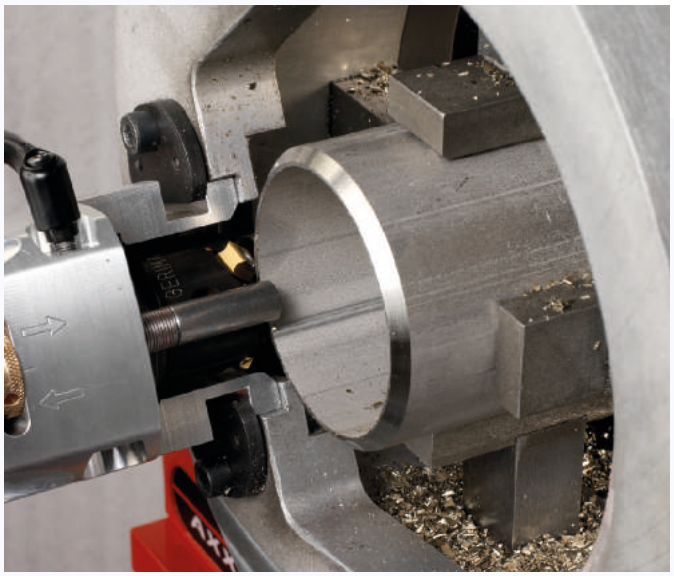
AXXAIR's orbital bevelling

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, bevelling 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, bevelling 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 bevelling 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

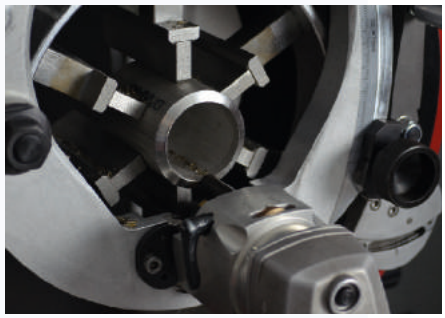
Implementation, setting/adjustment and bevelling are quick and easy. Each machine's diameter range is very broad and does not require specific jaws.
AXXAIR's frames are **scalable** for orbital cutting and welding.

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 bevelling 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 bevelling

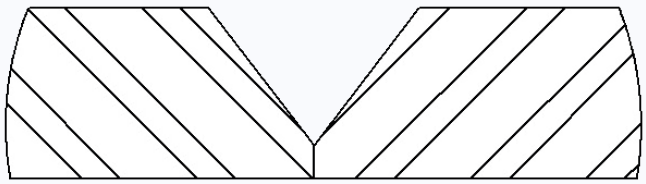
- V- or J-Bevel? -

AXXAIR
INNOVATIVE ORBITAL SOLUTIONS

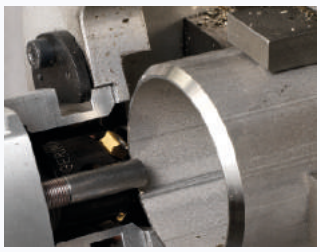
There are two types of bevel, which depend on the manual or automatic welding process used: the V-bevel and the J-bevel (or "Tulip").
These names relate to the fact that, when assembled, the two prepared edges assume the shape of these letters.
In orbital welding, the two root faces of the bevelled parts 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.

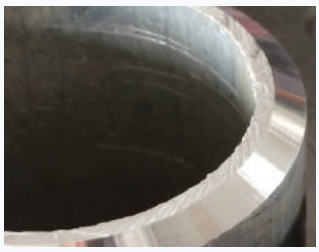
V-bevel

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°.



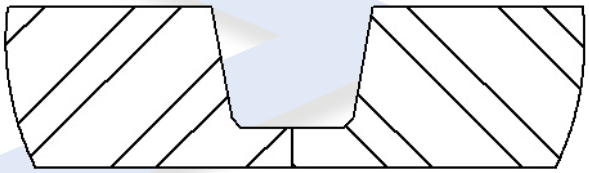
These angles are determined by the application, the thickness of the parts to be welded and the material used. We offer 3 milling heads for orbital V-bevels, each corresponding to one of these angles.





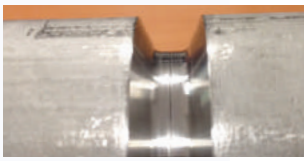
J-bevel (tulip)

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

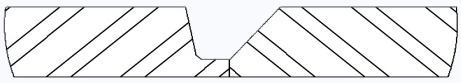


The root face of this type of bevel enables a delicate "tube-tube" type assembly to be created; this generally allows for a single fusion penetration, which represents a better way of precisely controlling the penetration's geometry. This type of preparation also reduces the volume of metal required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

NEW

GA 122 - 172 - 222 - 322

AXXAIR
INNOVATIVE ORBITAL SOLUTIONS

No tube deformation and no tube pollution

Concentric clamping

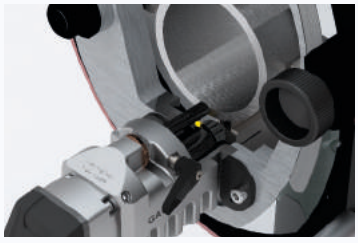
Stainless steel jaws

V-bevel or J-bevel without lubricant

Carbide technology, 10x faster than HSS inserts

Angles :

