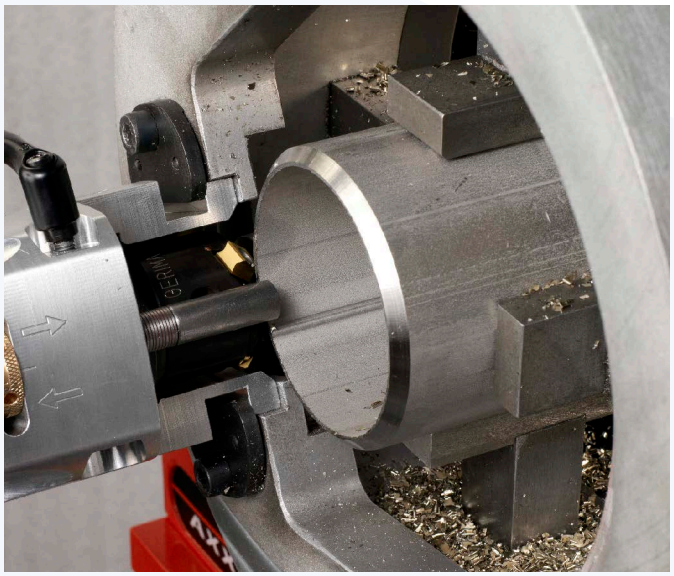
AXXAIR's orbital bevelling

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

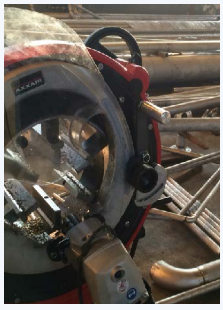
Implementation, setting/adjustment and bevelling are quick and easy. Each machine's diameter range is very broad and does not require specific jaws.
AXXAIR's frames are **scalable** for orbital cutting and welding.

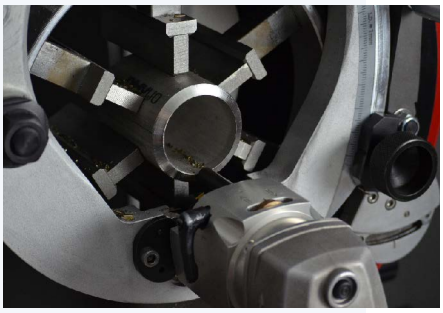
QUALITY

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? -

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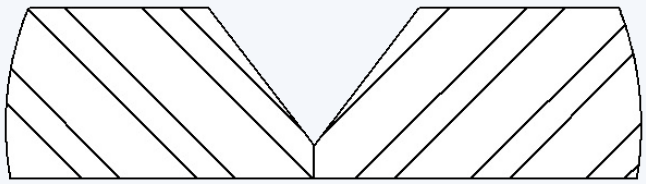
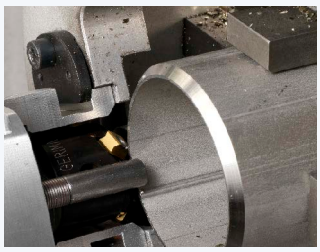
There are two types of bevel, which depend on the manual or automatic welding process used: the V-bevel and the J-bevel (or "Tulip"). These names relate to the fact that, when assembled, the two prepared edges assume the shape of these letters. In orbital welding, the two root faces of the bevelled parts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

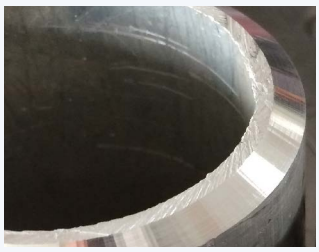
V-bevel

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°.



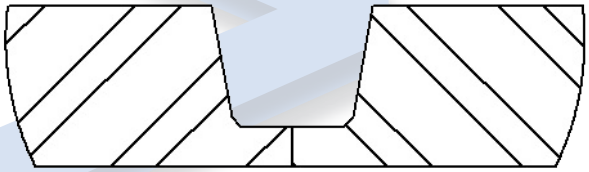
These angles are determined by the application, the thickness of the parts to be welded and the material used. We offer 3 milling heads for orbital V-bevels, each corresponding to one of these angles.





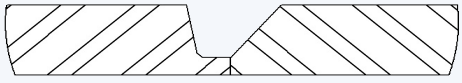
J-bevel (tulip)

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 angle of a J-bevel is shallower (generally 15 to 20°) depending on the application.
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!

