

Orbital-tube welding systems Inverter power sources

The TECHNODATA *orbital* welding systems are the result of many years experience in the field of tube to tube and tube to tube-sheet TIG welding. High quality welds and high repeatability are reached by using ultra modern technical components and special software. The input of all parameters is very easy and logical by means of the control panel with 8-line display.

Technical Data :

- integrated control unit for TECHNODATA *orbital* welding heads
- integrated sector control
- integrated store
- remote control.
- current range: 5 A - 300 A
- max current 60% d.c.: 300 A
- max current 100% d.c.: 250 A
- no load voltage: 93 V
- welding voltage: 10 V - 30 V
- mains voltage: 3 x 400 V
- tolerance: + 20 % / - 25 %
- frequency: 50 / 60 Hz
- max. connected load: 14.3 kVA
- surrounding temperature: - 10°C / 40 °C
- cooling: fan
- torch-cooling: water
- tank capacity: 12 l
- ground cable: 35 mm²
- size (L / W / H): 1100 x 455 x 950 mms
- weight: appr. 124 kgs
- tested: VDE 0544 + EN 60974-1 S



INVERTER-POWERSOURCE TYPE	IM-99	IM-2013	IM-2015
welding current 5A to 300 A	yes	yes	yes
time span starting 100% at 270 A	yes	yes	yes
no-load voltage 98V	yes	yes	yes
cooling with cooling liquid for connected welding heads	yes	yes	yes
connection tube to tube welding head type TDA	no	yes	yes
connection tube to tube sheet welding head type TDA	T-250 + T-250 ECO	T-250 + T-250 ECO + T-230	T-250 + T-250 ECO + T-230 + T-230MC
halving of angular steps according to connected welding head	no	no	yes
connection pneumatic clamping device	no	no	yes
automatic distance control electrode-tubesheet	no	no	yes
multilayer welding with automatic distance control	no	no	yes
real-time measurement of welding parameters	no	no	yes
controllable via Remote Access Viewer	no	no	yes
LAN Connection	no	no	yes
USB-Connection	no	yes	yes
connection printer	no	yes	yes
direct printing on PC via Hyper Terminal	no	yes	yes
entering of parameters is password protected	no	yes	yes
store programmes internally and externally	no	yes	yes
synchronisation rotation wire	no	yes	yes
separate down slope speed	no	yes	yes
monitoring rotation and wire	no	yes	yes
automatic wire backdrawing during down slope	yes	yes	yes
store programmes internally 2MB capacity	yes	yes	yes
alarm message in case of a battery error	yes	yes	yes
monitoring of gas and coolant flow	yes	yes	yes
two-ply welding without automatic distance control	yes	yes	yes
menu lead control via HMI with 8 mm hose package	yes	yes	yes
connection titan chamber	yes	yes	yes
record of operating hours and welding cycles	yes	yes	yes
multi-language display	yes	yes	yes
modification of all parameters during the welding process possible	yes	yes	yes
cooling Power Source Ventilator	yes	yes	yes
10 sectors for rotation, wire, and max current	yes	no	no
10 sectors for rotation, wire, max current, min current, min pulsation, max pulsation	no	yes	no
18 sectors for rotation, wire, max current, min current, min pulsation, max pulsation	no	no	yes
dimensions L/W/H 1110x455x950 mm	yes	yes	yes
weight 124 kgs	yes	yes	yes

Orbital-welding head type T-250 ECO

The orbital welding head type T-250 ECO is used for tube-to-tube sheet weldings – with or without filler wire – according to the TIG welding procedure. It distinguishes by its easy handling, high adaptability to different welding tasks and accurate torch guidance. The welding head consists of a central body with centering bell, a torch unit as well as a flange-mounted and turning filler wire feeding unit. The water-cooled torch, which can be adjusted radially, axially and angularly, rotates around its main axle. The media electricity, shielding gas and water are transferred via endless rotating couplings. The welding head is centered in the tube by a centering cartridge mounted onto a centering mandrel and positioned by support legs that can be precisely adjusted to the hole pattern. Stable holdings provide a reliable feed of the filler wire. Infinitely adjustable driving motors for the rotation and filler wire feed as well as an accurate path detection allow the individual adjustment of automatic single-ply or multilayer weldings. Summarized, the orbital welding head type T-250 allows reliable and reproducible tube-to-tube sheet weldings while its handling is simplest.



