TUBE METAL SOLUTIONS

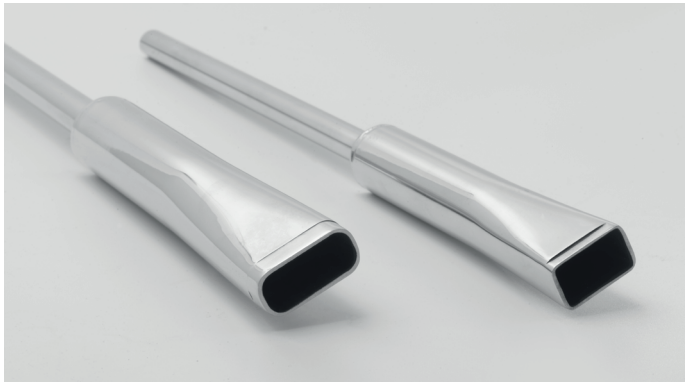
COMPONENTS AND ENGINEERING

COMPANY

With more than 25 years of experience, the support of young and skilled people and solid ownership, Ricos can be considered a lean company.
Lean on the production. Lean on the delivery of the right solution. Lean on price.

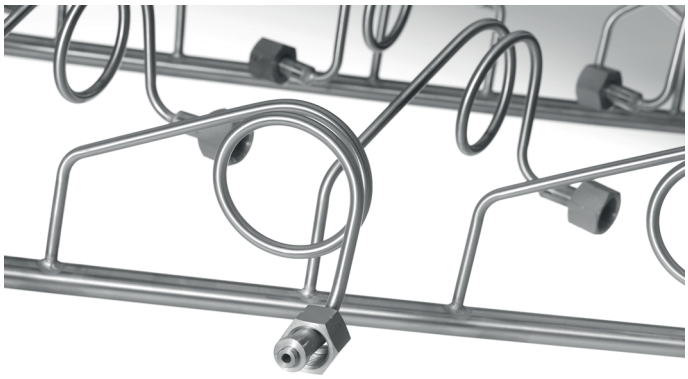
In 1995, Ricos was born for the manufacturing of tools to process tubes. As the years went by, Ricos increased its experience and focused on finding the right solution, building our tooling, and looking for the last innovation in metal tube transformation. Ricos offers a wide range of solutions for tube components, including many tube processing (automated cutting, tube bending, 3D laser cutting for tubes and sheets) and mechanical processing that can be done with tools (shearing, drilling, deep drawing, shaping, and many others). Other useful solutions can be: tapering until a diameter of maximum 80 cm, swaging until a maximum of 80 cm, TIG and MIG automatic welding, braze welding and hydroforming.
At the end of the production process buffing, chromium plating, varnishing on stainless steel, passivation and finally brightening and other finishings help improving the quality of the production even more. After manufacturing and before storing or sending, each item is checked, cleaned, protected, and packed.

PAPER MACHINERY

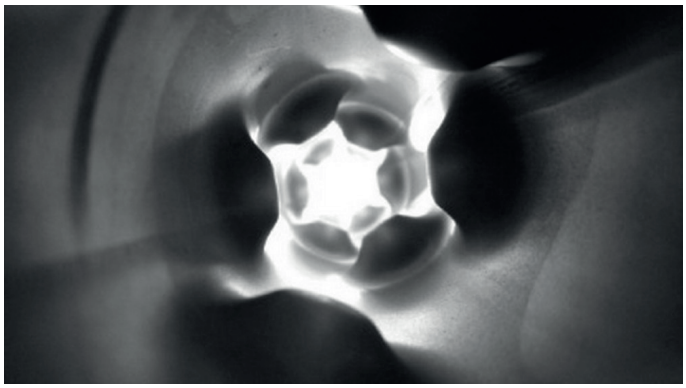


WATER FLOW

HIGH PRESSURE



FOOD & BEVERAGE



PHARMACEUTICAL

MOBILITY

PAPER MACHINERY

Inner surface roughness is the most significant feature we need to consider when processing tube components for the paper machinery sector.
That's because the fluid is the paper pulp, known for its high density and flocculation danger, but also because the flow needs to be checked and then controlled constantly.

