

AXXAIR

ORBITAL BEVELLING

THICK WALLED TUBES > 3mm WALL THICKNESSES



ORBITAL WELDING





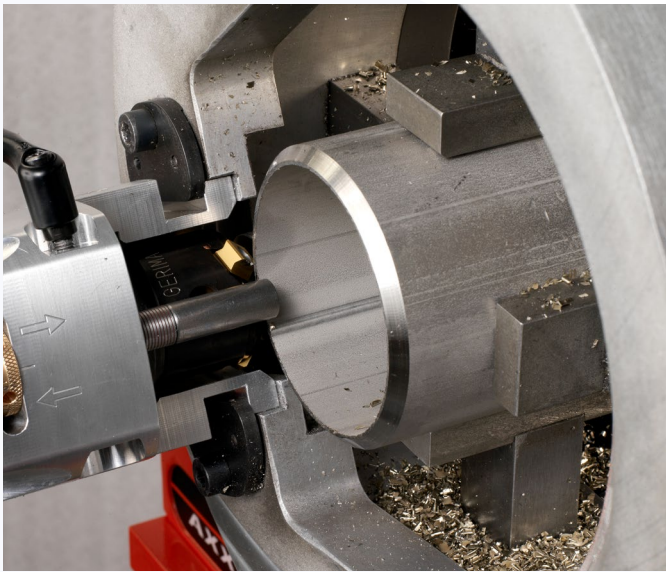
AXXAIR's orbital beveling

AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

The success of an orbital weld relies primarily on preparation of the parts to be welded. Of the various preparation steps, a good quality bevel, which is suitable for the welding process, is essential.

Following orbital cutting, the face of the tube is perfectly perpendicular and free of burrs. At this point, beveling is essential to ensure that the weld bead's geometry is appropriate, particularly on the inside (penetration).



Above a thickness of 3 mm, simple fusion involves a melt volume that is too significant to guarantee proper geometric control of the weld bead. To remedy this, beveling reduces the quantity of material to be fused in order to achieve proper penetration.

As a result, several passes are usually needed to finish the weld bead (filling and finishing). The bevel shape is created by the welding equipment used.

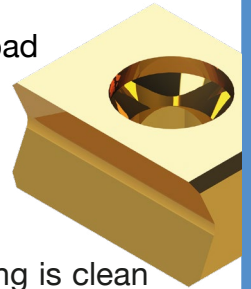
AXXAIR'S UNIQUE AND PATENTED CONCEPT

AXXAIR's orbital beveling machines use a carbide milling head rotating at high speed to remove a large quantity of chips in **a single rotation of the tool around the tube** (orbital).

This patented process avoids the need for lubricant: no more cleaning/washing of parts before welding! The carbide inserts' ability to remove chips is 10x greater than those used traditionally with HSS tools (High-speed Steel).

FLEXIBILITY, PRODUCTIVITY

Implementation, setting/adjustment and beveling are quick and easy. Each machine's diameter range is very broad and does not require specific jaws. AXXAIR's frames are **scalable** for orbital cutting and welding.



QUALITY

The surface created by carbide milling is clean and free of burrs and is, therefore, ready for welding.

Our process also includes a workpiece guide outside the tube, which takes account of "pipe" ovalisation defects. This ensures that the bevel is more uniform over the entire circumference.

PORTABILITY

Portable machines, which are easy to move and can be used both on site or in a workshop. Perfect preparation for thick tubes before welding with filler wire.



Please do not hesitate to contact us for all enquiries relating to orbital beveling technology.

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





AXXAIR's orbital beveling

- V- or J-Bevel? -

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There are two types of bevel, which depend on the manual or automatic welding process used: the V-bevel and the J-bevel (or "Tulip").

These names relate to the fact that, when assembled, the two prepared edges assume the shape of these letters.

In orbital welding, the two root faces of the bevelled parts are placed in contact with each other.

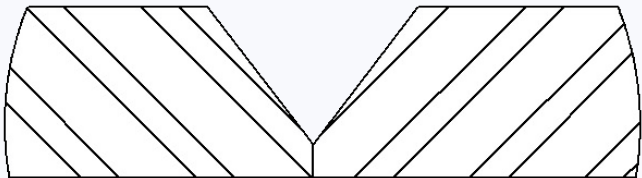
All that is required is a simple fusion of the two root faces and for the bevel to be subsequently filled with wire.

