Erhardt+Leimer

ELCUT

Web cutting systems

Precise edge and center cutting

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Global solutions for production of the future

Intelligent technologies and products in the highest quality designed to optimize the production processes of our customers all around the world. This is our claim as the internationally expanding Erhardt+Leimer group of companies.

With our global presence – from development to production and on to service – we are always close to the customer. We develop customer-specific solutions and provide our customers with excellent products either in digital or intelligent versions depending on their preference. Not only this, but we also set new standards for the production of tomorrow. In the process, it is not just our products that are increasingly becoming smart – our entire company is currently undergoing a digital transformation. One visible indication of this is the E+L online shop, which enables our customers to order products and spare parts quickly and easily from our website.

With more than 1,600 employees at sites across Europe, Asia, and America, we deliver cutting-edge technology on-time to any location in the world.

In everything we do, we aim to use all company resources responsibly to protect the environment and demonstrate our commitment to increased sustainability.

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Increased quality and productivity

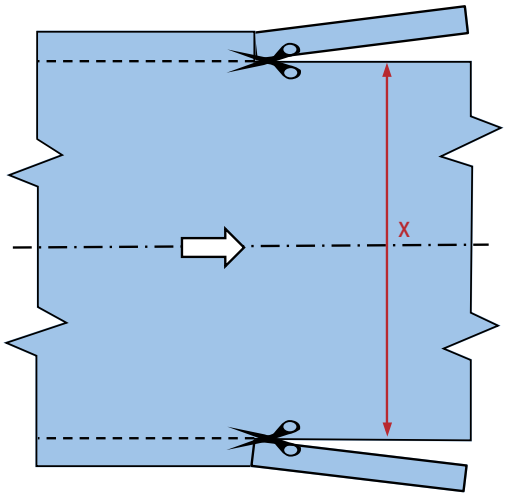
Two different aims are pursued during cutting. Depending on production, a fixed use width must be guaranteed or the edge waste reduced to a minimum.

Fixed useful width

With laminated and coated materials, the producer must guarantee and exact use width. For this purpose, edge and center cutting devices with manual or motorized positioning at the required useful width are particularly suitable.

Typical area of use

- Laminating machines
- Coating systems



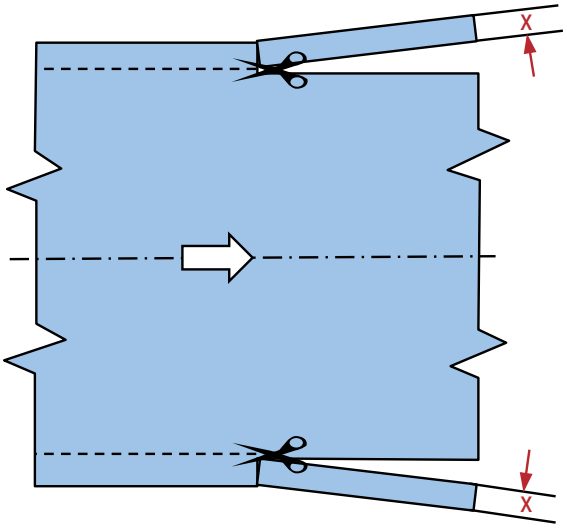
Example of fixed use width X

Minimum edge trimming

If, by contrast, a maximum useful width is required, then the edge trimming must be kept as small as possible. In this case, an automatic follow-up controller ensures a constant edge strip width.

Typical area of use

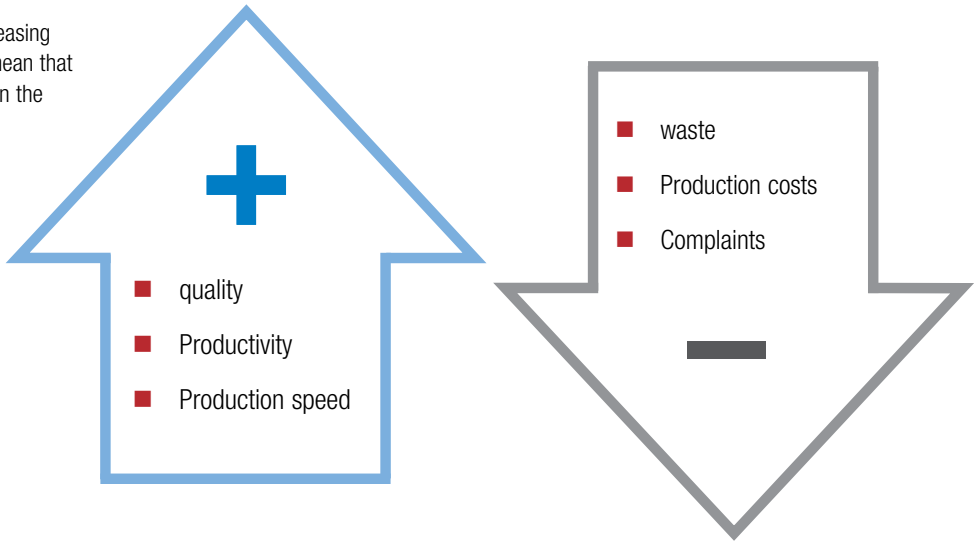
- Tenters
- Compactors
- Sanforization systems



Example of minimum edge strip width X

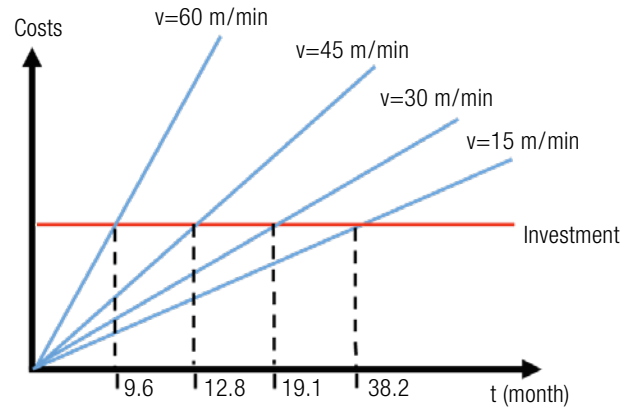
Return on investment calculation

The cost-reduced and productivity-increasing benefits of the ELCUT cutting system mean that the acquisition costs can be recouped in the shortest of times.

