Erhardt+Leimer

ELMETA

Metal detection systems

Continuous metal detection

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Erhardt+Leimer
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.

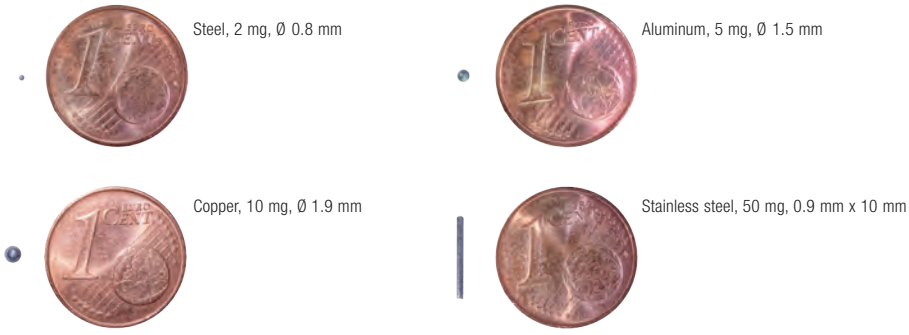
Higher quality and productivity due to metal detection systems

During the production of textiles, small metal particles can find their way into the fabric web during the various processing steps. If these particles are not all detected, extremely costly damage may occur on the downstream calender rollers and shearing tools. In wet finishing, there is also danger of web damage (holes) due to catalytic reactions. As a result, whole web sections are often converted into scrap.

Needles in non-woven fabric web

Smallest detectable metal particles

Metals have a varying effect on the alternating magnetic field.
The following figures show, in a spherical or rod shape, the smallest possible metal particles that can be detected using the metal detector at varying production speeds.



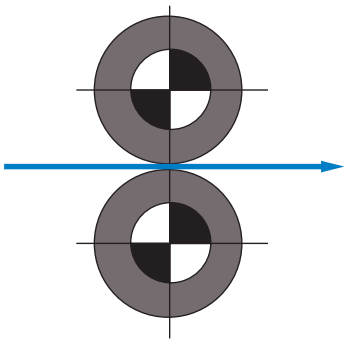
Textile finishing processes to be protected

Calender rollers are among the most expensive components in textile machinery manufacture. The slightest damage will cause defects in the textile that then reoccur in every repeat.

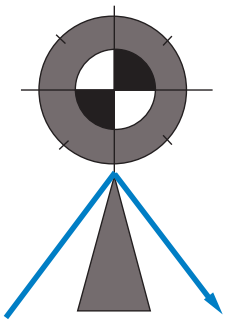
Metal particles can damage or destroy shearing tools. Metal detectors prevent expensive repairs or the costly premature replacement of the tools.

Raising rollers can also be irreparably damaged by metal particles. Metal detectors prevent expensive repairs.

