

In printing and coating processes as well as in roller inking units of printing presses so-called ink mist or particle mist is generated in the outlet of double roller systems, coming from the appropriate coating material resp. the printing ink.

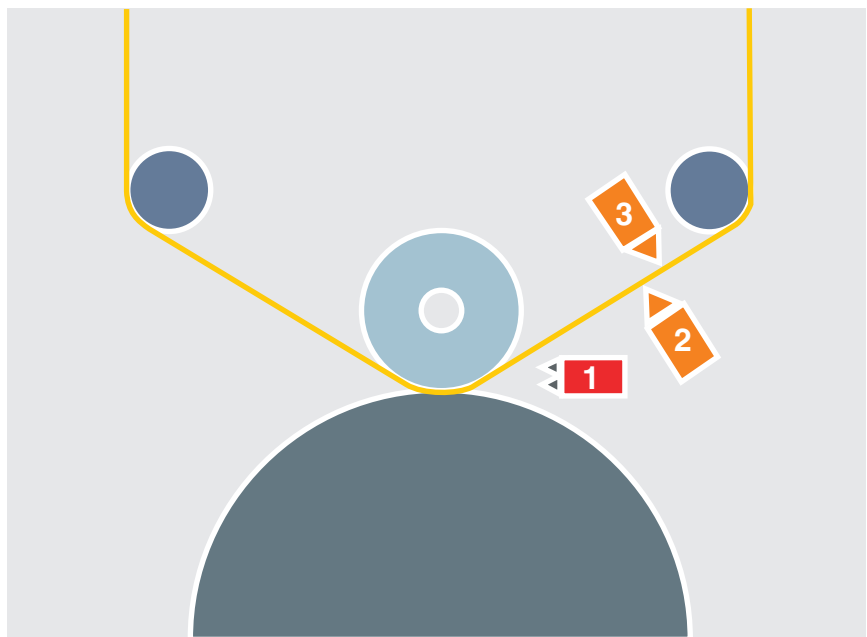
The MISTING TACKER MTS20 system is designed to reduce ink mist in the printing / application nip of printing and coating units.

The patented dual DC plasma bar R170A3 imparts separate charges to the particle streams, ensuring optimal particle separation.

The benefits:

- complete particle deposit on the roll surface or on the substrate
- reduced ink and coating consumption
- less pollution of the environment
- optimal print/coating results at the highest processing speeds and lowest maintenance costs
- less maintenance effort

Technical Information



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MISTING TACKER SYSTEM MTS20

System for the reduction of ink mist in printing and coating units

TI-en-9055-1712



System Description

MISTING TACKER SYSTEM MTS20 by Eltex

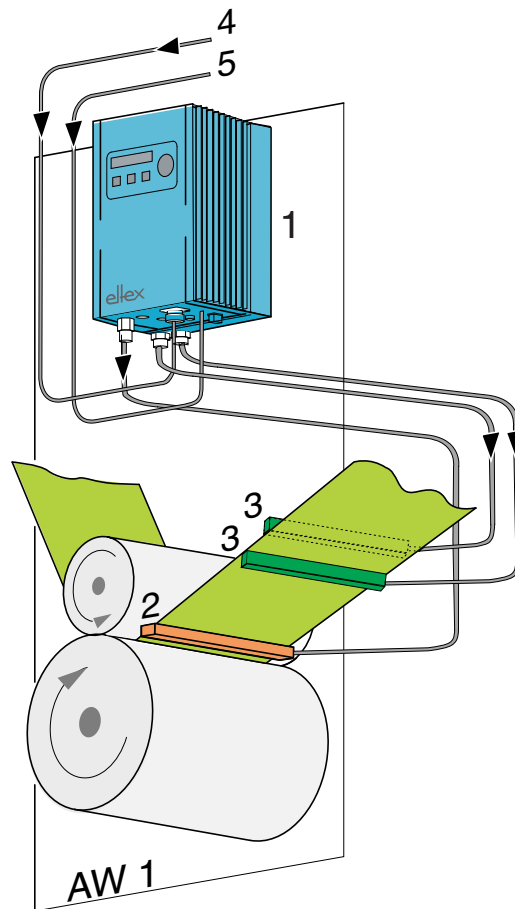
In the application units of coating systems and in the inking units of printing presses, the ink or coating is split, distributed and transported by a series of roller pairs. The printing/coating substrate is transported in the nip between the application roller and the impression roller. At increasing processing speeds, the ink/coating is split into more than two parts, leading to free particles.

The particle streams formed in the outlet have a wide particle size range; their diameter ranges from a few nanometers to a few micrometers depending on the rheology of the ink or the coating material, the viscosity, the surface structure of the rollers or the substrate and the production speed.