AXXAIR
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NEW PRODUCTS
in the CCx22 orbital bevelling range

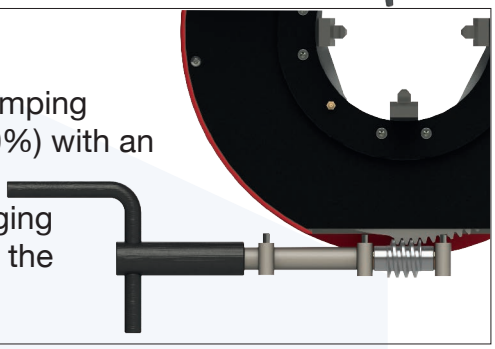
Customer satisfaction and our continuous improvement policy have led our developers to redesign part of our bevelling programme. The aim is to provide easier and and stronger clamping and sealing against chip. The level of quality is higher than ever and stability has been improved.

Easy handling

Introduction of a lifting eye for use in a workshop or on site.

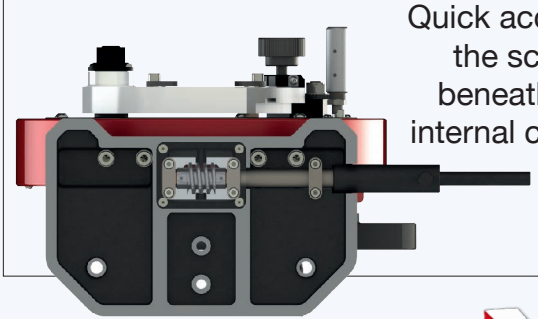
Robustness

A more effective clamping system (+30%) with an endless screw engaging directly with the cam lock.



Easy maintenance and inspection

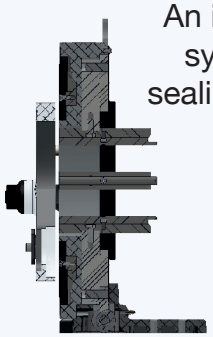
The internal clamping components are lubricated using a greaser

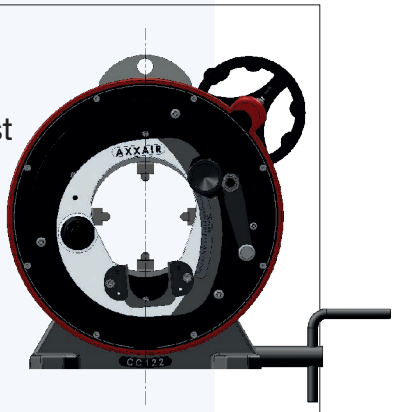


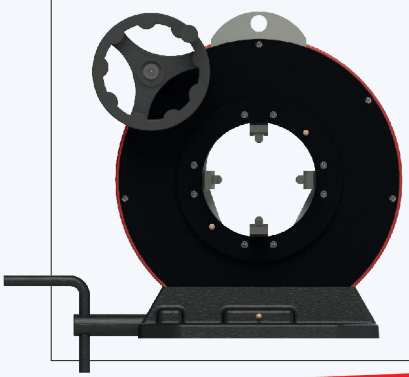
Quick access to the screw beneath the internal cowling

A perfect seal against chips

An improved system of sealing against chip



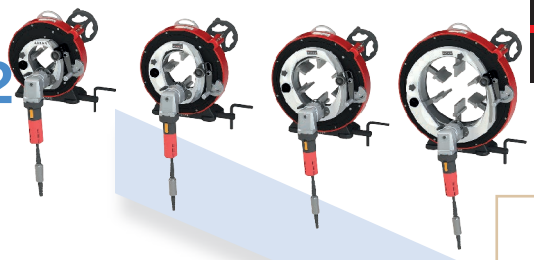




All rotating parts are incorporated into the body.

QUALITY MADE IN FRANCE

GA 122 - 172 - 222 - 322



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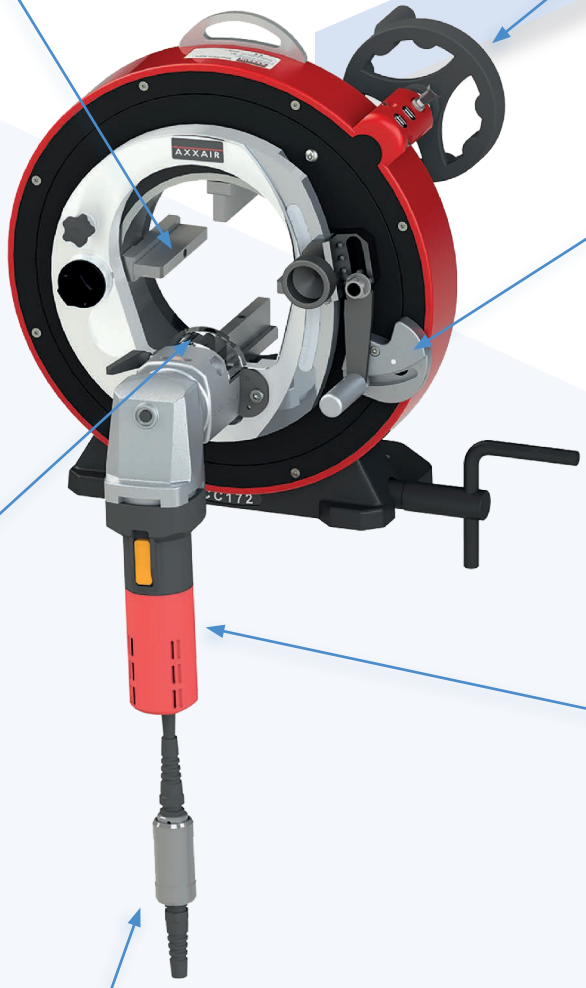