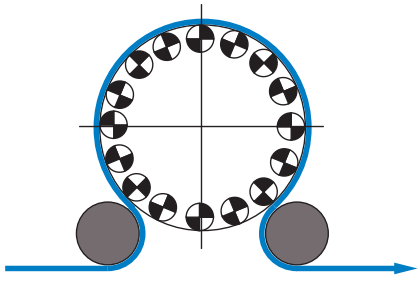
Calendering



Shearing



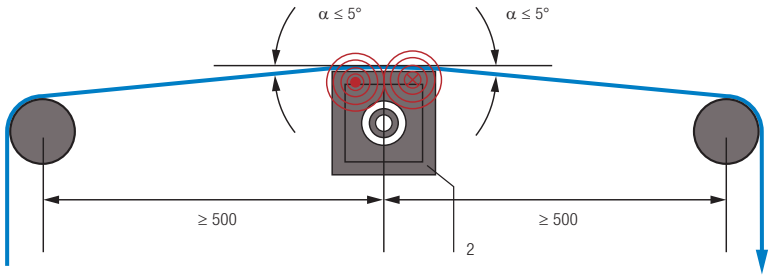
Napping

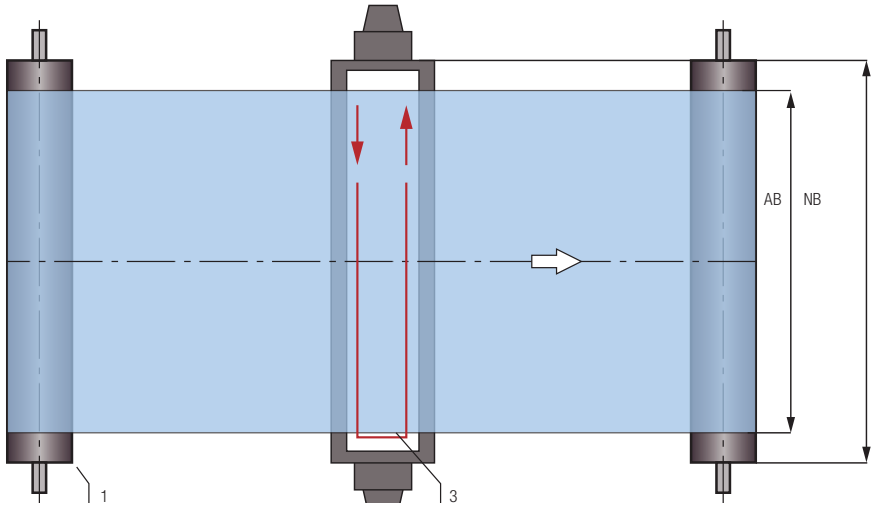


Metal detector ELMETA

Function

An alternating magnetic field of 200 kHz is generated by an AC current in a transmit coil. A web soiled with metal disrupts this alternating field and triggers a signal. Other effects such as moisture or contact have no effect on the metal detection thanks to capacitive shielding. The result can be used as a continuous or pulsed signal to stop the machine, to output a visual or acoustic alarm, or to operate marking or counting systems. The segmented LED display (MDA10) indicates the position of the metal particle. Optionally it is possible to connect an external signal display or reset button.





Area of use

Metal detection systems are suitable for dry and damp fabric webs, e.g. textile and non-woven fabric, in particular on the following machines:

- Non-woven fabric production machines
- Shearing machines
- Calender machines

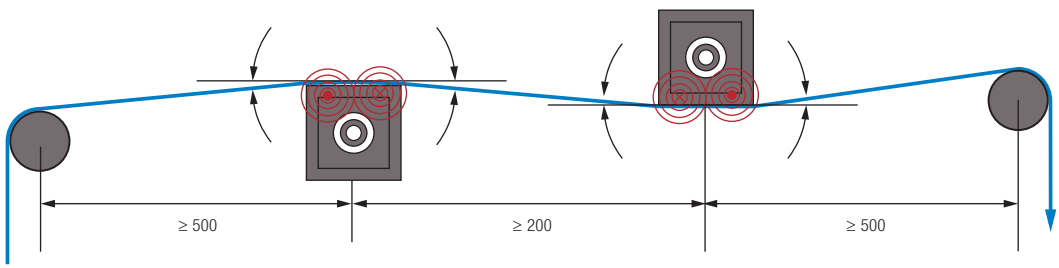
Application

The metal detector can be mounted in any position. The web should wrap the metal detector by approx. <10°. There should not be any moving mechanical parts in a radius of 500 mm.

