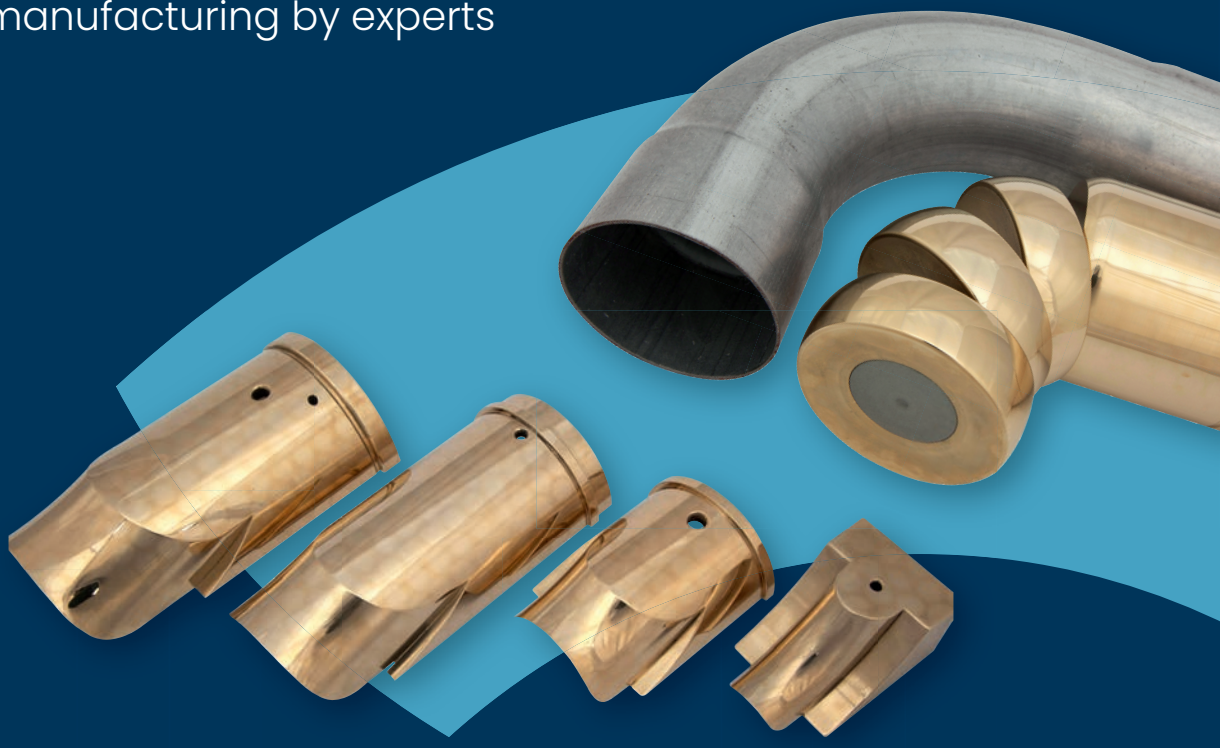
Tube bending tools made from aluminum bronze, tool steel or technical plastic

Design and manufacturing by experts



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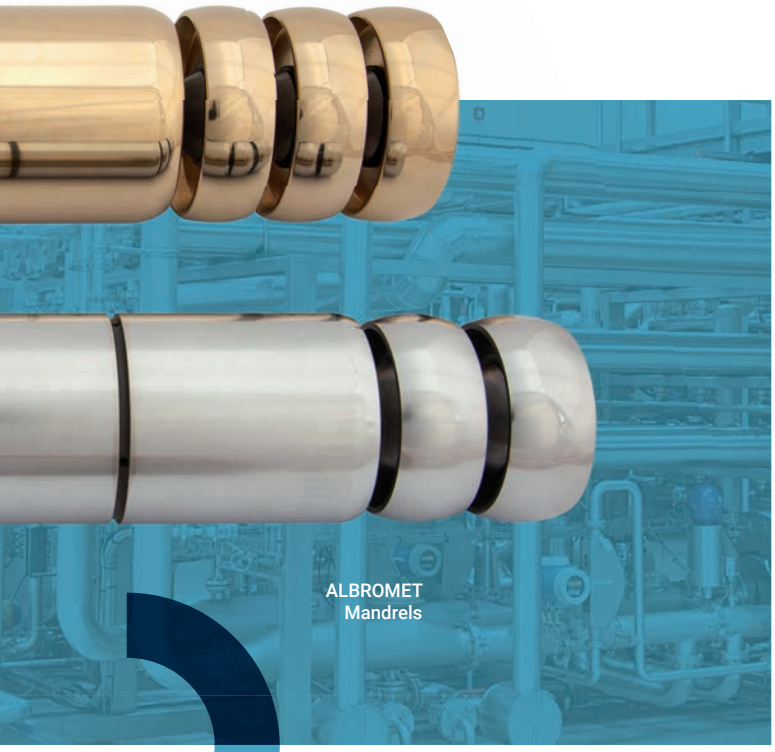
Precision begins with the tools

