2 SOFTWARE FOR DOCUMENTATION

For all Tigtronic controllers for back-up, administration and processing of the welding joint documentation (setpoint / actual parameter) at the PC in English and German.

1.3.0207



REMOTE CONTROL ORBICONTROL 3

8m cable remote control for all orbital controllers

- Start, downslope and termination of weld sequence
- Travel jog buttons
- Wire feed jog buttons
- AVC jog buttons
- Visual status display

1.3.0030



SPARE-PAPER ROLL FOR INTEGRATED PRINTER

Contains 3 Paper Rolls

1.3.0002



SPARE-RIBBON CARTRIDGE FOR INTEGRATED PRINTER

Ribbon Cartridge for TIGTRONIC ORBITAL 4 + COMPACT

1.3.0003



INVERTER TETRIX 200, control range 5 – 200A / 230V

Lightweight, compact inverter power source for the TIG manual or orbital welding (automatic detection) in conjunction with all Orbitec controllers.

1.2.0119

Optional: COOL 50 water cooling unit.

Technical Data:

Output	DC
Mains voltage	AC 1 x 230V
Mains frequency	50 / 60Hz
Power rating	4.4kVA
Generator output	7.5kVA
Current range	5A – 200A
Current duty cycles	
25% TIG / MMA	200A
60% TIG / MMA	150A
100% TIG / MMA	120A
Weight:	8.9kg
Dimensions (L x W x H)	475 x 180 x 295mm

Package includes:

- Inverter
- Power cable

INVERTER TETRIX 200 (AUTO RANGE), control range 5 – 200A / 110 / 230V

Same characteristics as TETRIX 200 inverter but input voltage of 115VAC or 230VAC can be used. No switching required as the unit recognises the input voltage and adjusts automatically.

(Note: Maximum output of 150A when used on 115VAC.)

1.2.0120

INVERTER TETRIX 351, control range 5 – 350A / 415V

Mobile inverter power source for the TIG manual or orbital welding with built-in cooling system and gas sensor. Can be used with all Orbitec controllers, particular in high-demand applications such as tube-to-tube-sheet.

1.2.0117

Technical Data:

Output	DC
Mains voltage	3x400V (-25% -+ 20%)
Mains frequency	50 / 60Hz
Power rating	15kVA
Generator output	20.3kVA
Current range	5A – 350A
Current duty cycles	
60% TIG / MMA	350A
100% TIG / MMA	300A
Cooling efficiency	1500W
Water column	35m/5l/min.
Tank capacity	12l
Weight	131kg
Dimensions (L x W x H)	1100 x 455 x 1000mm

Package includes:

- Inverter
- Power cable
- 10l coolant



**COOL 50 WATER COOLING UNIT**

Water-cooling unit for application with TETRIX 200 inverter and TIGTRONIC COMPACT in conjunction with water-cooled welding tools.

1.2.0118**Technical Data:**

Input voltage	230V AC
Cooling system	F / IP 23
Weight	16.5kg
Dimensions (L x W x H)	610 x 298 x 330mm
Tank capacity	approx. 4l
Water column	35m/5l/min.
Cooling capacity	1000W (1l/min.)

Package includes:

- Water cooling unit
- Connection cable Inverter / water cooling unit
- 5l coolant

COOL 50 WATER COOLING UNIT, 115V**NEW!**

Same characteristics as COOL 50 water-cooling unit for input voltage of 115VAC.

1.1.0118

ACCESSORIES FOR STANDARD EQUIPMENT

PRESSURE REGULATORS, GAS HOSE, GROUND CABLES



Item number



Purging

Orbital TIG

The pressure regulator can be tightened 'by hand' without the need for a spanner. It reduces the stored bottle pressure for max. 200bar (on request 300bar) to an outlet pressure adjusted at the flowmeters. The flowmeters are used to set the required flow in l/min.

Important: The pressure regulator has a constant outlet pressure of 2.5 bar which is necessary to protect the gas flow sensor of the orbital unit.

Twin flowmeter outlet 1 – 16l/min, 3 – 30l/min

Triple flowmeter outlet 1 – 16l/min, 3 – 30l/min, 5 – 55l/min

SPECIAL ARGON PRESSURE REGULATOR twin flowmeters, brass

1.2.0123

SPECIAL PRESSURE REGULATORS with twin flowmeter for H₂ gases, brass

1.2.0144



Purging

Manual TIG

Orbital TIG

SPECIAL ARGON PRESSURE REGULATOR with triple flowmeters, brass

1.2.0134

Pressure regulators with different connections and for use with other gas types / mixes or nickel-plated available on request.



GAS HOSE, 3m

1.3.0121



GROUND CABLE, 5m, 35mm², up to 300A

1.3.0125



GROUND CABLE, 5m, 50mm², up to 500A

1.3.0146



// ORBITAL WELDING TOOLS



Enclosed weld heads provide complete inert gas protection of the full weld bead circumference (an industry requirement for producing welded joints in electro-polished and hygienic applications).

Collets are required for each tube diameter to be welded.

Cold wire feed is not possible.

Welding will be made after preparation of the tube ends to provide a flat, square face.

During welding the weld head remains static, only the rotor carrying the electrode rotates in an 'orbital' motion around the tube (90° saw cut, if necessary square off).

Advantage: Compact size for use in restricted space environments.

MICROFIT WELD HEAD OSK 13 S

NEW!

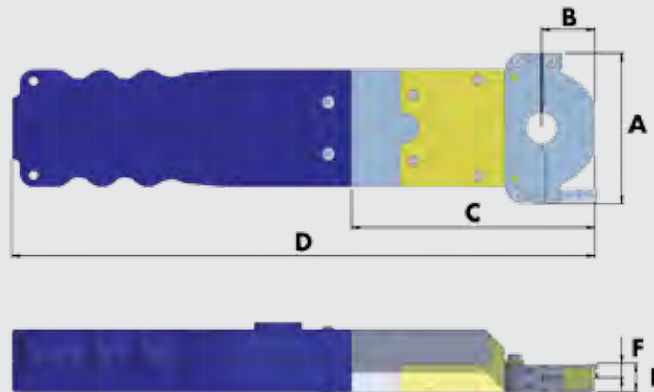
1.3.4000

Gas-cooled weld head for applications with extreme narrow space requirements as e.g. in the semiconductor industry. Specially designed to weld micro-fittings. Unique construction, including specifically directed gas routing to improve gas coverage and material selection resulting in a high duty cycle even without water cooling.

- Extreme narrow / compact design
- Simple design allows easy to maintain
- Handle with control element (start/stop kit with status display)
- Arc Machines Model 9-500 cassettes will fit too

Weld head type:	Tube size Range mm	inch	Weight
OSK 13 S	OD 3.17 – 12.7mm	0.125" – 0.500"	2.4kg

Dimension Sheet Enclosed Weld Heads OSK 13 S



Weld head type	A		B		C		D		E		F	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
OSK 13 S	64	2.520	22.7	0.894	103.3	4.067	277.5	10.925	12	0.472	6	0.236

OSK 13 S MICROFIT CLAMPING CASSETTE

For welding with extreme narrow space requirements

NEW!

1.3.4001+Ø

- Orbitec TCA clamping cassette, width 12mm (0.472inch)
- Clamping cassette compatible with Arc Machines, model 9-500
- Cassette can be mounted in either direction (left or right hand)



ENCLOSED WELD HEADS

OSK C/CS/CW, HANDLE AND CABLE ASSEMBLY



Item number



ENCLOSED WELD HEADS OSK C (compact version)

Our current series of one gas-cooled and compact weld head. This weld head is for smaller outside diameters with a narrow handle for tighter access conditions.

Weld head type:	Field of application mm	inch	Weight
OSK 21 C	OD 3.17 – 21.3mm	0.125" - 0.839"	0.8kg

1.3.2820



ENCLOSED WELD HEADS OSK CS (compact version)

NEW!

Our latest series of a gas-cooled and compact weld head. Technical optimized and in a new design with clamping levers for tighter access conditions.

Weld head type:	Field of application mm	inch	Weight
OSK 38 C	OD 3.17 – 38.1mm	0.125" - 1.500"	1.2kg

1.3.2920



OSK C HANDLE AND CABLE ASSEMBLY, 8m

Consisting of a handle with control element (start/stop with status display), weld head interface, motor, gearbox and tacho /encoder unit with 8m long cable.

1.3.2003

Optional:

ADAPTERFLANGE OSK G OR S FOR C OR CS

Advantage: While using the flange the OSK 21 C and OSK 38 C weld heads can also get used with the OSK G handle and cable assembly.

1.3.2011

WATER-COOLED WELD HEADS OSK CW

NEW!

Our new generation of compact weld heads for high duty cycle requirements have water-cooled clamp housings and clamping levers.

Both OSK CW weld heads are operated using a sharable handle and cable assembly.



Weld head type:	Tube size Range mm	inch	Weight
OSK 21 CW	DA 3.17 – 21.3mm	0.125" – 0.839"	1.0kg
OSK 38 CW	DA 3.17 – 38.1mm	0.125" – 1.500"	1.4kg

Only **one** drive unit is needed for all C and CW weld heads.

1.0.2820W



OSK CW HANDLE AND CABLE ASSEMBLY, 8m

NEW!

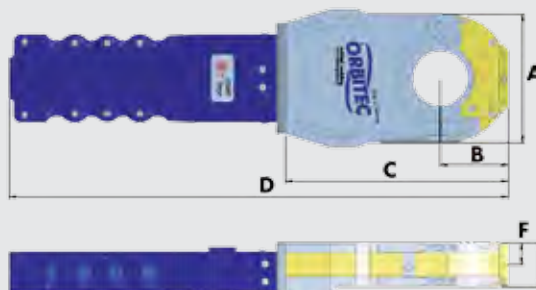
Consisting of a handle with control element (start/Stop kit status display), weld head interface, motor, gearbox and tacho/encoder unit with 8m long cable.

1.0.2920W



Dimension Sheet Enclosed Weld Heads OSK C and CW

1.3.2059



Weld head type	A		B		C		D		E		F	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
OSK 21 C	70	2.756	40	1.575	150	5.906	370	14.567	33	1.299	16	0.630
OSK 38 C	102	4.016	53	2.087	175	6.890	390	15.354	33	1.299	16	0.630
OSK 21 CW	70	2.756	39.5	1.555	146	5.748	365.5	14.390	35	1.378	17.5	0.689
OSK 38 CW	102	4.016	54	2.156	177	6.969	396	15.591	35	1.378	17.5	0.689



GAS-COOLED WELD HEADS OSK S

NEW!

Our latest series of 3 gas-cooled weld heads technical optimized and in an new design covers the tube size ranges from 6mm – 114.3mm / 0.250" - 4.500".

Unique construction and material selection allows a high duty cycle even without water cooling.

The weld heads are one of the narrowest on the market and have a 'quick latch' system for retaining the collets.

Weld head type:	Field of application mm	inch	Weight
OSK 53 S	OD 6 – 53mm	0.250" – 2.087"	2.1 kg
OSK 76 S	OD 6 – 76.2mm	0.250" – 3.000"	2.6 kg
OSK 115 S	OD 9.53 – 114.3mm	0.375" – 4.500"	3.4 kg

1.0.2520

1.0.2620

1.1.2720

OSK S HANDLE AND CABLE ASSEMBLY, 8m

NEW!

