ELTURNER

Turning bar system

Innovative products for turning fabric webs

Turning bar system ELTURNER

Function

Web guiding with ELTURNER turning bar systems is based on a simple principle: a bar is mounted at an angle of 45° to the longitudinal and transverse axes while the web runs over it with 180° wrapping. This has the immediate effect of changing the direction of web travel by 90°. To correct the web position at the same time, the turning bar is moved parallel to the infeed plane according to the actuating signal, thus offsetting the web to the side as it runs off.

Area of use

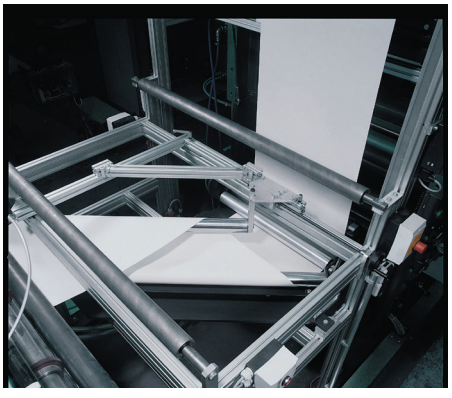
The use of turning bar control systems is recommended where space restrictions prevent the use of an ELGUIDER or ELROLLER system after the 90° deflection.

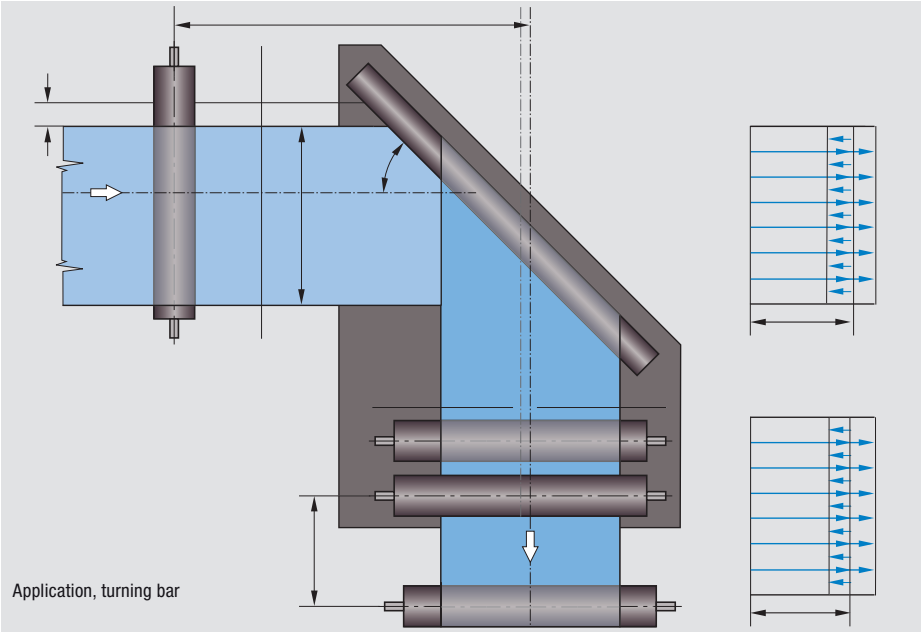
Application, turning bar

On the use of the turning bar there must be constant points of friction-locking between the bar and the web. To protect the web surface, the friction can be reduced by inserting an air cushion between the turning bar and the web. Guiding precision of up to ±1 mm can be achieved. For improved adjustment dynamics, a guide roller should also be moved together with the turning bar. The distance between the guide roller and the locking roller should correspond to half the web width. The sensor should be mounted immediately after the outfeed roller as close as possible.

Application, turning bar with pivoting frame

A combination of pivoting frame and turning bar causes the web to turn and at the same time ensures precision positioning control in the range of ± 0.1 mm.