V-bevel

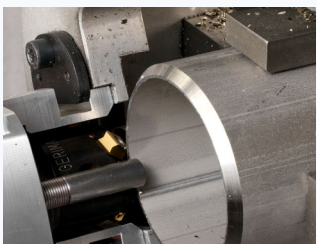
For manual TIG welding, a V-bevel is preferable, with or without a root face, depending on the manner in which the parts are married. It is called a V-bevel as, once the parts have been married, the resulting shape looks like the letter V.

The root face generally prevents the edges being distorted when the parts are handled, along with a collapse on the first pass (penetration).

For manual welding, the parts are married leaving a small gap, which specifically allows the wire to be inserted manually, including from inside the tube (penetration geometry). The bevel angles routinely used are 30, 37.5 and 45°.

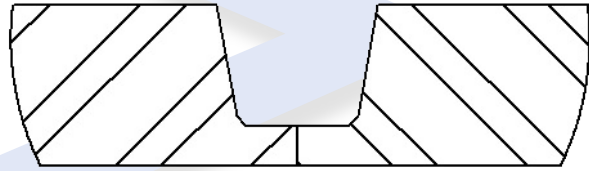


These angles are determined by the application, the thickness of the parts to be welded and the material used. We offer 3 milling heads for orbital V-bevels, each corresponding to one of these angles.



J-bevel (tulip)

This shape is essential for automated welding, especially for orbital welding.

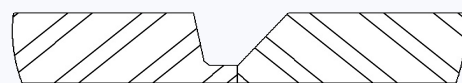


The root face of this type of bevel enables a delicate "tube-tube" type assembly to be created; this generally allows for a single fusion penetration, which represents a better way of precisely controlling the penetration's geometry. This type of preparation also reduces the volume of metal required to fill the bevel.

The root face must be sufficiently long to allow a single fusion bead to be created, without overlapping onto the edges of the bevel: a root face thickness of 1.6 to 2 mm with a root face length of 2 to 2.5 mm. These adjustments are easily made and relate to the carbide milling head (unlike adjustment using HSS tools).



As the accessories (elbows, T unions, flanges, etc.) are generally prepared with V-bevels, many welds will need to be of the V-J type, which is difficult to achieve. Consequently, the quality of orbital welding accessories is generally a key criteria to be taken into consideration.



Contact us to find the perfect solutions for your needs!



Join **experience**

www.axxair.com



GA 122 - 172 - 222 - 322



No tube deformation and no tube pollution

Concentric clamping



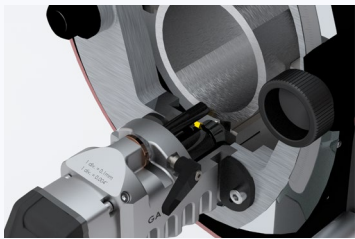
Stainless steel jaws

V-bevel or J-bevel without lubricant

Carbide technology, 10x faster than HSS inserts

Angles :

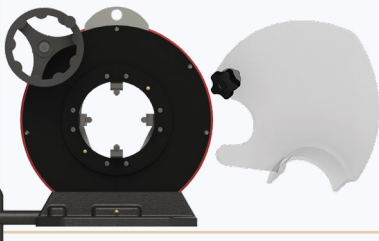
- J-Bevel: 10°
- V-Bevel: 30°, 37,5° and 45°



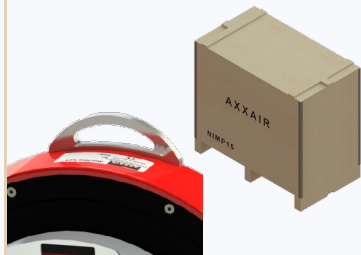
Perfect sealing against chips

All rotating parts are incorporated in the body

Plastic shield in the front



Easy handling and transportation



Continuous use

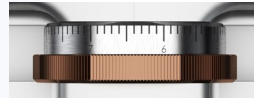
Anti-twist cable with bearings. Protects the electric cable from damage resulting from rotation around the tube.