Consisting of a handle with controle element (start/Stop kit status display), weld head interface, motor, gearbox and tacho/encoder unit with 8m long cable.

1.3.2057

Handle and cable assemblies of the OSK G and S heads are interchangeable!

WATER-COOLED WELD HEADS OSK SW

NEW!

For the highest duty cycle applications we also offer the gas-cooled G series weld heads in a water-cooled GW-version (the overall width remains unchanged).

Full water-cooling of the lower clamp housing. Also available as an upgrade for standard OSK G Weld heads.

Water-stop-connector (old weld heads and cable assemblies can get retrofitted).

Weld head type:	Field of application mm	inch	Weight
OSK 53 SW	OD 6 – 53mm	0.250" – 2.087"	2.1 kg
OSK 76 SW	OD 6 – 76.2mm	0.250" – 3.000"	2.6 kg
OSK 115 SW	OD 9.53 – 114.3mm	0.375" – 4.500"	3.4 kg

1.0.2520W

1.0.2620W

1.1.2720W

OSK SW HANDLE AND CABLE ASSEMBLY, 8m

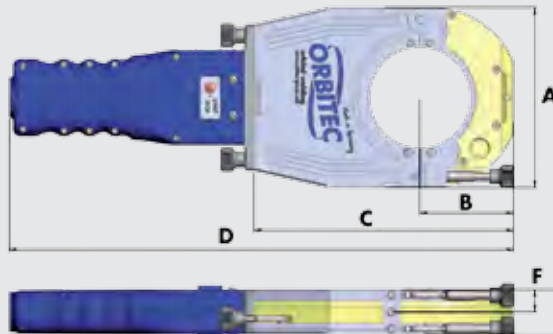
NEW!

Consisting of a handle with controle element (start/Stop kit status display), weld head interface, motor, gearbox and tacho/encoder unit with 8m long cable.

1.3.2058

Handle and cable assemblies of the OSK GW and SW heads are interchangeable!

Dimension Sheet Enclosed Weld Heads OSK G and GW



Weld head	A		B		C		D		E		F	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
OSK 53 S / SW	130	5,118	70	2,756	205	8,071	425	16,732	40	1,575	20	0,787
OSK 76 S / SW	160	6,299	83	3,268	230	9,055	450	17,717	40	1,575	20	0,787
OSK 115 S / SW	200	7,874	103	4,055	270	10,630	487,5	19,192	40	1,575	20	0,787

**COLLETS OSK****Immediate availability**

We maintain a large stock of collets for all OSK weld heads.
1 set for each outside diameter = 4 collets.

COLLETS FOR OSK 21**COLLETS FOR OSK 38****COLLETS FOR OSK 53****COLLETS FOR OSK 76****COLLETS FOR OSK 115****1.3.2321 + Ø****1.3.2021 + Ø****1.3.2521 + Ø****1.3.2621 + Ø****1.3.2721 + Ø**

The standard collet sizes available from stock are listed on page 28.
Non-standard sizes and 'specials' are available on request.

HP-COLLETS (OSK 53/76/117) for specific clean welding
seams for the semiconductor industry are available on request.

NEW!**OFFSET ELECTRODE HOLDER**

from sizes OSK 53 upward

The maximum coverage of the weld head size is then reduced.

OFFSET ELECTRODE HOLDER for tungsten Ø 1.6mm | 0.063"

OFFSET ELECTRODE HOLDER for tungsten Ø 2.4mm | 0.094"

1.3.3106**1.3.3101****MULTI-POSITION ELECTRODE HOLDER**

from sizes OSK 53 upward

The maximum coverage of the weld head size is then reduced.

MULTI-POSITION ELECTRODE HOLDER for tungsten Ø 1.6mm | 0.063"

MULTI-POSITION ELECTRODE HOLDER for tungsten Ø 2.4mm | 0.094"

1.3.3102**1.3.3107****GAS-SHIELD COLLETS**

Gas-shield collets are particularly narrow and have an aluminium base jaw and a gas-shield cover of heat-resistant material for welding fittings, flanges, elbows, etc. In combination with offset or multi-position electrode holders the weld can be completed very close to one side of the weld head. Special wide clamps are available for a more secure fixture on request. Gas-shield collets are available for OSK weld heads size 53 / 76 / 115 (tube size range limited).

Gas-shield base collets and covers (1 set – 2 collets)

GAS-SHIELD BASE COLLETS FOR OSK 53**GAS-SHIELD BASE COLLETS FOR OSK 76****GAS-SHIELD BASE COLLETS FOR OSK 115****1.2.3305****1.2.3304****1.2.3303****GAS-SHIELD COVER COLLETS (GRP)**

(adaptation by the customer)

FOR OSK 53**FOR OSK 76****FOR OSK 115****1.2.3308****1.2.3307****1.2.3306****GAS-SHIELD COVER COLLETS (GRP)**

(prefabricated with through hole)

FOR OSK 53**FOR OSK 76****FOR OSK 115****1.2.3309****1.2.3310****1.2.3311**



The open-frame weld head locates one side of the weld joint. During welding, a gas or water cooled torch and cable assembly rotates around the tube or pipe.

Some advantages of open-frame weld heads:

- Robust construction
- Ease of handling
- Option to add wire feed
- No 'size specific' collets required, each weld head will accommodate its full tube/pipe OD size range as supplied
- 90° tilting torch bracket

OSW WELD HEADS

A selection of 4 weld heads to cover the size range from 8mm to 168.3mm OD.

Weld Head:	Tube Size Range mm	inch	Weight
OSW 40	OD 8 – 40mm	0.394" – 1.575"	2kg
OSW 80	OD 10 – 76.2mm	0.394" – 3.000"	3kg
OSW 115	OD 20 – 114.3mm	0.787" – 4.500"	4.5kg
OSW 170	OD 40 – 168.3mm	1.575" – 6.626"	6.5kg

1.3.1001

1.3.1101

1.3.1201

1.3.1301

Package includes:

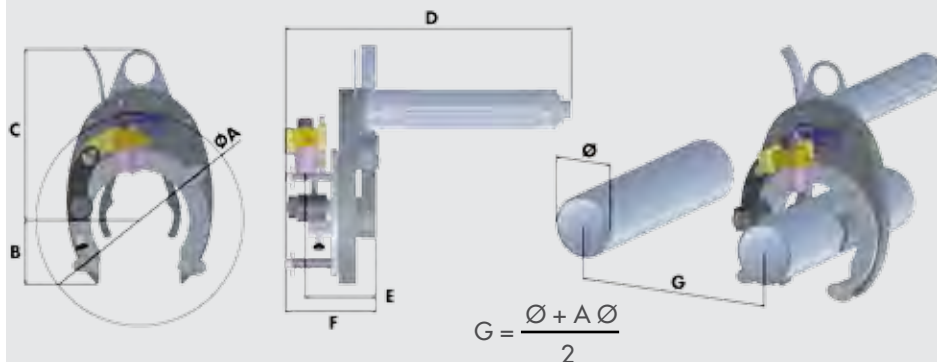
- Weld head
- Integrated start/stop-button at the handle
- Clamp 'shoes'
- Torch bracket
- Mechanical arc gap adjusting screw

Optional:

Angular gear complete for OSW on request.



Dimension Sheet OSW Open-frame Orbital Weld Heads



Weld head	Ø A		B		C		D		E		F	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
OSW 40	120	4.724	40	1.575	145	5.709	310	12.205	81	3.189	91	3.583
OSW 80	210	8.268	64	2.520	171	6.732	290	11.417	69	2.717	91	3.583
OSW 115	243	9.567	90	3.543	210	8.268	290	11.417	69	2.717	91	3.583
OSW 170	310	12.205	134	5.276	266	10.472	290	11.417	69	2.717	91	3.583



The OSZ weld heads were developed for welding larger pipe diameters with a thinner wall thickness, with or without wire feed, with a gas-cooled or water-cooled torch hose.

Special design feature: Enclosed gear ring system

WELD HEAD OSZ

Weld head type:	Tube Size Range mm	inch	Weight
OSZ 275	OD 88.9 – 273mm	3.500" – 9.331"	16kg
OSZ 325	OD 168.3 – 323.9mm	6.626" – 12.750"	18kg

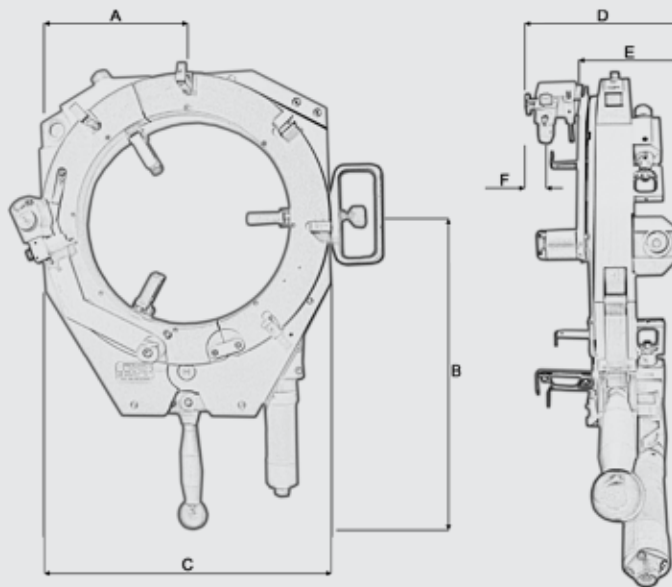
1.2.1401

1.2.1501

Package includes:

- Weld head
- Clamp 'shoes'
- Standard OSZ torch bracket
- Mechanical arc gap adjusting screw

Dimension Sheet OSZ 325 Open-frame Orbital Weld Head



Weld head OSZ 275	A	B	C	D	E	F
mm	220	420	380	150	78	19(12)
inch	8.661	16.535	14.961	5.905	3.071	0.748 (0.472)

Weld head OSZ 325	A	B	C	D	E	F
mm	255	450	450	150	78	19(12)
inch	10.039	17.717	17.717	5.906	3.071	0.748 (0.472)



INTERCONNECTION CABLE BJ, 8m

1.3.1626



INTERCONNECTION CABLE, with ORBIFEED plug BJ, 8m

1.3.1629

TIG TORCH WITH CABLE ASSEMBLY, GAS OR WATER-COOLED FOR OSW AND OSZ



TIG TORCH "STANDARD" with cable assembly BJ, 8.5m, gas-cooled

1.3.1631



TIG TORCH "STANDARD" with cable assembly BJ, 8.5m, water-cooled

1.3.1634



TIG TORCH "MINI" with cable assembly, 8.5m, gas-cooled

1.3.1602



TIG TORCH "MINI" with cable assembly, 8.5m, water-cooled

1.3.1625



SILICON CABLE, 2.5m, gas-cooled

1.3. 1615

EXTENSION CABLE ASSEMBLIES FOR OSK, OSW AND OSZ



EXTENSION CABLE ASSEMBLY, 8m, gas-cooled

1.3.2005

EXTENSION CABLE ASSEMBLY, 8m, combined gas and water-cooled

1.3.2006

OPEN-FRAME WELD HEADS

TORCH BRACKETS, MANUAL TIG HOSE PACKAGE



Item number



TIG TORCH BRACKET (isolator)

TORCH BRACKET OSW "MINI"

1.3.1617



TORCH BRACKET OSW "MINI" 45°, MULTI-POSITION

1.3.1609



TORCH BRACKET, MULTI-POSITION FOR OSW 80-170

1.3.1635



TORCH BRACKET OSZ "STANDARD"

1.3.1627



TORCH BRACKET OSZ 90°, MULTI-POSITION

1.3.1628

Package includes:

- Torch bracket
- Arc gap adjusting screw with ceramic ball
- Torch clamping screw
- Stainless steel thread insert



HIGH-FLEX MANUAL TIG HOSE PACKAGE SR 9, 8m, gas-cooled

1.3.1909

- High-Flex cable assembly
- Same spare parts as OSW / OSZ
- Plug, 5 poles



TURN 300 TURN TABLE SYSTEM, complete with accessories

Turn table system, particularly suitable for non-orbital ready components at higher quantities. Can be connected to all Orbitec controllers.