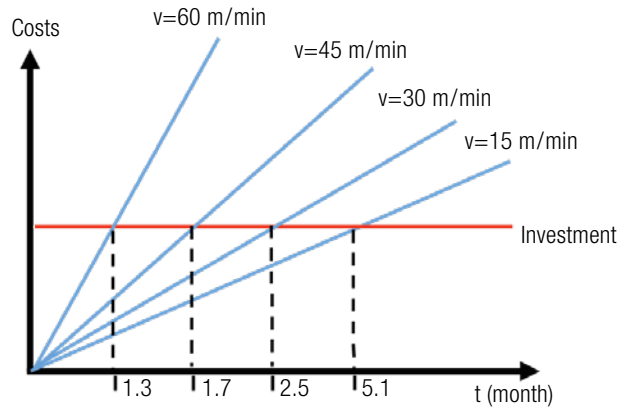


Average amortization calculation

ROI for edge waste reduction of 1 mm per side



ROI for edge waste reduction of 7.5 mm per side



Technical Data		
Product	BT 80	
Machine	Tenter	
Application	Tenter outfeed	
Web type	Knitted fabric	
Web weight	170 g/m²	
Operating width	2000 mm	
Edge waste reduction	1 mm per side	7.5 mm per side
Sales price	3 €/kg	

Center cut

Function

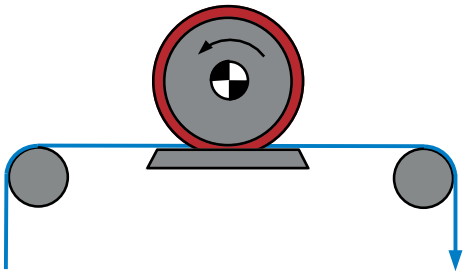
With the circular blade cut, a disk blade is driven by a three-phase motor in the direction of web travel. An integrated support table ensures a defined cutting position.

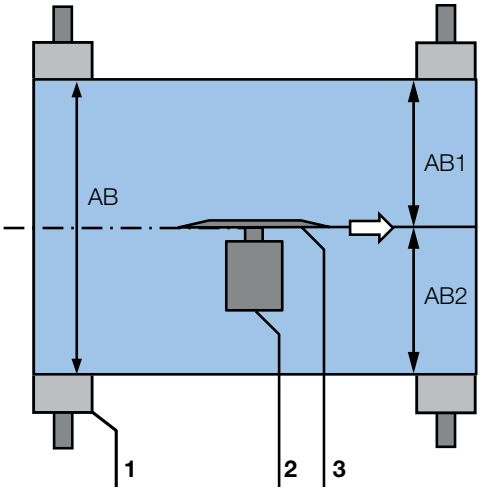
Area of use

Economic solution for center cuts of non-woven, woven and knitted fabrics.

Application

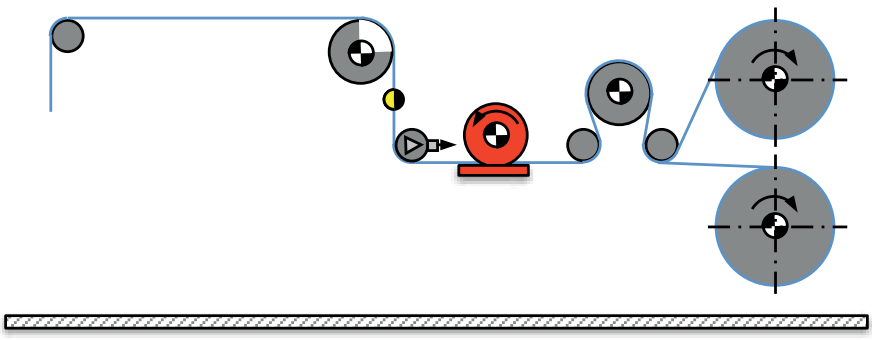
The web must be run flat by guide rollers both in front of and behind the cutting station. The cutting speed should be 5 – 10 times greater than the production speed.





Legend

1	Guide roller
2	Three-phase drive
3	Circular blade
AB	Operating width
AB1	Use width 1
AB2	Use width 2



ELCUT BTA 02 web cutting device on textile finishing system

Web cutting device BTA 02

- Circular blade cut with three-phase geared motor
- Suitable for center cuts on woven and knitted fabrics as well as webs of non-woven fabrics
- Integrated cutting table for stable cutting position
- Grinding unit for rapid resharpening of the circular blade

ELCUT BTA 02 web cutting device

Selection table

Web cutting device BTA 02			
Type	Speed 50/60 Hz (1/min)	Cutting speed (m/min)	Rated power (kW)
BT 0225	153/183	96/115	0.12
BT 0222	1500/1800*	942/1130	0.18
BT 0224	3000/3600*	1884/2260	0.25

*Not suitable for 100% polyester

Technical data

Web cutting device BTA 02	
Material type	Woven fabrics, knitted fabrics, pile fabrics, non-woven fabrics, carpets, imitation leather, foam material
Material thickness	max. 30 mm
Web speed	max. 200 m/min
Diameter of circular blade	200 mm
Nominal power	0.12 kW/0.18 kW/0.25 kW
Operating voltage	220-240 /380-415 V 50 Hz
	265/440-480 V 60 Hz
Current consumption	depending on the nominal power of the motor
Protection rating	IP 54
Ambient temperature	+10 to +50 °C
Weight	9 kg
motor certification	CE, UKCA, UL, CSA, ISI, CCC