Tool life
Rotation handle for controlled and continuous cutting speed

Tracking system
External profile tracking that takes into account the ovality of the tubes



Easy setting of the root face
Reading on a vernier



1550 W motor
Wide speed range: flexibility depending on the material

Global Process
Can be transformed into an orbital cutting and welding machine

Opening capacity	
122	ø15 - ø119mm ø5/8" - ø4,5 "
172	ø33 - ø173 mm ø1,3 - ø6,625 "
222	ø55 - ø228 mm ø2.35 to ø8,625 "
322	ø141 - ø328 mm ø5,5 to ø12,75 "

GA 122 - 172 - 222 - 322**AXXAIR**
INNOVATIVE ORBITAL SOLUTIONS**Technical specifications:****NEW****New motor: 1550 W, 120 V or 230 V**

- Class 2 electric device. Double electrical isolation. None accessible metal part. Longer service life, more power, patented dust protection.

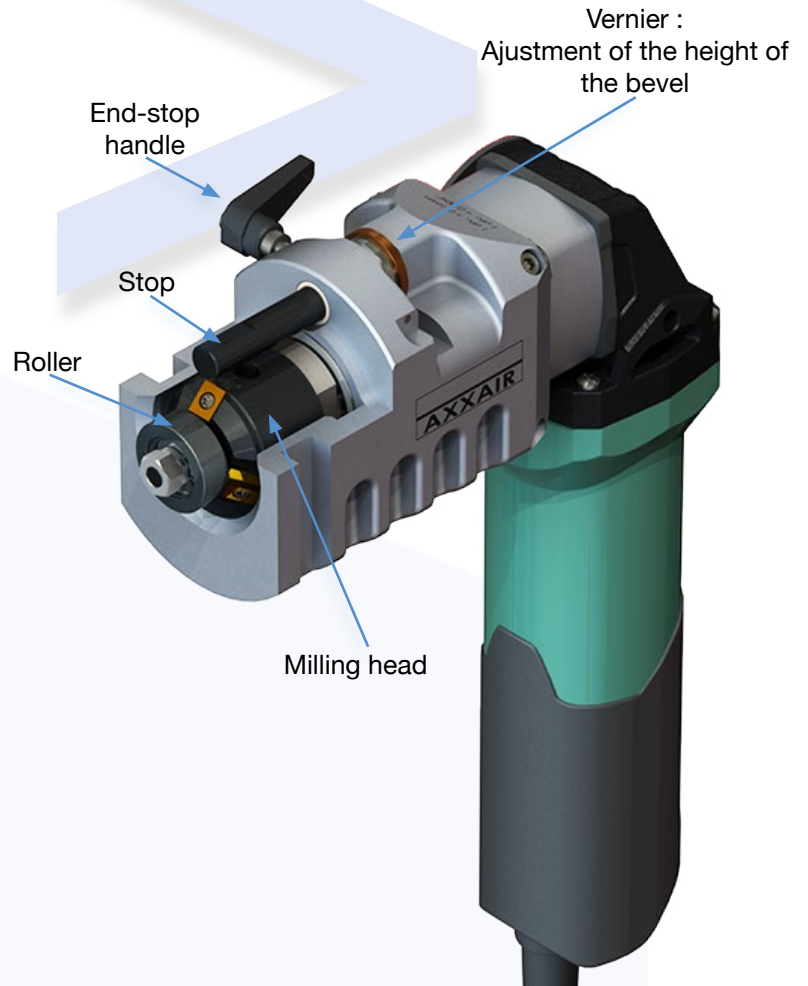
- Vibration level in accordance with standard EN 28662: <math><2.5\text{m/s}^2</math>, Protection class: IP 20

- Vario Tacho Constamatic (VTC) Full-wave Electronics with Thumbwheel: for working at customised speeds to suit the application material and speeds that remain constant, even under load.
6 speed variations: from 2050 to 7300 RPM

- 0V security: the motor does not restart alone after a power failure

- Mechanical protection of the gearbox, torque limiter integrated into the angular gearbox

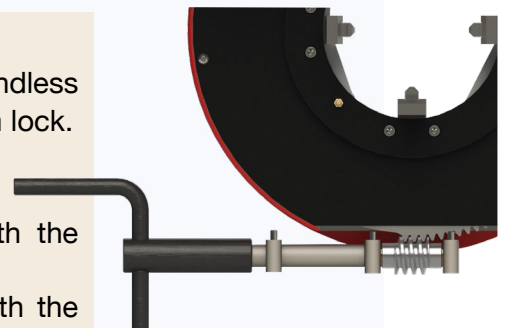
All motors are supplied in their own individual cases, including the necessary tools

**Robustness of the body:**

- Effective clamping system with an endless screw engaging directly with the cam lock.