Application, turning bar

Technical data

VWS		
Operating voltage Nominal value Nominal range Nominal range with power supply		 24 V DC 20 to 30 V DC 115 to 460 V, 50/60 Hz
Current consumption	Actuating drive AG 2491 Actuating drive AG 2591 Actuating drive AG 2691	1.6 A DC 3.6 A DC 5.6 A DC
Nominal width NB		400 to 3000 mm
Turning bar diameter		80/100/120/160/200 mm
Nominal actuating travel		Max. ±25/50/75/100 mm
Actuating speed		25 mm/s adjustable
Web tension		Max. 2000 N
Positional accuracy		< ±1 mm (material-dependent)
Error frequency		Max. 0.5 Hz
Ambient temperature		10 to 50 °C

Note

Because the turning bar with position control in the infeed operates in the direction of web travel and against the direction of web travel, fluctuations in the web tension are to be expected. These fluctuations must be compensated using suitable measures, such as a dancer. The gain or the motor speed must also be adjusted to suit the situation for delicate materials. Otherwise web breaks or damage to the material may occur.

Turning cross system ELTURNER

Function

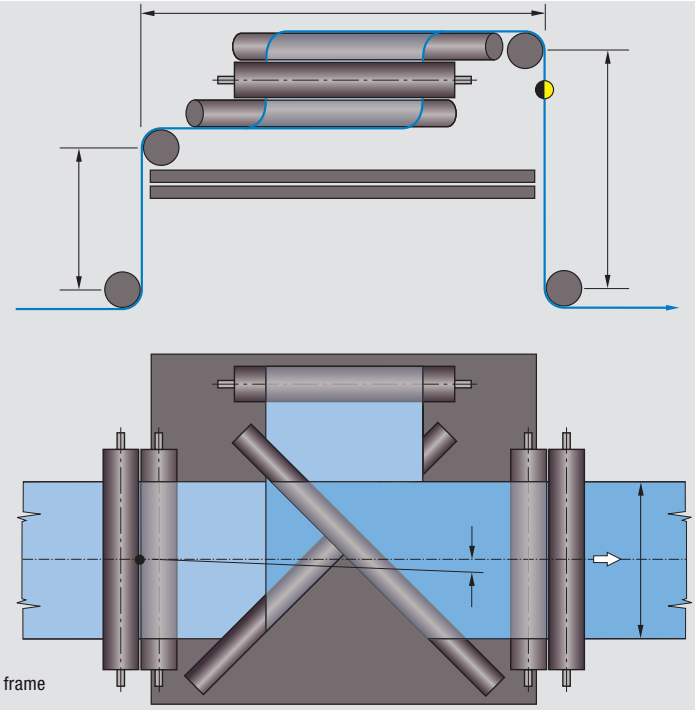
The turning cross is a special form of turning bar and utilizes the same technical and physical principle. However, the difference is that here 2 turning bars are combined such that the material is turned twice by 90°, which rotates the fabric web by 180°.

+ Individual adjustment of the turning bars to the machine environment
+ Control components and complete systems with turning bar available
+ Optional turning bar with pneumatic cushioning

Area of use

The turning cross is mostly used where processes are only arranged on one side, however the fabric web is to be processed on both sides in one pass.

ELTURNER VWS with ultrasonic edge sensor FX 42



Application, turning cross with pivoting frame

Legend

A-A	Web tension distribution at infeed	1	Pivoting frame	TL	Transfer length
B-B	Web tension distribution at outfeed	2	Infeed roller	L	Infeed path
K	Web correction	3	Turning bar	L^1	Outfeed path
α	Correction angle	4	Sensor	A^2B	Operating width
σ	Web basic tension	5	Locking roller		
σ^1_2	Tension distribution on actuating movement to left	6	Pivot point		
σ_3	Tension distribution on actuating movement to right				