Tube slitting

Function

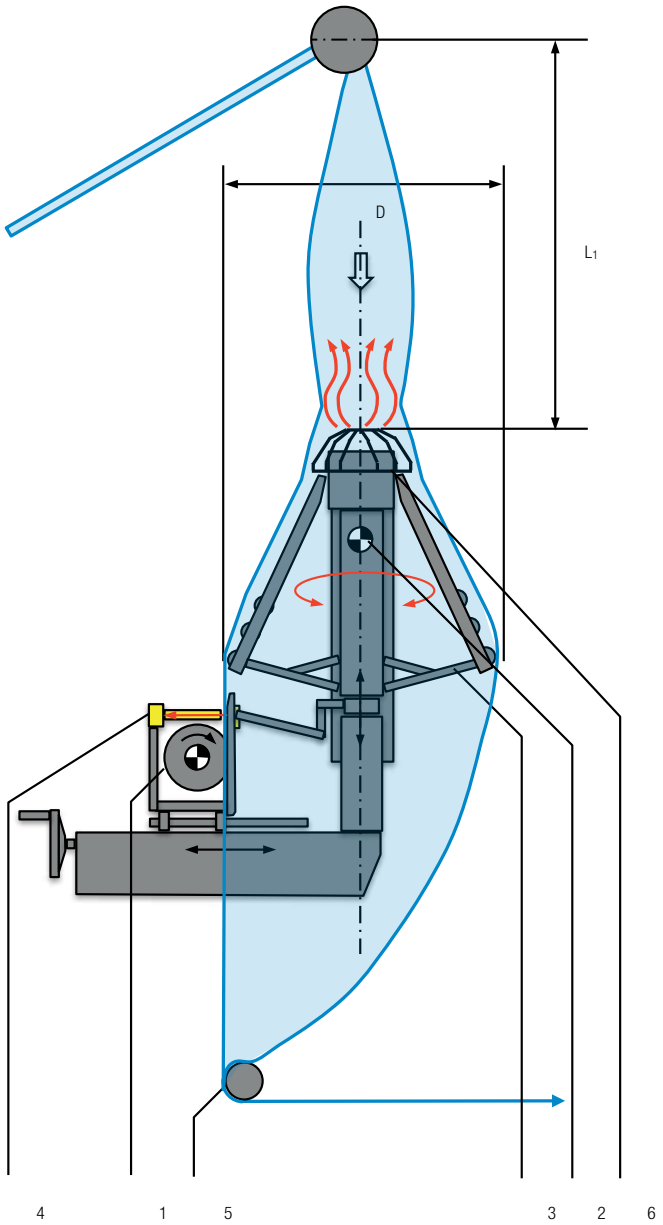
Textile tubular fabrics with a drop stitch must be cut exactly along a reference line. Using a drop stitch matrix sensor, these are detected safely using the transmitted light principle and fed to the position controller as the actual position. The digital position controller continuously compares the target and actual values and constantly controls the motorized, swiveling guide basket. The guide basket can be adjusted to the desired tube diameter using a hand wheel. The tube-shaped knitted fabric is opened precisely in the drop stitch with a cut of the circular blade.

Area of use

In the textile finishing process, knitted fabrics produced in a tube must be cut open along the drop stitch for further processing.

Application

Normally, the existing twist on a textile tube is untwisted and the tube is fed to the tube slitter from above. In so doing, the pre-entry path should be at least 3 m.



Legend

1	Circular blade cut
2	Actuator
3	Swivelable guide basket
4	Sensor
5	Guide roller
6	Fan
D	Tube diameter
L_1	Pre-entry path

Web cutting device BTA 25

- Drop stitch matrix sensor detects the drop stitch using the transmitted light principle
- Position the drop stitch under the sensor, press the Teach button and the sensor learns the guide criterion (Easy Teach mode)
- Rapid positioning of the drop stitch at the beginning of production due to internal LED lighting in the basket
- Stable closed loop with position, speed and current controller
- The roller basket guarantees the minimum longitudinal tension for dry and wet tubes
- Defined static friction between the tube and the spherical guide rollers guarantees rapid, delay-free positioning of the drop stitch in front of the cutting blade
- Opening of the tube fabric supported by speed-controllable fan

ELCUT BTA 2535 Tube slitter

ELCUT BTA 2535 on tube slitting system

Technical data

Web cutting device BTA 2535	
Web type	Tube-shaped knitted fabrics
Tube diameter	350 – 830 mm
Web width	1080 – 2600 mm
Cutting speed	1800 m/min
Web speed	max. 120 m/min depending on type of web
Web state	Dry, spun dry, squeezed
Ambient temperature	+10 to +50 °C
Operating voltage	220-240 / 380-415 V 50 Hz 265/440-480 V 60 Hz
Current consumption, rotary current motor	1.52/0.88 A 50 Hz 1.3/0.8 A 60 Hz
Protection rating	IP 54
Weight	60 kg
motor certification	CE, CCC

Web cutting device BTA 25

Drop stitch sensor FE 5204

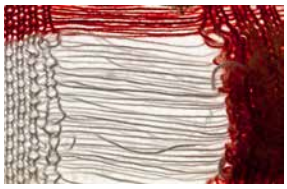
- Drop stitch matrix sensor for secure detection of the guide criterion
- Reduced effort during operation due to innovative Teach mode
- Reliable detection of different types of drop stitch, such as double drop stitches
- Large field of view of 80 mm
- Up to 40 mm offset on the drop stitches on a seam can be processed without problems
- Automatic exposure controller for adjustment to different web qualities
- Transmitted light principle with integrated infrared light transmitter

DO 4021 command station

- Intuitive operation with color touch display
- Display of the signal quality
- Connection on the FE 52 via PoE (Power over Ethernet)