Easy maintenance and control:

- Lubrication of the inner parts with the grease nipples
- Quick access to the screw beneath the internal cowling





GA 122 - 172 - 222 - 322

NEW

Technical specifications:

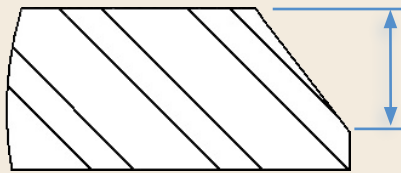


AXXAIR
INNOVATIVE ORBITAL SOLUTIONS

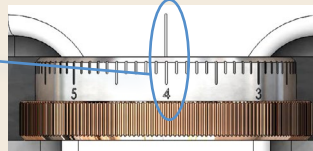
Easy setting of the root face:

Adjustment of the height of the bevel (V-Bevels) :

To adjust the height of the bevel, the stop needs to be moved. The wheel with the vernier must be turned in either direction to increase or decrease the height of the bevel.



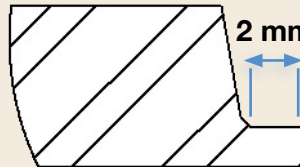
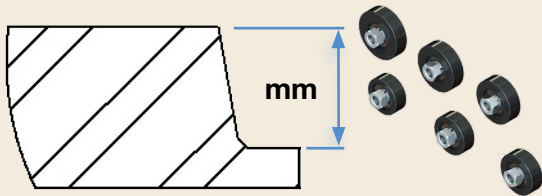
4 mm



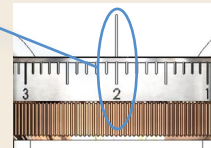
The vernier value is equal to the **bevel height**.

Adjustment of the length of the root face (J-Bevels) :

The height of the bevel is determined by the selection of the roller mounted on the milling head. Adjusting the stop allows the length of the root face at the end of the bevel to be changed.

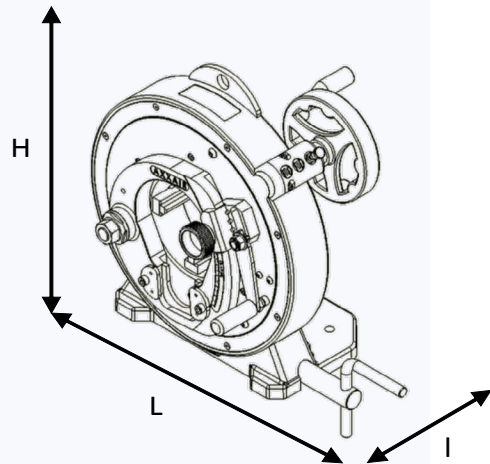


2 mm



The value of the vernier is equal to the **length of the root face**.

Materials that can be machined by the machine	Hardness between :
All types of steel	500 and 800 Mpa
All types of alloys (copper / brass / bronze / aluminum)	200 and 800 Mpa



Product Code Machine with a 120V motor	Product Code Machine with a 230V motor	Machine's jaw opening capacity in mm		Net weight	Dimensions (HxLxW in mm)
		With basic jaws	With extra jaws (included)		
GA122-M1	GA122-M2	Ø29 - Ø 119	Ø 15 - Ø99	42 kg	443 x 541 x 304
GA172-M1	GA172-M2	Ø74 - Ø 173	Ø 33 - Ø116	49 kg	493 x 566 x 304
GA222-M1	GA222-M2	Ø128 - Ø 228	Ø 55 - Ø155	57 kg	548 x 594 x 304
GA322-M1	GA322-M2	Ø230 - Ø 328	Ø 141 - Ø239	71 kg	649 x 644 x 304

Please contact us for large diameters and special adaptations



Join **experience**

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Orbital Beveling - Accessories

AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

Our support legs and stands have been designed to further facilitate beveling by ensuring that the machine is stable in different conditions: in a workshop or on site.