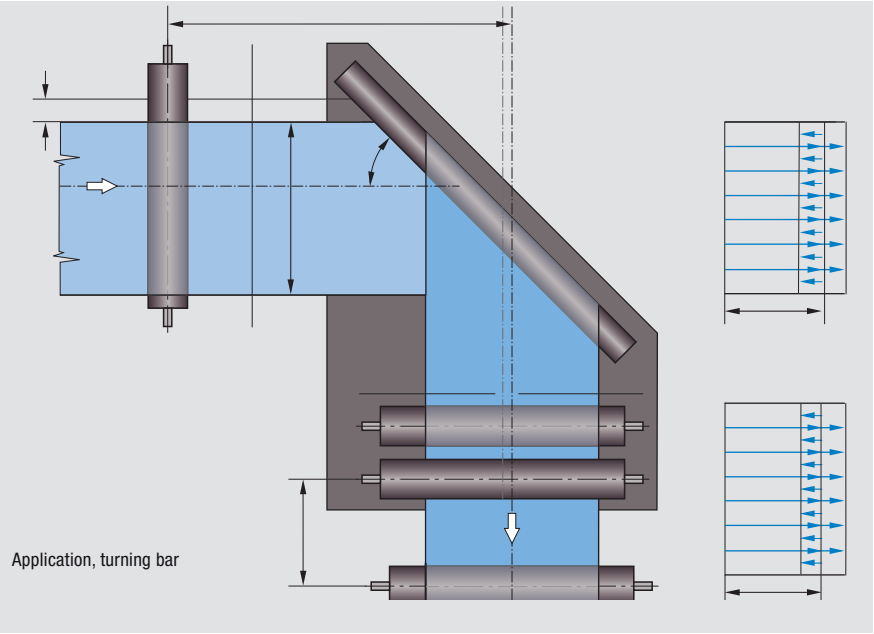
Turning bar without position control, turning by 90°

Your requirements

+ You want to turn a web by 90°.
+ You want an economical solution.
+ Your accuracy requirement on the web position after turning is not high.

Options

+ You can always use web guiding after the turning bar to improve the positioning result.
+ All turning systems can be designed with different roller surfaces or custom rollers. Hard chromium plated, bored rollers for air cushioning or sintered rollers are only the typical options. Other options are possible.
+ We supply complete systems incl. high-performance fan ready to use.



Application, turning bar

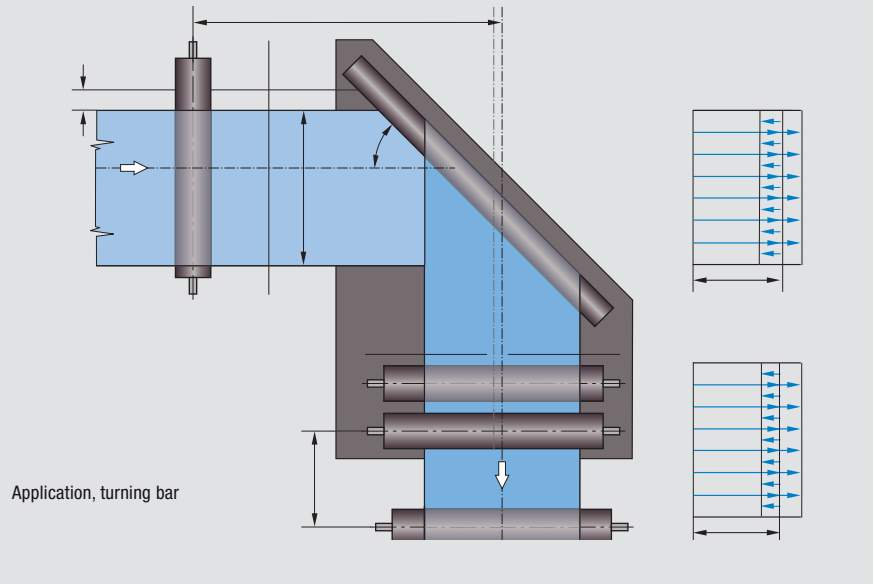
Turning bar with position control, turning by 90°

Your requirements

+ You want to turn a web by 90°.
+ Your accuracy requirement on the web position after turning is high.

Options

+ You can always equip the web guiding for the turning bar with different sensors if necessary for your material.
+ All turning systems can be designed with different roller surfaces or custom rollers. Hard chromium plated, bored rollers for air cushioning or sintered rollers are only the typical options. Other options are possible.
+ We supply complete systems incl. high-performance fan ready to use.