- Hollow shaft OD 70mm (e. g. for purging components through the centre)
- Quick-change TIG torch system
- Bit tilted to any angle 90°
- High quality three-jaw chuck

Technical Data:

Max. load	300N		
Swivel range	0° – 90°, infinitely variable		
Current transmission	Max. 300A		
Chucking capacity	min. mm / max. mm	min. inch / max. inch	
Inner	50mm / 230mm	1.970" / 9.060"	
Outer	10mm / 120mm	0.394" / 4.720"	

Optional also with cold wire feed and AVC in conjunction with the TIGTRONIC controllers and the AVC upgrade kit.

Package includes:

- Turn table incl. console
- 2 sets of jaw chucks
- Bed-plate with assorted fixings and positional plate
- Multi-positional torch arm for infinite adjustment of torch position
- TIG torch bracket
- Cable for connection to Tigtronic controller with Orbifeed plug
- Chuck key
- Ground cable



CABLE ASSEMBLY TURN 300

4m, gas-cooled

CABLE ASSEMBLY TURN 300

4m, water-cooled



UPGRADE KITS FOR TURN 300 TURN TABLE SYSTEM

TORCH HOLDER WITH CROSS-SLIDE FOR FINE ADJUSTMENT

(50mm travelling distance)



AVC UPGRADE KIT TURN 300

Package includes:

- AVC motor / gear unit incl. mounting
- Cross-slide



WIRE CONSOLE TURN 300

1.2.1801

1.2.1814

1.2.1815

1.2.1853

1.2.1810

1.2.1852

**ORBIFEED EXTERNAL WIRE FEED UNITS**

Compact and lightweight wire feed unit mounted in a Peli case for 5kg (ORBIFEED 5) and 15kg (ORBIFEED 15) standard spools.

EXTERNAL WIRE FEED UNIT ORBIFEED 5, for 5kg – spools

1.3.1701

EXTERNAL WIRE FEED UNIT ORBIFEED 15, for 15kg – spools

1.3.1702

Technical Data:

Motor voltage and power

Orbifeed 5

24V DC, 6W

Weight

approx. 7kg

Dimensions (L x W x H)

406 x 330 x 174mm

Wire spools

Standard spools 5kg

Wire outside diameter

0.8 / 1.0mm

Orbifeed 15

24V DC, 6W

approx. 8kg

525 x 436 x 217mm

Standard spools 5 and 15kg

0.8 / 1.0mm

Package includes:

- Water-resistant and dust-proof Peli case
- Four roller drive mechanism
- Delivery hose with inlet and outlet nozzles
- Torch bracket for wire feed on OSW / OSZ / TURN
- Interconnecting cables wire feed unit / controller

SPARE DELIVERY HOSE FOR ORBIFEED, complete

1.3.1706

SPARE DELIVERY HOSE TEFLON FOR ORBIFEED

1.3.1712

SPARE WIRE INLET NOZZLE

1.3.1704

SPARE WIRE OUTLET NOOZLE

1.3.1705

TORCH BRACKETS FOR WIRE FEED, complete

Can be fitted to TIG torch OSW / OSZ

TORCH BRACKET FOR WIRE FEED OSW 80-170 "STANDARD", OSZ INTERNAL

1.3.1708

TORCH BRACKET FOR WIRE FEED OSZ "STANDARD", OSW 80-170 INTERNAL

1.3.1709

TORCH BRACKET FOR WIRE FEED OSW 40

1.3.1710

SPARE TORCH BRACKET GFP OSW 80-170 "STANDARD", OSZ INTERNAL

1.0.1630

SPARE TORCH BRACKET GFP OSZ "STANDARD", OSW 80-170 INTERNAL

1.0.1638

SPARE TORCH BRACKET GFP OSW 40

1.0.1619

SPARE TORCH BRACKET ALU, OSW 80-170

1.0.1634

SPARE TORCH BRACKET ALU, OSW 40

1.0.1639



With tube-to-tube-sheet weld heads the reproducible welding of tubes to tube-sheets is possible at a constantly high quality, with and without an external wire. The tubes to be welded can be flush with the tube-sheet, offset, protrude or in the rear sheet.

The RBK 20 is an easy-to-use and lightweight tube-to-tube-sheet weld head with a water-cooled torch. The optional cold wire feed is static at the head, i.e. does not turn.

RBK 20 WELD HEAD without wire feed, incl. cable assembly, 8m

1.2.3503

RBK 20 WELD HEAD with wire feed, incl. cable assembly, 8m

1.2.3504

RBK 16 is a tube-to-tube-sheet weld head for high demands with a completely water-cooled machine body and torch. The RBK 16 has in comparison to the RBK 20 a modified and very comfortable torch adjustment, at which the tripod or the support ring does not turn. The optional cold wire device rotates dynamically with the head. The RBK 16 is available with AVC upon request or with corresponding lances for rear tube-sheet welding.

RBK 16 WELD HEAD without wire feed, incl. cable assembly, 8m

1.2.3501

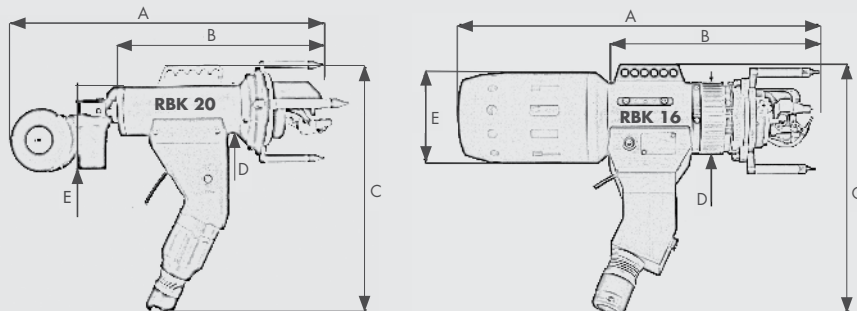
RBK 16 WELD HEAD with wire feed, incl. cable assembly, 8m

1.2.3502

RBK 16 WELD HEAD with wire feed and AVC, incl. cable assembly, 8m

1.2.3628

Dimension Sheet for RBK Weld Heads



Weld head	A		B		C		Ø D		Ø E	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
RBK 20	500	19.685	330	12.992	400	15.748	80	3.150	130	5.118
RBK 16	490	19.291	290	11.417	390	15.354	100	3.937	130	5.118

TECHNICAL DATA:

Field of application
Field of application with AVC
Max. welding current
Wire motor
Rotation speed
Wire coil
Wire diameter
Weight (without wire feed)
Weight (with wire feed)
Weight (with AVC)

RBK 20

ID 9.8 – 78mm
–
200A
24V DC Tacho
Max. 5rpm
1kg, dia. 100mm
0.6 – 1.2mm
5kg
6kg
–

RBK 16

ID 9.8 – 78mm / 0.3585"-3.070"
ID 10 – 100mm / 0.393"-3.937"
200A
24V DC Tacho
Max. 5rpm
1kg, dia. 100mm
0.6 – 1.2mm
8kg
10kg
11kg

Package includes:

- RBK weld head
- Water-cooled cable assembly
- Three-point support (support ring optional)
- Torch equipment
- Tool kit

TUBE-TO-TUBE-SHEET WELD HEADS

CENTRING SPINDLES, MANDRELS, ACCESSORIES



Item number

Centring spindles



Mandrel

MANDREL A, Ø 4 mm 0.157"		ID	
CENTRING SPINDLES		mm	inch
TYP 01	9,8 - 10,3	0.386 - 0.406	
TYP 02	10,3 - 10,8	0.406 - 0.425	
TYP 03	10,8 - 11,3	0.425 - 0.445	
TYP 04	11,3 - 11,8	0.445 - 0.465	
TYP 05	11,8 - 12,3	0.465 - 0.484	
TYP 06	12,3 - 13,0	0.484 - 0.512	

MANDREL B, Ø 6 mm 0.236"		ID	
CENTRING SPINDLES		mm	inch
TYP 07	12.8 - 14	0.504 - 0.551	
TYP 08	13.8 - 15	0.543 - 0.591	
TYP 09	14.8 - 16	0.583 - 0.630	
TYP 10	15.8 - 17	0.622 - 0.669	
TYP 11	16.8 - 18	0.661 - 0.709	
TYP 12	17.8 - 19	0.701 - 0.748	
TYP 13	18.8 - 20	0.740 - 0.787	
TYP 14	19.8 - 22.5	0.780 - 0.886	

MANDREL C, Ø 9 mm 0.354"		ID	
CENTRING SPINDLES		mm	inch
TYP 15	22.3 - 25.0	0.878 - 0.984	
TYP 16	24.5 - 27.0	0.965 - 1.063	
TYP 17	26.5 - 29.0	1.043 - 1.142	
TYP 18	28.5 - 31.0	1.122 - 1.220	
TYP 19	30.5 - 33.0	1.201 - 1.299	
TYP 20	32.5 - 36.0	1.280 - 1.417	
TYP 21	35.5 - 39.0	1.389 - 1.535	
TYP 22	38.5 - 42.0	1.516 - 1.654	
TYP 23	41.5 - 45.0	1.634 - 1.772	
TYP 24	44.5 - 48.0	1.752 - 1.890	
TYP 25	47.5 - 51.0	1.870 - 2.008	

MANDREL D, Ø 12 mm 0.472"		ID	
CENTRING SPINDLES		mm	inch
TYP 26	50.5 - 54.0	1.988 - 2.126	
TYP 27	53.5 - 58.0	2.106 - 2.283	
TYP 28	57.5 - 62.0	2.264 - 2.441	
TYP 29	61.5 - 66.0	2.421 - 2.598	
TYP 30	65.5 - 70.0	2.579 - 2.756	
TYP 31	69.5 - 74.0	2.736 - 2.913	
TYP 32	73.5 - 78.0	2.894 - 3.071	

THREE-POINT SUPPORT RBK 20
THREE-POINT SUPPORT RBK 16

SUPPORT RING with cage for RBK 20
SUPPORT RING with cage for RBK 16

BALANCER for RBK 20 (4.5 – 9kg)
BALANCER for RBK 16 (9 – 15kg)

1.2.3601

1.2.3605

1.2.3630

1.2.3631

1.2.3632

1.2.3633

1.2.3634

1.2.3602

1.2.3606

1.2.3635

1.2.3636

1.2.3637

1.2.3638

1.2.3639

1.2.3640

1.2.3641

1.2.3603

1.2.3607

1.2.3642

1.2.3643

1.2.3644

1.2.3608

1.2.3645

1.2.3646

1.2.3647

1.2.3648

1.2.3649

1.2.3650

1.2.3604

1.2.3609

1.2.3651

1.2.3652

1.2.3653

1.2.3654

1.2.3655

1.2.3656

1.2.3610

1.2.3611

1.2.3613

1.2.3612

1.2.3617

1.2.3614





Solutions to operate Orbitec weld heads in combination with other manufacture equipment, e.g. AMI, Polysoude and Orbitalum are available. To some extend other manufacturer weld heads can also get connected to Orbitec welding systems. The matching adaptations are available for purchase and rental.

