

AXXAIR

NOVEMBER 2022

INNOVATIVE ORBITAL SOLUTIONS

TUBE TO TUBE SHEET WELDING

ORBITAL CUTTING AND FACING



ORBITAL WELDING



Orbital welding : Tube-to-tube sheet



Our tube-to-tube sheet welding heads, fully water-cooled, are designed for heat exchanger production applications in various industries such as aeronautics, agri-food or energy production.

Indeed, heat exchangers play an increasingly important role in industry and this welding head allows the economical, reliable and very high quality assembly of the tubes on the plates.

The SATP-80X covers virtually all common tube to tube sheet configurations in both stainless steel, titanium and black steel.



In tube to tube sheet applications, preparation is a very important aspect to guarantee repeatable and quality welding results. The following steps are discussed at each project and are essential to ensure the success of your process:

- Length of the tube in relation to the tube sheet (dressing operation)
- Centring of the tubes on the tube sheet:

This operation consists in bringing the tube into contact with the end of the hole in the tube sheet in order to avoid collapsing associated with the clearance between the tube and tube sheet if this operation is neglected.

Centring machines allow this essential operation. This centring also allows the weld gases to be evacuated through the back of the plate. Centring is often neglected but avoids much inconvenience during production.

FLEXIBILITY, PRODUCTIVITY

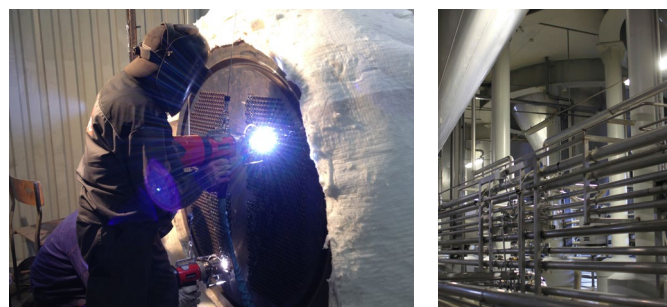
This head can weld in simple fusion or with the supply of wire. The wire feed is mounted on the head (1 kg reel) and rotates with the torch to ensure controlled wire output.

QUALITY AND REPEATABILITY

The specific mandrel of our SATP with centring by balls pushed by springs allows positioning while allowing fast installation and especially ensuring that the head can easily be brought out of the tube in the case of excess internal weld thickness.

PORTABILITY

Portable machines, which are easy to move and usable directly on site.



Please do not hesitate to contact us for all enquiries relating to tube sheet welding technology.

We will be glad to share our know-how with you and to devise a solution that best meets your needs!

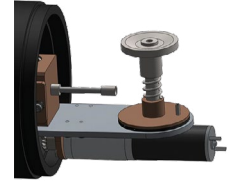
SATP-80X

ORBITAL WELDING

Water Cooled

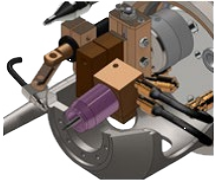


Wire holder 1 kg



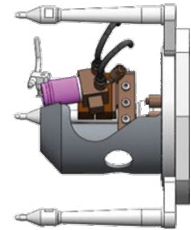
Tilting head

Water cooled with tilting wire



Positioning stops

Adjustable stops for better tube sheet stability



Mandrel system

Concentric tightening from the inside of the tube



Electric motor with wire feed

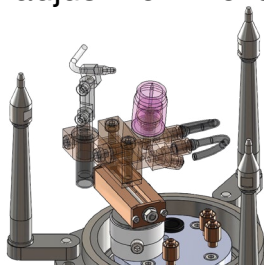


Compatible with the SAXX power sources



Flexibility

Head and wire adjustment trolley



Welding range

SATP-80X

∅ 10 - ∅ 80 mm
0.4 - 3"

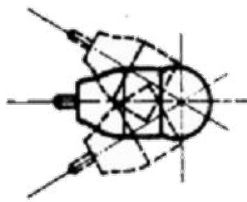
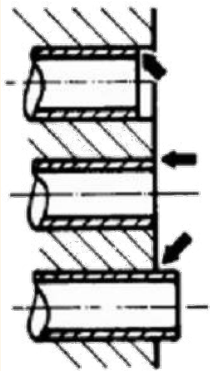
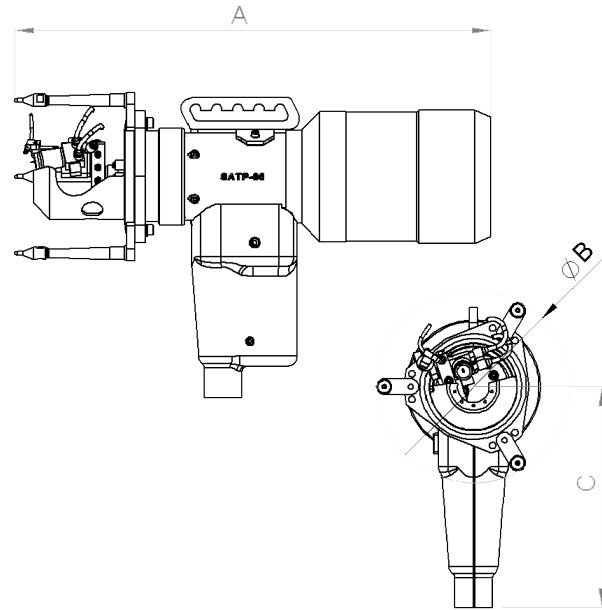
SATP-80X