Application, turning bar

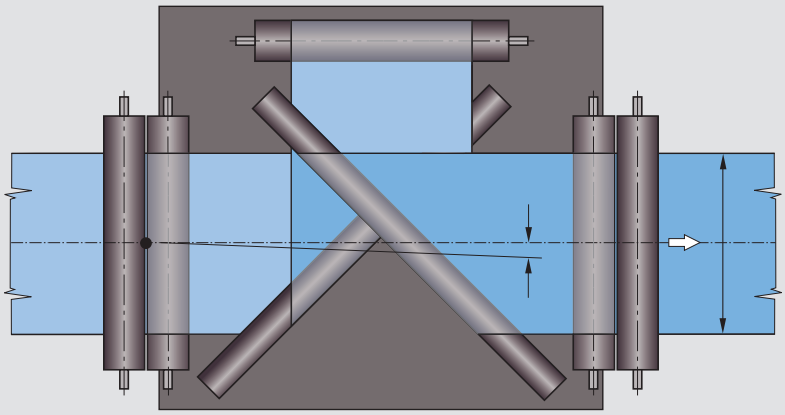
Turning cross without position control, turning by 180°

Your requirements

+ You want to turn a web by 180°.
+ Your accuracy requirement on the web position after turning is not high.

Options

+ You can always equip the web guiding for the turning bar with different sensors if necessary for your material.
+ You have only little space between the process stations. Our turning crosses can be designed upright or horizontal and can be adapted to your situation.
+ You have these requirements in various machines, but you do not always produce with the same machine. You want to have a portable turning cross system. We can design the turning cross system such that it can be inserted flexibly in different machines.
+ All turning systems can be designed with different roller surfaces or custom rollers. Hard chromium plated, bored rollers for air cushioning or sintered rollers are only the typical options. Other options are possible.
+ We supply complete systems incl. high-performance fan ready to use.
+ Along with the turning cross without position control, you can also use a variant with position control.



Turning cross without position control
Direction of web travel from left to right

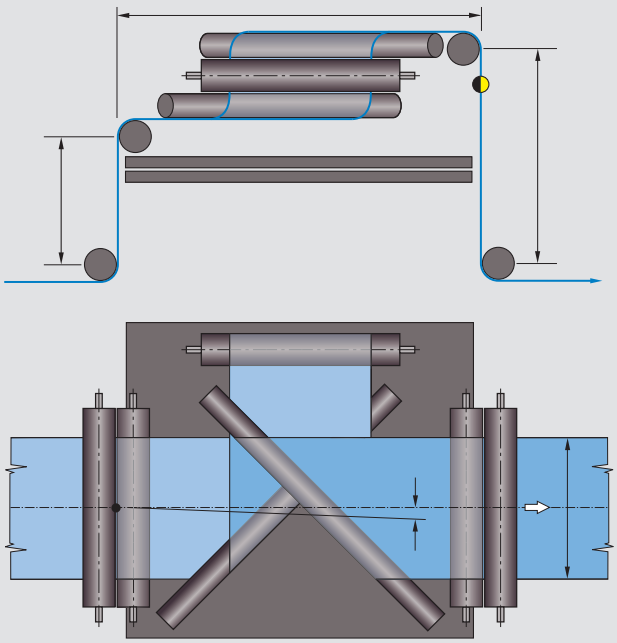
Turning cross with position control, turning by 180°

Your requirements

+ You want to turn a web by 180°.
+ Your accuracy requirement on the web position after turning is high.

Options

+ Install the web guiding in the web run or in the turning cross. In this way the accuracy of the positioning of the web can be further improved.
+ The result of the control is similar to a pivoting frame.

