



Machines for the treatment of
strip edges and strip surface

Preparation of the weld seam

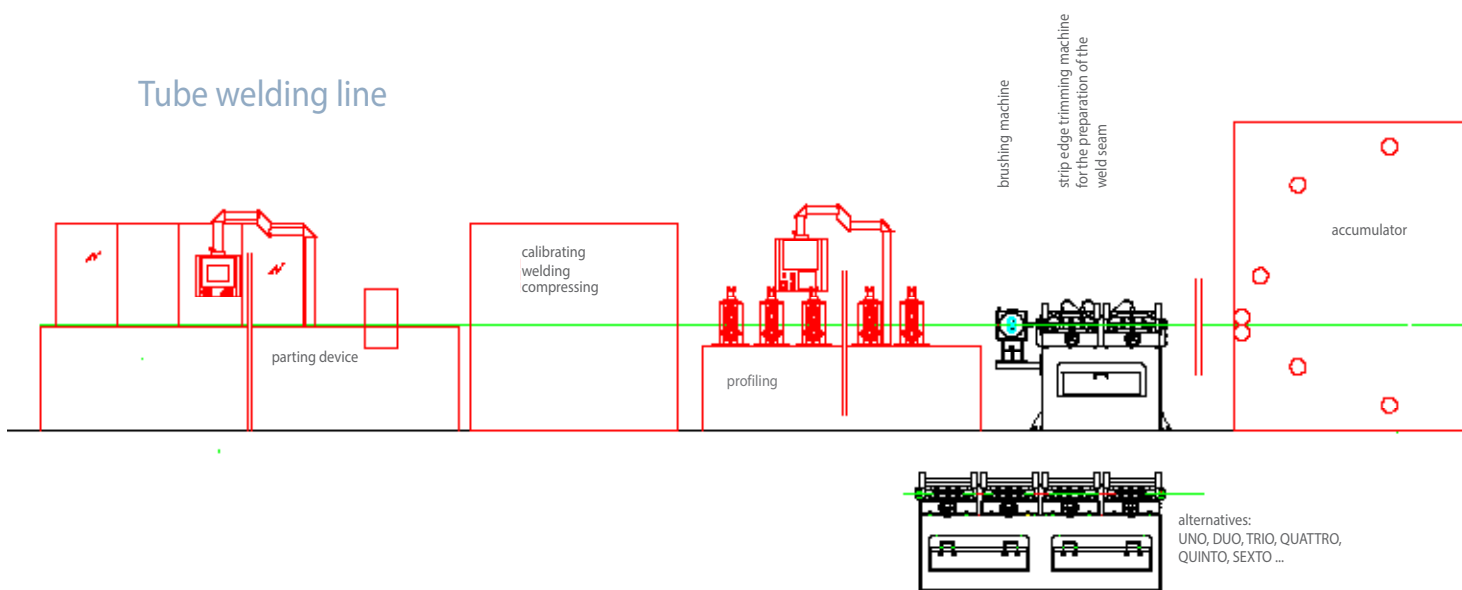
Improvement of the weld seam

From slit edge to finished edge

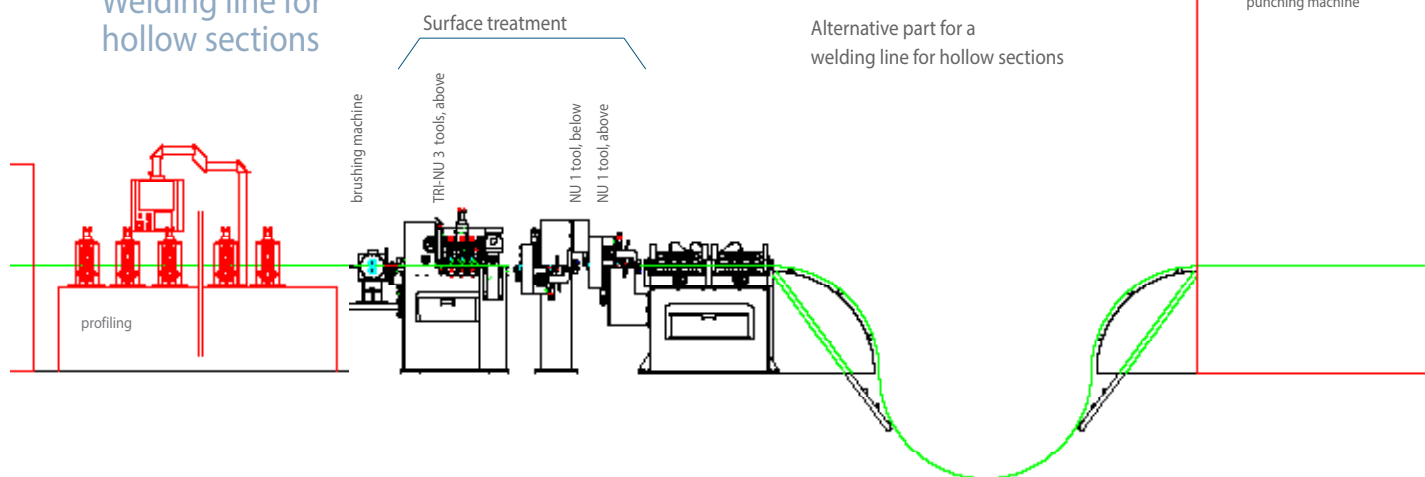
If a slit edge is used as a functional edge, the edge quality of slit strip is not adequate to produce a high quality product.