ARC MACHINES

OSK S HANDLE AND CABLE ASSEMBLY, Version AMI, 8m **1.3.5313**

OSK SW HANDLE AND CABLE ASSEMBLY, Version AMI, 8m **1.3.5314**

OSK C HANDLE AND CABLE ASSEMBLY, Version AMI, 8m **1.3.5311**

OSK CW HANDLE AND CABLE ASSEMBLY, Version AMI, 8m **1.3.5315**

Adaptations for other weld heads are available on request.



POLYSOUDE

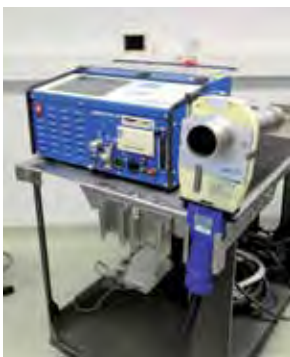
ADAPTOR FOR ORBITEC OSK WELD HEAD, Gas-cooled on Polysoude **1.3.5301**

ADAPTOR FOR ORBITEC OSK WELD HEAD, Water-cooled on Polysoude **1.3.5302**

ADAPTOR FOR ORBITEC OSW WELD HEAD, Gas-cooled on Polysoude **1.3.5303**

ADAPTOR FOR ORBITEC OSW WELD HEAD, Water-cooled on Polysoude **1.3.5304**

ADAPTER POLYSOUDE WELD HEAD ON ORBITEC **1.3.5309**



ORBITALUM

ADAPTATION ORBITEC OSK WELD HEAD, Gas-cooled on Orbitalum incl. Remote Control Pendant, 8m **1.3.5305**

ADAPTATION ORBITEC OSK WELD HEAD, Water-cooled on Orbitalum incl. Remote Control Pendant, 8m **1.3.5306**

Adaptations of other weld heads are available on request.

Adaptations of other manufacture equipment are available on request.

SuperArc: Precision ground tungsten for repeatable high-quality orbital welds. Reduce your costs by using disposable tungsten because manual sharpening costs time and money. Standard quality WC 20 to DIN EN ISO 6848.

Sizes for all ORBITEC weld heads depending on the tube outer diameter

Ø	Length	Ø Tip Diameter	Grinding
1,0 mm	All lengths available	0.1mm	18°
1.6mm	All lengths available	0.2mm	18°
2.4mm	All lengths available	0.4mm	30°

TUNGSTEN SUPERARC Ø 1,0MM NEW!
TUNGSTEN SUPERARC Ø 1.6MM
TUNGSTEN SUPERARC Ø 2.4MM

1.2.0202 + Length
1.2.0200 + Length
1.2.0201 + Length

WELD HEAD		OSK 13°		OSK 21		OSK 38		OSK 53		OSK 76		OSK 115	
Tube OD Ø		Tungsten length											
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
3.17	0.125	14	0.551	26	1.024	40	1.575						
6.00	0.236	12	0.472	25	0.984	39	1.535						
6.35	0.250	12	0.472	25	0.984	39	1.535	53	2.087				
8.00	0.315	11	0.433	24	0.945	38	1.496	53	2.087				
9.53	0.375	10	0.394	23	0.906	37	1.457	52	2.047	62	2.441	82	3.228
10.00	0.394	10	0.392	23	0.906	37	1.457	52	2.047	62	2.441	82	3.228
10.20	0.402	10	0.392	22	0.866	36	1.417	51	2.008	61	2.402	81	3.189
12.00	0.472	9	0.354	22	0.866	36	1.417	51	2.008	61	2.402	81	3.189
12.70	0.500	9	0.354	21	0.827	35	1.378	50	1.968	60	2.362	80	3.150
13.00	0.512			21	0.827	35	1.378	50	1.968	60	2.362	80	3.150
13.50	0.531			21	0.827	35	1.378	50	1.968	60	2.362	80	3.150
15.88	0.625			20	0.787	34	1.339	49	1.929	59	2.323	79	3.110
16.00	0.630			20	0.787	34	1.339	49	1.929	59	2.323	79	3.110
17.20	0.677			19	0.748	33	1.299	48	1.890	58	2.283	78	3.071
18.00	0.709			18	0.709	32	1.260	47	1.850	57	2.244	77	3.031
19.00	0.748			17	0.669	31	1.220	46	1.811	56	2.205	76	2.992
19.05	0.750			17	0.669	31	1.220	46	1.811	56	2.205	76	2.992
20.00	0.787			17	0.669	31	1.220	46	1.811	56	2.205	76	2.992
21.30	0.839			16	0.630	30	1.181	45	1.772	55	2.165	75	2.953
22.00	0.866					30	1.181	45	1.772	55	2.165	75	2.953
23.00	0.906					29	1.142	44	1.732	54	2.126	74	2.913
25.40	1.000					28	1.102	43	1.693	53	2.087	73	2.874
26.90	1.059					27	1.063	42	1.654	52	2.047	72	2.835
28.00	1.102					27	1.063	42	1.654	52	2.047	72	2.835
29.00	1.142					26	1.024	41	1.614	51	2.008	71	2.795
30.00	1.181					26	1.024	41	1.614	51	2.008	71	2.795
33.70	1.327					24	0.945	39	1.535	49	1.929	69	2.717
35.00	1.378					23	0.906	38	1.496	48	1.890	68	2.677
38.10	1.500					21	0.827	36	1.417	46	1.811	66	2.598
40.00	1.575							36	1.417	46	1.811	66	2.598
41.00	1.614							35	1.378	45	1.772	65	2.559
42.40	1.669							34	1.339	44	1.732	64	2.520
44.50	1.752							33	1.299	43	1.693	63	2.480
48.30	1.902							31	1.220	41	1.614	61	2.402
50.80	2.000							30	1.181	40	1.575	60	2.362
51.00	2.008							30	1.181	40	1.575	60	2.362
52.00	2.047							30	1.181	40	1.575	60	2.362
53.00	2.087							29	1.142	39	1.535	59	2.323
54.00	2.126									39	1.535	59	2.323
60.30	2.374									35	1.378	55	2.165
63.50	2.500									34	1.339	54	2.126
70.00	2.756									31	1.220	51	2.008
76.10	2.996									27	1.063	47	1.850
76.20	3.000									27	1.063	47	1.850
85.00	3.346											43	1.693
88.90	3.500											41	1.614
101.60	4.000											35	1.378
104.00	4.094											34	1.339
108.00	4.252											32	1.260
114.30	4.500											28	1.102

Tungsten lengths for:

open-frame weld heads OSW 40:	20 – 35mm		0.787" – 1.378"
open-frame weld heads OSW 80 – 170, OSZ:	35 – 50mm		1.378" – 1.968"
tube-to-tube-sheet weld heads RBK:	35 – 46mm		1.378" – 1.811"

* For the OSK 13S are just diameter 1.0mm tungsten applicable.

Non-Standard length are available on request.



BACK CAPS

BACK CAP OSW, OSZ

1.3.1147

BACK CAP TURN

1.2.1817

BACK CAP MANUAL TORCH

1.3.1910

CLAMP SLEEVES

CLAMP SLEEVE OSW 40 Ø 1.6mm

1.0.1616

CLAMP SLEEVE OSW 40 Ø 2.4mm

1.0.1623

CLAMP SLEEVE OSW 80 – 170, OSZ, RBK, Manual torch Ø 1.6mm

1.0.1626

CLAMP SLEEVE OSW 80 – 170, OSZ, RBK, Manual torch Ø 2.4mm

1.0.1627

CLAMP SLEEVE TURN Ø 1.6mm

1.2.1818

CLAMP SLEEVE TURN Ø 2.4mm

1.2.1819

TEFLON TORCH INSOLATORS

TEFLON TORCH INSOLATOR OSW, OSZ

1.0.1629

TEFLON TORCH INSOLATOR TURN, RBK, Manual torch

1.1.1820

GAS LENSES

GAS LENS OSW 40 Ø 1.6mm

1.0.1620

GAS LENS OSW 40 Ø 2.4mm

1.0.1624

GAS LENS OSW 80 – 170, OSZ, TURN, Manual torch Ø 1.6mm

1.0.1631

GAS LENS OSW 80 – 170, OSZ, TURN, Manual torch Ø 2.4mm

1.0.1632

GAS LENS RBK Ø 1.6mm

1.2.3658

GAS LENS RBK Ø 2.4mm

1.2.3659

GAS CUPS

GAS CUP Mini, OSW 40

1.3.1046

GAS CUP Size 8, OSW 80 – 170, OSZ, TURN

1.3.1146

GAS CUP Size 5 (fillet weld) RBK

1.2.3660

GAS CUP Size 6, manual torch

1.3.1911

STRIKING AIDS / HF-SPIRALS

STRIKING AID / HF-SPIRAL TURN (150mm length, Ø 15mm)

1.2.1803

STRIKING AID / HF-SPIRAL TURN (150mm length, Ø 19mm)

1.2.1804

STRIKING AID / HF-SPIRAL RBK (50mm length, Ø 15mm)

1.1.3508

STRIKING AID / HF-SPIRAL RBK (50mm length, Ø 19mm)

1.1.3509

TORCH EQUIPMENT OSW / OSZ

SPARE PARTS BOX for TIG torch "Standard" Ø 1.6mm

1.3.1621

SPARE PARTS BOX for TIG torch "Standard" Ø 2.4mm

1.3.1622

SPARE PARTS BOX for TIG torch "Mini" Ø 1.6mm

1.3.1623

SPARE PARTS BOX for TIG torch "Mini" Ø 2.4mm

1.3.1624

Package includes:

- 1 back cap
- 1 clamp sleeve Ø 1.6 or 2.4mm
- 1 teflon torch isolator
- 1 gas lens Ø 1.6 or 2.4mm
- 1 gas cup



Your business card: The Orbital-Workstation

MOBILE ORBITAL WORKSTATION

1.2.0128

- 5 gang accessory power outlet (European plugs) fitted in the workstation.
5 x 230V, 10A (not suitable for the power source)
- 2 x Ø160mm locking swivel wheels
- 2 x Ø280mm heavy duty rubber tired wheels
- Adjustable gas bottle bracket with high level fixing chain
- High-quality powder-coated finish
- Formed and welded stainless steel work top
- Pull-out platform for oxygen analyser
- Fixings for bench vice with 'V' block
- Holder for open-frame weld head
- Holder for enclosed weld head
- Holder for manual TIG-Torch
- Continuously adjustable controller holder for TIGTRONIC ORBITAL 4 and BASIC 2/3/4
- Footprint for inverter, water cooling unit, etc.