The great advantages of these products:

- lightness
- flexible handling
- easy to use



Product Code	Description	Net Weight	Dimensions (in cm)
CCPS21	Support legs	10 kg	103 x 32 x 11

Support legs for orbital beveling machines:

- storage box at the back
- optimum stability
- quick assembly and dismantling
- height adjustment with screws

✓ GA122

✓ GA172

✓ GA222

✓ GA322



Product Code	Description	Net Weight	Dimensions (in cm)
CCSER1	Stand	10 kg	60 x 26 x 10

Simple stand for supporting tubes with height adjustment:

- quick assembly and dismantling
- height adjustment

✓ GA122

✓ GA172

✓ GA222

✓ GA322



Product Code	Description	Net Weight	Dimensions (in cm)
CCSER2	Stand with chrome steel bearings	11 kg	60 x 26 x 10

Stand with chrome steel bearings for supporting tubes with height adjustment:

- facilitates tube feeding after each cut
- quick assembly and dismantling
- height adjustment

✓ GA122

✓ GA172

✓ GA222

✓ GA322





Orbital Beveling - Accessories

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INNOVATIVE ORBITAL SOLUTIONS

Our support benches help you to position and feed your tubes without the aid of stands. The height-adjustable table helps you easily and precisely set the height of your machine, for cutting and beveling tubes placed on the support bench.

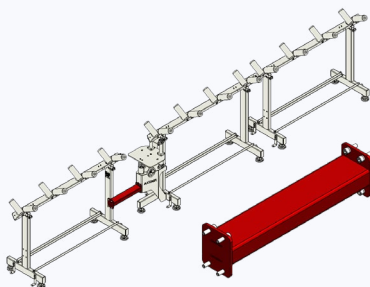
The additional tube support bench allows you to position your longest tubes in a stable manner on all benches.



Product Code	Description	Net Weight	Dimensions (in cm)
CCBSB-X1	Height-adjustable tube support bench	57 kg	184 x 95 x 51
<u>Height-adjustable support bench, 1.5m</u>			
<ul style="list-style-type: none"> - stainless steel rollers - height adjustment handle - 1.5 m long 		<ul style="list-style-type: none"> - maximum load 350 kg uniformly distributed - min tube ø: 5 mm - max tube ø: 321 mm - compatible with machines 121 to 321 	
✓ GA122	✓ GA172	✓ GA222	✓ GA322



Product Code	Description	Net weight	Dimensions (in cm)
CCBSB-X2	Additional support bench	38 kg	150 x 95 x 51
<u>Additional tube support bench:</u>			
<ul style="list-style-type: none"> - stainless steel rollers - 1.5 m long - maximum load 350 kg uniformly distributed 		<ul style="list-style-type: none"> - min tube ø: 5 mm - max tube ø: 321 mm - compatible with machines 121 to 321 	
✓ GA122	✓ GA172	✓ GA222	✓ GA322



Product Code	Description	Net Weight	Dimensions (in mm)
CCBSB-B005	Connecting bar	3 kg	100 x 80 x 402
<u>Connecting bar for CCBSB-X1 and CCBSB- X2:</u>			
<ul style="list-style-type: none"> - Allows the height-adjustable table to be connected to a bench placed in front of the machine 			
✓ GA122	✓ GA172	✓ GA222	✓ GA322





Orbital Beveling - Accessories

AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

Autoline electric rotation:

Measures and displays the cutting/beveling motor's power consumption

- enables the motor and cycle to be stopped in the event of overconsumption
- protects the motor and frees the operator from watching the machine
- detects whether the motor is straining and whether the blade is worn

Welding mode with prefab machine and SAXX power source : 4-button display (Start, Stop, Left, Right) with the addition of a power source connection cable

(Ref. SAEX-A02 for addition, more details in the "ORBITAL WELDING" section of this catalogue)

3.5 colour touch-screen allowing you to:

- enter the diameter and precisely adjust the feed speed in mm/min
- aid adjustment with a suggested motor speed and feed speed based on the type of material and the blade used
- perform quick and easy configuration
- display the cutting/beveling motor's consumption
- display in English, French or German
- choose the unit of measure: mm or inch

This rotation is compatible with our previous **121, 171, 221, 321, 421, 521 and 721** models.

The previous SAEP-00/000 rotation cannot be fitted to our new 122, 172, 222 and 322 models.



Product Code	Description	Net Weight	Dimensions (in mm)
SAEX-00	Autoline electric rotation	6.3 kg	320 x 261x 193

Autoline electric inverter for GA122 to 322:

- 110 V to 230 V
- even rotation
- easy to use
- precise adjustment

✓ GA122

✓ GA172

✓ GA222

✓ GA322





Orbital Beveling - Accessories

AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

This milling head is a tool holder. It creates the shape of the final bevel based on the initial choice, with the necessary angulation.