Less than 35% of the edge area is cut cleanly. The rest is broken and exposes the ruggedness of the slit, unevenness concerning straightness, angle and structure.

Tube welding line



Welding line for hollow sections

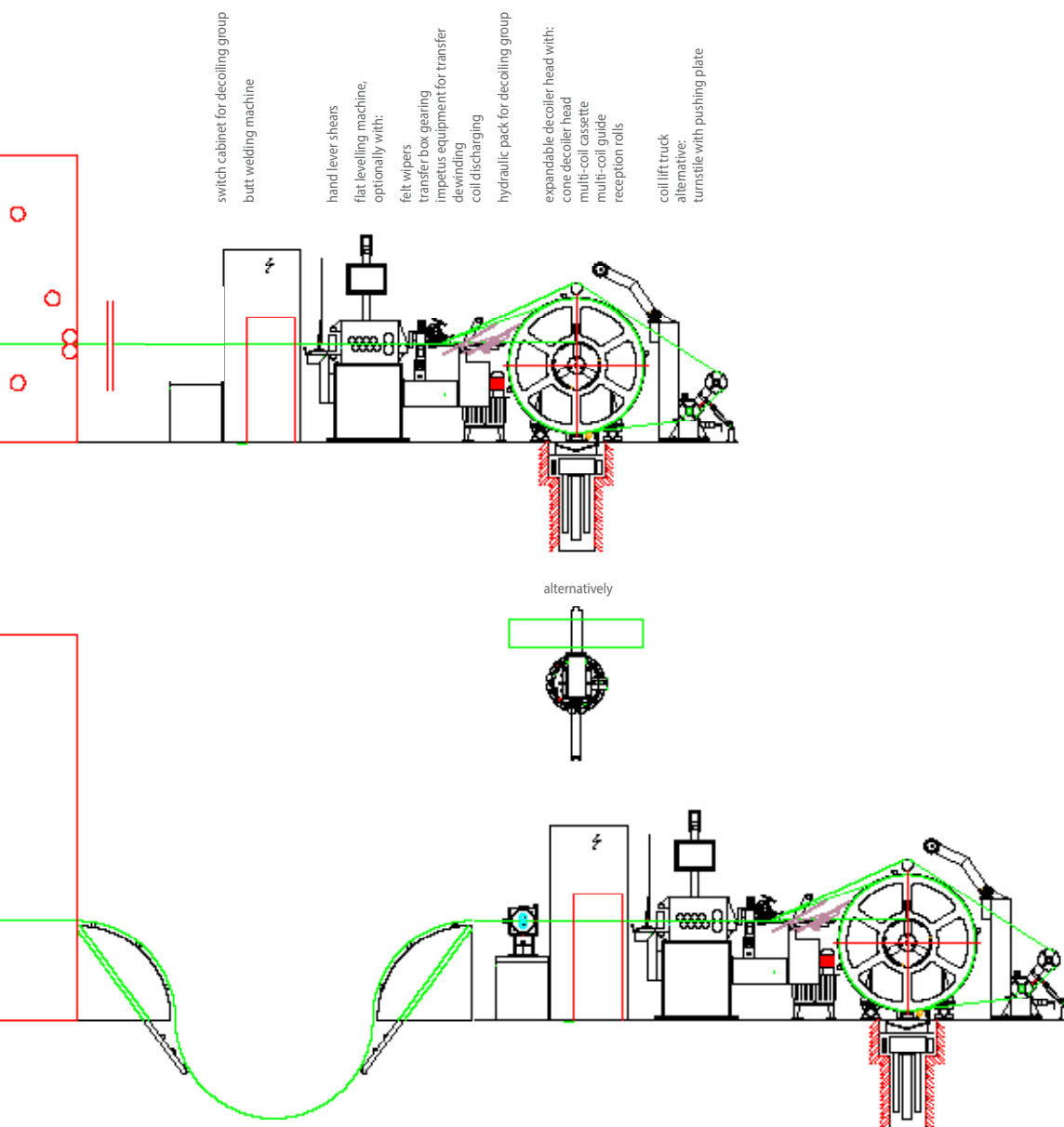


Coatings (e.g. with tin, aluminium ...) and oxidation disturb the welding process.

The v-shaped opening between the edges widens with increasing strip thickness and decreasing tube diameter. The cross-section of the two edges which have to be welded diminishes and the area which has to be liquefied grows.

This means that the area which must be compressed as well as the compressing force after welding have to increase. The weld setup grows and the weld seam has to be shaped at the inside and the outside of the tube.