Dimensions (excluding brackets):
(L x W x H): 1110 x 710 x 850mm
Weight: unloaded approx. 70kg



Optional:

ADAPTER PLATE for TIGTRONIC COMPACT

1.2.0147



OSK 13 S FIXTURE FOR WORK BENCH **NEW!**

1.3.4002



BENCH VICE, NICKEL-PLATED

Parallel bench vice size 100 suitable for use in cleanroom

1.2.0132

V BLOCKS

For securing tubes when tacking before welding

· Electro-plated aluminium

V BLOCKS FOR MINI FITTINGS

V BLOCK for mini fitting OD 6 - 6.35mm | 0.236" - 0.250"

1.2.0141

V BLOCK for mini fitting OD 8 - 10mm | 0.315" - 0.394"

1.2.0142

V BLOCK for mini fitting OD 12 - 13.5mm | 0.472" - 0.531"

1.2.0143

V BLOCKS FOR LARGER TUBE DIAMETERS

V BLOCK OD 5 - 30mm | 0.236" - 1.181"

1.2.0129

V BLOCK OD 10 - 65mm | 0.394" - 2.559"

1.2.0130

V BLOCK OD 20 - 115mm | 0.787" - 4.528"

1.2.0131

TOOL KIT

Package includes:

- Nine-piece ball-ended allen key set
- Feeler gauge (21 blade)
- Tweezers
- Slotted screwdriver
- Carrying case

1.2.0133

TOOL KIT OSK 13S

NEW!

Package includes:

- Six-piece ball-ended allen key set
- Feeler gauge (13 blade)
- Tweezers
- Various slotted screwdriver
- Carrying case

1.3.0133

TELESCOPE MIRROR SET (Ø 24 mm, 30 mm, 40mm)

NEW!

Incl. electrical Torch for inspection and Carrying case

1.1.4132





//SAWS/TUBE SQUARING DEVICES

**CUTTING SAW ORS**

A precise 90° cut is essential for orbital welding joint preparation.

- Portable lightweight unit
- Flash-free square cut
- 2 cast aluminum clamping jaws
- Multiple clamping points on the tube OD provides deformation-free clamping
- For cutting thin-walled tubes and elbows
- Saw blade located close to the clamps to provide an optimal cut even with small tube diameters
- Blade position indicator
- Precise scale to enable correct cutting depth

CUTTING SAW ORS 115 (OD 5 – 120mm)**1.2.4503****Technical Data:**

Size range	OD 5 – 120mm 0.196" - 4.724"
Wall thickness	0,5 – 5mm
Electric drive	Single-phase AC motor
Main voltage (input)	220/230VAC (50/60Hz)
Power	1100W /5.1A
Protection class	II
Built-in electronic variable cutting speed	20 – 360RPM
Weight	30kg

Package includes:

- Orbital saw and drive unit
- 1 saw blade
- Tool wallet and tools
- 1 bottle of lubricant oil
- Transportation box with inlay (600x800x600mm)

CUTTING SAW ORS 115, 115V NEW!
(OD 5 – 120 mm)**1.1.4503**

Saws for other dimensions are available on request.

STAND FOR CUTTING SAWS ORS**1.2.4510**

SAW BLADE for wall thickness 1 – 3mm
Ø 68mm, 72 teeth

1.3.4520

SAW BLADE for wall thickness 2.5 – 7mm
Ø 68 mm, 44 teeth

1.3.4521**SAW BLADE AND LUBRICANT OIL 250ml bottle****1.3.4525**

CUTTING BLOCKS, quick lock system

- For locking no tools needed
- Save and quick clamping at site
- Angular kerf for a precise cutting of tubes
- Saw blades up to 1 mm applicable
- Made of high quality hardened tool steel

CUTTING BLOCKS DIN 11850/RANGE 1

CUTTING BLOCKS DIN 11850/RANGE 2

CUTTING BLOCKS INCH

CUTTING BLOCKS ISO

Other sizes on request.

DN	mm	
10	12	1.1.4601
15	18	1.1.4602
20	22	1.1.4603
25	28	1.1.4604
32	34	1.1.4605
40	40	1.1.4606
50	52	1.1.4607
65	70	1.1.4608
80	85	1.1.4609
100	104	1.1.4610
125	129	1.1.4611
150	154	1.1.4612
200	204	1.1.4613
DN	mm	
10	13	1.1.4614
15	19	1.1.4615
20	23	1.1.4616
25	29	1.1.4617
–	30	1.1.4642
32	35	1.1.4618
40	41	1.1.4619
50	53	1.1.4620
	inch	
	1/4"	1.1.4645
	1/2"	1.1.4640
	3/8"	1.1.4646
	3/4	1.1.4641
	1"	1.1.4621
	1 1/4"	1.1.4622
	1 1/2"	1.1.4623
	2"	1.1.4624
	2 1/2"	1.1.4625
	3"	1.1.4626
	3 1/2"	1.1.4627
	4"	1.1.4628
	5"	1.1.4649
	6"	1.1.4650
	mm	
	13.5	1.1.4629
	17.2	1.1.4630
	21.3	1.1.4631
	26.9	1.1.4632
	33.7	1.1.4633
	42.4	1.1.4634
	48.3	1.1.4635
	60.3	1.1.4636
	76.0	1.1.4637
	88.9	1.1.4638
	114.3	1.1.4639
	139.7	1.1.4647
	168.3	1.1.4648





Tube squaring systems are available for precise weld preparation, an essential ingredient for producing high-quality welds.

TUBE SQUARING SYSTEM PLANFIX 40 (OD 3 – 40mm)

The PLANFIX 40 is a handy, high-performance, battery-powered tube squaring system.

Technical Data:

Tube size range	OD 3 – 40mm 0.368" - 1.575"
Max. wall thickness	3.0mm
Weight	3,9kg
Feed with scale division	

Technical Data Drive Unit:

Motor and transmission unit	Fein ASCM14
Voltage	14V DC
Power (battery)	4.0Ah
Speed ranges	0 – 420 / 0 – 1250 / 0 – 1850RPM

Technical Data Battery Charger:

Battery charger	ALG 50
Mains voltage (input)	220/230VAC (50/60Hz)
Output voltage	10.8-18V
Power	75W/ 3.5A
Charging time	70min

Package includes:

- Drive unit, tool hub and tube clamping mechanism
- 2 rechargeable lithium ion batteries
- Battery charger
- Allen key set
- 1 facing tool bit

TUBE SQUARING SYSTEM PLANFIX 40, 115V NEW!

(OD 3 – 40mm)

SPECIAL TRANSPORTATION BOX

with inlet for PLANFIX 40 and accessories
Dust- and moisture-proof

PLANFIX 40 COLLETS

1 set for each outside diameter = 2 collets.
Additionally the OSK 38 weld head collets are compatible

1.3.4101

1.1.4101

1.2.4103

1.3.4102 + Ø





TUBE SQUARING SYSTEM PLANFIX 115 (OD 9.53 – 114.3mm)

The PLANFIX 115 is a high-performance lightweight tube squaring system with a high torque worm gear transmission and electric drive unit.

Technical Data:

Tube size range	OD 9.53 – 114.3mm 0.375" - 4.500"
Wall thickness	max. 3.0mm
Electric drive	Single-phase AC motor
Main voltage (input)	220/230VAC (50/60Hz)
Power	1100W / 5.1A
Protection class	II
Built-in electronic variable cutting speed	0 – 144rpm
Weight	12.5kg
Feed with scale	

Package includes:

- Drive unit, tool hub and tube clamping mechanism
- Allen key set
- 1 facing tool bit

TUBE SQUARING SYSTEM PLANFIX 115, 115V

(OD 9.53 – 114.3mm)



TRANSPORTATION BOX

with inlet for PLANFIX 115 and accessories

PLANFIX 115 COLLETS

1 set for each outside diameter = 2 collets

Additionally the OSK 115 weld head collets are compatible.



FACING TOOL BITS (TIC COATED), for squaring
for PLANFIX 40 and PLANFIX 115



1.2.4005

1.1.4005

1.2.4006

1.3.4007 + Ø

1.2.4114

Facing tool bits for chamfering 30° and 37.5° are available on request.

DEBURRING TOOLS

UNIVERSAL DEBURRING TOOL SET (7 PARTS)

OD 3 – 16mm | 0.118" - 0.630"

1.2.4125

ID BURR REMOVING TOOL WITH NOZZLE

1.2.4122

ID BURR REMOVING TOOL WITH THREE-EDGE SUPPORT

1.2.4123

OD BURR REMOVING TOOL

1.2.4124

BOXED DEBURRING TOOL KIT (3 PARTS)

1.2.4120

UNIVERSAL DEBURRING TOOL, Ø 10 – 54m | 0.394" - 2.126"

1.2.4121

FOR WELDING SEAM CLEANING:

ABRASIVE PAD ROLL, SUPER FINE, role 10m | 393.701", 115mm wide | 4.528"

1.1.4125

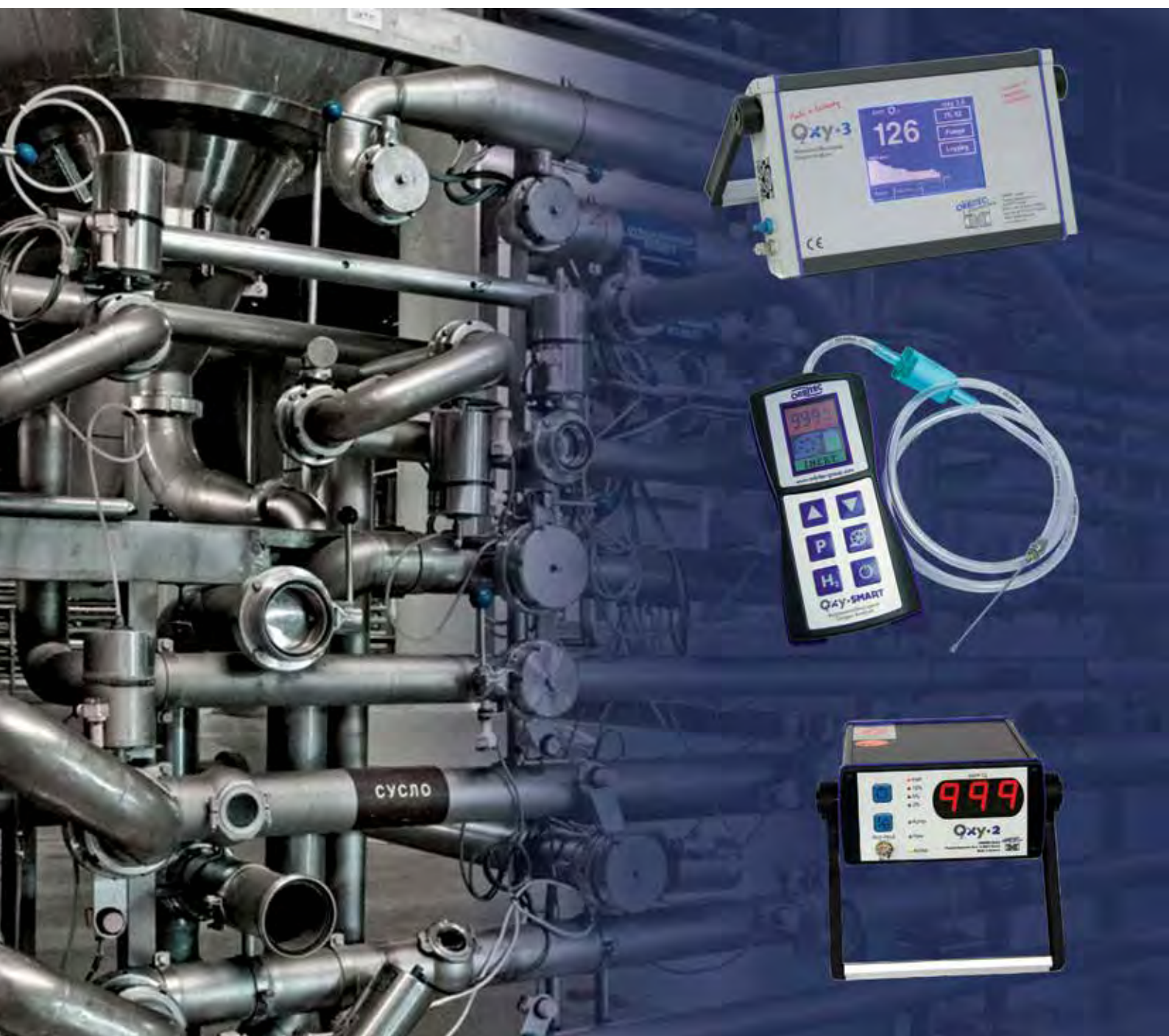
POLISHING DISC SC 80 WP, Ø 150mm | 5.905"