Drop stitch sensor FE 5204

Examples of drop stitches



Drop stitch sensor FE 5204

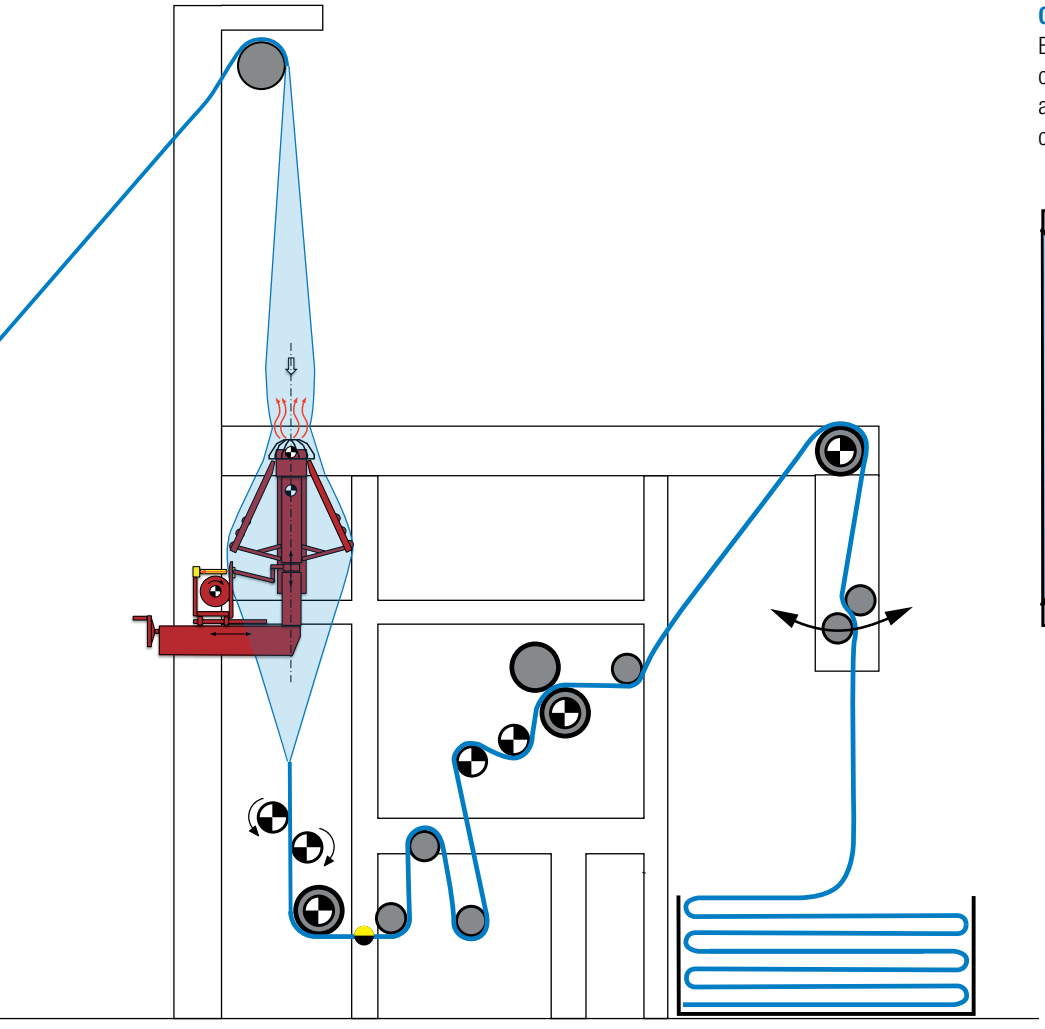
Technical Data	
Drop stitch sensor FE 5204	
Operating voltage	24 V DC
Current consumption	350 mA
Measuring range	±28.5 mm
Field of view	±40 mm
Resolution	0.125 mm
Distance sensor – web	176 mm ±2 mm
Width guide reference	0.5 – 30 mm (Standard 1 – 2 mm) Single and multi-track drop stitches Woven and knitted fabrics
Scanning rate	200 Hz
Ambient temperature	+10 to +50 °C
Protection rating	IP 65
Operating unit DO 4021	
Operating voltage	Supply via PoE (Power over Ethernet)
Display resolution	320 x 240 pixels
Ambient temperature	+10 to +50 °C
Protection rating	IP 54

Control unit SG 2645

- Compact control unit for the tube slitter
- Integrated multi-area transformer with 24 V DC/48 V DC power supply unit for the power supply of the control components and the fan
- Position controller RK 4004 including logic card LK 4203 and analog input card AK 4014 ready integrated
- Necessary operating elements integrated in the front side of the switchgear cabinet

Control unit SG 2645 opened

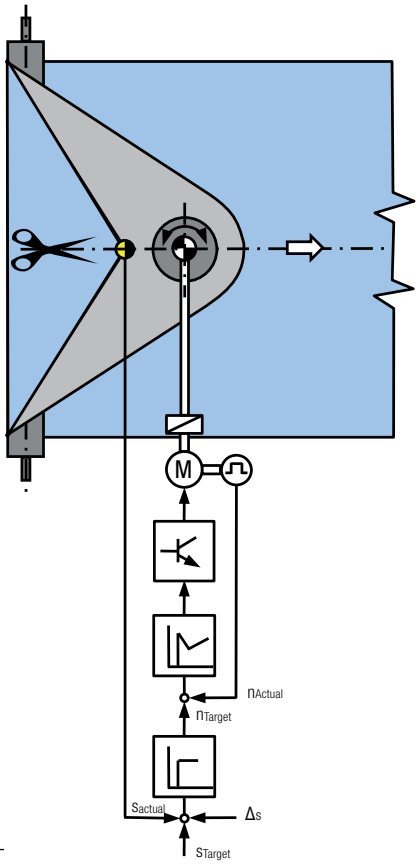
Control unit SG 2645



ELCUT BTA 25 web cutting device on tube opening system

Control structure for proportional actuator

Besides a positioning controller for the web, the cascaded control structure for the proportional actuator also features a speed and current controller for the actuator.



Edge cut

Function

The upper and lower blade shafts are driven by a three-phase motor via a multi-stage spur gearbox. Various gear transmissions or the use of frequency-controlled rotary current drives allow infinite adjustment of the cutting speed to the necessary production speed.

Area of use

The main area of application is production systems for paper, film/foil, textiles, carpet, non-woven fabrics and felt webs. Predominantly installed after the last process step before rewinding.

Application

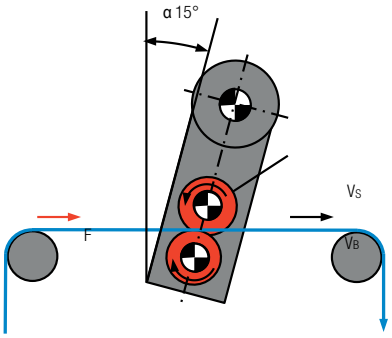
The web cutting device can be used for horizontal and vertical web travels. Incline the web cutting device by 15° for an optimal cutting position.

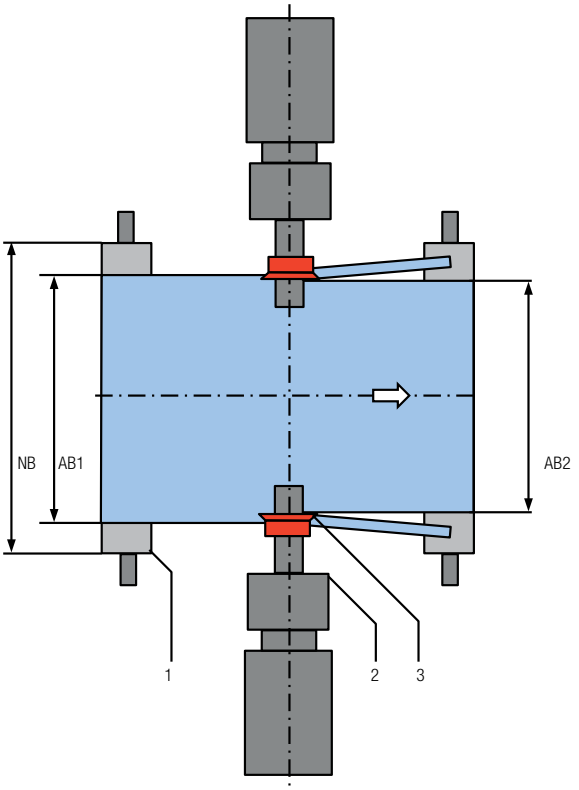
The cutting speed should be approx. 5 – 10% greater than the web speed.