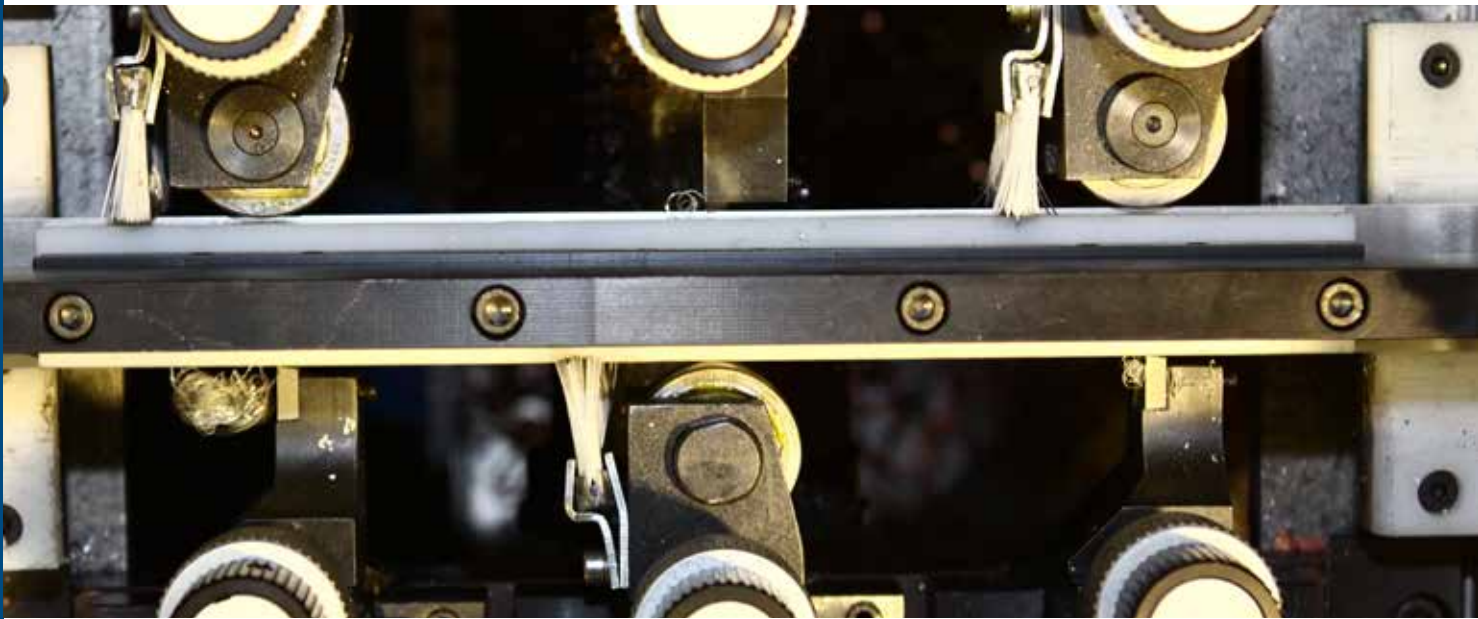
Modern welding processes – such as laser welding – demand machining of the slit edge as a pre-condition for efficient processing.



Strip edge trimming by metal-cutting

Thanks to strip edge trimming by metal-cutting, the strip edges are steadily cleaned and straight. They meet requested dimensions and expose the inner structure at the surface.

The edges are treated at an adjustable angle so that any coating is removed and the V-angle is shaped to any angle.



Bilateral treatment of an aluminium strip with three tools

The area where the edges touch each other is optimized, so that less material has to be liquefied. The result is:

- less energy input and/or higher welding speed
- less compression and less bulge = less shaping at the inner and outer welded seam
- fewer rejections
- gain of material, because less compression force means less strip width addition
- homogeneous welding structure = better quality
- special welding methods become possible (e.g. laser)
- better shape due to less compression
- constant strip width delivering strict tolerances = constant compression and therefore uniform shape
- edges free of coating



The Modular System



The edge trimming units can be combined flexibly and expanded or retrofitted any time due to the modular concept.

In this way, a machine with one working station (UNO) can be extended to a machine with two (DUO), three (TRIO) or even more stations.

The module itself is composed in a modular method. All assemblies and components can be added and exchanged in each module.

Each module incorporates three positions for tool or roll holders at each side. Tools and rolls can be adjusted and exchanged in any order.

By means of a programmable automatic opening the main supports and horizontal guides are lifted hydraulically versus pneumatically.

If the production speed is high and/or the swarf is thick higher energy is introduced into the process. A cooling and/or lubricating system will accommodate the higher strain.

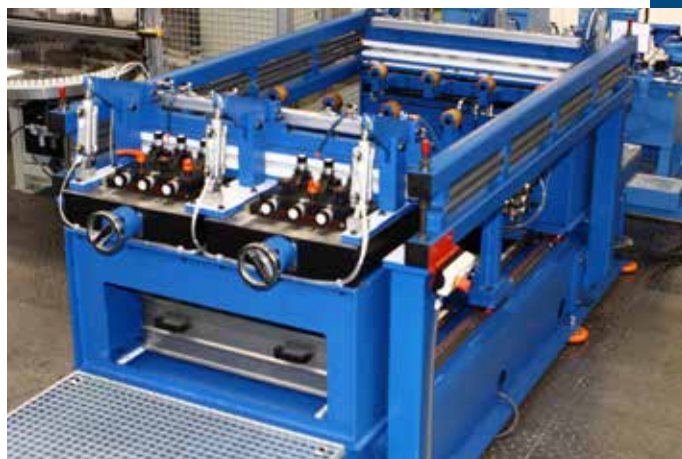
The modular strip edge trimming machine can be combined with modules of strip surface treatment.