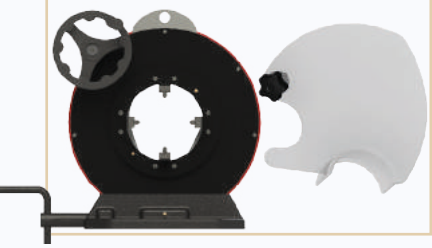
- J-Bevel: 10°
- V-Bevel: 30°, 37,5° and 45°

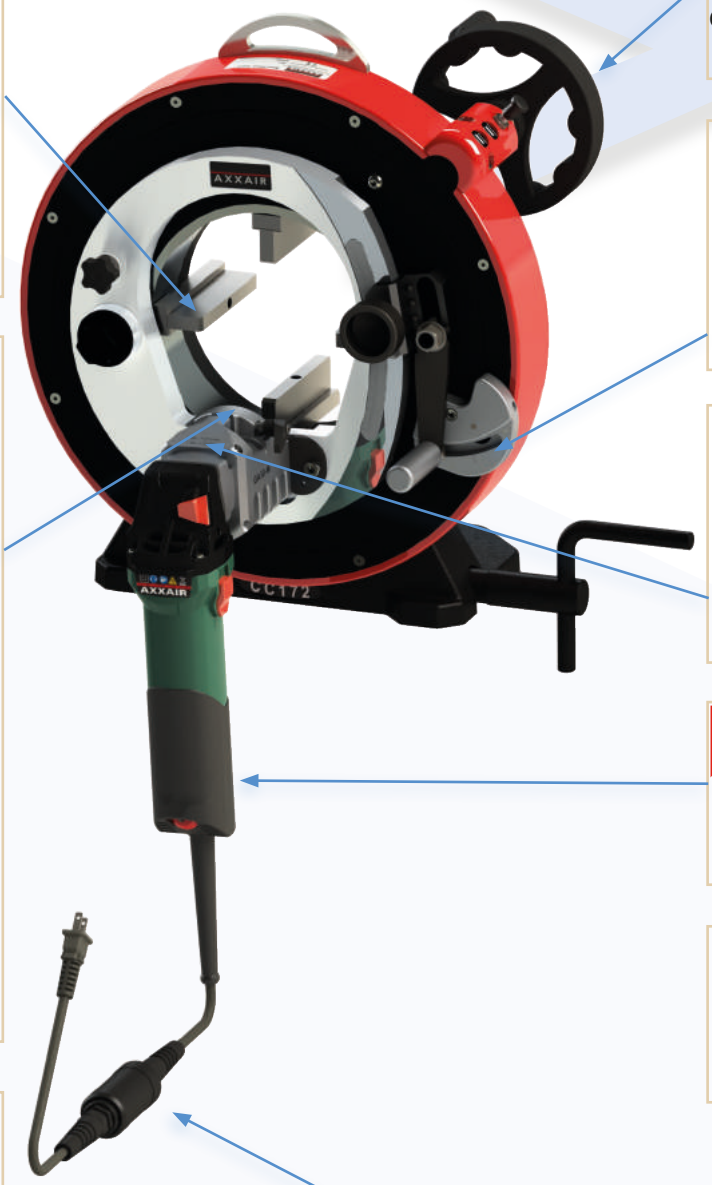


Perfect sealing against chips

All rotating parts are incorporated in the body

Plastic shield in the front





Tool life

Rotation handle for controlled and continuous cutting speed

Tracking system

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

NEW

Easy setting of the root face

Reading on a vernier

NEW

1550 W motor

Wide speed range: flexibility depending on the material

Global Process

Can be transformed into an orbital cutting and welding machine

Easy handling and transportation

Continuous use

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

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.