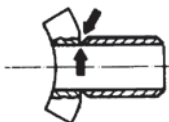
example for welding application:

with standard equipment

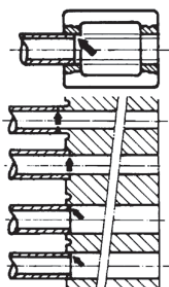
working range from
I.D. 10 mm upto O.D. 33 mm



with optional equipment:



special torches with or without wire feed, centering device adapted to the special requirements



more applications on request

Technical Data :

- Endless rotating coupling for shielding gas, water and electricity
- Path detection for the rotation
- Torch is water-cooled
- Slide for coincident radial adjustment of torch and wire mounting
- Tubus ring for coincident axial adjustment of torch and wire mounting
- Filler wire unit that rotates with the torch, removable
(spool: D 100 / d= 0,8 mm / approx. 1 kg)
- Speed of rotation: 0,2 - 5 min⁻¹
- Feed of filler wire: 0 - 1,5 m / min
- Diameter of the electrode: 1,6 - 2,4 mm
- max. ampacity: 200 A
- Weight (without spool): 5,3 kg
- Diameter (without centering): L= 450 mm
D= 120 mm

Options: double gas shield chamber, pneumatic clamping system, special torch, support ring

Orbital-welding head T-250

The TECHNODATA welding head is used for TIG tube to tube-sheet weldings with and without filler wire. The main features are easy handling, high adaptability to the specific welds and precise torch guiding.

The welding head T-250 consist of the central body with centering bell and torch unit, and the mounted rotating filler wire device. The rotating torch is water cooled and can be adjusted radial, axial, and angular. The rotating movement is endless, current, shield gas and coolant are passed over by a rotation coupling.

The welding head T-250 is centered in the tube to be welded by means of a interchangeable centering cartridge mounted on a centering mandrel. The distance and the right angle position are secured by adjustable precise supporting legs. Exact filler wire guiding is guaranteed by a rigid guide system. Stepless adjustable driving motors for rotation and wire feeding together with the way control system are responsible for the automatic single- or multi-pass welding cycle.