1.1.4126

POLISHING DISC ARBOUR

1.1.4127





//PURGING

Precise purging is essential for controlling weld quality, particularly when welding high-alloy, corrosion-resistant materials that are highly sensitive to oxygen in the welding process.

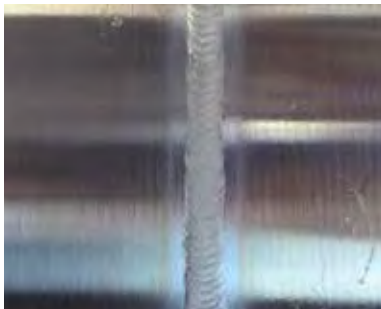
Our oxygen analysers can be connected to our controllers for monitoring ID purge quality as part of the programmed weld schedule parameters (except Oxy Smart).

Values measured during welding will also be recorded as part of the weld data recording facility. The maximum oxygen value (in ppm) is entered in the controller (typically < 20ppm). Welding will not commence until the measured value drops below the programmed threshold.

The analysers are calibrated to measure in the for welding relevant range below 30ppm up to +/- 2ppm precise.

Since oxidation starts at around 30ppm analysers with values displayed as a percentage are not recommended → 0.1% = 1,000ppm!

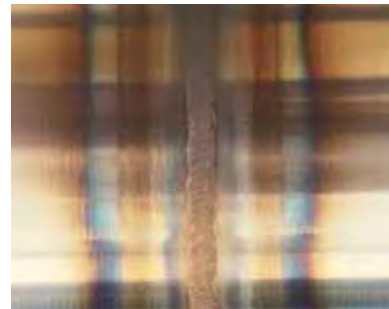
Examples of ppm vs oxidation levels:



7ppm
0.0007 %



27ppm
0.0027 %



500ppm
0.05 %

Oxy-2



OXY 2 OXYGEN ANALYSER incl. accessories

- For inert gases
- For mixed gases containing hydrogen
- Measuring cell made of zirconium oxide (maintenance-free)
- Interface for communication with our orbital controllers

Technical Data:

Measuring range	5 – 999ppm O ₂
Operating temperature	0 – 45° Celsius
Measuring accuracy	+/- 0.3mV (EMK Sensor)
Stabilisation time	10 – 15min.
Response time	approx. 2 seconds for changes
Dimensions (H x W x L)	140mm x 210mm x 225mm without handle
Mains voltage	230V AC / 110VAC adjustable
Heating cycle load	approx. 200VA
Standard load	approx. 40VA

Package includes:

- Oxygen analyser
- Power cable
- Hors set, 3m incl. filter and stainless steel probe
- Calibration certificate
- Simple plastic case

Optional:

SPECIAL TRANSPORTATION CASE FOR OXY 2

with inlet for OXY 2 and accessories
Dust- and moisture-proof



COM-CABLE OXY 2 FOR COMMUNICATION AND DOCUMENTATION

COM-CABLE for connection to controllers TIGTRONIC BASIC 2-4

COM-CABLE OXY 2 for connection to controllers TIGTRONIC ORBITAL 4 and COMPACT



1.2.5001

1.2.5043

1.3.5009

1.3.5011

O₂-SMART



OXY SMART OXYGEN ANALYSER incl. accessories and box

- Battery powered device
- For inert gases
- For mixed gases with hydrogen (max. 10%)
- Measuring cell made of zirconium oxide (maintenance free), long lifetime through intelligent software
- Robust for use at site (protective frame out of rubber)
- Dust- and moisture-proof, also for use around high humidity
- Intuitive operator guidance through symbols
- Coloured enlighten display
- Battery indicator
- Fault indication in case of error

1.2.5004

Technical Data – Analyser:

Measuring range	5 – 999ppm O ₂
Dimensions (L x W x H)	160mm x 80mm x 35mm
Weight	0.35kg
Supply voltage	12V
Charging cable	100-240V with various adapter plugs
Battery life	9h using lithium ion technology

Package includes:

- Oxygen analyser
- Charging cable with various adapter plugs for worldwide use
- Hose set, 1m, incl. filter and stainless steel probe
- Calibration certificate
- Plastic case with inlay



Oxy-3



RESIDUAL OXYGEN ANALYZER OXY 3, incl. accessories

1.2.5050

- Simple menu navigation
- For inert gases and mixed gases containing hydrogen
- Measuring cell made of zirconium oxide (maintenance-free)
- Large high resolution touch screen panel
- Graphic display of measured values
- SD card interface for storing documentation
- Interface for communication with our controllers
- User adjustable alarm limits and thresholds
- Audible key tones and alarms
- Colour display for figures outside setpoint values
- Interface for communication with our orbital controllers
- Software updates possible
- Multi language
- Bluetooth compatible
- Multirange 90 – 260V

Technical Data:

Measuring range	5ppm -21% O ₂
Ambient temperature	0 – 45° Celsius
Measuring accuracy	+/- 0.3mV (EMK sensor)
Stabilisation time	10 – 14min
Response time	approx. 2 seconds for changer
Dimensions (L x W x H)	190mm x 270mm x 55mm
Mains voltage	Multirange 90 – 260V AC
Heating cycle load	approx. 40VA
Standard load	approx. 20VA

Package includes:

- Oxygen analyser
- Power cable
- Hors set, 3m incl. filter and stainless steel probe
- Calibration certificate
- Simple plastic case

Optional:

SPECIAL TRANSPORTATION BOX FOR OXY 3

1.2.5051

with inlet for OXY 3 and accessories
Dust- and moisture-proof

COM-CABLE OXY 3 for communication and documentation

COM-CABLE OXY 3 for connection to controllers TIGTRONIC BASIC 2-4

1.3.5007

COM-CABLE OXY 3 for connection OXY 3 to controllers TIGTRONIC ORBITAL 4 and COMPACT

1.3.5052

SPARE PLASTIC HOSE for OXY 2 / OXY 3, 3m, with particle filter and stainless steel probe

1.3.5014

SPARE PLASTIC HOSE for OXY SMART, 1m, particle filter and stainless steel probe

1.3.5016

SPARE FILTER

1.3.5015





PURGE HOSE with ball valve, 8m

1.3.0126



ALUMINIUM ADHESIVE TAPE ROLL 50 x 0.09mm, roll 55m

1.1.4129



PURGE BUNGS

- Conical
- Hole: Ø 6mm | 0.236"
- Material: silicon, clear
- Heat resistant up to 250°C



Purge bungs for ID	
mm	inch
10.5 - 14.5	0.413 - 0.571
12.5 - 16.5	0.492 - 0.650
14.0 - 18.0	0.551 - 0.709
18.0 - 24.0	0.709 - 0.945
23.0 - 29.0	0.906 - 1.142
26.0 - 32.0	1.024 - 1.260
29.0 - 35.0	1.142 - 1.378
31.0 - 38.0	1.220 - 1.496
36.0 - 44.0	1.417 - 1.732
41.0 - 49.0	1.614 - 1.929
47.0 - 55.0	1.850 - 2.165
50.5 - 59.5	1.988 - 2.343
56.0 - 65.0	2.205 - 2.559
60.0 - 70.0	2.362 - 2.756
64.5 - 75.5	2.539 - 2.972
71.0 - 83.0	2.795 - 3.268
79.0 - 92.0	3.110 - 3.622
87.0 - 100.0	3.425 - 3.937
94.0 - 107.0	3.701 - 4.213

1.3.5510

1.3.5512

1.3.5514

1.3.5518

1.3.5523

1.3.5526

1.3.5529

1.3.5531

1.3.5536

1.3.5541

1.3.5547

1.3.5550

1.3.5556

1.3.5560

1.3.5564

1.3.5571

1.3.5579

1.3.5587

1.3.5594



PURGE BUNGS SET

NEW!

For ID 10.5 - 49mm / 0.413" - 1.929" (10 x 2 Bungs) in a Case

1.3.5501

PURGE BUNGS SET

NEW!

For ID 47 - 107mm / 1.850" - 4.213" (9 x 2 Bungs) in a Case

1.3.5502

**FLEXIBLE PURGE DAM**

- Gas and time saving
- Heat resistant up to 340°C
- Applicable in all positions
- Simple pull through elbows possible

SC PROFI SUPPLIED WITH 2 DISCS (340°C), FLEXIBLE CONNECTION WITH RECTUS NIPPLE TYPE 21

Type	Connection	ID (mm)	ID (inch)
SC Profi Ø 17mm	80mm spring connection	13 – 16	0.512" - 0.630"
SC Profi Ø 21mm		16 – 20	0.630" - 0.787"
SC Profi Ø 24mm		18 – 23	0.709" - 0.906"
SC Profi Ø 30mm		23 – 29	0.906" - 1.141"
SC Profi Ø 39mm		29 – 38	1.141" - 1.496"
SC Profi Ø 45mm		36 – 43	1.417" - 1.693"
SC Profi Ø 57mm	120mm flex connection	42 – 53	1.654" - 2.087"
SC Profi Ø 60mm		45 – 58	1.772" - 2.283"
SC Profi Ø 70mm		55 – 67	2.165" - 2.638"
SC Profi Ø 82mm	150mm flex connection	68 – 80	2.677" - 3.150"
SC Profi Ø 95mm		79 – 92	3.110" - 3.622"
SC Profi Ø 117mm		98 – 114	3.858" - 4.488"
SC Profi Ø 145mm		120 – 136	4.724" - 5.354"
SC Profi Ø 176mm		150 – 168	5.905" - 6.614"
SC Profi Ø 182mm		155 – 170	6.102" - 6.693"
SC Profi Ø 220mm	250mm flex connection	190 – 205	7.480" - 8.070"
SC Profi Ø 231mm		195 – 215	7.677" - 8.464"

1.1.6017**1.1.6021****1.1.6024****1.1.6030****1.1.6039****1.1.6045****1.1.6057****1.1.6060****1.1.6070****1.1.6082****1.1.6095****1.1.6117****1.1.6145****1.1.6176****1.1.6182****1.1.6220****1.1.6231****WS PLUS FLEXIBLE PURGE DAM****NEW!**

Type	ID (mm)	ID (inch)
WS Plus Purge Dam 8" (340°C)	180 - 215	7.086" - 8.465"
WS Plus Purge Dam 9" (340°C)	215 - 240	8.465" - 9.449"
WS Plus Purge Dam 10" (340°C)	240 - 265	9.449" - 10.433"
WS Plus Purge Dam 11" (340°C)	265 - 290	10.433" - 11.417"
WS Plus Purge Dam 12" (340°C)	290 - 315	11.417" - 12.402"
WS Plus Purge Dam 13" (340° C)	315 - 330	12.402" - 12.992"

1.1.6180**1.1.6215****1.1.6240****1.1.6265****1.1.6290****1.1.6315**

Other purge dams are available on request.