ALBROMET - Your Experts for high-quality bending tools



ALBROMET
Mandrels

Tube bending is a key manufacturing process in numerous industries, including car manufacturing, plant engineering, medical technology, manufacture of music instruments, and the furniture and construction industries. All of these require high dimensional accuracy, reproducible quality and perfect surface and cross-sectional geometry. High-performance tube bending tools are essential for this.

ALBROMET offers a comprehensive range of high-quality bending tools for all applications. All tools, whether bending mandrels, wiper dies, bending dies or rollers, as well as pressure and clamping dies, are produced in-house. With modern design tools, collision checks in the CAD system and our many years of experience, we ensure that you receive the tools that are perfectly matched to your bending task.

How you benefit from our bending tools

- Bending with consistently high quality
- Technical advice, design and manufacturing from a single source
- Tools for (almost) all tube materials
- Long service life thanks to optimised choice of material
- Rapid availability in many sizes

ALBROMET
Tube bending tools

Product overview

Bending mandrels

- For tubes made of aluminium, steel, stainless steel, copper, brass, titanium and coated metals
- Segment mandrels, plug mandrels or spoon mandrels, etc., in many different shapes and sizes
- Made of aluminum bronze or tool steel, with and without coating

Bending dies

- Bend dies, clamp dies, pressure dies
- Manufactured from hardened tool steel according to customer drawing
- All components from a single source

Wiper dies

- Effectively prevent wrinkles from forming on the inner radius of the tube
- Made of aluminium bronze, tool steel or plastic according to the tube material
- Various designs, e.g. as a monoblock or wiper die insert
- Matching wiper die holders available

Our spare parts sets are helpful when servicing is required. Whether connecting links, mandrel connections or bending balls, all components of a bending mandrel can be quickly replaced as needed. This helps to minimise search times, incorrect orders and assembly errors. Sustainable and cost-effective.

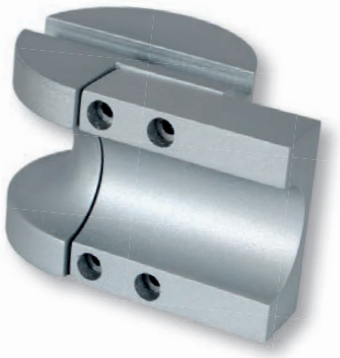
Spare part-kits from stock:

- ✔ Consisting of connecting links (end and center links), mandrel links and balls segments
- ✔ Available for all sizes
- ✔ Short delivery times thanks to stock availability
- ✔ Sustainable and cost-effective

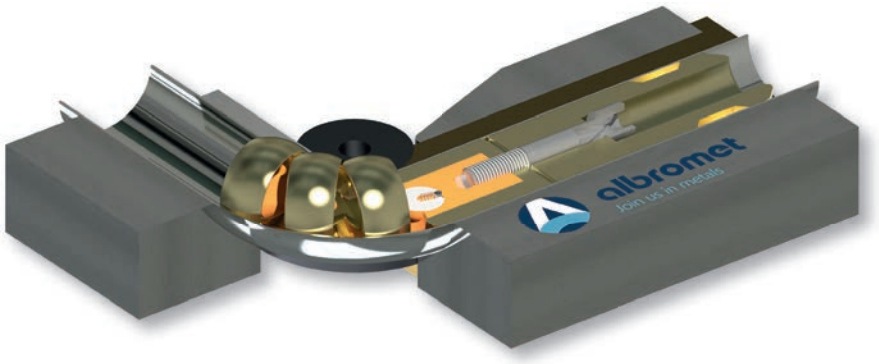
ALBROMET
Wiper die

Mandrels for
rotary draw bending

Designed for precise radii and best bending results



In rotary draw bending, the tube bending mandrels reliably stabilise the inside of the pipe and thus influence the quality of the bending result. ALBROMET offers plug mandrels, spoon mandrels and segment mandrels made of aluminum bronze, high-strength tool steel and plastic in all standard sizes.