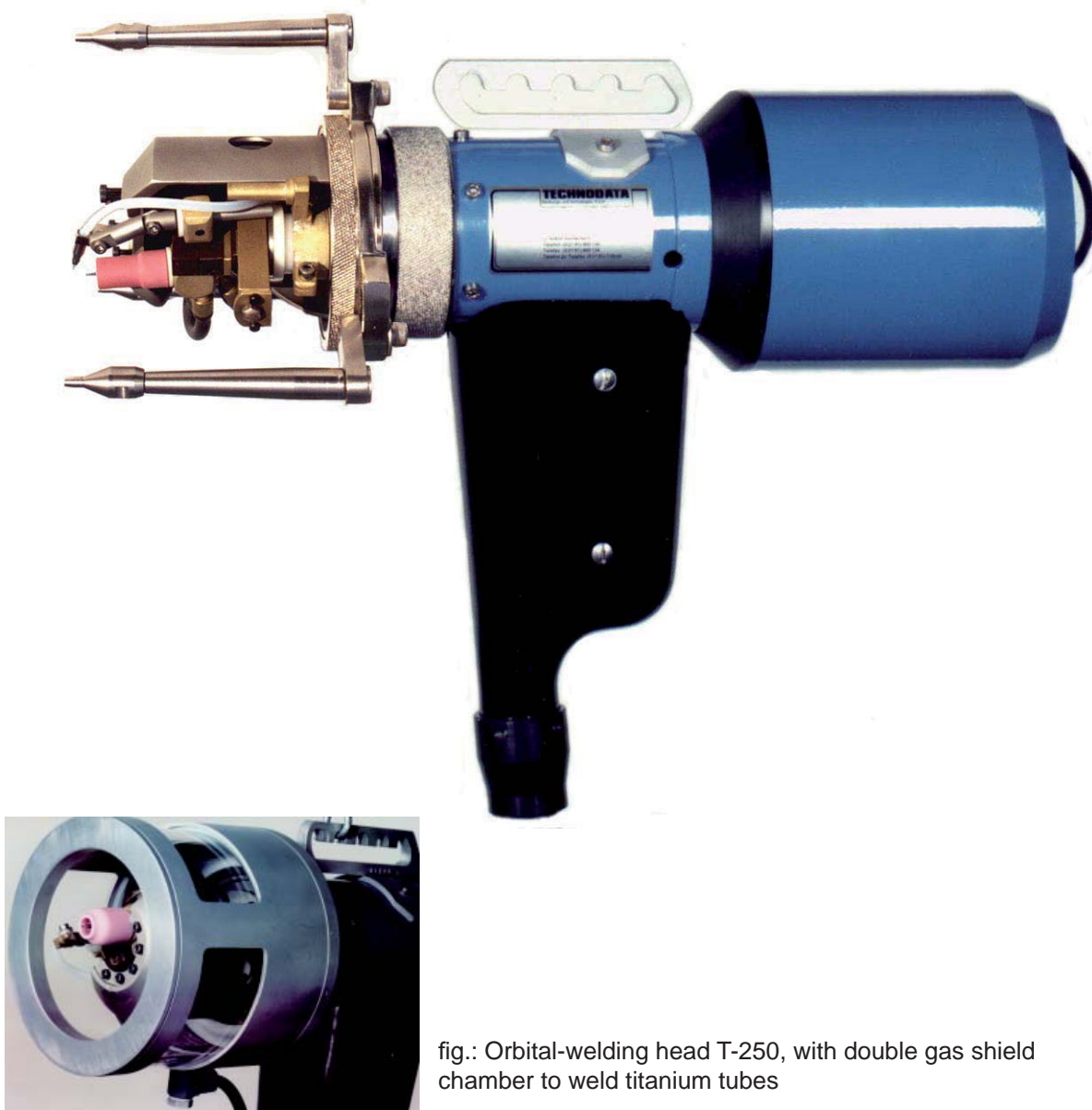
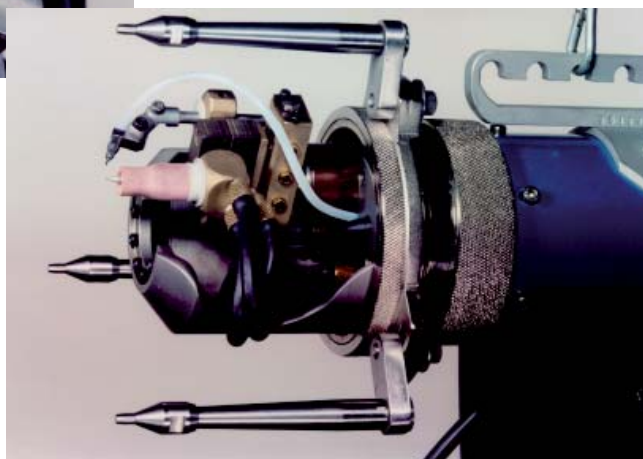
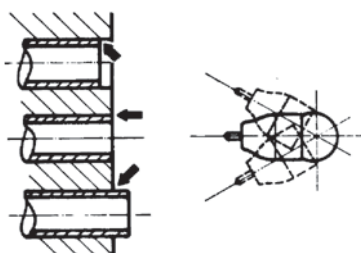


fig.: Orbital-welding head T-250, with double gas shield chamber to weld titanium tubes



Examples for welding geometries:

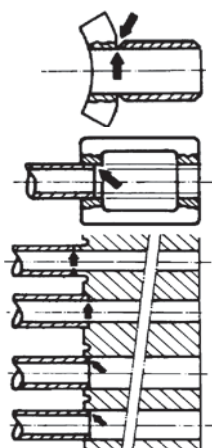
with standard equipment:



$D = 12 - 82 \text{ mms}$

$D_{30^\circ} = 12 - 40 \text{ mms}$

with optional equipment:



i.e:

special torches with or without
wire feed, centering device
adapted to the special require-
ments