The milling head can be easily changed for different bevel angles.



NEW

Product Code	Description	Net Weight
GV-300	Kit of milling head, roller, stop and vernier	1 kg

Kit for 30° V bevel:

- Supplied with 3 fitted inserts

This milling head allows you to remove a maximum of 8 mm of the wall thickness, excluding the root face

✓ GA122	✓ GA172	✓ GA222	✓ GA322
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NEW

Product Code	Description	Net Weight
GV-375	Kit of milling head, roller, stop and vernier	1 kg

Kit for 37,5° V bevel:

- Supplied with 3 fitted inserts

This milling head allows you to remove a maximum of 7 mm of the wall thickness, excluding the root face

✓ GA122	✓ GA172	✓ GA222	✓ GA322
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NEW

Product Code	Description	Net Weight
GV-450	Kit of milling head, roller, stop and vernier	1 kg

Kit for 45° V bevel:

- Supplied with 3 fitted inserts

This milling head allows you to remove a maximum of 6.5 mm of the wall thickness, excluding the root face

✓ GA122	✓ GA172	✓ GA222	✓ GA322
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NEW

Product Code	Description	Net Weight
GJ-100	Kit of milling head, 6 rollers, stop and vernier	1 kg

Kit for 10° J bevel:

- Supplied with 6 fitted inserts

This milling head allows you to remove a maximum of 8 mm of the wall thickness, excluding the root face

This form is indispensable for automated welding processes and especially for orbital welding.

✓ GA122	✓ GA172	✓ GA222	✓ GA322
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AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

Accessories (electric clamping)

NEW



You realize **important series** in your company and want to be more effective during your projects? Our electric clamping is the ideal answer for the preparation and / or welding of your tubes.

The electric clamping makes it possible to carry out a **repetitive and constant force tightening** on tubes with identical diameters and thicknesses.

The **clamping force is adjustable**, it prevents the tubes from being deformed or marked.

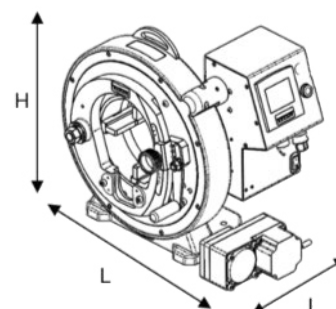
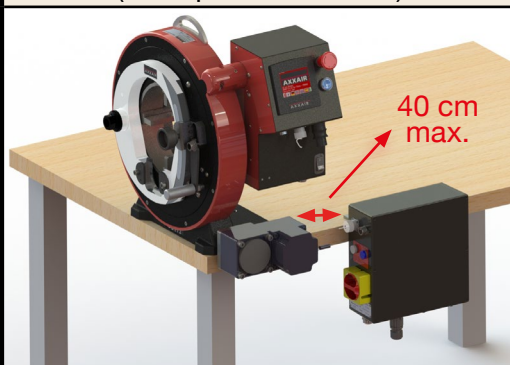
Technical specifications:

- 24Vdc brushless motor, motor torque: 34N.m
- Tightening force on the tube: 850 kg maximum, adjustable from 15 to 100%
- Clamping speed: 86 mm / min (diameter)
- The electric clamping is sold with the body frame and the automatic rotation

Fixation on an AXXAIR support bench



Fixation on an other support (example: workbench)



Product code	Body frame, automatic rotation and electric clamping Machine's jaw opening capacity in mm		Net weight	Dimensions (HxLxI in mm)
	With basic jaws	With extra jaws (included)		
122-AU	Ø29 - Ø119	Ø5 - Ø99	51 kg	470 x 498 x 359
172-AU	Ø74 - Ø173	Ø16 - Ø116	58 kg	520 x 530 x 359
222-AU	Ø128 - Ø228	Ø55 - Ø155	66 kg	575 x 575 x 359
322-AU	Ø230 - Ø328	Ø141 - Ø239	80 kg	675 x 662 x 359

Caution: Remember to order one or more motors (cutting, bevelling or welding torch) and the consumables needed with the sets listed above.



Orbital Beveling - Consumables

AXXAIR

INNOVATIVE ORBITAL SOLUTIONS

Our carbide inserts provide an operating speed that is 10x that achieved with an HSS tool.

Our carbide inserts create an even bevel with a clean surface and no burrs.

It does not alter the nature of the material. There is less wear on the insert, thanks to the cleanness of the cut.