The SATP-80X covers virtually all common tube to tube sheet configurations in stainless steel as well as in titanium or black steel.



Technical characteristics:

- Rotating gas, current and cooling seal
- Tilting water cooled head
- Head and wire adjustment trolley
- Built-in rotating wire dispenser (\varnothing 0.8 mm)
- Cycle startup integrated in the handle for better ergonomics
- The head is fully cooled allowing a maximum welding current of 200A
- Specific mandrel with ball centring pushed by springs: precise positioning and quick installation.



- 3 tube-to-tube sheet welding configurations
- Outside diameter of the straight torch tube: 12 - 82 mm
- External diameter of the tube **if torch tilted at 30°** : 12 - 40 mm

Product Code	Description	Net weight (Without reel)	\varnothing wire	Max Wire Speed	Dimensions (AxBxC mm)
SATP-80X	Welding head SATP-80X \varnothing 10 to \varnothing 78 mm Supplied with wire dispenser	7.5 kg	0.8 mm	200 cm/min	451 x 182 x 210

Accessories

The mandrel used must be chosen according to the inner diameter of the tube to be welded to the tube sheet.

Depending on the mandrel used, it will be necessary to choose the compatible spindle.



SATP mandrels

SATP Centring mandrels:

Tube inner \varnothing (mm)	Mandrel Product Code	On spindle
9.8 to 10.3 mm	SATP-M11	SATP-B01
10.3 to 10.8 mm	SATP-M12	
10.8 to 11.3 mm	SATP-M13	
11.3 to 11.8 mm	SATP-M14	
11.8 to 12.3 mm	SATP-M15	
12.3 to 13.0 mm	SATP-M16	
12.8 to 14.0 mm	SATP-M21	SATP-B02
13.8 to 15.0 mm	SATP-M22	
14.8 to 16.0 mm	SATP-M23	
15.8 to 17.0 mm	SATP-M24	
16.8 to 18.0 mm	SATP-M25	
17.8 to 19.0 mm	SATP-M26	
18.8 to 20.5 mm	SATP-M27	
19.8 to 22.5 mm	SATP-M28	

✓ SATP-80X



SATP mandrels (continued)

SATP Centring mandrels:



Tube inner ϕ in mm	Mandrel Product Code	On spindle
22.3 to 24.8 mm	SATP-M29	SATP-B03
24.5 to 27.0 mm	SATP-M30	
26.5 to 29.0 mm	SATP-M31	
28.5 to 31.0 mm	SATP-M32	
30.5 to 33.0 mm	SATP-M33	
32.5 to 36.0 mm	SATP-M34	
35.5 to 39.0 mm	SATP-M35	
38.5 to 42.0 mm	SATP-M36	
41.5 to 45.0 mm	SATP-M37	
44.5 to 48.0 mm	SATP-M38	
47.5 to 51.0 mm	SATP-M39	SATP-B04
50.5 to 54.0 mm	SATP-M40	
53.5 to 58.0 mm	SATP-M41	
57.5 to 62.0 mm	SATP-M42	
61.5 to 66.0 mm	SATP-M43	
65.5 to 70.0 mm	SATP-M44	
69.5 to 74.0 mm	SATP-M45	
73.5 to 78.0 mm	SATP-M46	

✓ SATP-80X

SATP Spindles

Spindles for SATP mandrel:



Product Code	For Mandrel
SATP-B01	M11 to M16
SATP-B02	M21 to M28
SATP-B03	M29 to M39
SATP-B04	M40 to M46

✓ SATP-80X

Consumables

Our electrodes are specifically sharpened to 20° with a flat.

This increases the life of the electrodes.



Product Code	Description	Net weight	Plastic box (cm)
SCE24-39.5	Electrodes	0.05 kg	5.5 x 4.5 x 1

Electrodes \varnothing **2.4 mm**, length 39.5mm for SATP:

- Box of 10 electrodes

✓ SATP-80X



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