In the paper sector, Ricos specializes in the manufacturing of metal components for **headboxes**, a part of the paper machinery that needs an internal surface without wrinkles.

Ricos supplies these components and guarantee the best control of the flow by elements with:
- Oval, square or triangular end shape.
- From round starting shape to square end shape with no welding process.
- Conical junction.
- Sharp edge for coupling in welding.

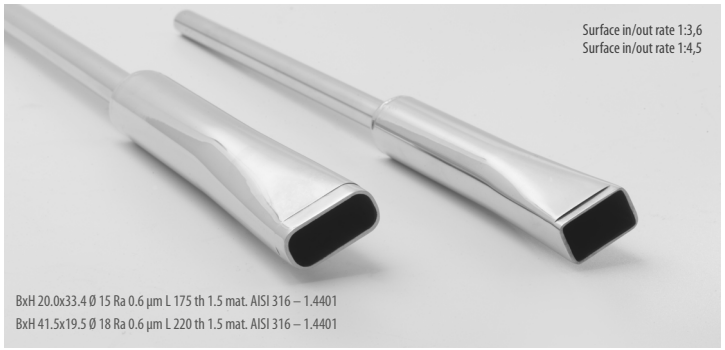
All these processing with an average internal roughness of Ra 0.6 µm or lower.

Surface in/out rate 1:2,2
No welding-sharp edges

BxH 25x25 Ø 20 Ra 0.6 µm L 500 th 2 mat. AISI 316

Surface in/out rate 1:4,7
No welding-sharp edges

BxH 70x85 Ø 42 Ra 0.6 µm L 450 th 2 mat. AISI 316



Surface in/out rate 1:3,6
Surface in/out rate 1:4,5

BxH 20.0x33.4 Ø 15 Ra 0.6 µm L 175 th 1.5 mat. AISI 316 – 1.4401
BxH 41.5x19.5 Ø 18 Ra 0.6 µm L 220 th 1.5 mat. AISI 316 – 1.4401

BxH 48x51 Ø 18 Ra 0.6 µm L 225 th 2 mat. AISI 316 – 1.4401

WATER FLOW

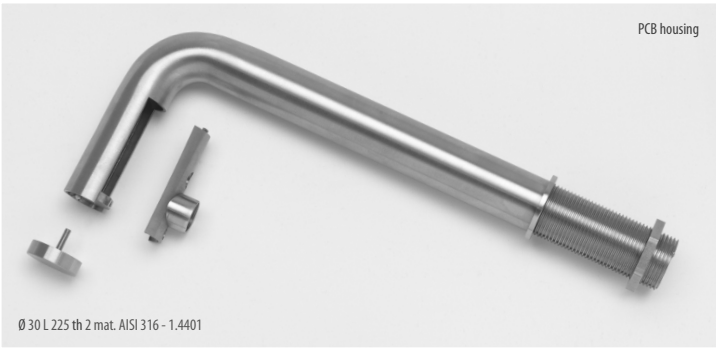
Tube components in the water flow sector need attention in the aesthetic details and the precision of the coupling parts. The fluid here is water and it usually flows better in stainless steel tubes or components. The need is to have beautiful and high-quality tap shapes, suitable finishing and precise machining.
A tube bending process with **a center-line radius that equals the tube diameter** (tight bend – CLR=ø) while avoiding wrinkling and humps is a must in the taps and faucets sector.

Thanks to the internal process and the experience in the field, RICOS supplies well-done components for taps, faucets and mixers with:
- Extreme center line radius while bending
- Precise end tube machining
- Pre-finishing items
- High-quality welding
- PCB housing for electronic faucet/tap

We develop each item following the client's idea while delivering the best solution available linked to a good finishing and a great definition of the item.