A web guider in front of the cutting device optimizes cutting and prevents the web from moving away from the blades.

Positioning

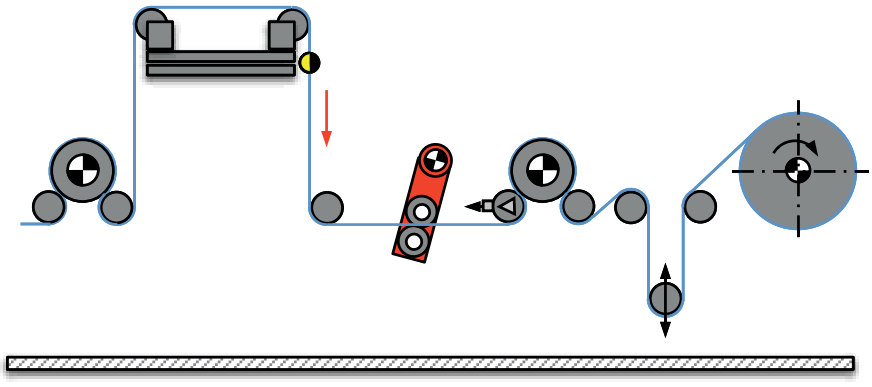
A range of support beams (VWG, VS) is available for manual or motorized positioning.





Legend

1	Guide roller
2	Three phase drive
3	Shear cut
α	Inclination angle
AB1	Operating width
AB2	operating width after edge cut
NB	Nominal width
F	Web tension
VB	Web speed
VS	Cutting speed



ELCUT BTB 01 web cutting device on impregnation system

Web cutting device BTB 01

- Shear cut principle with driven bottom and top blades
- Internal/external motor installation
- Blade shaft for max. 240 mm cut-off
- Suitable for edge cutting of paper, foil, textile, carpet, non-woven fabric, and felt webs
- Fixed cutting speed or optionally adjustable with frequency converter
- Three different blade sets for different material types

ELCUT web cutting device BTB 01 with external motor

BTB 01 web cutting device on impregnation system

Technical Data	
Material type	Paper, cardboard, film, textile, carpet, non-woven fabrics, felt
Material thickness	Max. 8 mm
Edge strip width	110 mm (Standard) 240 mm (with extended blade shaft)
Operating voltage	200 – 240/380 – 415 V 50 Hz
	265 /400 – 480 V 60 Hz
Current consumption	1.65/0.95 A 50 Hz
	1.4/0.8 A 60 Hz
Nominal power	0.37 kW
Protection rating	IP 55
Ambient temperature	0 – 50 °C
Weight	23 kg
motor certification	CE, UKCA, UL, CSA, ISI, CCC

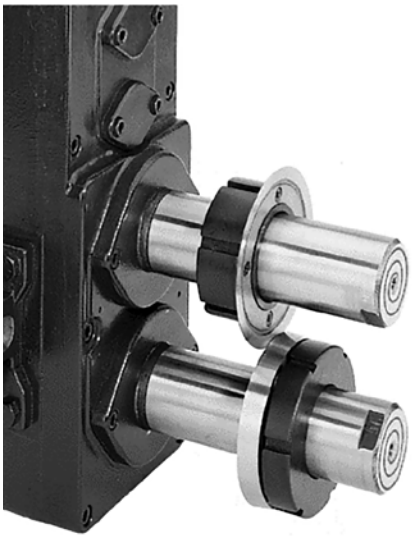
Selection table			
Type	V (m/min) 50 Hz	V (m/min) 5–100 Hz	Motor attachment
BT 0190	15	1.5 – 30	External
BT 0191	30	3.0 – 60	External
BT 0192	60	6.0 – 120	External
BT 0193	85	9.0 – 170	External
BT 0194	175	18.0 – 350	External
BT 0195	15	1.5 – 30	Internal
BT 0196	30	3.0 – 60	Internal
BT 0197	60	6.0 – 120	Internal
BT 0198	85	9.0 – 170	Internal
BT 0199	175	18.0 – 350	Internal

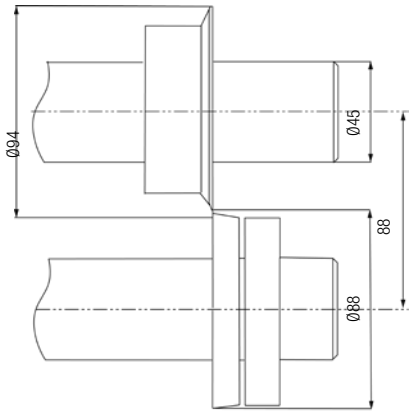
Selection of cutting blade / area of use

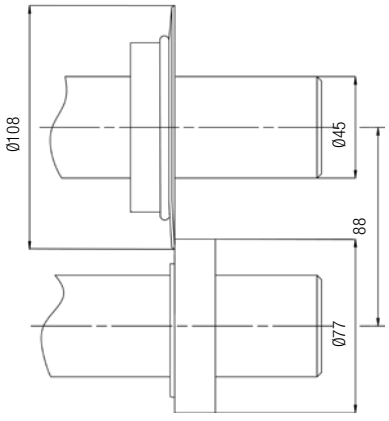
Blade set 1
A high contact pressure is created through the horizontal suspension of the bottom blade. This also allows precise cutting of stable materials such as paper, foil and non-woven fabrics.

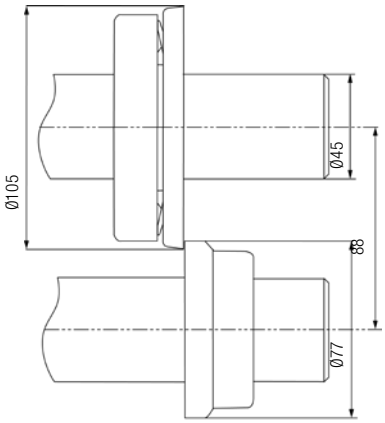
Blade set 2
For light materials, such as textiles, this version with a sprung top blade offers a very economic solution.

Blade set 3
The blade set is particularly suitable for thick materials, such as carpets or felt, as the top and bottom blades are designed as bowl blades.