**more applications
on request**

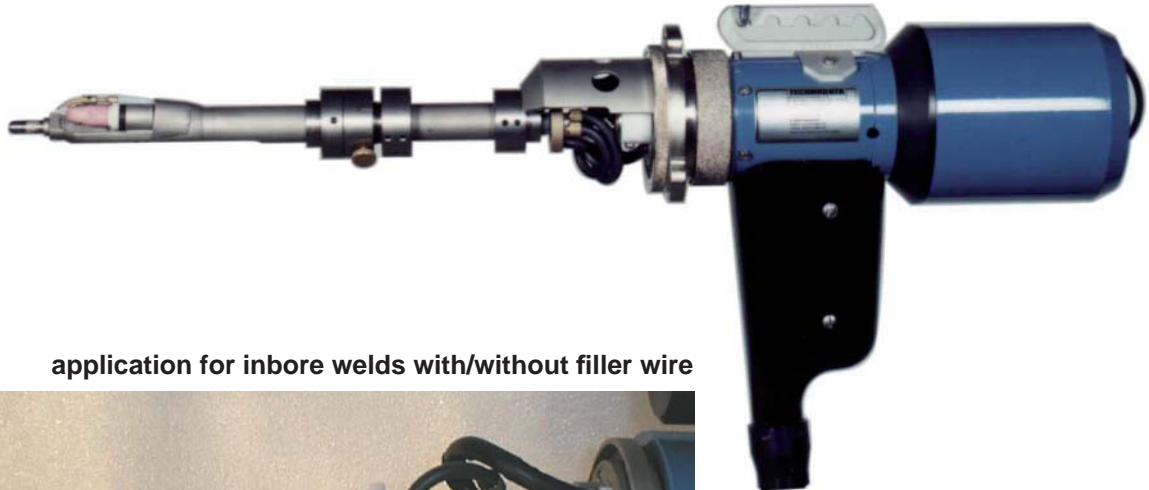
Technical Data :

- endless rotating coupling for current, shield gas and coolant
- way control for rotation
- torch water cooled, swivelling
- slide for torch and wire adjustment
- axial adjustment by screw ring
- rotating wire feeding device (dismantable)
(spool D 100; wire dia. 0,6 - 1,2 mms; 1 kgs)
- rotating speed: 0,2 - 5 rpm
- wire speed: 0 - 1,5 m / min
- tungsten dia.: 1,6 - 3,2 mms
- max. current: 200 A
- net weight: 7,5 kgs
- size (without centering): L= 450 mms
D= 120 mms

Accessories:

double gas shield chamber
pneumatic clamping device
motorized torch adjustment
support ring; balancer etc.

Orbital-welding head Typ T-250 special solutions for aircooler weld



application for inbore welds with/without filler wire



Orbital-welding / Standard und special applications



simultaneous working of 7
welding head



special torch for recessed weld



special torch for
header drum stud welding

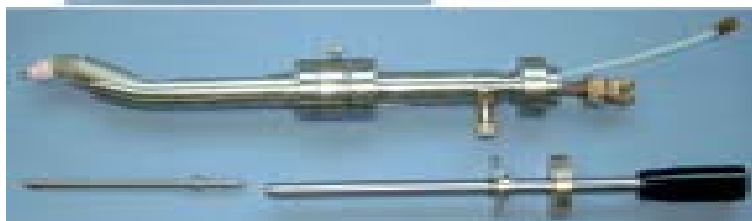


Frame for double welding system

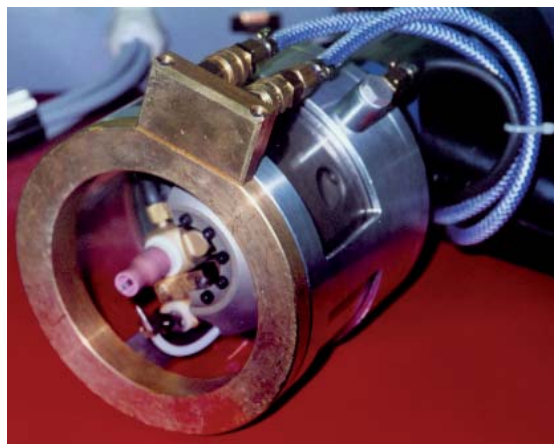


aircooler torch for fillet welds

Version 32 33



T-250 with standard double gas shield chamber



double gas shield chamber, liquid cooled

Orbital-welding head Type T-230

The welding head type T-230 may be used for single- and two-ply tube-to-tube sheet weldings – with or without filler wire – according to the TIG welding procedure. It distinguishes by its easy handling, high adaptability to different welding tasks and accurate torch guidance. The welding head consists of a central body with centering bell, a motorized torch unit as well as a flange-mounted and turning filler wire feeding unit. The water-cooled torch, which can be adjusted radially by hand and axially by motor, rotates around its main axle. The media electricity, shielding gas and water are transferred via endless rotating couplings. The welding head is centered in the tube by a centering cartridge mounted onto a centering mandrel and positioned by support legs that can be precisely adjusted to the hole pattern. Stable holdings provide a reliable feed of the filler wire. Infinitely adjustable driving motors for the rotation and filler wire feed as well as an accurate path detection allow the individual adjustment of automatic single- or two-ply weldings. The operating range can be increased by an optional extension of the support legs. Additionally, when fillet welds shall be produced, the desired torch angle is ensured by exchanging the torch holder (optional). Summarized, the orbital welding head type T-230 allows reliable and reproducible tube-to-tube sheet weldings while its handling is simplest