TIG welding

Ø [1] 30 Ø [2] 28 H 225 th 2 mat. AISI 316 – 1.4401



PCB housing

Ø 30 L 225 th 2 mat. AISI 316 - 1.4401

Ø 20 L 225 th 2 mat. AISI 316 - 1.4401

BxH 31,5x21,5 L 225 th 1,5 mat. AISI 316 - 1.4401

[Dimensions expressed in millimeters mm]

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HIGH PRESSURE

Safety and careful attention are the keywords that need to be associated with the High-pressure gas industry.Tube components need to be carefully controlled during transport to guarantee the safety of the product delivered.

The gas involved in this industry can be stocked at 500 bars and for this reason, it is fundamental to have safe and tested components which are part of a whole qualified system.
Ricos wants to assure the presence of a Quality Certified process, a full equipped Testing station and a great relationship between design, manufacturing and development departments.
The components Ricos delivers are **TPED and PED Directive** compliant together with:

- WPS Welding procedure specification.
- WPQR welding procedure qualification record.
- **Welder certification.**
- No welding end junction – direct forming end (patented)

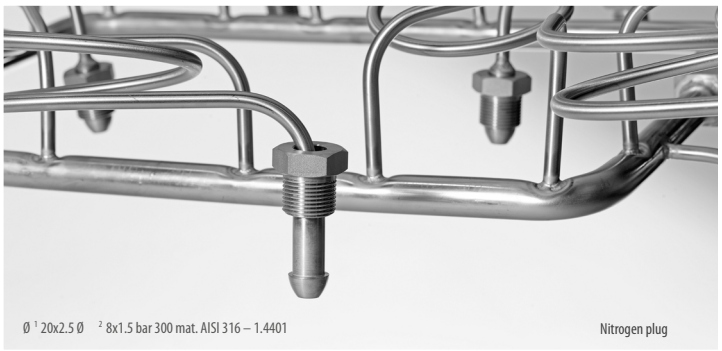
Ricos has introduced a brand-new **modular manifold** that can be used with cylinder bundles up to 750 bars.

Patented shape

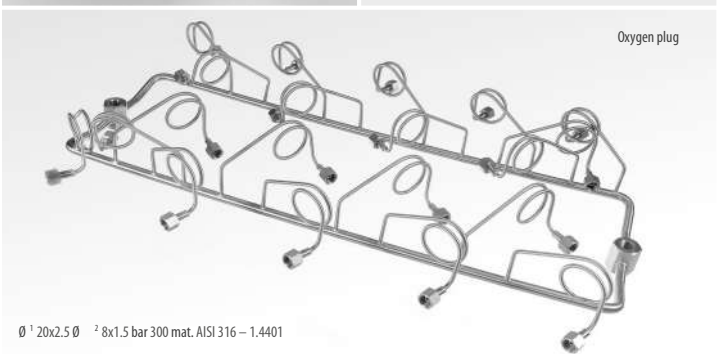
Ø 8x1.5 bar 300 mat. AISI 316 – 1.4401

No welding process

Ø [1] 45 Ø [2] 34 L 160 th 1.5 mat. AISI 316 – 1.4401



Ø [1] 20x2.5 Ø [2] 8x1.5 bar 300 mat. AISI 316 – 1.4401 Nitrogen plug



Oxygen plug

Ø [1] 20x2.5 Ø [2] 8x1.5 bar 300 mat. AISI 316 – 1.4401

FOOD & BEVERAGE

Tube components in the food and beverage sector need attention in the internal finishing and require special different steps to achieve a complete transformation.
The fluid here is food liquid with relative density and the actual need is to get an efficient, safe and well-formed component where the shape is in line with the particular design definition.
A **forming process without welding** is a must-have process in the food and beverage industry.

