



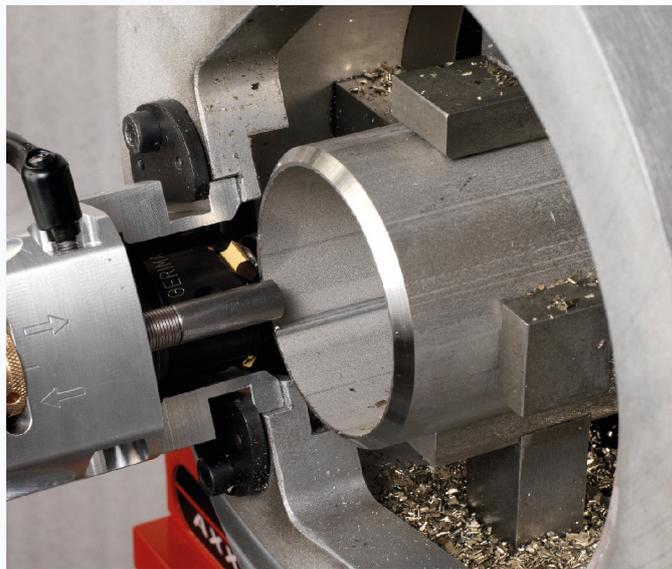
# AXXAIR's orbital beveling

**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.

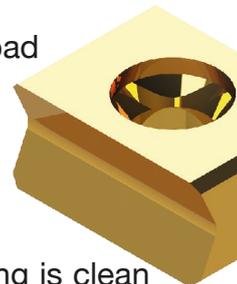
## AXXAIR'S UNIQUE AND PATENTED CONCEPT

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!

**Join experience**

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# AXXAIR's orbital beveling

## - 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.

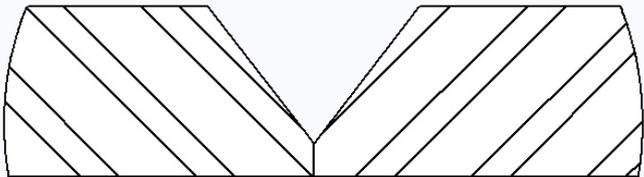
All that is required is a simple fusion of the two root faces and for the bevel to be subsequently filled with wire.

### V-bevel

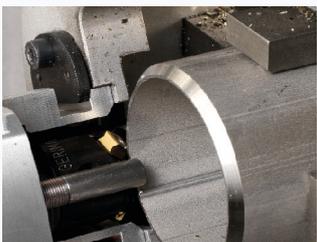
For manual TIG welding, a V-bevel is preferable, with or without a root face, depending on the manner in which the parts are married. It is called a V-bevel as, once the parts have been married, the resulting shape looks like the letter V.

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°.

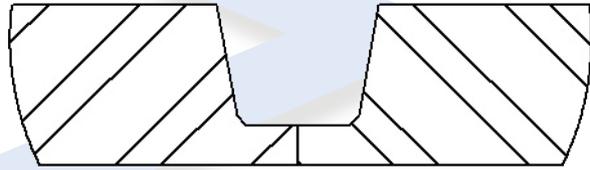


These angles are determined by the application, the thickness of the parts to be welded and the material used. We offer 3 milling heads for orbital V-bevels, each corresponding to one of these angles.



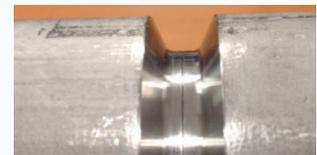
### J-bevel (tulip)

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!



**GA 122 - 172 - 222 - 322**



**No tube deformation and no tube pollution**

Concentric clamping



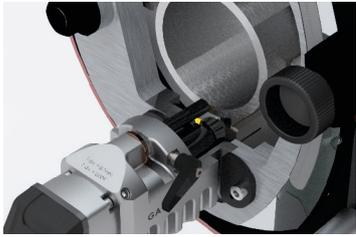
**Stainless steel jaws**

**V-bevel or J-bevel without lubricant**

Carbide technology, 10x faster than HSS inserts

Angles :

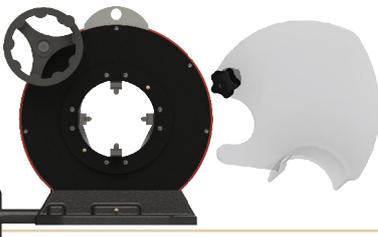
- J-Bevel: 10°
- V-Bevel: 30°, 37,5° and 45°



**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<br>ø5/8" - ø4,5 "     |
| 172              | ø33 - ø173 mm<br>ø1,3 - ø6,625 "   |
| 222              | ø55 - ø228 mm<br>ø2.35 to ø8,625 " |
| 322              | ø141 - ø328 mm<br>ø5,5 to ø12,75 " |