PULL ROPE, 10m, (insulated) with carabiner**1.1.6232****CONNECTION FOR FLEXIBLE PURGE DAM / PURGE HOSE**

OD 6mm

1.1.6234**Measurement connection for purge dam to Oxy**

(from SC Profi Ø 57mm) available upon request.



**PURGE PRESSURE ANALYSER PPA 2500****1.3.5200**

The PPA 2500 purge pressure analyser is used for setting and monitoring the ID purge pressure. It replaces the analogue Magnahelic devices traditionally used for applying the ID pressure balancing technique used for producing high-quality "controlled profile" welds on small diameter applications. The connection with the TIGTRONIC ORBITAL and TIGTRONIC COMPACT controllers enables documentation.

Technical Data:

Input voltage	24V (via the controller)
Measuring range	Calibrated 0 - 2500Pa
Weight	0.6kg
Dimensions (L x B x H)	42mm x 80mm x 160mm

Package includes:

- Purge Pressure Analyser
- Sampling Hose
- 6mm T-fitting
- Calibrations certificate
- Plastic box

SERVICES

RENTAL SERVICE, REPAIR SERVICE, FINANCING



RENTAL SERVICE – USE INSTEAD OF INVEST

All Orbitec orbital welding equipment is available for hire at competitive prices.

Some of the advantages of hiring:

- Multiple systems available as required
- Fixed prices for 'end of hire' return servicing
- Reliable basis for cost calculation
- No investment risk
- High availability in multiple combinations

Your business card on site: The Orbital-Workstation

Mobile workstation provided free of charge when hiring a complete system.



Complete systems with mobile workstations are sent by us in special containers.



Purchase option: Your benefit

If you decide to purchase the system within 4 weeks of the end of the rental period, we will deduct the rental costs up to 30 calendar days from the purchase price.

REPAIR AND MAINTENANCE

A quick and reliable repair and maintenance service is a matter of course. Our comprehensive rental service helps to bypass the downtimes of devices.

HIRE PURCHASE / LEASING

We are happy to provide you with ...

- a hire purchase over 3, 6 or 12 months,
- a leasing offer via our leasing partner.

HELP WITH CONTRACTING OUT

If you would prefer to contract out the 'orbital welding' of your application, we are happy to recommend one of our many customers who are equipped with appropriate equipment, qualified procedures and personnel, and can provide this service.

Excellent welding results are achievable with most orbital equipment available on the market today, good operator training is essential to achieve the most from your equipment and Orbitec offer training courses to suit all equipment and application combinations.

Training is delivered by our experienced orbital engineers; we can provide standard and application tailored courses at our facility which is equipped with all the necessary equipment and accessories.

All courses include a high degree of practical 'hands on' use. Application of the process with supporting literature and one-to-one instruction included as required.



Some topics covered in one of our courses:

- Explanation of the process
- Process technology, examples of various manufacturers' products
- Welding gases
- Weld joint preparation
- Purging techniques
- Creating a weld schedule
- Equipment set-up and operation
- Welding with various equipment and material combinations
- Weld schedule development
- Material related issues
- Weld acceptance criteria
- Main focus on customer preference

SPECIAL OFFER "REPLACEMENT"

ORBITEC offers a part exchange scheme for replacement of aging or obsolete orbital equipment such as AMI, Polysoude or Orbitalum.

Please contact your nearest ORBITEC partner!



obsolete

no spare parts

defect



OSW series

Made in Germany
ORBITEC[®]
orbital welding
www.orbitec-group.com



OSK series

OSK 13 S

Cassettes are compatible
with AMI Model 9-500

PROBLEM? NO!

Our enclosed and open-framed Weld heads are compatible with your ARC Machines Power Supplies. The matching adaptations are available for purchase and rental.

the solution!



SERVICE

ORBITEC offers services for AMI orbital welding equipment:

- technical assistance
- maintenance
- repairs



GENERAL TERMS AND CONDITIONS OF WARRANTY

A warranty period of 24 months in a one-shift operation is provided with Orbitec equipment. However, batteries, measuring cells, gas level monitors and wearing parts are not covered under warranty. The warranty period commences at the time of transfer (in the case of shipment it commences when the goods leave our factory). During this period Orbitec guarantees all products against material and manufacturing defects:

- Fault investigation free of charge
- Replacement of defective parts free of charge (except consumable parts)
- Professional repair service free of charge
- Defects caused by inappropriate treatment or use of spare parts not supplied by Orbitec will not be covered by this guarantee



All work covered by guarantee will be performed at the Orbitec facility in Seligenstadt / Germany. All costs for transportation of goods to/from Seligenstadt to be covered by the customer.

The guarantee is void if the equipment has been subject to interference or where repair has been attempted by unauthorised persons.

These terms are additional to the legal guarantee regulations.

GENERAL TERMS AND CONDITIONS OF HIRE

1. General

These terms and conditions also apply to future business transactions conducted between the contracting parties. These General Terms & Conditions of Hire apply exclusively. The General Terms & Conditions of Business of the customer are only valid if the supplier has expressly approved their validity in writing.

2. Period of rent

The period of rent is calculated according to full calendar days. The period of rent commences upon dispatch of the equipment to the place of use and ends when the equipment is returned to the lessor. There is no minimum rental period.

3. Dispatch and transfer of risk

The equipment is dispatched at the expense of the lessee using normal shipping methods, unless the lessee has expressly stipulated a certain shipping method. The cost of transport insurance is borne by the lessee. The transfer of risk commences upon pick-up or collection of the equipment from the lessor and ceases upon return of the equipment to the lessor.

4. Use of the rental property

The rented equipment remains the property of the lessor. The lessee must use the equipment with care, adhere to all obligations related to the possession, use and preservation of the rental property, and comply with the lessor's recommendations for maintenance, support and use. Any necessary repairs arising from improper use shall be invoiced to the lessee separately. The status and repair report from the lessor forms the basis of the invoice and is made available to the lessee.

5. Liability and guarantee

To the exclusion of other claims, the lessor is responsible for the functional operation of the rented equipment at the time of the transfer of risk in the following way: If the rented equipment has a fault at the time of the transfer of risk, which voids its capability for the contractual use or reduces its scope of use amounting to its invalidation, the lessor can at his own discretion eliminate the fault, replace the faulty equipment or rescind the contract. The rental price is reduced accordingly for the duration of the fault. For damage arising from the use of the rental object by the lessee, the lessor is only liable if this is based on a fault existing at the time of transfer of risk. The liability extends to the cost of repairs to the amount of the rental price claim of the lessor, with which any subsequent claim for damages must be invoiced. Furthermore, any resulting claims from the lessee, in particular for damages, are excluded. Cases of fatal or serious personal injury and damage to health are exempt from the limitation of liability clause.

6. Liability of the lessee

The lessee is liable to the lessor for all damage arising from the non-intended and improper use of the rental object. Furthermore, the lessee shall bear the costs of any claims for accidental destruction, accidental damage, as well as theft. The lessee is obligated to insure the rental property against loss and/or damage. In the case of complete damage, the lessee must provide the replacement value.

7. Third party rights

The lessee must keep the rental property exempt from all charges, demands and liens from third parties. He is obligated to immediately inform the lessor, by making available all necessary documents, if, during the period of the rental agreement, the rental property is subject to a lien or any other such charge by third parties. The lessee shall bear all costs necessary to cancel any such third party intervention.

8. Payment

The rental price is due immediately upon receipt of the invoice and payable without deductions.

9. Return of the rental property

The lessee must return, at his own risk and expense, the rented equipment immediately upon expiry of the period of rent to the lessor.

10. Deposit

The lessor reserves the right to charge a deposit. The deposit is payable before the rental property has been transferred and is returned to the lessor once the rental objects have been returned or is charged against any unpaid invoice.

11. Final provisions

Verbal supplementary agreements are null and void. Any amendments made to this contract are required in writing. Should one clause of this contract not be legally effective, the validity of the other clauses remains unaffected. Incidentally, the General Terms & Conditions of Business of the lessor apply, in addition to the terms and conditions stated herein.

General Terms & Conditions of Business

1. General

These terms and conditions also apply to future business transactions conducted between the contracting parties. These General Terms and Conditions of Business apply exclusively. The General Terms and Conditions of Business of the purchaser are only valid if the supplier has expressly approved their validity in writing.

2. Final specification of services

The aspects of this specification of services provide a comprehensive and conclusive definition of the delivery item.

3. Correct and punctual deliveries

The contract is concluded under the reservation of correct and punctual delivery by the supplier. [The contractor must immediately inform the principal of the non-availability of the delivery item and in the case of rescission the contractor must be reimbursed the equivalent amount immediately.]

4. Payment conditions and supplementary performance

Payment is due in full upon delivery or acceptance. The principal is, without additional declarations from the seller, in default 14 days after the due date for payment if he has not paid. In the case of the presence of defects, the principal is not entitled to retain possession of the goods, unless the delivery was evidently faulty or the principal is clearly entitled to the right to decline acceptance of the work; in such cases, the principal is only entitled to retain possession if the retained amount covers to a reasonable extent the defects and any foreseeable costs for subsequent performance (in particular the costs for eliminating the fault). The principal is not entitled to assert claims and rights for defects if he has not made any payments due and the amount due (including any payments made) covers to a reasonable extent the value of the delivery, with faults, or the work.

5. Reservation of proprietary rights

(1) The delivery item remains the property of the contractor until fulfillment of all contractual obligations to the principal.

(2) During the period of reservation of proprietary rights, the principal is prohibited from taking out a lien or assigning the item as security. Further disposal is only permitted to distributors in the ordinary course of business and subject to the conditions that payment of the equivalent value for the delivery item is made to the principal. The principal must also agree with the purchaser that the purchaser only acquires the proprietary rights upon this payment.

(3) The principal is allowed to process the delivery item or combine it with other objects. The processing or combination (hereinafter referred to collectively as "processing" and with regard to the delivery item: "processed") occurs when an object is designated as a "new item" following the processing of an existing item. The principal stores the new item for the contractor with the due care and prudence of an ordinary business.

In the event of processing with other objects not belonging to the contractor, the contractor is entitled to co-ownership of the new item for the amount of the share, which results from the proportion of the value of the processed or combined delivery item to the value of the other processed goods at the time of processing. If the principal acquires sole ownership of the new item, both the principal and contractor agree that the principal shall grant the contractor co-ownership of the new item for the proportion of the value of the processed delivery item to the other processed goods at the time of processing.