Technical Data:

- Endless rotating coupling for shielding gas, water and electricity
- Torch is water-cooled, swivel-type
- Slide for coincident radial adjustment of torch and wire mounting
- Motorized axial adjustment of torch and wire mounting during manual operation
- Filler wire feeding unit that rotates with the torch, removable (spool: D 100 / d= 0.8 – 1.0 mm / approx. 1 kg)
- Speed of rotation: 0.2 – 5 min⁻¹
- Feed of filler wire: 0 – 1.5 m/min
- Diameter of the electrode: 1.6 – 2.4 mm
- Max. ampacity: 200 A
- Tube range:(standard)10.0 – 32.0 mm (AD)

Options:

- Double gas shield chamber
- pneumatic clamping system
- special torch
- support ring
- balancer
- centerings adjusted to the welding task
- conversion kit for tube O.D. 10-51 mm
- conversion kit for fillet weld
- Selectable angle position of the torch

More cases of application upon request.

Orbital-welding head Type T-230 MC

The welding head type T-230 MC may be used for multiply tube-to-tube sheet weldings – with or without filler wire – according to the TIG welding procedure. It distinguishes by its easy handling, high adaptability to different welding tasks and accurate torch guidance. The welding head consists of a central body with centering bell, a motorized torch unit as well as a flange-mounted and turning filler wire feeding unit. The water-cooled torch, which can be adjusted radially by hand and axially by motor, rotates around its main axle. The media electricity, shielding gas and water are transferred via endless rotating couplings. The welding head is centered in the tube by a centering cartridge mounted onto a centering mandrel and positioned by support legs that can be precisely adjusted to the hole pattern. Stable holdings provide a reliable feed of the filler wire. Infinitely adjustable driving motors for the rotation and filler wire feed as well as an accurate path detection allow the individual adjustment of automatic single-ply or multilayer weldings. Next to the START/STOP button, the welding head has two additional button which can be individually programmed with functions like torch positioning, filler wire feed, gas test or similar. The operating range can be increased by an optional extension of the support legs. Additionally, when fillet welds shall be produced, the desired torch angle is ensured by exchanging the torch holder (optional). Summarized, the orbital welding head type T-230 MC allows reliable and reproducible tube-to-tube sheet weldings while its handling is simplest.

The welding head type T-230 MC can be operated with different control units. By using a TDA-control which is designed for two-ply weldings (cf. TDA power source Type IM-2015), the axial distance between the electrode and the work piece is ensured by a path control. The result is a multiply welding of high quality by which a consistent heat input into the weld pool has happened. By using a control which is designed for AVC welding, the axial distance between the electrode and the work piece is adjusted permanently. The result is a multiply welding of high quality.



Technical Data:

- Endless rotating coupling for shielding gas, water and electricity
- Path detection for the rotation
- Torch is water-cooled, swivel-type
- Slide for coincident radial adjustment of torch and wire mounting
- Motorized axial adjustment of torch and wire mounting during manual operation
- Filler wire feeding unit that rotates with the torch, removable (spool: D 100 / d= 0.8 – 1.0 mm / approx. 1 kg)
- Position detection for AVC-controls
- Speed of rotation: 0.2 – 5 min⁻¹
- Feed of filler wire: 0 – 1.5 m/min
- Diameter of the electrode: 1.6 – 2.4 mm
- Max. ampacity: 200 A
- Tube range:(standard)10.0 – 32.0 mm (AD)

Options:

- Double gas shield chamber
- pneumatic clamping system
- special torch
- support ring
- balancer
- centerings adjusted to the welding task
- conversion kit for tube O.D. 10-51 mm
- conversion kit for fillet weld
- Selectable angle position of the torch.