Legend

1	Guide roller
2	Metal detector
3	Transmission loop
AB	Operating width
NB	Nominal width
α	Wrap angle

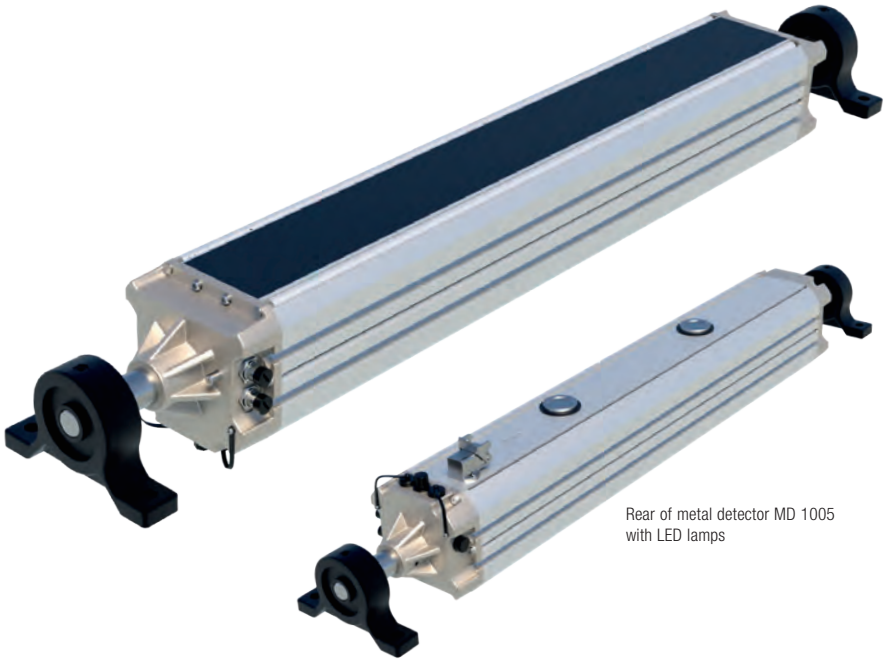
MDA10 metal inspection on both sides



Metal detection system MDA10

Metal detection system MDA1005

- Reliable, accurate detection of spherical metal particles at a distance of < 1 mm from the scanning surface
- Segmented LED display with 300 mm sections
- Pulse signal adjustable from 0.3 to 5 s
- Compact design with integrated electronics
- Large usage area for production speeds of 2 to 500 m/min for aluminum particles
- Straightforward mounting at two points
- Metal detection on both sides possible
- External individual segment evaluation (MD 1006) optional



Rear of metal detector MD 1005 with LED lamps

Selection table

Type	Consisting of	Characteristics
MDA1005	MD 1005 + SG 103_	• Individual-segment display on the sensor • Collective indicator on the SG 103_
MDA1006	MD 1006 + SG 103_ + LK 0501	• Individual-segment display on the sensor • External individual-segment evaluation (LK 0501) • Collective indicator on the SG 103_
SG 1031		Control unit without adjustment feature
SG 1032		Control unit with external potentiometer for adjusting the sensitivity

Detection table

Material	Min. mass of spherical particles (mg)	Web speed (m/min)
Steel AISI 52100	≥2	2 to 350
Aluminum EN AW 2017	≥5	2 to 500
Copper	≥10	2 to 250
Stainless steel AISI 316	≥50	2 to 350

Technical data

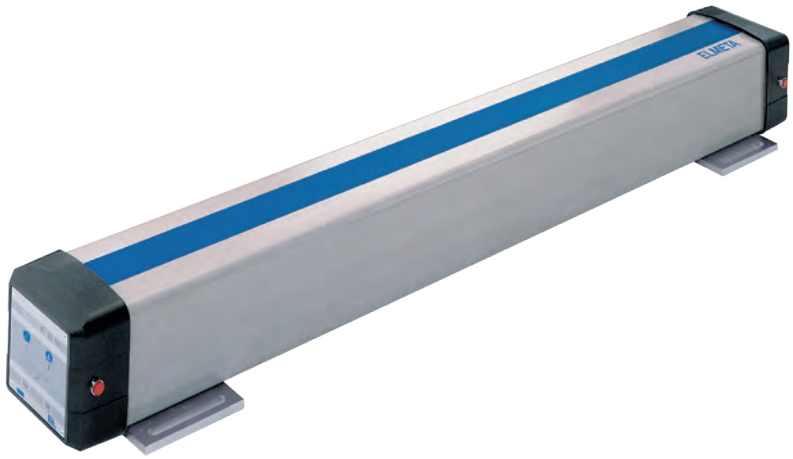
Metal detector MDA1005/MDA1006

Web type	Woven and knitted fabrics, non-woven fabrics, felt, carpeting
Operating width	Nominal width -50 mm
Nominal width	600 to 6000 mm (steps of 300 mm)
Web state	Dry, damp (squeezed)
Web speed	See table
Ambient temperature	0 to +60 °C
Storage temperature	-20 to +80 °C
Protection class	IP 54
Operating voltage SG 103	100 to 240 V, 50/60 Hz
Current consumption	1.65 A
Weight MDA10	30 kg (nominal width 2100 mm)