Product Code	Description	Net Weight
PC30-08-B02	Titanium coated carbide inserts	70 g

Carbide inserts for orbital beveling (box of 10), usable with:

- low rotation speeds on the following materials: plastic, aluminum and copper types: PVC, aluminum T6, copper / nickel-plated, bronze
- high rotation speeds on carbon and stainless steels: 304 / 304L / 316L and A106 steel

- Usable with all AXXAIR milling heads
- Inserts usable on **4 sides**
- Always change all inserts at the same time

✓ GA122

✓ GA172

✓ GA222

✓ GA322

NEW



Product Code	Description	Net Weight
PC30-08-B03	Micrograin carbide inserts, coated with a high wear resistance treatment	70 g

Carbide inserts for orbital beveling (box of 10), usable with:

Depending on the material, the tool rotation speeds must be adapted and the use of automatic rotation is recommended.

- Recommended for high alloyed stainless steels: Duplex, inconel, super-duplex (316TIN / C-22 / C-4/625)

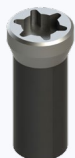
- Usable with all AXXAIR milling heads
- Inserts usable on **4 sides**
- Always change all inserts at the same time

✓ GA122

✓ GA172

✓ GA222

✓ GA322



Product Code	Description	Net Weight
KS30	Insert locking screw	1g

Locking screw for carbide inserts

✓ GA122

✓ GA172

✓ GA222

✓ GA322

1 machine - 3 applications

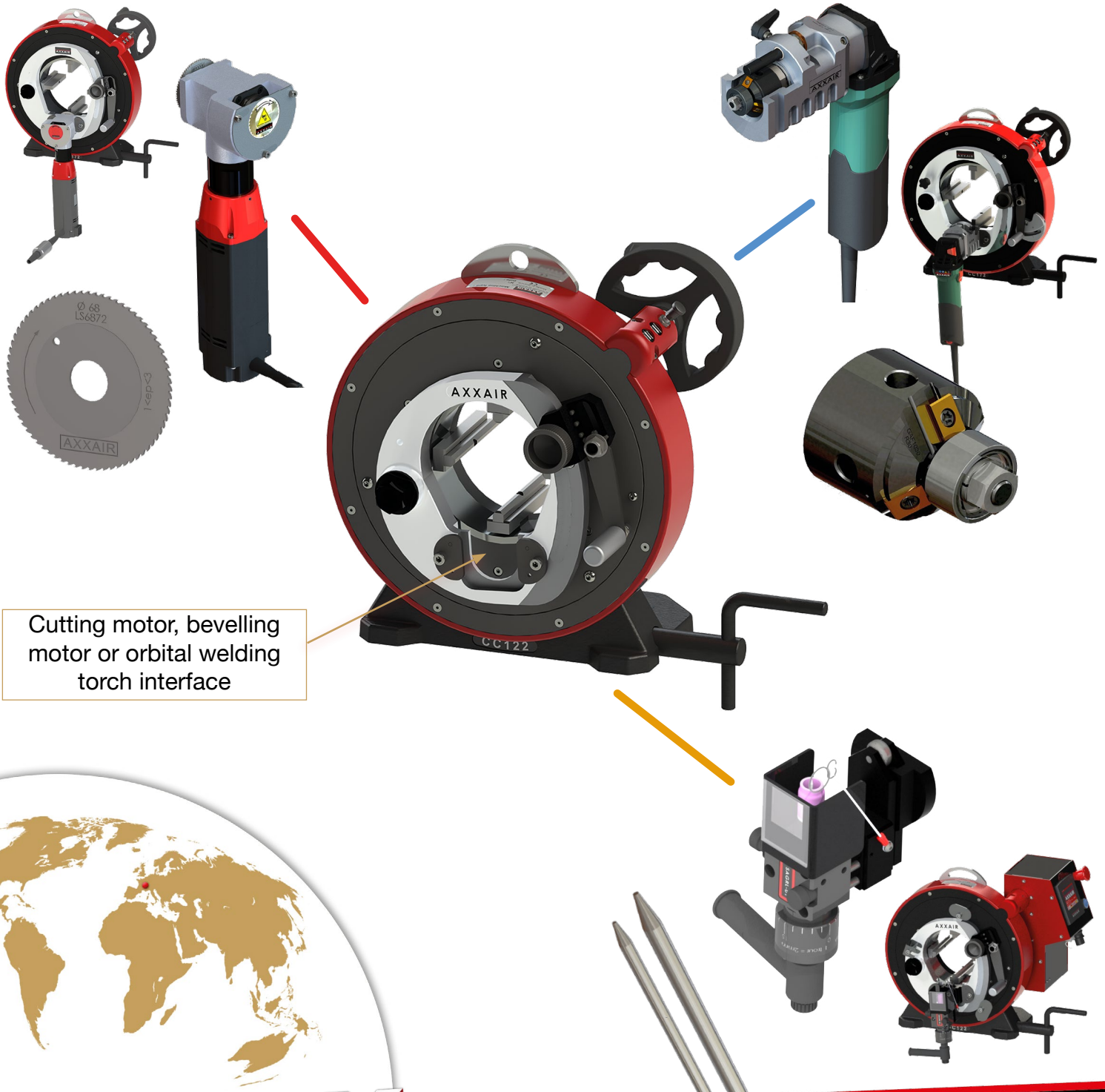
AXXAIR
INNOVATIVE ORBITAL SOLUTIONS

The AXXAIR Group was the first to offer a triple and exclusive solution, from preparation to orbital welding:

the global process

For more than 20 years, a single machine frame (122, 172, 222 and 322) has enabled three operations to be carried out:

Cutting, bevelling and orbital welding



Cutting motor, bevelling motor or orbital welding torch interface



1 machine - 3 applications



Product Code	Description	Net weight
FS xx / MOPD	Cutting motor	5 kg
Low-speed / high-speed / pneumatic motor with dual output (uptake):		