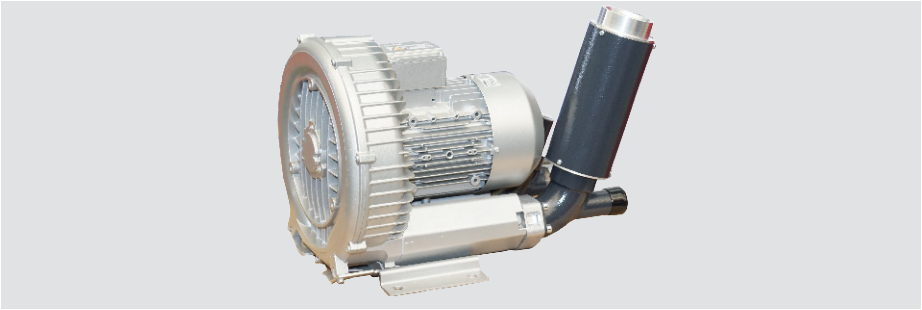


Turning cross with position control
Direction of web travel from left to right

Features

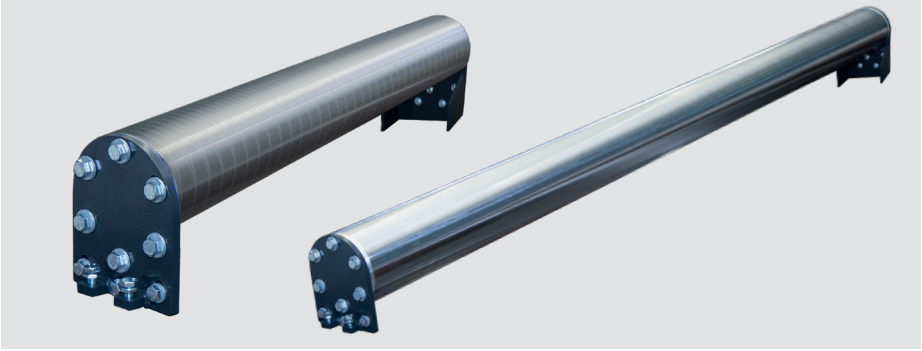
Fan / radial compressor

For wear-free wrapping of the material, at high web tensions or for wider materials, a powerful, oil-free, continuous cushion of air is required around the turning bar.
We offer suitable compressor systems that are optimally adapted to your application.
Here selection of the performance while maintaining cost-effectiveness at the same time is particularly important for us.



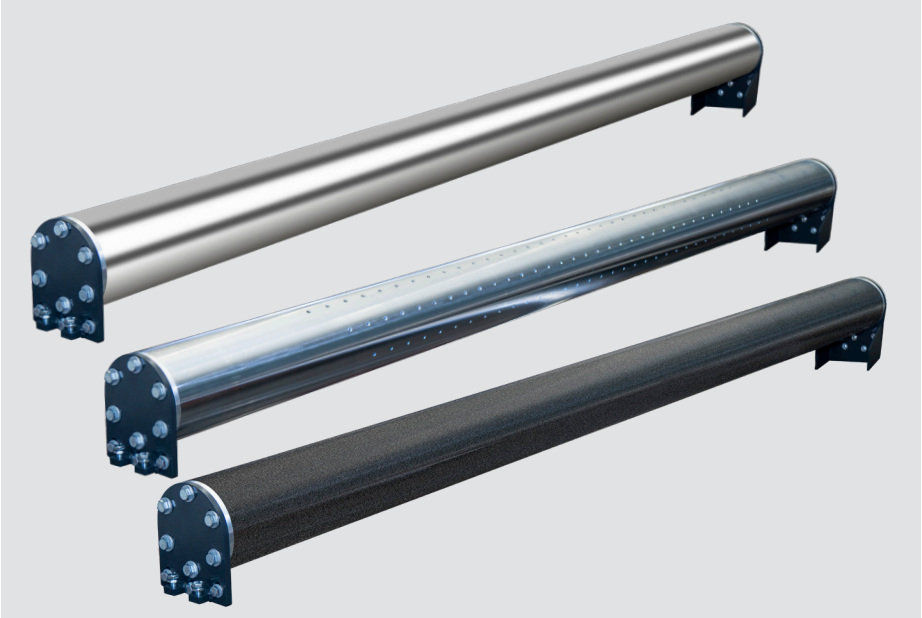
Bar surfaces

Every material has special properties and it will not be possible to turn the material largely without wear using every bar surface. For this reason we offer our bars with the necessary surfaces, e.g. hard chromium plated and polished, to achieve the best result in your production.



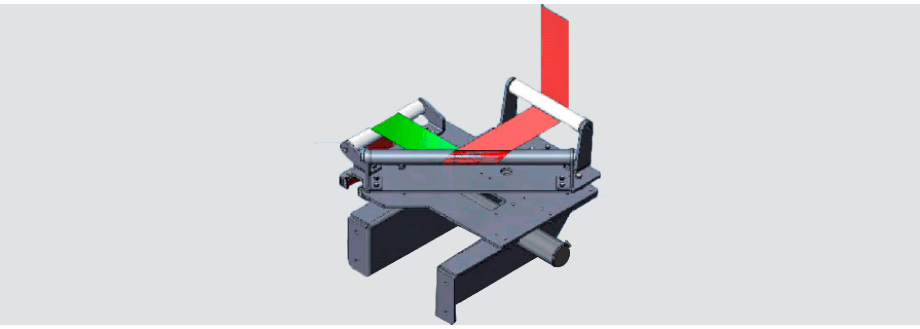
Hard chromium plated, bored or sintered bar