Metal detection system MDS50

Metal detection system MDS50

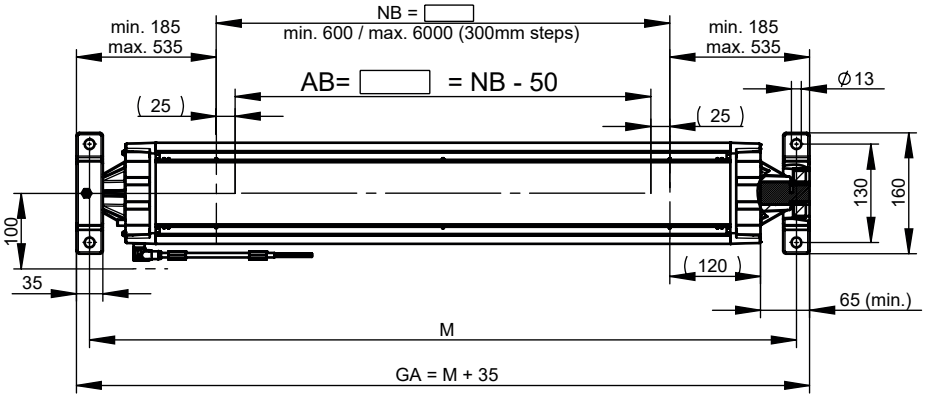
- Reliable detection of spherical metal particles at a distance of < 1 mm from the scanning surface
- Integrated control panel with luminous LED strip for the indication of the signal level and buttons for adjusting the sensitivity
- Illuminated buttons for metal detection and reset function integrated in both ends
- Adjustable signal outputs with time or, in combination with an incremental encoder, distance-based delay
- Interference-proof, self-balancing amplifier with electronics designed for long-term stability
- Straightforward base-mounting

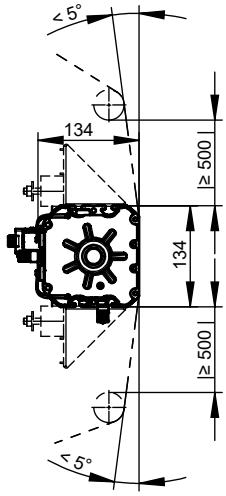


Technical data		
Metal detector MDS50		
Web type	Woven and knitted fabrics, non-woven fabrics, felt, carpeting	
Operating width	Nominal width -180 mm	
Nominal width	600 to 3600 mm (steps of 200 mm)	
Web state	Dry	
Web speed	See table	
Ambient temperature	0 to +45 °C	
Storage temperature	-20 to +80 °C	
Protection class	IP 54	
Operating voltage	Connection Nominal voltage Nominal range Max. current consumption	1x valve connector, 3-pin 24 V DC 22 to 30 V DC 1.5 A
Signal input 1 Web speed	Connection Nominal voltage Nominal current Input resistance Input frequency	1xM16, 2-pin 24 V DC (20 to 30 V) 8 mA (6 to 10 mA) 4 kΩ 6 kHz
Signal input 2 Reset	Connection Nominal voltage Nominal current Input resistance Input frequency	1xM16, 4-pin 24 V DC (20 to 30 V) 8 mA (6 to 10 mA) 4 kΩ 6 kHz
Signal output Output operational Output 1 alarm Output 2 alarm distance-delayed Input reset	Connection Output voltage Output current Input voltage Input current Input resistance Input frequency	1xM16, 6-pin 24 V DC 0.5 A (short circuit-proof) 24 V DC (20 to 30 V) 8 mA (6 to 10 mA) 4 kΩ 6 kHz
Fieldbus	E+L CAN bus	2xM16, 3-pin
Weight	28 kg (nominal width 600 mm)	