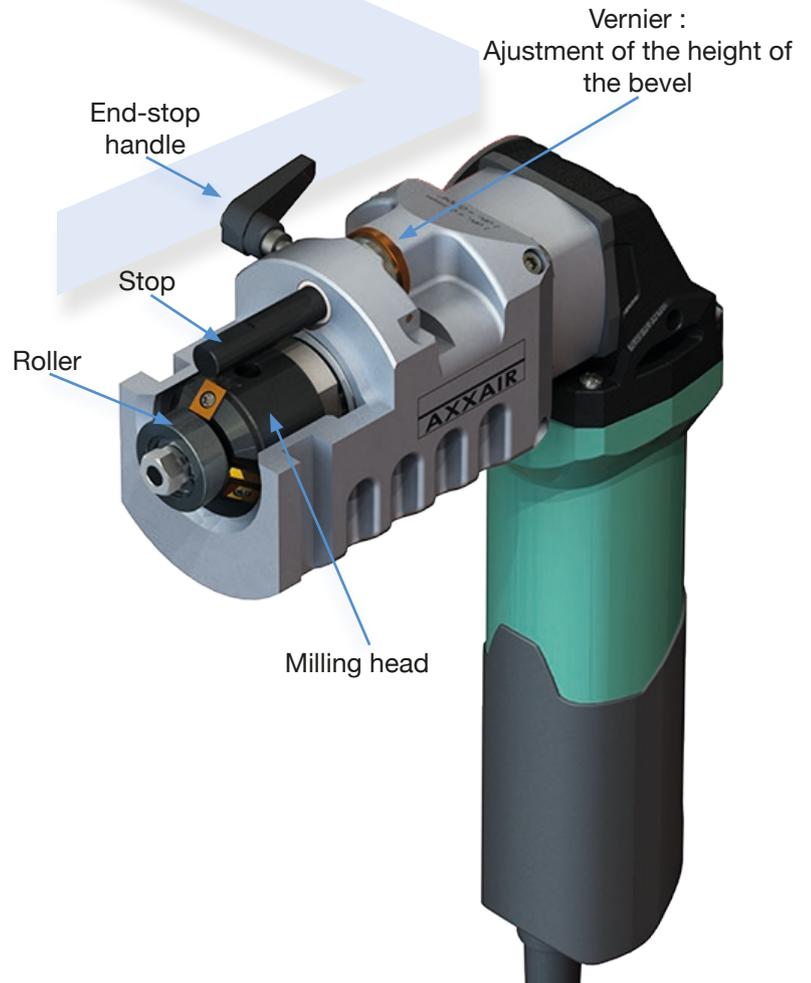
**GA 122 - 172 - 222 - 322**
**AXXAIR**  
 INNOVATIVE ORBITAL SOLUTIONS

### 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

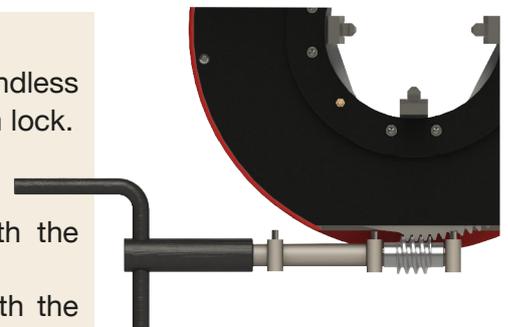


#### Robustness of the body:

- 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


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# GA 122 - 172 - 222 - 322



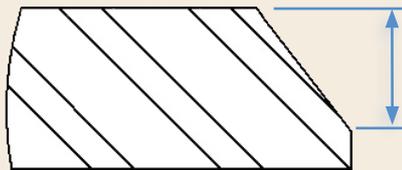
**AXXAIR**  
INNOVATIVE ORBITAL SOLUTIONS

## Technical specifications:

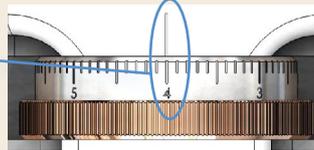
### Easy setting of the root face:

#### 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.



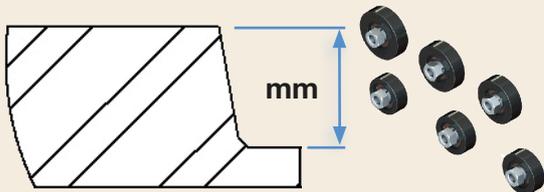
4 mm



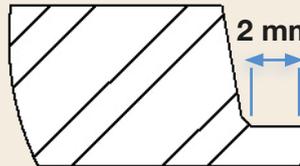
The vernier value is equal to the **bevel height**.

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

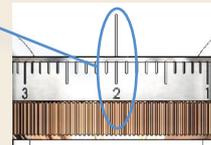
The height of the bevel is determined by the selection of the roller mounted on the milling head. Adjusting the stop allows the length of the root face at the end of the bevel to be changed.



mm

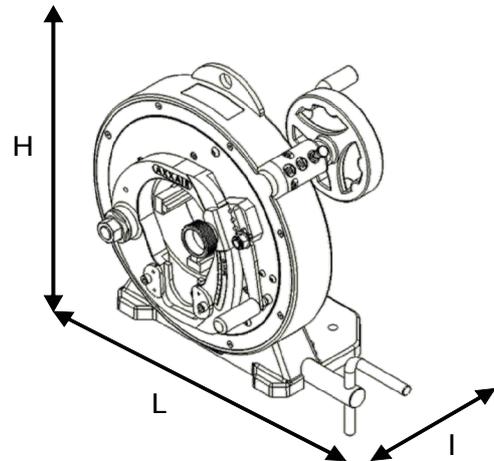


2 mm



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

Please contact us for large diameters and special adaptations



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