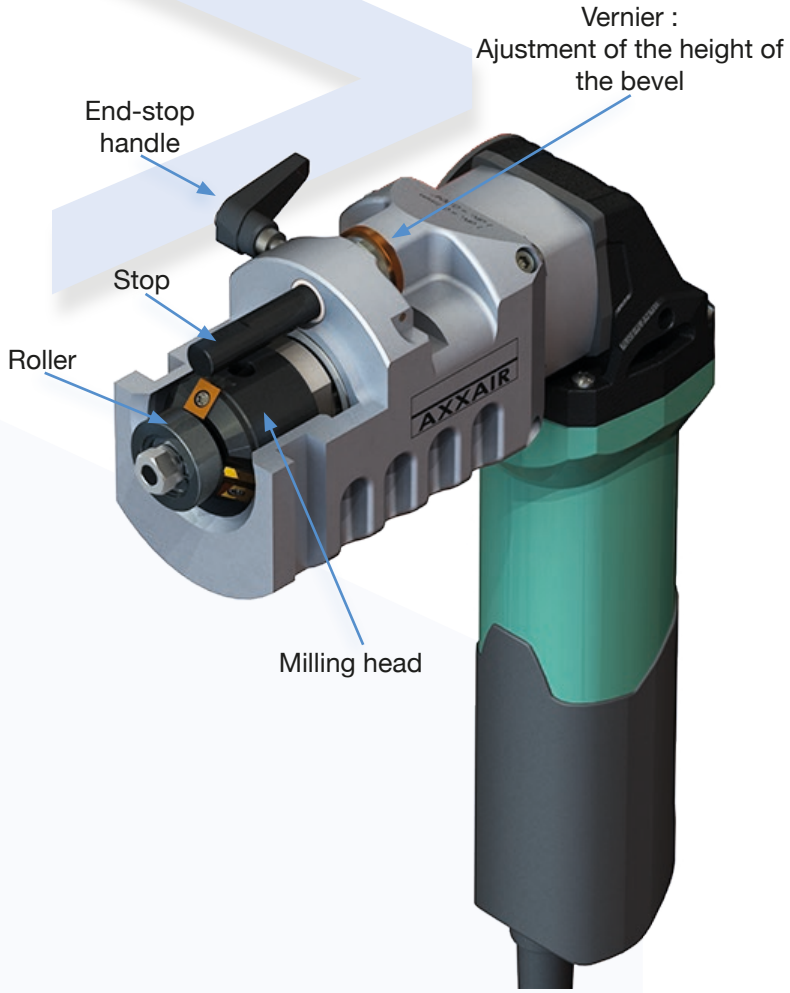
- Vibration level in accordance with standard EN 28662: <2.5m/s², Protection class: IP 20

- 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

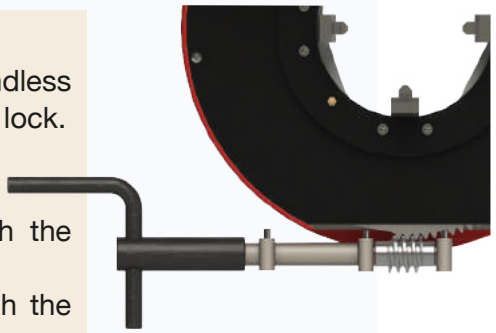
- Mechanical protection of the gearbox, torque limiter integrated into the angular gearbox

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

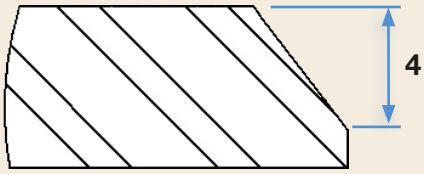
AXXAIR
INNOVATIVE ORBITAL SOLUTIONS

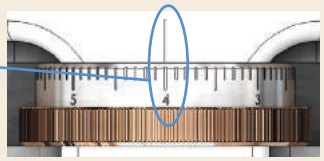
NEW

Technical specifications:

Easy setting of the root face:

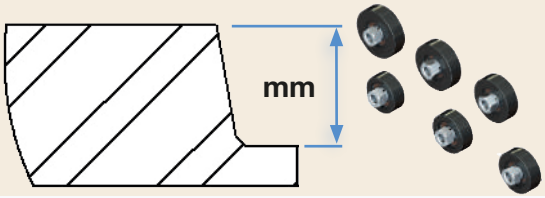
Ajustment of the height of the bevel (V-Bevels) :
To adjust the height of the bevel, the stop needs to be moved. The wheel with the vernier must be turned in either direction to increase or decrease the height of the bevel.

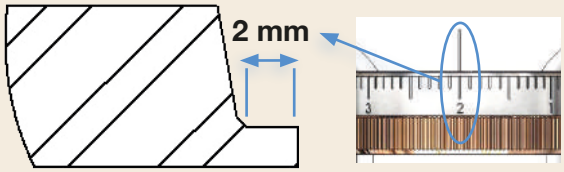




The vernier value is equal to the **bevel height.**

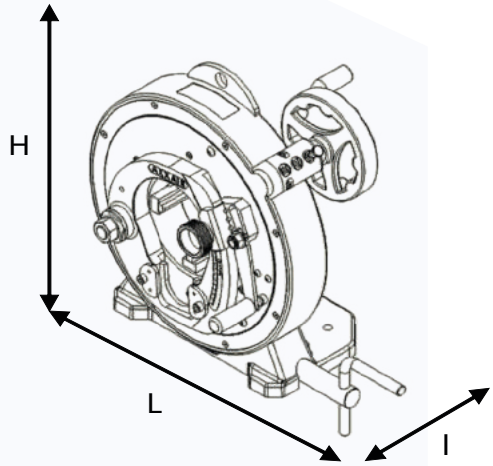
Ajustment of the lenth of the root face (J-Bevels) :
The height of the bevel is determined by the selection of the roller mounted on the milling head. Adjusting the stop allows the length of the root face at the end of the bevel to be changed.





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 - Ø119	Ø15 - Ø99	42 kg	443 x 541 x 304
GA172-M1	GA172-M2	Ø74 - Ø173	Ø33 - Ø116	49 kg	493 x 566 x 304
GA222-M1	GA222-M2	Ø128 - Ø228	Ø55 - Ø155	57 kg	548 x 594 x 304
GA322-M1	GA322-M2	Ø230 - Ø328	Ø141 - Ø239	71 kg	649 x 644 x 304

Please contact us for large diameters and special adaptations