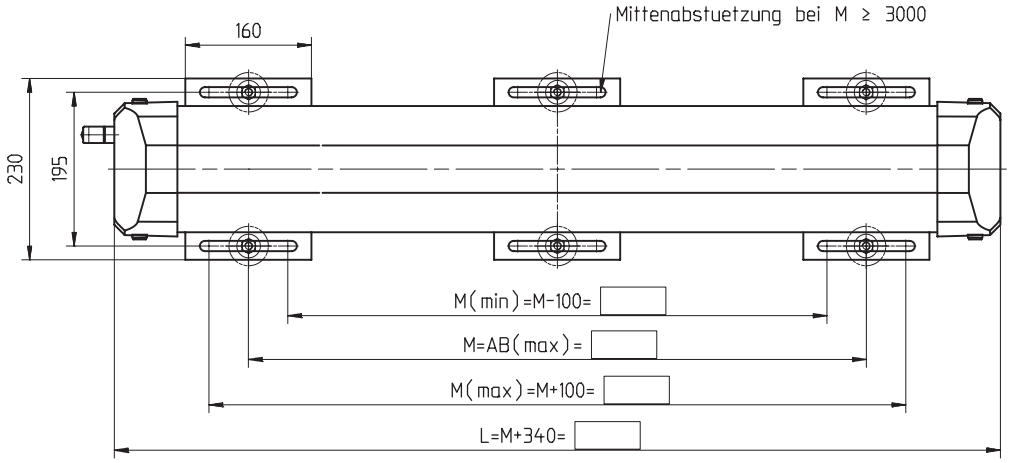
Detection table		
Material	**Min. mass of spherical particles (mg)**	**Web speed (m/min)**
Steel AISI 52100	≥2	3 to 200
Aluminum EN AW 2017	≥5	3 to 200
Copper	≥10	3 to 200
Stainless steel AISI 316	≥50	3 to 200

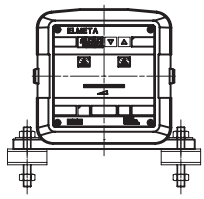
Dimensional drawing MDA10





Dimensional drawing MDS50





Questionnaire

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

Technical data			
Type of machine			
Make			
Position on the machine			
Web type	❑ Woven fabric	❑ Knitted fabric	❑ Non-woven fabric
	❑ Carpet	❑ Felt	❑
Web width	Min. _____ mm	Max. _____ mm	
Web thickness	Min. _____ mm	Max. _____ mm	
Web weight	Min. _____ g/m^2	Max. _____ g/m^2	
Web speed	Min. _____ m/min	Max. _____ m/min	
Web condition in operation	❑ Dry	❑ Damp	❑ Wet
Ambient temperature	_____ °C		
Ambient conditions	❑ Dry	❑ Dusty	❑ Wet
Operating voltage	❑ 24 V DC	❑ _____ V _____ HC	

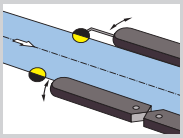
Specification, metal particles			
Mass of the metal particles	❑ Steel	Min. _____ mg	Max. _____ mg
	❑ Aluminum	Min. _____ mg	Max. _____ mg
	❑ Stainless steel	Min. _____ mg	Max. _____ mg
	❑ Copper	Min. _____ mg	Max. _____ mg

Specification, metal detector	
Mounting dimension	M = _____ mm

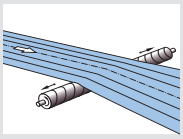
Application

Date		Issuer	

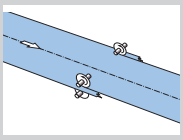
Other products for the textile industry



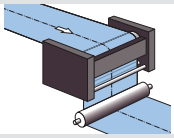
ELFEED Tenter infeed systems



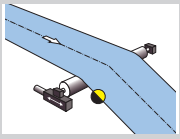
ELSPREADER Web spreading systems



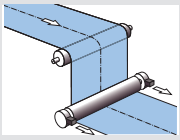
ELCUT Web cutting systems



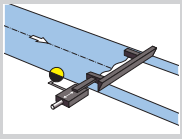
ELSMART Web guiding systems



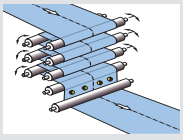
ELBANDER Fabric position control systems



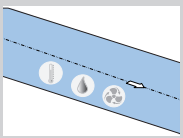
ELTENS Web tension control systems



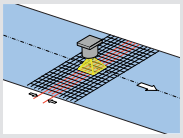
ELPOSER Positioning and follow-up systems



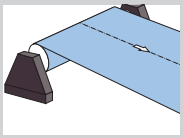
ELSTRAIGHT Textile straightening systems



ELMAT Process control systems for tenters



ELCOUNT Thread counting systems



ELWEBTEX Infeed and exit systems for textile production processes

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Romania
Spain
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Brasil
India
Taiwan
China
Japan
Korea
Thailand

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Mexico
8x in China
2x in Japan
5x in India
Pakistan
Indonesia
2x in Vietnam
Thailand
Egypt
Turkey
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South Africa

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