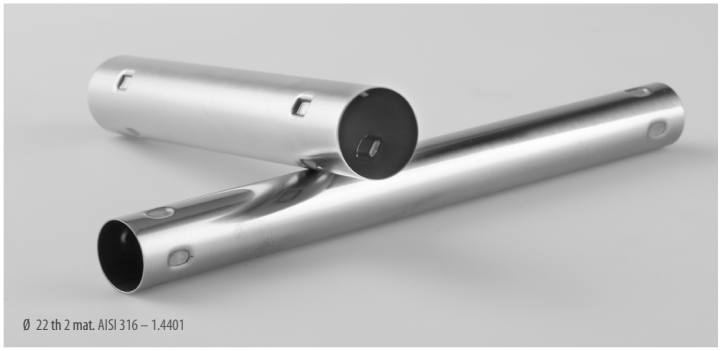
Ricos can supply highly technical components that assure great performances in their application:

- Dimple tubes for heat exchange treatment
- Floating tube components (weight and thickness constraints)
- Special forming bent tubes

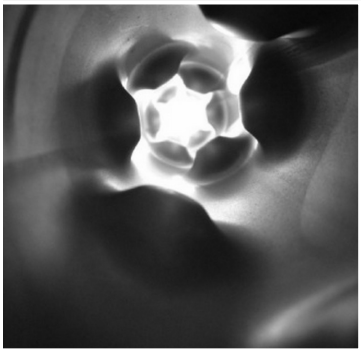
Each component is made with an average internal roughness of Ra 0.6 µm or lowers to ensure the fluid to flow. This solution eases cleaning, maintenance, and sanitization of the tubular component while saving time and resources.

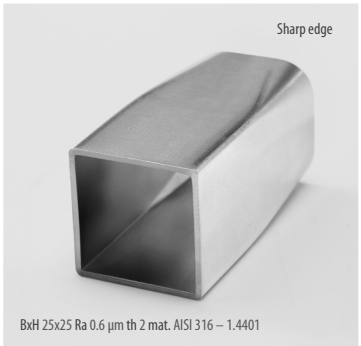
Controlled deformation and weight

Ø [1] 52.2 Ø [2] 44.4 th 0.5 mat. AISI 316 – 1.4401



Ø 22 th 2 mat. AISI 316 – 1.4401





Sharp edge

BxH 25x25 Ra 0.6 µm th 2 mat. AISI 316 – 1.4401

MOBILITY

Tube components in the e-Mobility sector need attention to weight and structural shape, especially when the item is the **frame for folding or electric bikes**. The right approach to find the perfect solution is to consider the tube as a fluid.
One of the most relevant needs is getting an extreme deformation with low initial investments. This solution is possible with **hydroforming**, an innovative machine that can deform aluminum tubes using a fluid under pressure, a pre-formed mold and a clamp.