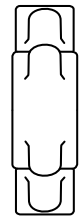


Positioning of web cutting device

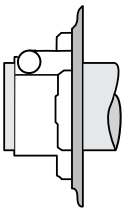
Support beam VWG 2

- Simple positioning of the web cutting device using a hand wheel
- Symmetrical position of both devices
- Individual positioning of each device using hand wheels on both sides
- Motorized position available as an option

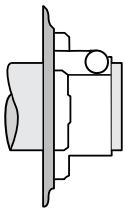
Support beam VWG 2 B-X1-K3



X1 Pedestal bearing



X2 Internal flange bearing



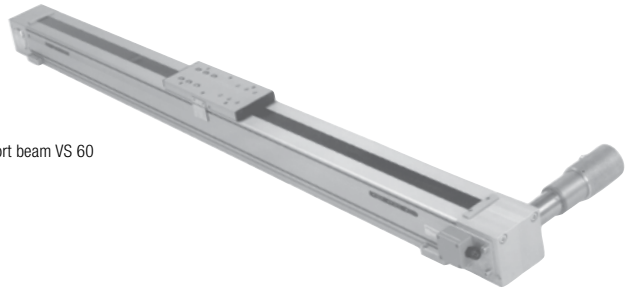
X3 External flange

Selection table

Type	Positionierung I Sliding guides	Mounting	Surface
VWG 2 A-X1-K3	Symmetrically adjustable	Pedestal bearing	Chrome-plated
VWG 2 A-X2-K3		Flange bearing, inner	Chrome-plated
VWG 2 A-X3-K3		Flange bearing, outer	Chrome-plated
VWG 2 B-X1-K3	Individually adjustable separately	Pedestal bearing	Chrome-plated
VWG 2 B-X2-K3		Flange bearing, inner	Chrome-plated
VWG 2 B-X3-K3		Flange bearing, outer	Chrome-plated
VWG 2 AB-X1-K3	Individually and symmetrically adjustable	Pedestal bearing	Chrome-plated
VWG 2 AB-X2-K3		Flange bearing, inner	Chrome-plated
VWG 2 AB-X3-K3		Flange bearing, outer	Chrome-plated

Support beam VS 60

- Precise linear guide with DC geared motor and incremental encoder
- Positional accuracy ±0.5 mm
- Optimized for follow-up and positioning of cutting units



Support beam VS 60

Blade follow-up with VS 60

Technical Data

Positional accuracy	±0.5 mm (material-dependent)
Nominal actuating travel	200 – 3000 mm (100 mm gradation)
Nominal actuating speed	1 – 55 mm/s adjustable
Nominal support load	500 N
Nominal actuating force	500 N
Ambient temperature	10 to 50 °C
Current consumption	3.4 A DC (per positioning unit)
Operating voltage	
Nominal value	24 V DC
Nominal range	20 – 30 V DC
Incremental encoder resolution	0.03 mm/increment
Weight	
Basic element with 200 mm actuating travel	9.7 kg
Per 100 mm	0.7 kg
Protection rating	IP 54

Edge cut on the tenter

Function

The top blade is powered via a geared motor and drives the spring-mounted bottom blade.

The device is positioned in a user-friendly manner using a motor at the touch of a button or with automatic follow-up according to the web edge.

Minimal edge waste is only achieved when the web edge is fully unrolled. E+L can offer an integrated mechanical spreading unit (E+L patent) for this and, alternatively, a pneumatic solution.

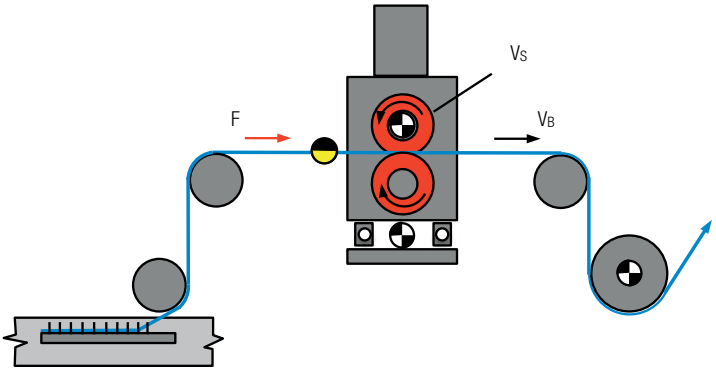
Noise-dampened side channel compressors are available for the removal of any edge waste.

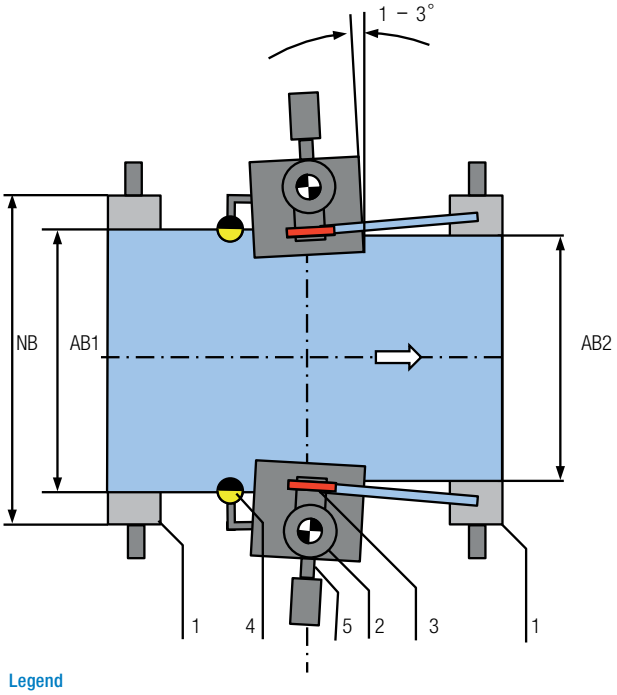
Area of use

Tenter outfeed
Compactor
Sanforizing systems

Application

At the end of the machine, the web is removed from the pins with an initial path roller. Two further path rollers form the cutting level.