ALBROMET tube bending tools in perfect interplay:
Wiper die, bending mandrel, clamp, bend die and pressure die

When is which mandrel used?

Type of mandrel / Parameters	Plug mandrel	Ball mandrel	Segment mandrel
Typical CLR/D-area *	> 3,0	2,0 - 3,0	< 2,0
Ratio D/W **	< 20	20 - 25	> 25
Wall thickness	medium - thick	thin - medium	thin - very thin
Risk of ovalization	limited	medium	very low
Suitable for high-strength materials	limited	conditional	very good

* Ratio of bending radius (CLR) to tube diameter (D)
** Ratio of tube diameter (D) to wall thickness (W)

Materials and coatings

Bend any tube with us

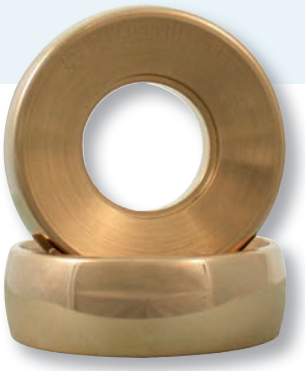
ALBROMET bending mandrels – developed for precise radii and best bending results. Many years of experience guarantee ideal tool design and dimensioning. Material- and geometry-dependent factors such as tube material, wall thickness, bending radius and tube diameter, to name just the most important ones, are decisive.

Each pipe material has its own characteristics. Steel and stainless steel require high mandrel strength, while aluminium requires low-friction surfaces. Copper requires sensitive process control, while titanium demands uncompromising tool quality. Plastics, on the other hand, have their own specific requirements in terms of temperature control and mandrel material.

Each pipe material has specific requirements:

- ✔ Stainless steel (1.4301 / 1.4404): high strain hardening ➔ stable mandrel support required
- ✔ Aluminum (e.g. EN AW-6060): low strenght but sensitive surface ➔ polished or coated mandrels recommended
- ✔ Copper pipe Ø < 20 mm: high tendency to crease ➔ early mandrel contact crucial
- ✔ Titan (grade 2 / 5): high spring back ➔ Precise mandrel position and rigid segment chain required

Two-ball mandrell made from ALBROMET-A300



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Balls made from aluminum bronze

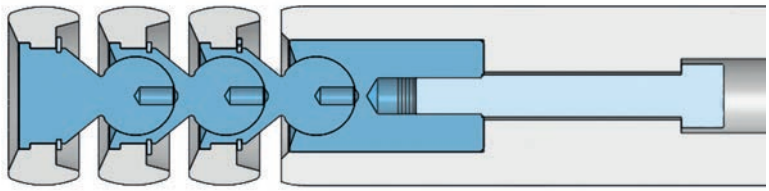
Material recommendation for mandrels

Mandrel material / Tube material	ALBROMET Aluminum-bronze	Tool steel hardend, hard chrome-plated	Tool steel hardend, TiN-coated	Tool steel hardend, CrN-coated	Tool steel hardend, DLC-coated
Aluminum		★			★
Stainless steel	★				
Copper / Brass		★		★	
Steel		★	★		
Titan					★

Types of mandrels

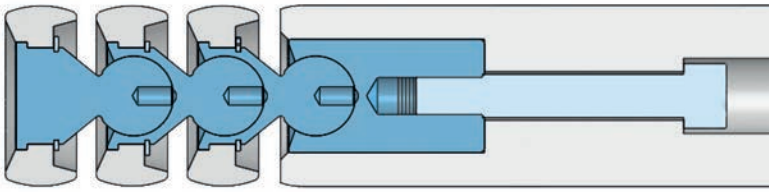
Standard-Link-Mandrel (Segment mandrel)

- Combines flexibility with dimensional stability
- Return to original position thanks to spring force of the links
- Homogeneous support because of cylindrical segments



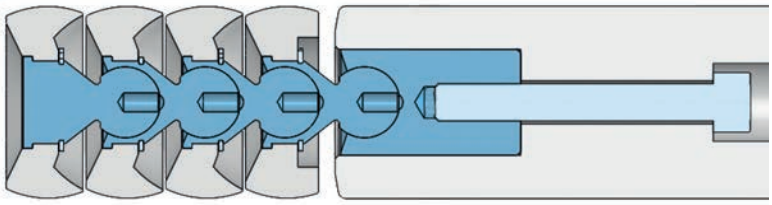
Segment mandrel in sd-design (small distance)