If it is necessary to turn your product on a cushion of air, we offer bored bars as standard. The bore geometry applied and the complete bore pattern are selected such that there is no material wear at the edges of the bores and the air flow can distribute optimally below the material through the selected bore pattern. Of course, the bore pattern takes into account the actual coverage in the best possible manner to restrict air leakage to a minimum.
If you have special requirements on the turning bar in relation to even better air consumption figures and further optimized air distribution, we can also offer high-quality sintered bars.



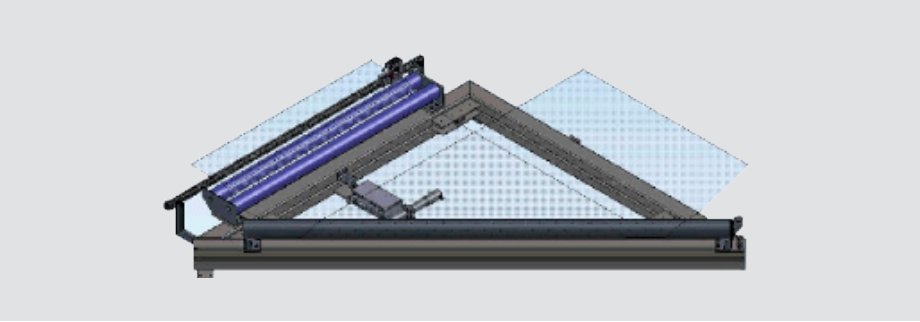
Application examples

Fixed turning bar



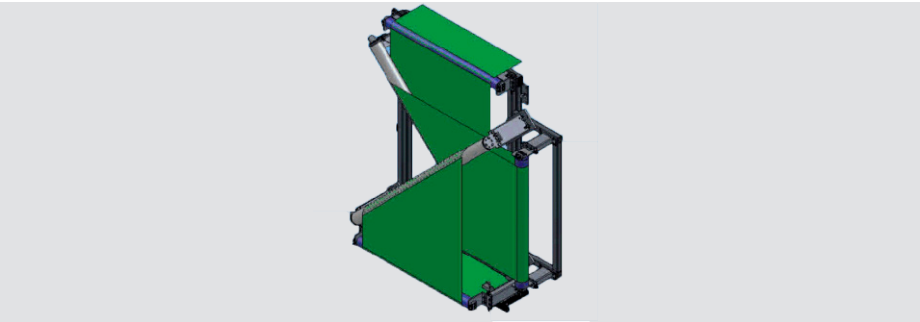
Small turning bar attached on one side for feeding a further material to a packaging machine

Turning bar with position



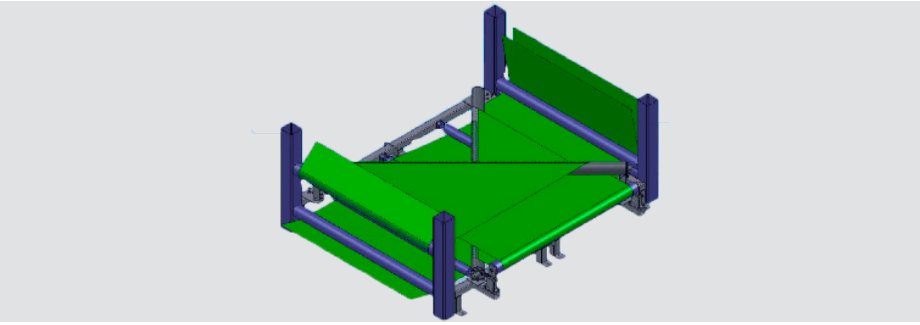
Medium-sized turning bar for changing the direction of a paper web by 90°

Turning cross without position control



Medium-sized turning cross application at the end of a process line for processing both sides of a fabric web after reversing the direction

Turning cross with position control



Large turning cross application with lamination of a specific side of the material for process reasons

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