Legend

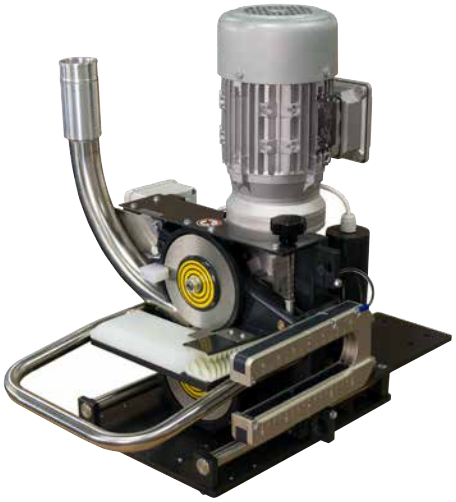
1	Guide roller	AB2	Operating width after edge cutting
2	Rotary current drive	NB	nominal width
3	Shear cut	F	Web tension
4	Edge sensor	V_B	web speed
5	Actuator for follow-up	V_S	cutting speed
AB1	Operating width		

Web cutting device BTA 80/81

Web cutting device BTA 80

- Edge cutting system for edge cutting of knitted fabrics
- Minimized edge trimming due to cutting outside the pin chain
- On the standard system, the cutting speed is set at 60 m/min
- With a frequency converter between 30 and 110 m/min
- Reliable and fault-free shear cut for minimum waste
- Spring-mounted bottom blade is driven by the top blade
- Contact pressure on the bottom blade preset by E+L for excellent cutting and extremely high blade service lives
- Simple blade changing without readjustment of the contact pressure
- The necessary lubrication of the blades is carried out a wick lubrication system

ELCUT Web cutting device BTA 8013



ELCUT Web cutting device BTA 8113

ELCUT web cutting device BT 8013 at the tenter exit

Selection table			
Type	Selvedge opener	Positioning	follow-up control
BT 8001	pneumatic	■	
BT 8003	pneumatic		■
BT 8011	Mechanical	■	
BT 8013*	Mechanical		■
BT 8111	pneumatic	■	
BT 8113	Mechanical		■

* Standard

Technical Data	
Web types	Woven and knitted fabrics, technical textiles
Cutting speed	max. 60 m/min (Standard) 30 – 110 m/min (with frequency converter)
Operating voltage, cutting motor	220-240/380-415 V 50 Hz 265/440-480 V 60 Hz
Current consumption	1.22/0.71 A 50 Hz 1.1/ 0.6 A 60 Hz
Nominal power	0.25 kW per cutting unit
Operating voltage, actuating motor	24 V DC
Actuating speed	8 mm/s
Actuating travel	±65 mm
Blade diameter	120 mm
Protection rating	IP 54
Ambient temperature	+10 to +50 °C
Weight	40 kg per device
motor certification	CE, UKCA, UL, CSA, ISI, CCC

Web cutting device BTA 80

selvedge opening device

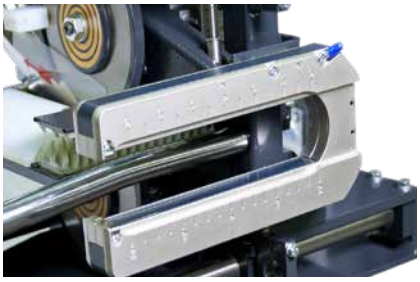
- The patented mechanical selvedge opening device optimizes the edge trimming
- Adjustable contact pressure
- Spring-loaded top plate lifts off for thick seams
- No dust or fluff on mechanical edge spreading device
- Optionally, a pneumatic edge spreading device is available

Suction device BT 7700-15

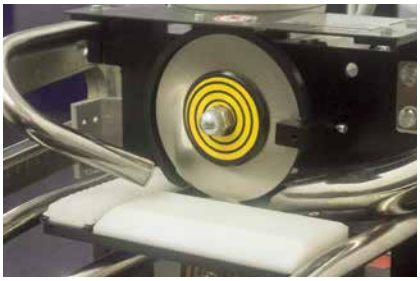
- Automatic extraction of the edge strips through noise-reduced side channel compactor with Venturi nozzle

Absauganlage BT 7700-15

Mechanical spreading device



Sensor FR 6011



Pneumatic spreading device

Controller DC 9156

Technical data Suction device BT 7700-15	
Flow rate	approx. 3m³/min
Operating voltage	200 – 240/345 – 415 V 50 Hz 220 – 275/380 – 480 V 60 Hz
Current consumption	9.7/5.6 A 50 Hz 11.0/6.5 A 60 Hz
Nominal power	2.2 kW 50 Hz per device 2.5 kW 60 Hz per device
Nominal speed	2860/3440 rpm
Operating pressure	Approx. 140 mbar
Ambient temperature	+10 to +50 °C
Noise (at a distance of 1 m)	78 dB per device
Protection rating	IP 54
Weight	Approx. 63 kg per device
Ambient temperature	+10 to +50 °C

follow-up control

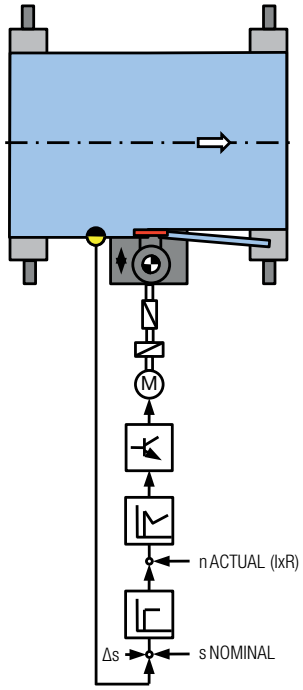
- Automatic cutting blade follow-up with reference to web edge
- Wide band infrared edge sensor with 158 mm measuring range and 0.1 mm resolution
- Precise proportional follow-up with digital position controller
- Even highly transparent textile web edges can be detected reliably
- Integrated DC actuating drive for positioning the cutting unit

Operation

- Operation remote from the cutting tool at the press of a button ensures straight-forward optimization of the cutting result
  - Automatic/manual operation mode
  - Alteration of the cutting position
  - Moving clear to the outside for setting up

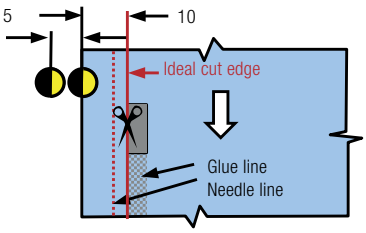
Control structure for follow-up controller

Besides a positioning controller for the cutting device, the cascaded control structure for proportional actuators also features a speed and current controller for the actuator.