- Ball spacing reduced by 40 %
- Larger contact surface during bending
- Wrinkle-free bending of thin-walled pipes



Segment mandrel in xsd-design (extra small distance)

- Ball spacing reduced by 80 %
- For extremely thin-walled tubes
- For high-strength tube materials



Plug mandrel

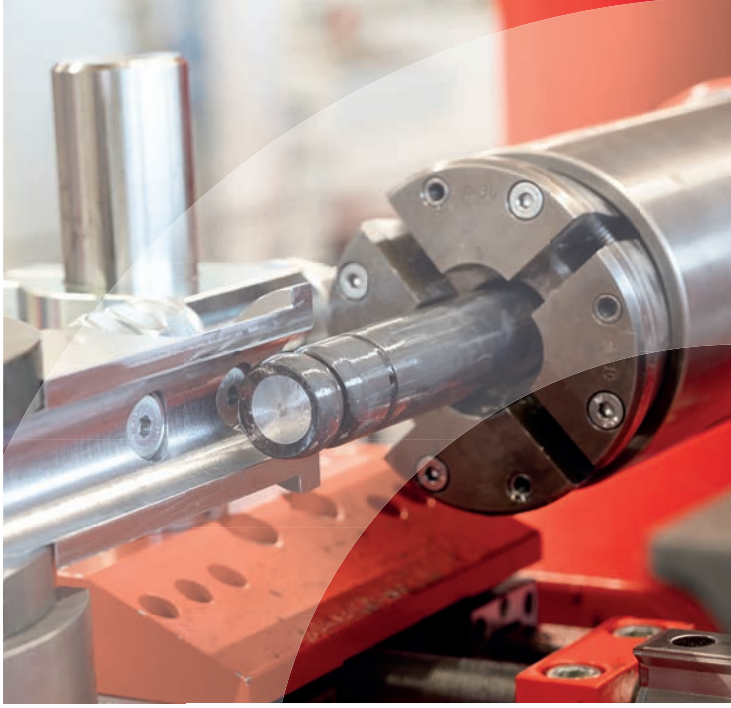
- For pipes with thick walls or large diameters
- Ratio D/W < 20, ratio CLR/D > 3.0
- Available in all kind of types

Spoon mandrel

- 3D-milled contour in the bending area with large contact surface for perfect bending results
- For pipes with thick walls or large diameters
- Ratio D/W < 20, ratio CLR/D > 3.0

D = pipe diameter (outside); W = wall thickness, CLR = centre line radius (bending radius)

Optimal lubrication



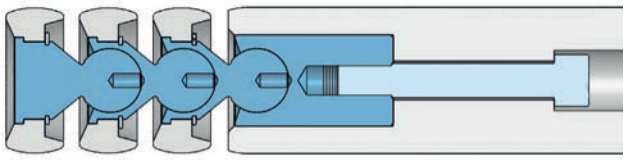
Lubrication is a crucial factor for high-quality mandrel bends in rotary draw bending. Depending on the tube material, oil, grease or paste is used to reduce friction between pipe, mandrel and tool.

Correctly dosed lubrication on the mandrel and on the inside of the pipe prevents surface damage, scoring and increased tool wear. A high bending quality is ensured by a consistent flow of material in the pipe.

Types of lubrication using the example of a standard link mandrel:

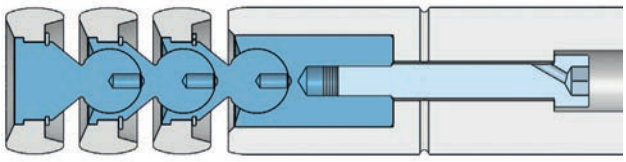
External lubrication on the mandrel

- Easy to implement
- Suitable for all lubricants (oil, grease, paste)



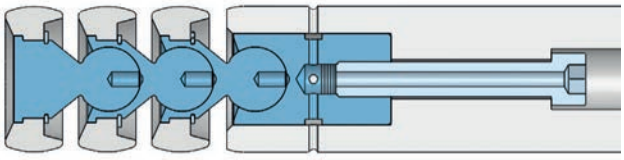
Internal lubrication

- Suitable for automatic bending machines
- Enables stable and reproducible bending processes
- **For low-viscosity bending gels or synthetic lubricants**



Minimum-Quantity-Lubrication (MQL)

- Low lubricant consumption
- Lubricant supply near the bending area
- Better lubricant distribution through compressed air supply of the fluid