Strip edge trimming machine type DUO2000 integrated into a tube welding line (photo: Ilta Inox, Italy)



The strip edge trimming machine of the series UNO works with one tool each side. It is the smallest machine of the modular system being employed for simple deburring of the strip edge.



Strip edging machine DUO2000 for the machining of strips with a max. width of 2000 mm. The DUO is often integrated into tube production lines to optimize the weld seam.



Strip edging machine with laser altimeter. The TRIO machines strips with up to 9 tools.



The QUINTO strip edge trimming machine works with up to 15 tools and achieves each contour required.

Dimensions of the machine (W/L)*

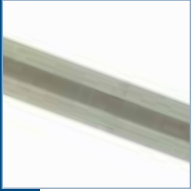
UNO:	700 mm × 760 mm	(27.56" × 29.92")
DUO:	700 mm × 1.360 mm	(27.56" × 53.54")
TRIO:	700 mm × 1.900 mm	(27.56" × 74.8")
QUATTRO:	700 mm × 2.500 mm	(27.56" × 98.43")
QUINTO:	700 mm × 3.100 mm	(27.56" × 122.1")

* The machine width corresponds to a max. strip width of 80 mm (3.15"). The larger the strips are the wider the machine will be. The height of the machine is adapted to the strip running height.

Technical data

- Strip width max. 1.500 mm (59.1")
- Strip thickness 0,15–8 mm (0–0.32")
- Contours: different contours (see here below)
- Speed: up to 300 m/min (1181.1"/min)
- Strip material: all kind of machinable material
- Automatic opening
- Hydraulic and pneumatic lifting
- Lubricating and cooling systems for tooling





The Modular System

Options

The modular system offers options to integrate further modules subsequently and covers changing demand perimeters.

JULIUS provides the following options:

- TRI-Step system
- Rail system
- Roller cage
- Pinch rolls
- Swarf hopper / swarf removal system
- Swarf shredder
- Swarf guiding plates
- Swarf blowing system
- Cooling and lubricating system
- Measuring systems

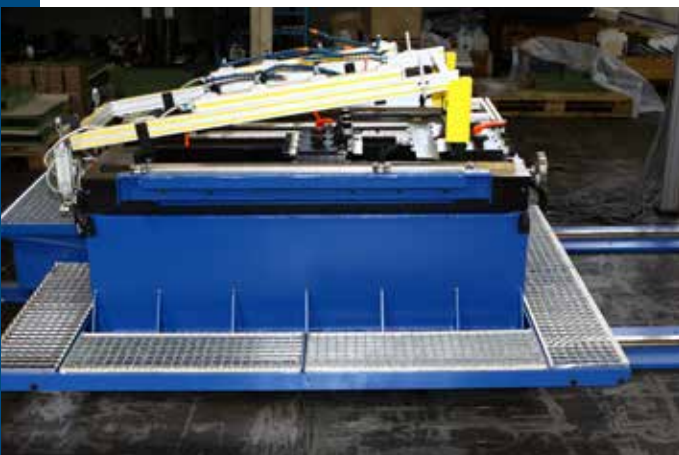


Tool Motor Adjustment

TRI-Step system

The TRI-Step features a motorized adjustment of the tools on the non-operator side – and if desired also of the tools on the operator side. It can be retrofitted later.

The use of a TRI-Step system is recommended for strips with a width of over 400 mm (15.75").



Flexible positioning of edge trimming

Rail system

A rail system allows the edge trimming machine to be rolled in and out a process line. This feature is used if and when the center of line of the strip changes.

This system is used for example for the production of tailored strips.

Loop Operation

Roller cage

A roller cage is flanged at a DUO strip edge trimming machine to support the strip when it leaves of a loop, preventing any fonding.



Pinch rolls

When the strip machining is slight, the strip can be pulled by pinch rolls. It is necessary in case of loop operation.

The photo on the right shows a UNO strip edge trimming machine in front of a pinch roll unit.



Swarf Removal

Swarf hopper

A swarf hopper is integrated into a QUATTRO strip edge trimming machine.

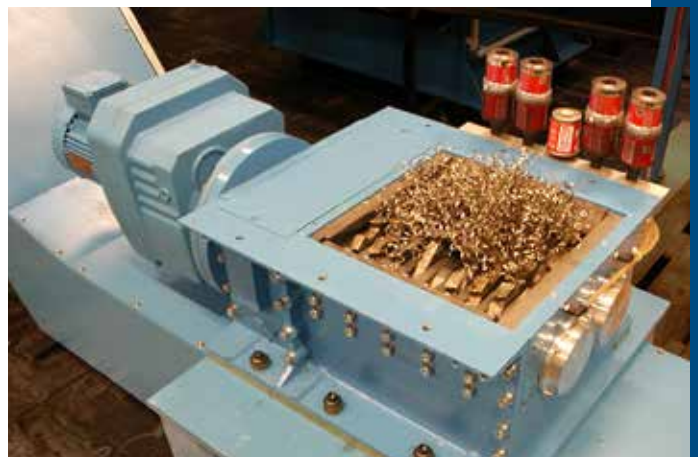
The swarfs are fed to a shredder through a swarf hopper and finally removed over a conveyer belt.