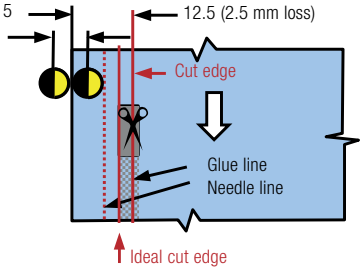


Cut edge of competitor systems with light barrier

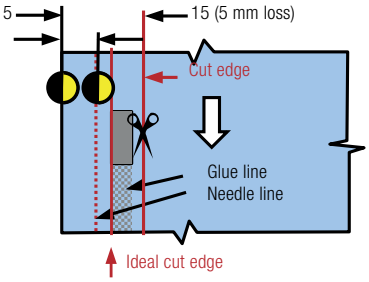
Web edge at right light barrier



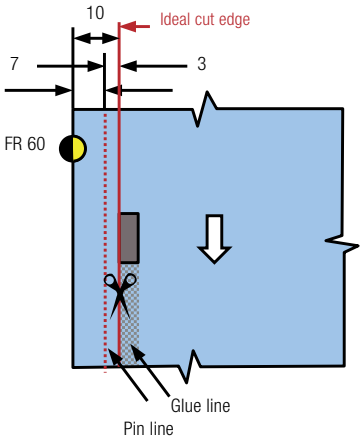
Web edge centered in relation to the light barrier



Web edge at left light barrier



Optimum cutting position with a proportional follow-up control



Technical data Follow-up control	
Positional accuracy	±1 mm
Measuring range sensor	±79 mm
Operating voltage	
Nominal value	24 V DC
Nominal range (ripple included)	20 – 30 V DC
Max. current consumption	2.5 A
Ambient temperature	+10 to +50 °C

Questionnaire

General data			
Customer			
Street			
Zip code		City/town	
Country		Internet	
Phone		Fax	
Contact person			
Phone		E-mail	
Project			

Technical Data				
Type of machine				
Make				
Position on the machine				
Web type	❑ Woven fabric ❑ Paper	❑ Knitted fabric ❑ Film	❑ Non-woven fabric ❑	❑ Carpet
Web width	Min. _____ mm		Max. _____ mm	
Web thickness	Min. _____ mm		Max. _____ mm	
Web weight	Min. _____ gr/m²		Max. _____ gr/m²	
Tube diameter	Min. _____ mm		Max. _____ mm	
Web speed	Min. _____ m/min		Max. _____ m/min	
Condition in operation	❑ Dry	❑ Moist	❑ Wet	❑
Ambient temperature	_____ °C			
Ambient conditions	❑ Dry	❑ Dusty	❑ Wet	❑
Control voltage	❑ 24 V DC		❑ V	❑ Hz
Operating voltage	❑ 3x V	❑ Hz		

Application

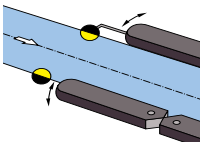
Specification of cutting unit

❑ Center cut with BT 02	Number of center cuts			
❑ Tube cut with BT 25	Mounting position		❑ Standing	❑ Hanging
	Control unit		❑ With housing	❑ Panel mounted kit
	Fan for tube opening		❑ With	❑ Without
❑ Edge cut on tenter with BT 80	follow-up control		❑ With	❑ Without
	Spreading		❑ Mechanical	❑ Pneumatic
	Suction device		❑ With	❑ Without
	Variable cutting speed with frequency converter		❑ With	❑ Without
❑ Edge cut with BT 01	Edge strip width	mm		
	Web run		❑ Horizontal	❑ Vertical
	Cutting speed		❑ Fixed	❑ Variable
	Control unit		❑ With housing	❑ Without housing
	Target speed value		❑ with E+L tachogenerator	❑ customer-side 0 – 10 V DC
	Support beam version	❑ Individually adjustable	❑ Symmetrically adjustable	❑ Individually and symmetrically adjustable
	Support beam fastening	❑ Pedestal bearing	❑ Flange bearing, inner	❑ Flange bearing, outer
	G dimension, support beam	mm		

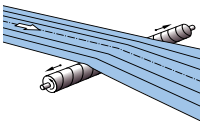
Comments

Date	Issuer

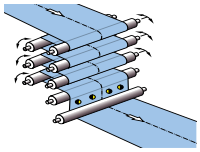
Other products for the textil industry



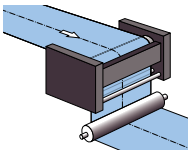
ELFEED – Tenter infeed systems



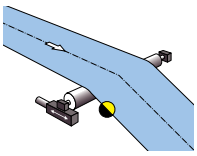
ELSPREADER – Web spreading systems



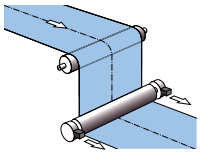
ELSTRAIGHT – Textile straightening systems



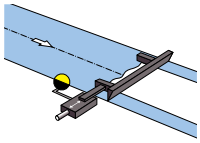
ELSMART – Web guiding systems



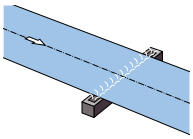
ELBANDER – Fabric position control systems



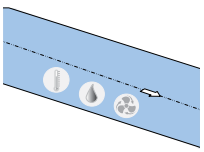
ELTENS – Web tension control systems



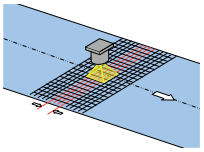
ELPOSER – Positioning and follow-up control systems



ELMETA – Metal detection systems



ELMAT – Process control systems for tenters



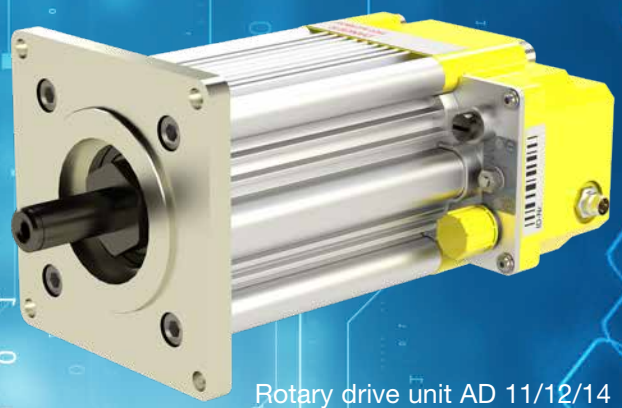
ELCOUNT – Thread counting systems

EL.MOTION

Linear and rotary drives from Erhardt+Leimer offer:

- Safe Torque Off (STO) function, the option for functional safety
- Space-saving design thanks to integrated control electronics
- Simple configuration via web-based management with standard web browser
- Wear-free brush-less drive technology
- Determination of absolute position
- High-resolution multiturn encoder

CERTIFIED SAFETY



Rotary drive unit AD 11/12/14

Linear drive unit
AG 91/93

SCAN HERE AND SPEAK WITH OUR EXPERTS

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