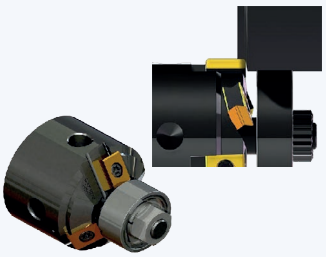
No tube distortion

Concentric clamping

Stainless steel basic and auxiliary jaws as standard

V-bevel or J-bevel without lubricant

Screwed-on carbide inserts, 10x faster than HSS inserts



Global Process

Can be transformed into an orbital cutting and welding machine

Continuous use

Electric rotary seal with anti-twist cable

Tool life

Rotation handle as standard: increases the life of tools

Workpiece guide

Workpiece guide that takes account of the ovality of tubes

1500 W motor

Supplied with a chip shield

Easy handling and transportation

Bevelling range	
122	ø15 - ø119 mm 0.25 - 4.5”
172	ø33 - ø173 mm 0.625 – 6.625”
222	ø59 - ø228 mm 2.375 – 8.625”
322	ø140 - ø328 mm 5.563 – 12.750”

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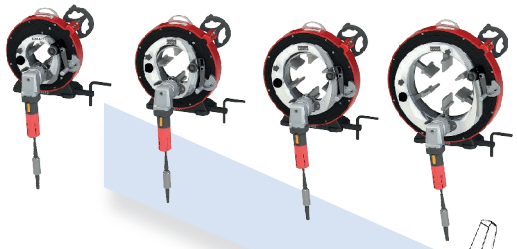
GA 122 - 172 - 222 - 322



Technical specification:

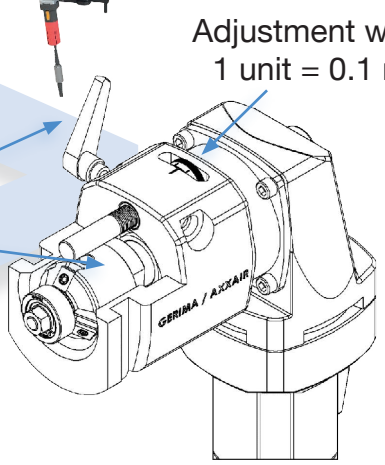
- **1500 W, 120 V or 230 V motor**

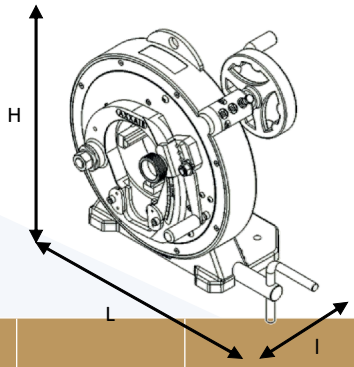
Vibration level in accordance with standard EN 28662: <2.5m/s², Protection class: IP 20

Rotation speed (6 speed variations) from 2200 RPM to 6500 RPM

- V-bevel at 30°, 37.5° or 45° or J-bevel at 10° depending on the milling head.

<u>All motors are supplied in their own individual cases, including the necessary tools</u>





	Product Code	Tube bevelling machine for the following diameters (in mm):		Net weight	Customs Code	Dimensions (HxLxW in mm)
		With basic jaws	With extra jaws (included)			
120V 1200W	NEW GA122-1	Ø29 to Ø119	Ø15 to Ø99	42 kg	846190 0000	443 x 541 x 304
	NEW GA172-1	Ø74 to Ø173	Ø33 to Ø116	49 kg		493 x 566 x 304
	NEW GA222-1	Ø128 to Ø228	Ø59 to Ø155	57 kg		548 x 594 x 304
	NEW GA322-1	Ø230 to Ø328	Ø140 to Ø239	71 kg		649 x 644 x 304
230V 1200W	NEW GA122-2	Ø29 to Ø119	Ø15 to Ø99	42 kg	846190 0000	443 x 541 x 304
	NEW GA172-2	Ø74 to Ø173	Ø33 to Ø116	49 kg		493 x 566 x 304
	NEW GA222-2	Ø128 to Ø228	Ø59 to Ø155	57 kg		548 x 594 x 304
	NEW GA322-2	Ø230 to Ø328	Ø140 to Ø239	71 kg		649 x 644 x 304

<u>Please contact us for large diameters and special adaptations</u>