Excample of a plug mandrel

- Mandrel internal lubrication is also available for fixed mandrels such as plug mandrels and spoon mandrels

All lubrication variants shown are available for all mandrel types

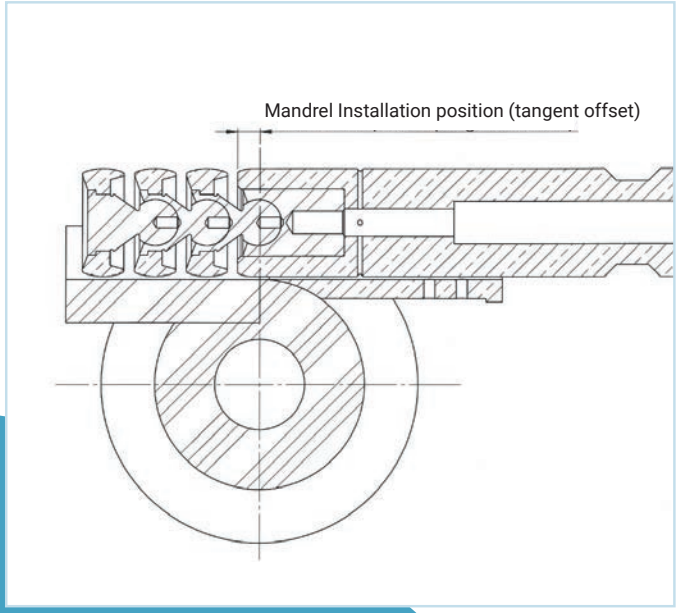
Mandrels: Design and installation position

As a manufacturer of tube bending tools, we put highest emphasis on function and design. The bending process is simulated using CAD models and the mandrels are checked for function and collision. The size of the bending mandrel is defined by the outer diameter of the pipe.

Dimensions – standard link mandrels

Size	Ø Tube outside from - to mm	Shaft length to mm	Mounting thread
4	15,9 – 18,9	100	M8
5	19,0 – 23,9	150	M12
6	24,0 – 28,4	200	M16
7	28,5 – 37,5	200	M16
8	38,0 – 43,5	200	M20
9	44,0 – 53,0	200	M24
10	53,5 – 66,0	200	M24
11	66,5 – 85,0	300	M30
12	85,5 – 117,0	300	M30

Ø tube outside in mm	Mandrel installation position in mm (tangent offset)
6,5 – 7,9	0,75
8,0 – 12,5	2,00
12,6 – 15,8	2,50
15,9 – 18,9	3,00
19,0 – 23,9	4,30
24,0 – 28,4	5,20
28,5 – 37,5	5,40
38,0 – 43,5	5,60
44,0 – 53,0	6,20
53,5 – 66,0	6,40
66,5 – 85,0	6,40
85,5 – 117,0	7,90



The diagram shows the recommended installation position of the mandrel.
Fine adjustment should be made after analysing the bent pipes.

Product overview

Wiper dies

The wiper die supports the pipe on the inside of the bend during bending, thus helping to maintain the shape and integrity of the pipe. It also minimises springback of the tube. The shape of the wiper die must be adapted to the desired pipe shape in order to effectively prevent deformation or creasing of the pipe.

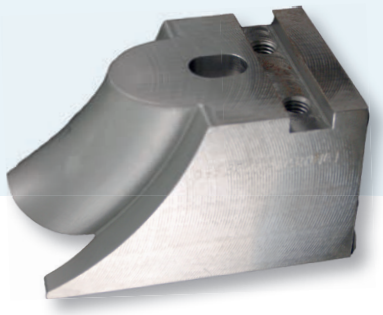
Different construction types

- Wiper dies as monoblocks
- Wiper die holders and inserts
- Wiper dies with supporting surface
- Wiper dies for rectangular profiles

Wiper dies are particularly important when bending pipes with tight radii and/or thin wall thicknesses. Various designs are available. The material is selected to match the pipe material. ALBROMET offers all of the materials and coatings mentioned.