More cases of application upon request.

centering cartridges and mandrels for orbital welding heads

Art.-No.	denomination	tube ID
179200101	centering mandrel size 1 - for	centering cartridges size 101 - 106
179209805	centering cartridges for tube ID:	9,8 - 10,3 mm size 101
179210305	centering cartridges for tube ID:	10,3 - 10,8 mm size 102
179210805	centering cartridges for tube ID:	10,8 - 11,3 mm size 103
179211305	centering cartridges for tube ID:	11,3 - 11,8 mm size 104
179211805	centering cartridges for tube ID:	11,8 - 12,3 mm size 105
179212305	centering cartridges for tube ID:	12,3 - 13,0 mm size 106
179200111	centering mandrel size 2 - for	centering cartridges size 107 - 114
179212812	centering cartridges for tube ID:	12,8 - 14,0 mm size 107
179213312	centering cartridges for tube ID:	13,3 - 14,5 mm size 107 A
179213812	centering cartridges for tube ID:	13,8 - 15,0 mm size 108
179214812	centering cartridges for tube ID:	14,8 - 16,0 mm size 109
179215312	centering cartridges for tube ID:	15,3 - 16,5 mm size 109 A
179215812	centering cartridges for tube ID:	15,8 - 17,0 mm size 110
179216812	centering cartridges for tube ID:	16,8 - 18,0 mm size 111
179217312	centering cartridges for tube ID:	17,3 - 18,5 mm size 111 A
179217812	centering cartridges for tube ID:	17,8 - 19,0 mm size 112
179218812	centering cartridges for tube ID:	18,8 - 20,0 mm size 113
179219312	centering cartridges for tube ID:	19,3 - 21,5 mm size 113 A
179219827	centering cartridges for tube ID:	19,8 - 22,5 mm size 114
179220827	centering cartridges for tube ID:	20,8 - 23,5 mm size 114 A
179200121	centering mandrel size 3 - for	centering cartridges size 115 - 125
179222327	centering cartridges for tube ID:	22,3 - 24,8 mm size 115
179224525	centering cartridges for tube ID:	24,5 - 27,0 mm size 116
179226525	centering cartridges for tube ID:	26,5 - 29,0 mm size 117
179228525	centering cartridges for tube ID:	28,5 - 31,0 mm size 118
179230525	centering cartridges for tube ID:	30,5 - 33,0 mm size 119
179232535	centering cartridges for tube ID:	32,5 - 36,0 mm size 120
179235535	centering cartridges for tube ID:	35,5 - 39,0 mm size 121
179238535	centering cartridges for tube ID:	38,5 - 42,0 mm size 122
179241535	centering cartridges for tube ID:	41,5 - 45,0 mm size 123
179244535	centering cartridges for tube ID:	44,5 - 48,0 mm size 124
179247535	centering cartridges for tube ID:	47,5 - 51,0 mm size 125
179200131	centering mandrel size 4 - for	centering cartridges size 126 - 132
179250535	centering cartridges for tube ID:	50,5 - 54,0 mm size 126
179253545	centering cartridges for tube ID:	53,5 - 58,0 mm size 127
179257545	centering cartridges for tube ID:	57,5 - 62,0 mm size 128
179261545	centering cartridges for tube ID:	61,5 - 66,0 mm size 129
179265545	centering cartridges for tube ID:	65,5 - 70,0 mm size 130
179269545	centering cartridges for tube ID:	69,5 - 74,0 mm size 131
179273545	centering cartridges for tube ID:	73,5 - 78,0 mm size 132



A:
adapter plate
to use TDA centering system,
with non-TDA welding heads

special sizes and ranges available, please contact customer service !

Orbital-welding machine type TDA-160

The TDA-160 is a direct current (DC) welder generator for the welding of stainless steel and any other material that can be welded using the TIG process. Using inverter technology, it can be used for TIG welding with arc-striking by RF. This welder is a TIG orbital welder intended for use in the automatic orbital welding of tubes for the food-processing, pharmaceutical and chemical industries etc. in particular. Combined with our welding heads, it offers a compact and powerful range of welding applications, for high quality, repetitive welding activities

Technical data:

- Voltage 230V AC
- Frequency 50 / 60 Hz
- electr. charge permitted 20 % 165 A
60 % 120 A
100 % 110 A
- protection class IP 23
- operating temperature 0 to 40°C
- transport temperature -25 to +55°C
- cooling system/power 800 W
- cooling system max. pressure 0,5 Mpa

Orbital-welding head type SZ-SATO



Orbital-welding head type SZ-40



Orbital-power source type TDA-160