(4) In the case of disposal of the delivery item or the new item, the principal hereby assigns his rights for further disposal against the purchaser to the contractor by way of security, without the need for further declarations. The assignment also includes outstanding balance claims. However, the assignment is only applicable for the amount that corresponds to the price of the delivery item invoiced by the contractor. The part of the balance assigned to the contractor is to be satisfied prior-ranking.

(5) If the principal combines the delivery item or the new item with moveable objects, he, without the need for further declarations, also assigns his claim, which is due to him as payment for the connection, to the contractor, with all ancillary rights by way of security for the amount in proportion of the value of the delivery item or new item to the other combined goods at the time of the combination.

(6) Except for revocation, the principal is authorised to forfeit the assigned debts. The principal shall immediately forward the payments for the assigned debts for the amount of the secured debt to the contractor. In the event of reasonable cause, in particular delay in payment, cessation of payments, initiation of insolvency proceedings, act of protest or reasonable evidence for excess indebtedness or threatened payment incapacity, the contractor is entitled to revoke the forfeiture authorisation of the principal. In addition, the contractor can, after a prior warning of notifying the debtor of the assignment or of utilizing the assigned claims subject to observance of an adequate respite, notify the debtor of the assignment, utilize the assigned claims, and demand that the principal notify the customer of the assignment.

(7) In the case of establishing prima facie evidence, the principal must provide the contractor with the necessary information and documents for the assertion of his rights against the customer.

(8) For charges, seizures or other dispositions or intervention by third parties, the principal must immediately inform the contractor thereof.

(9) Where the realizable value of all security rights, to which the contractor is entitled, exceeds the amount of all secured claims by more than 10%, the contractor at the request of the principal can approve a partial release of the security; the contractor has the choice between the various security rights.

(10) In the event of contractual breaches by the principal, in particular late payment, the contractor is entitled to demand without notice the withdrawal of the delivery item or new item and / or rescind the contract; the principal is obliged to surrender the item. The demand for the return of a delivery item or new item does not constitute cancellation of the contract by the contractor unless expressly stated.

6. No liability for damages from distributors

The seller is not liable for material damage of the delivery which he procured from third parties and distributed to the customer unchanged; the liability for intent and gross negligence remains unaffected.

7. Minor defects

The liability for defects does not apply to insignificant deviations from the agreed conditions or to minor impairments to usability.

8. Choice of supplementary performance

The contractor is entitled to choose between remedial and replacement options in all cases. If the subsequent performance fails, then the principal has the right to reduce or, at his own discretion, rescind the contract.

[This does not affect the rights of the principal in accordance with the statutory provisions and conditions of this contract to demand damages in place of performance.]

9. Number of improvement attempts

If the principal demands damages in place of performance or even self-remedy of defects, this is only provided after the second attempt at repairing the item fails. The statutory provisions regarding the dispensability of setting a grace period shall remain unaffected.

10. Expenses for supplementary performance

The expenses necessary for the purposes of subsequent performance shall be borne by the principal; if higher expenses are incurred as the deliveries or services in question are to be transported to a location other than that of the subsidiary of the principal, unless this is in the course of correct and proper use.

11. Liability (without delay of delivery / impossibility)

(1) The contractor is liable in cases of intent or gross negligence of the contractor or an agent or agents in accordance with statutory provisions. In addition, the contractor is liable only under the Product Liability Act in cases of loss of life, limb or health or because of culpable violation of essential contractual obligations. The claim for damages for the breach of significant contractual obligations is, however, restricted to the contractual foreseeable damage. The liability of the contractor in cases of gross negligence is also restricted to contractual foreseeable damage, if none of the exceptions mentioned in Clause 2, of Para. 1 are present.

(2) The liability for damages caused by the delivery item to legal interests of the principal, e.g. damage to other matters, is, however, fully excluded. This does not apply in cases of intent or gross negligence or injury to life, limb or health.

(3) The aforementioned provisions in paragraphs 1 and 2 extend to damages in addition to performance and compensation in place of performance, regardless of the cause of action, in particular because of defects, breach of obligations arising from the debt ratio or tort actions. They also apply to claims to cover expenses. The liability for delay is determined in accordance with paragraph 12. However, the liability for impossibility is covered under paragraph 13.

(4) A change in the burden of proof to the detriment of the principal is not connected to the above regulations.

12. Liability in the case of delayed delivery

(1) If non-observance of time periods is due to force majeure, for example, mobilisation, war, riot or similar events, e.g. strike or lockout, the time periods shall be extended accordingly.

(2) The contractor is liable for delay in performance of services in cases of intent or gross negligence on his part or on the part of an agent or agents in accordance with statutory provisions. The liability of the contractor in cases of gross negligence is restricted, however, to contractual foreseeable damage, if none of the exceptions stated in clause 5 of this provision are present. Furthermore, the liability of the contractor due to delayed performance for damages, in addition to performance, and in place of performance, is restricted to 5% of the value of deliveries / services. Additional claims by the principal, even after expiry of a deadline to the contractor, for performance, are excluded. The aforementioned restrictions do not apply to liability for injury to life, limb or health. A change in the burden of proof to the detriment of the principal is not connected to the above-mentioned regulations.

13. Liability in the case of impossibility

The contractor is liable for the impossibility of delivery in cases of intent or gross negligence of the contractor or an agent or agents in accordance with statutory provisions. The liability of the contractor is in cases of gross negligence limited to contractual, foreseeable damage, if no exceptions are present that are stated in clause 5. In addition, the contractor's liability for damages due to impossibility and for compensation for expenses is restricted to 10% of the value of deliveries / services. Additional claims by the principal due to impossibility of delivery are excluded. This limitation shall not apply in cases of intent, gross negligence or injury to life, limb or health. The right of the principal to rescind the contract remains unaffected. A change in the burden of proof to the detriment of the principal is not connected with the above regulations.

14. Right to withdraw from the contract

The principal may only, within the framework of the statutory provisions of the contract, withdraw from the contract if the contractor has performed a contractual breach; in the event of defects, however, the statutory conditions remain effective. In the event of contractual breaches, the principal must declare within an appropriate timeframe at the request of the contractor whether he is withdrawing from the contract due to contractual breach or he insists on the delivery.

15. Limitation of actions

(1) The limitation of actions for claims and assertion of rights due to defects in deliveries / services, regardless of the cause in law, is one year for new items and barred for used items. This does not apply, however, for the cases specified in § 479 S. 1 of the German Civil Code (BGB) (Right of recourse). The time periods stated in clause 2 are subject to a limitation period of three years.

(2) Statute-barred or limitation regulations in accordance with S. 1 also apply to all claims for damages against contractors who are connected to the damage – regardless of the cause of action of the claim. Insofar as claims for damages of any type arise against contractors who are not connected to the damage, the limitation period stated in § 1 S. 1 applies.

(3) The limitation period regulations in accordance with S. 1 and S. 2 apply with the following provisions:

a) The limitation periods in general do not apply in the case of intent.

b) The limitation periods also do not apply if the contractor intentionally misrepresented the defects by silence or if the contractor took out a guarantee for the conditions of the deliveries / services. If the contractor intentionally misrepresents the defects, then in place of the limitation periods listed in S. 1, the statutory limitation applicable to fraudulent intent apply [§ 438 S. 1 No. 3 (other deliveries) and § 634a S. 1 No. 1 German Civil Code (BGB) (Manufacture / Maintenance / Change of an item or Planning / Monitoring Services) and No. 3 (other services)] to the exclusion of the period extension for fraudulent intent in accordance with §§ 438 S. 3 or 634 a S. 3 German Civil Code (BGB), if no other exception is present in accordance with this S. 3.

c) The limitation periods apply to claims for damages and not to cases of injury to life, limb or health, infringement of freedom, claims for product liability, gross negligence or breach of other significant contractual duties.

(4) The period of limitation for all claims commences upon delivery of the items and for services upon acceptance.

(5) Insofar as nothing else is expressly agreed, the statutory terms and conditions on the commencement of the limitation period, suspension of the statute of limitations, the suspension and recommencement of periods remain unaffected.

(6) A change of the burden of proof to the detriment of the principal is not connected with the aforementioned regulations.

16. Recourse to contractor in accordance with § 478 of the German Civil Code (BGB)

Recourse to the purchaser against the seller in accordance with § 478 German Civil Code (BGB) (Recourse to the Contractor) only exists if the purchaser has not come to any agreements with the seller resulting from the legal defects claims.

17. Part performance

Part performances are permitted insofar as they are considered just and reasonable by the purchaser.

18. Offsetting

The purchaser can only offset such claims that are undisputed and final.

19. Place of jurisdiction

The sole place of jurisdiction for all disputes arising from this contract is the residence of the contractor, if the contracting partner of the contractor is the purchaser.

20. Applicable law

This contract is governed by the law of the Federal Republic of Germany to the exclusion of the United Nations Convention on Contracts for the International Sale of Goods.

CHART

CHART FOR STANDARD TUBE OUTSIDE DIAMETERS



DIN (DIN 11850)	ISO (EN ISO 1127)	inch (ASME BPE 1997)	OD (mm)	OD (inch)
			3,17	0.125
			6,00	0.236
		1/4"	6,35	0.250
6			8,00	0.315
		3/8"	9,53	0.375
8			10,00	0.394
	10,2		10,20	0.402
			12,00	0.472
		1/2"	12,70	0.500
10			13,00	0.512
	13,5		13,50	0.531
			15,88	0.625
			16,00	0.630
	17,2		17,20	0.677
			18,00	0.709
15			19,00	0.748
		3/4"	19,05	0.750
			20,00	0.787
	21,3		21,30	0.839
			22,00	0.866
20			23,00	0.906
		1"	25,40	1.000
	26,9		26,90	1.059
			28,00	1.102
25			29,00	1.142
			30,00	1.181
	33,7		33,70	1.327
32			35,00	1.378
		1 1/2"	38,10	1.500
			40,00	1.575
40			41,00	1.614
	42,4		42,40	1.669
			44,50	1.752
	48,3		48,30	1.902
		2"	50,80	2.000
			51,00	2.008
			52,00	2.047
50			53,00	2.087
			54,00	2.126
	60,3		60,30	2.374
		2 1/2"	63,50	2.500
65			70,00	2.756
	76,1		76,10	2.996
		3"	76,20	3.000
80			85,00	3.346
	88,9		88,90	3.500
		4"	101,60	4.000
100			104,00	4.094
			108,00	4.252
	114,3		114,30	4.500
		5"	127,00	5.000
125			129,00	5.079
	139,7		139,70	5.500
		6"	152,40	6.000
150			154,00	6.063
			165,10	6.500
	168,3		168,30	6.626
			177,80	7.000
			190,50	7.500
200			204,00	8.031
	219,1		219,10	8.626

Standard collets available from stock for enclosed OSK weld heads.

Non-Standard length are available on request.



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HEADQUARTER:

Orbitec GmbH
Willi-Brehm-Straße 8
D-63500 Seligenstadt / Germany
Phone: +49 (0) 6182 / 78 69 3 - 0
Fax: +49 (0) 6182 / 78 69 3 - 10
E-Mail: info@orbitec-group.com
Web: www.orbitec-group.com



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