Wiper die materials:

- Aluminum bronze
- Plastic
- Tool steel uncoated
- Tool steel with various coatings



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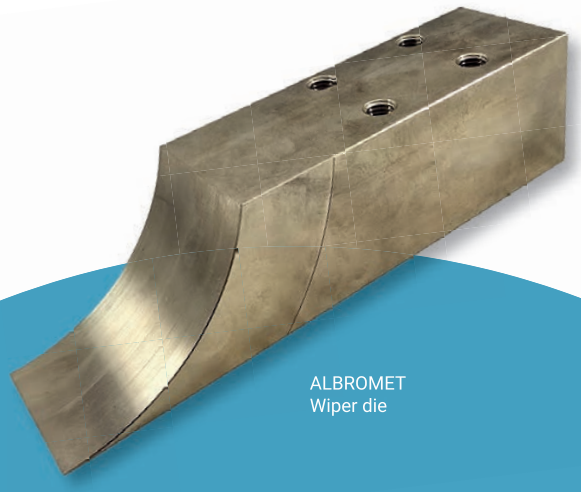
Wiper die holder

ALBROMET Wiper dies
made of different materials



ALBROMET
Wiper die

Spare part-kits and individual parts

Spare part-kits offer significant advantages when servicing is required. All necessary components are already fully assembled and pre-installed, which eliminates search times, incorrect orders and installation errors. This significantly reduces the on-site workload and shortens machine downtime. At the same time, the standardised assembly ensures consistent quality and increases process reliability during maintenance and repair work.

Spare part-kits

- Available in a wide variety of materials and coatings
- Item is delivered pre-assembled
- Many sizes available from stock

Ball segments

- Wide variety of materials
- In all sizes
- Also available separately

The high-precision connecting links between the mandrel shaft and balls are made from heat-treated, premium-quality tool steel with extremely high strength. This increases service life and reduces maintenance requirements during use. Thanks to our in-house production and warehousing, we offer short delivery times and excellent value for money.

Connecting links

- Up to mandrel size 5: one-piece (slotted)
- From mandrel size 6: two-parts
- Accessories included (detent spring, detent ball, lock ring)

one piece, split

two-parts

Mandreal connections

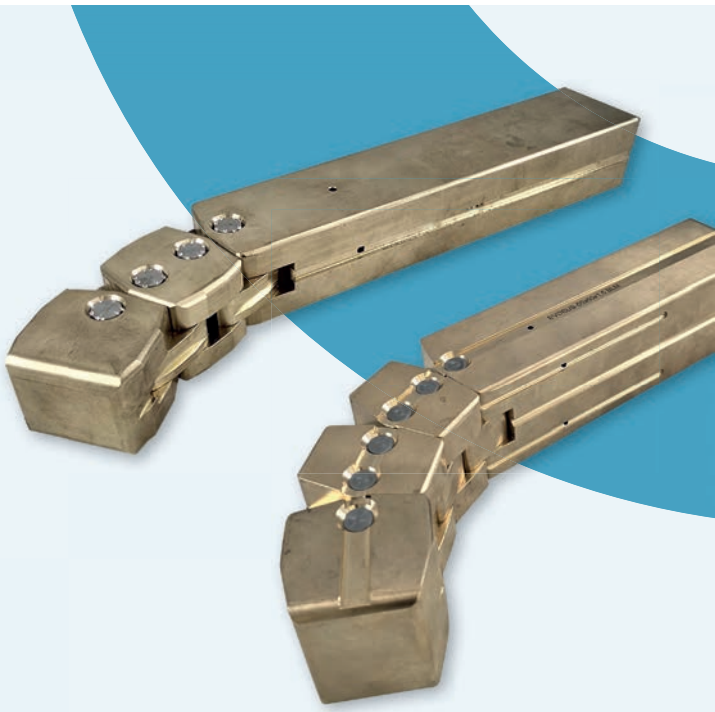
- Two-parts (always)
- Accessories included (mounting screw)

End links

- One piece
- Solid
- Accessories included

Product advice

From the very beginning ALBROMET has relied on expert product advice



Advice and spare parts service for tube bending tools

+49 8171 63 998-03
fertigteile@albromet.de

Detailed enquiry forms you will find here:

albromet.de/en/inquiry-tube-bending-tools/

as of: 03/2026

ALBROMET Service

- 24h sawing center
- Precisely fitting cuts
- Extensive metal warehouse
- Individual advice
- Product management and development

Founded in 1994, Albromet is now one of Europe's leading suppliers of tube bending tools made of aluminum bronze, high-strength tool steel and plastic in all standard sizes and for all applications. The company also offers wear-resistant aluminum bronzes and high-strength copper alloys as semi-finished products in a wide range of diameters, formats and qualities from stock. The company has been ISO-certified since 1998 – currently according to ISO 9001:2015.

Please contact us!

We provide competent and personal advice.

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