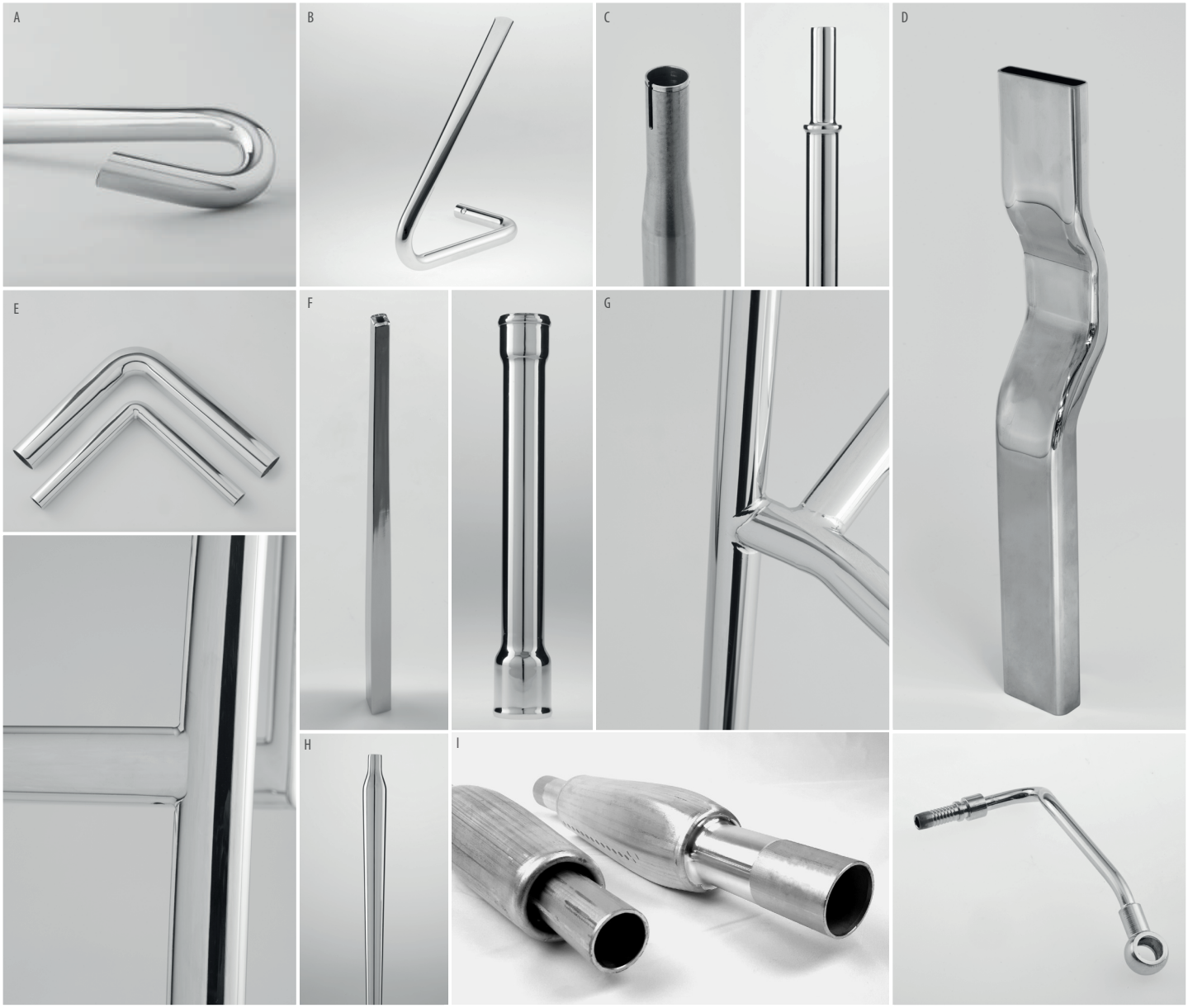
RICOS can supply components with the desired deformation but without changing the base features of the material:
• Hot forming tube shaping;
• Low deformation aluminum welding;
• Special forming bent tubes.
All of these processes with the assurance of getting the best balance between extreme deformation and initial investment.

PHARMACEUTICAL

Internal finishing or roughness and all special transformation steps required are two of the most relevant features to consider when working for the pharmaceutical sector. The fluid is sterile liquid and the main requirement is to realize **safe well-shaped components** with a specific finishing where sterilization and absence of bacteria are assured.

We found the solution to this dilemma by assuring a controlled and certified forming process to avoid welding. Ricos is committed to delivering the best solution and the safest tube components to assure high performances in their application:
• Dimple tubes for heat exchange treatments.
• Floating tube components (weight and thickness constraints).
• Special forming bent tubes.

Each item gets checked and processed with an average internal roughness of Ra 0.6 µm or lower to guarantee the best sterilization and hygienic safety.



A) Tapering and bending with tight radius.
B) Bending of a round tube with flat end.
C) High yield strength material-thickness rise with cold tapering.
D) Extreme aluminium deformation without collapsing.
E) Very tight radius. Centreline radius = tube diameter.
F) Square tube with reduced dimensions.
G) Automated TIG welding process (with fusion).
H) Bending of a round tube.
I) Hydroforming process.

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