Swarf shredder

The swarfs are fed into the shredder through a swarf hopper.

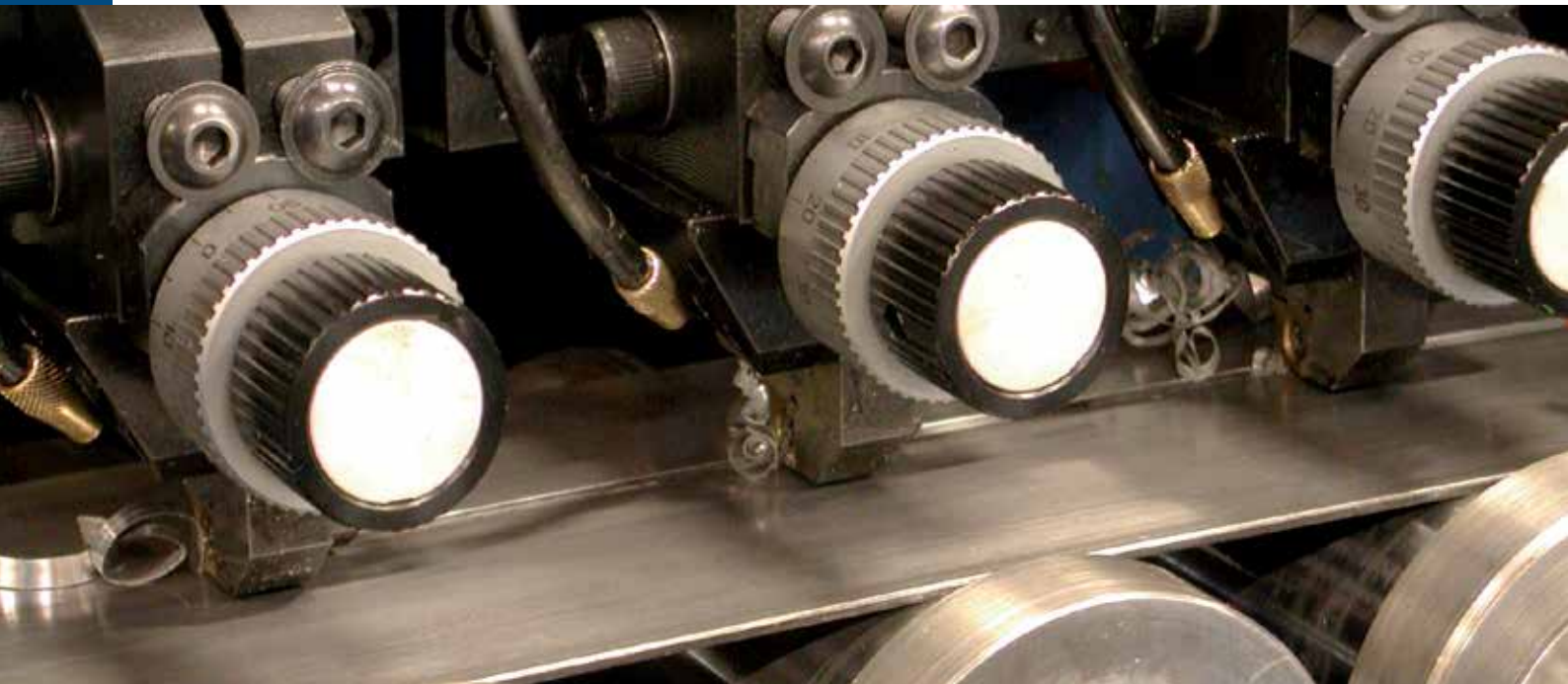
The shredder pulls in the swarf, shreds them and they fall onto a conveyer belt for removal.



Strip surface treatment by metal-cutting

Some production processes necessitate a pre-treated edge and a pre-treated surface.

For some production processes – such as hollow profiles – a narrow strip of the coating layer is removed to allow the base metal to weld onto itself.