120V	Low-speed motor: FS15	122
	High-speed motor: FS19	
230V	Low-speed motor: FS25	222
	High-speed motor: FS29	
Pneumatic	MOPD	322

To use this motor you will need to order: suitable cutting blades for the tube thickness you want to cut and, if necessary, lubricant.

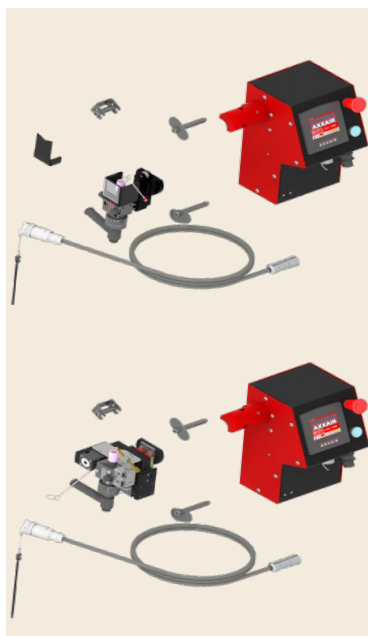
All information and relevant product codes appear in the orbital cutting accessories and consumables section of this catalogue.



Product Code	Description	Net Weight			
GA10 - x - xx	Beveling motor kit	5 kg			
120V / 230V beveling motor supplied with a chip shield and a workpiece guide tailored to the frame of your cutting / prefab welding machine:					
120V	Product Code	Frame	230V	Product Code	Frame
	GA10-M1-122	122		GA10-M2-122	122
	GA10-M1-172	172		GA10-M2-172	172
	GA10-M1-222	222		GA10-M2-222	222
	GA10-M1-322	322		GA10-M2-322	322

To use this motor and bevel your tubes you will need to order: one or more milling heads and carbide inserts.

All information and relevant product codes appear in the orbital beveling accessories and consumables section of this catalogue.



Product Code	Description	Net Weight
SX - KIT x	Torch kit	depending on the chosen product
KIT for upgrading a CC/GA to an SX Air / Water / AVC+OSC torch		
Cooling	Product Code	Frame
AIR	SX-2KITA	122
EAU	SX-2KITE	172
	SX-2KITNAOF (AVC/OSC)	222
		322
If you have acquired the electrical clamping (xx2-AU), please order the references below, they are delivered without automatic rotation:		
AIR	SX-3KITA	122
EAU	SX-3KITE	172
	SX-3KITNAOF (AVC/OSC)	222
		322

To use this KIT and to prefab weld, you will need to order: a suitable AXXAIR welding power supply for the tubes you want to weld.

All information and relevant product codes appear in the orbital welding section of this catalogue.





SPECIALIZED FABRICATION EQUIPMENT GROUP

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