Strip surface treatment with three tools

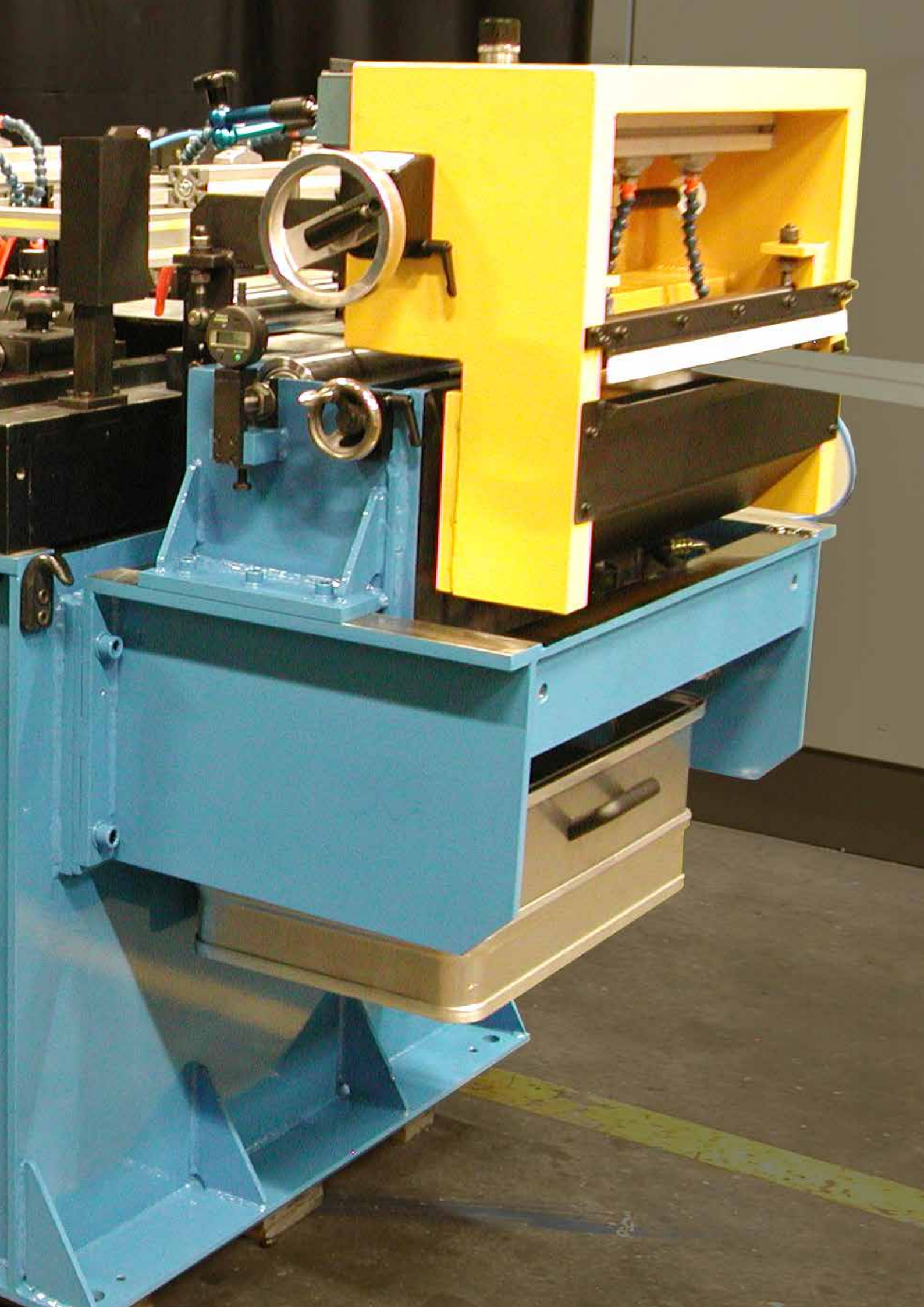
In this case, the JULIUS grooving systems are of great importance. They operate by scarfing single or multiple grooves into the surface of the strip preparing in this way the welding process.

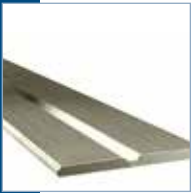
As the tools are vertically and horizontally adjustable, the width and the depth of the groove can be chosen flexibly.

The machine type TRI-NU works with three tools per module by metal-cutting.

The machine can be integrated into existing lines and retrofitted later when the needs arise.

Grooving machine Nu203 flanged at a TRIO strip edge trimming machine (photo on the right side)





The Modular System

The JULIUS product range offers the modular series NU, DNU and TRI-NU as well as the groove dressing machine for the machining of the strip surface.

The machines of each series can be combined with elements of modular strip edge trimming.

Due to a compact construction method, the machines of the modular series can easily be integrated into existing lines or even retrofitted later as an extension.



Series NU

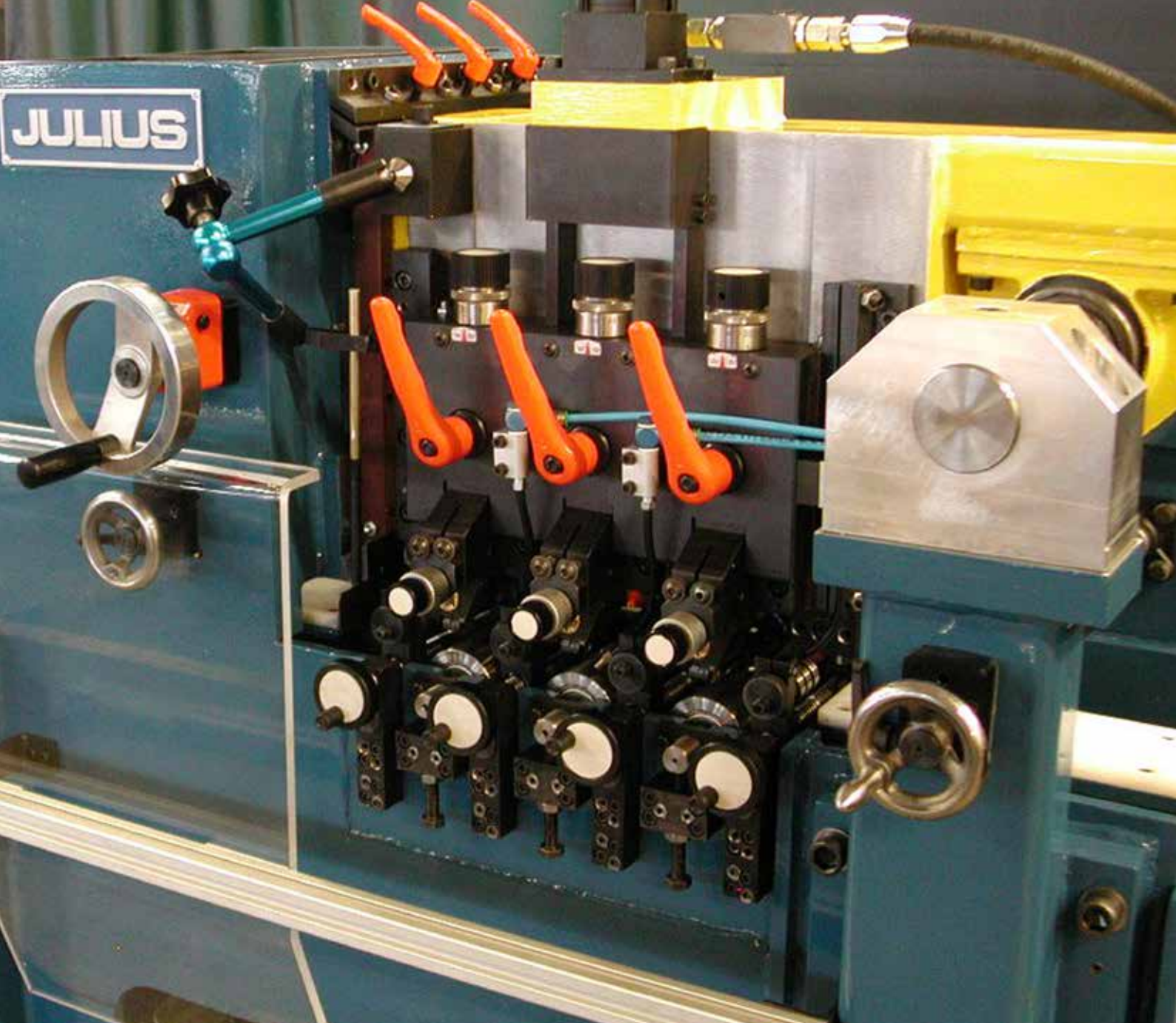
With one tool the grooving machine of the series NU removes a layer of coating from the strip surface. The tool can be adjusted vertically and horizontally.

The grooving machine of the series DNU is composed of two grooving modules installed serially.

The DNU U machines two layers of coating from the bottom side of the strip. This unit is used when the groove is on the bottom side of the strip.



Technical data	NU
Groove width:	3 mm (0.12")
Groove depth:	0,1–0,2 mm (0–0,001")
N° of grooves:	1/machine
Speed:	100 m/min (393.7"/min)
Strip material:	all machinable material
Options:	lubrication system special tool holders swarf blow process swarf guiding system



Grooving machine of the series TRI-NU

Series TRI-NU

The grooving machine of the series TRI-NU has three tools arranged staggered or simultaneous. The flexibility of adjustments on three axes and the angle makes it possible to have any groove wider and/or deeper.

Up to three grooves can be drawn into the strip surface with a max. distance of 10 mm (0.39") in case of three grooves or 20 mm (0.79") in case of two grooves.

- Max. groove width: 20 mm (0.79")
- Groove depth: 0,01–1 mm (0–0.04")
- 3 grooves/machine
- Speed: up to 100 m/min (393.7"/min)
- Strip material: all machinable material
- Options: lubrication system, special tool-holders, swarf blow process and swarf guiding systems

Levelling and Brushing

For numerous further operating processes (e.g. the machining of the edge and the surface) the strip must be flat and straight.

Bow and waviness must be adjusted to allow downstream operation to process optimally.

Julius provides different series for levelling, calibrating and cleaning metal strips.

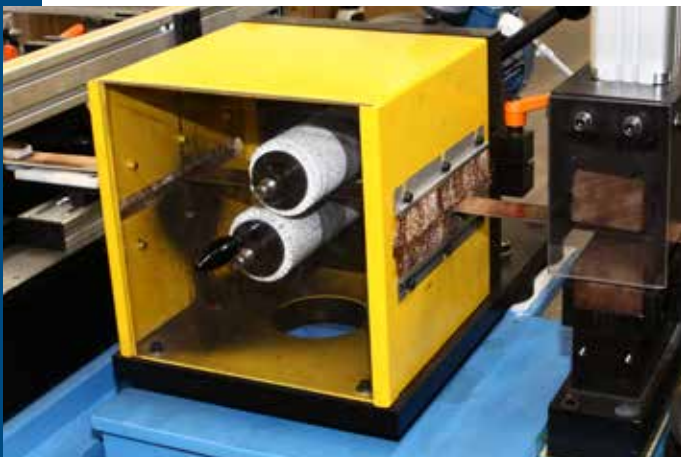
All machines can be integrated into existing lines and be retrofitted at any time.



Flat levelling machine of the series DRAP

The flat levelling machine of the series DRAP is used for slight levelling of strip material. It reduces the waviness of the strip and removes the coil set.

- Strip width: up to 1500 mm (59.1") as a standard
- Strip thickness: up to 6 mm (0.24")
- Levelling rolls-Ø: variable depending on the strip thickness
- Number of levelling rolls: variable
- Options: drive system, supporting rolls, pinch rolls, alligator system and wipers



Brushing machine of the series BS

The brushing machine of the series BS removes dirt particles from the strip surface. Both brushes can be adjusted and exchanged easily.

- Brush width: 70–500 mm (2.76"–19.69")
- Brush-Ø: 70–250 mm (2.76"–9.84")
- Number of brushes: 2
- Power: 0,5/0,75/1,5 kW



Brushing machine of the series BS and flat levelling machine type DR61 with alligator system

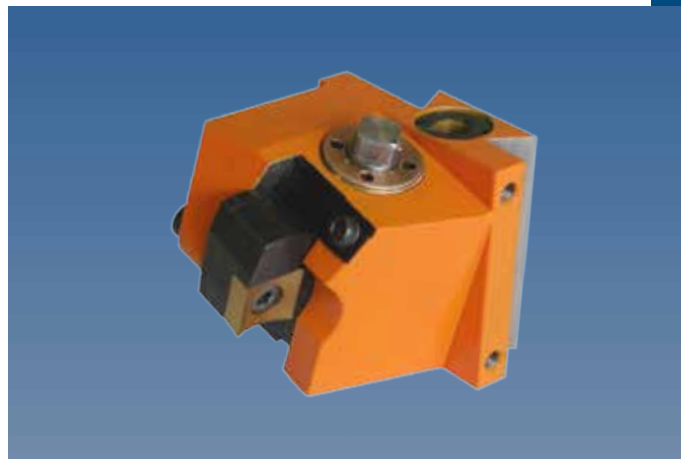
Tool holders

JULIUS offers a big range of tool holders for different applications.

Due to the modular system it is possible to combine tool and roll holders flexibly and to exchange them at any time.

The angle of the tools can be adjusted continuously. The spindle is adjustable free of clearance.

With the tool holder type WZWV 9013 pro it is possible to regulate and readjust the angle of the tool during the production process. In this way, the waste of material is minimized.



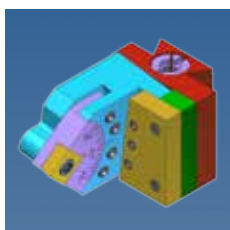
Tool holder WZWV 9013 pro with angle adjustment during production process



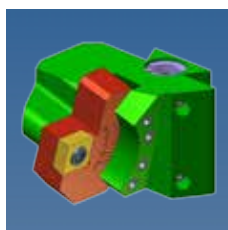
WZHH 2021, tool holder 90° with 15° setting angle



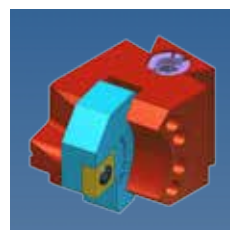
WZHH 2909, double tool holder 30°



WZWV 9010 with continuously adjustable angle 0–90°

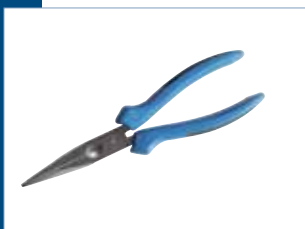
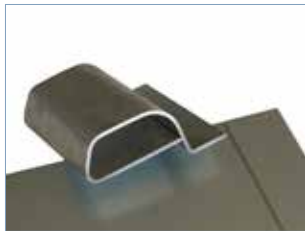
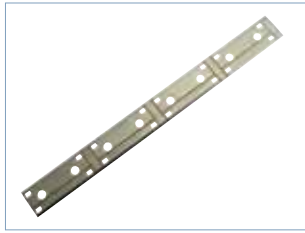


WZWV 9013 with continuously adjustable angle 0–30°



WZWV 9015, 15° beheaded, for the treatment from above

Strong partners under one roof ...



The names Berger, Hauschild, Nell, Julius, Peters and Laschet stand for highest quality in the field of machining and refining metal coils and tools, e.g. household and machine blades, cutting tools, surgical instruments, cast or forged tools. Their in-house robotic capabilities provide solutions to automation and process integration tasks.

Trend-setting innovations in the fields of robotics and CNC machines for grinding and polishing tools, as well as state-of-the-art technology for strip edge trimming by metal-cutting and surface finishing, are available for coil stock and tools that demand high quality.

The first automatic grinding machines from Berger in 1957, the development of the Julius edge trimming machine in 1980, the first CNC controlled double-scallop polishing machine by Hauschild in 1987, the use of more than 300 robots for automating Berger grinding machines since 2000, as well as Nell's develop-

ment of the BSM 3000 CNC grinding machine for micro-grinding coil stock with camera control – all important milestones for the Group and key driving forces for the metalworking industry.

Thanks to a broad product line, the synergistic effects in our engineering, R&D and production departments, and a competent customer service team, the Berger Group provides complete solutions – particularly for custom requirements – all from a single source.

Heinz Berger Maschinenfabrik

Hauschild

August Nell jr.

Julius Maschinenbau

Werner Peters

Laschet + Partner

... the Berger Group!



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