Eltex developed a special dual DC plasma bar for eliminating this particle mist. This bar is capable of separately imparting such a strong charge to both particle streams in the smallest possible stretch that 100% of the particles have been separated out through deposition onto the roller surface or the substrate in the processes examined to date.

Processes involving a lower proportion of large particles in the particle range, i.e. $> 3\mu\text{m}$, can be supported by airflow as necessary, which can be applied by the bars using a series of bores between the tips. Such heavy particles are also referred to as color splashes, an effect that can occur in combination with the ink mist, especially in relatively high-viscous inks or coating materials.

System Outline



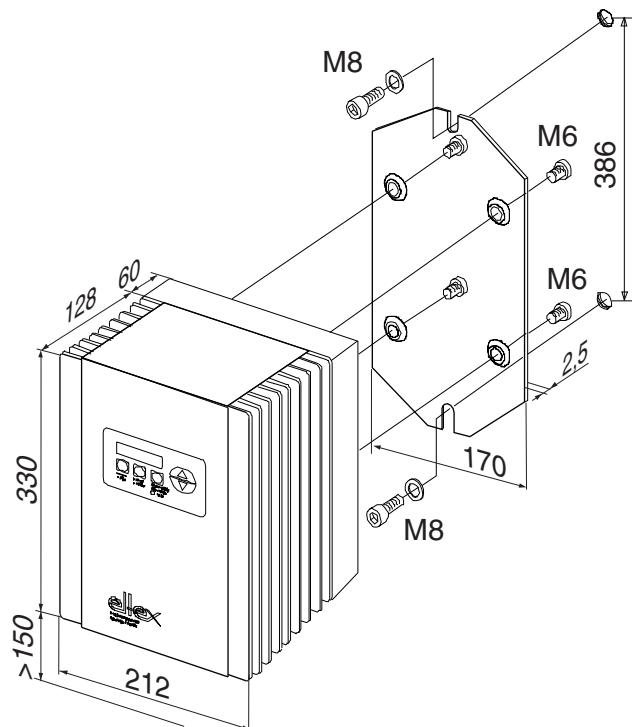
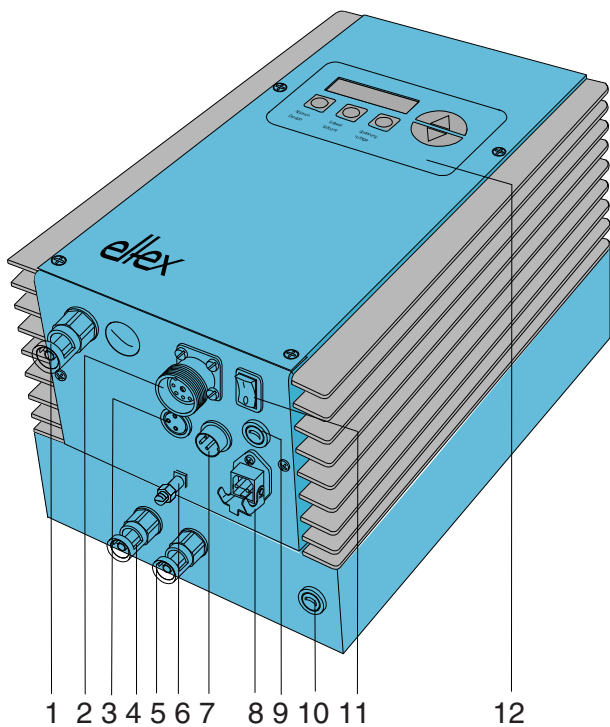
AW = Coating Unit

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Funcional principle / position of bars

- 1 Generator HSG61
Supplies the charging and discharging bars and controls the releases.
- 2 Charging bar R170A3
Used to charge the particles.
- 3 Discharging bar EXR50
The undesired charge of the substrate web - an inevitable result of the charging of the particles - is reduced or even eliminated by the two discharging bars.
- 4 Mains power cable generator
- 5 Release cable charge and discharge from the safety circuit to the generator

High Voltage Generator HSG61EX_S09 / S10



Z00406y / Z00312y

- 1 Terminal, charging bar
- 2 Socket analog interface
- 3 Socket CAN bus female
- 4 Terminal, discharging bar inlet side
- 5 Terminal, discharging bar outlet side
- 6 Ground terminal
- 7 Socket CAN bus male
- 8 Socket supply voltage
- 9 Fuse, primary circuit
- 10 Discharge fuse
- 11 Master switch ON/OFF
- 12 Operator interface

The high voltage generator HSG61EX supplies the charging and the discharging bars with the required high voltage. The high voltage generator is programmed directly via the keyboard. Once programmed, a reprogramming will not be necessary.

Messages are shown on the display in plain text.

The generator is installed at the machine frame.

Technical specifications High Voltage Generator HSG61EX__S09 / S10

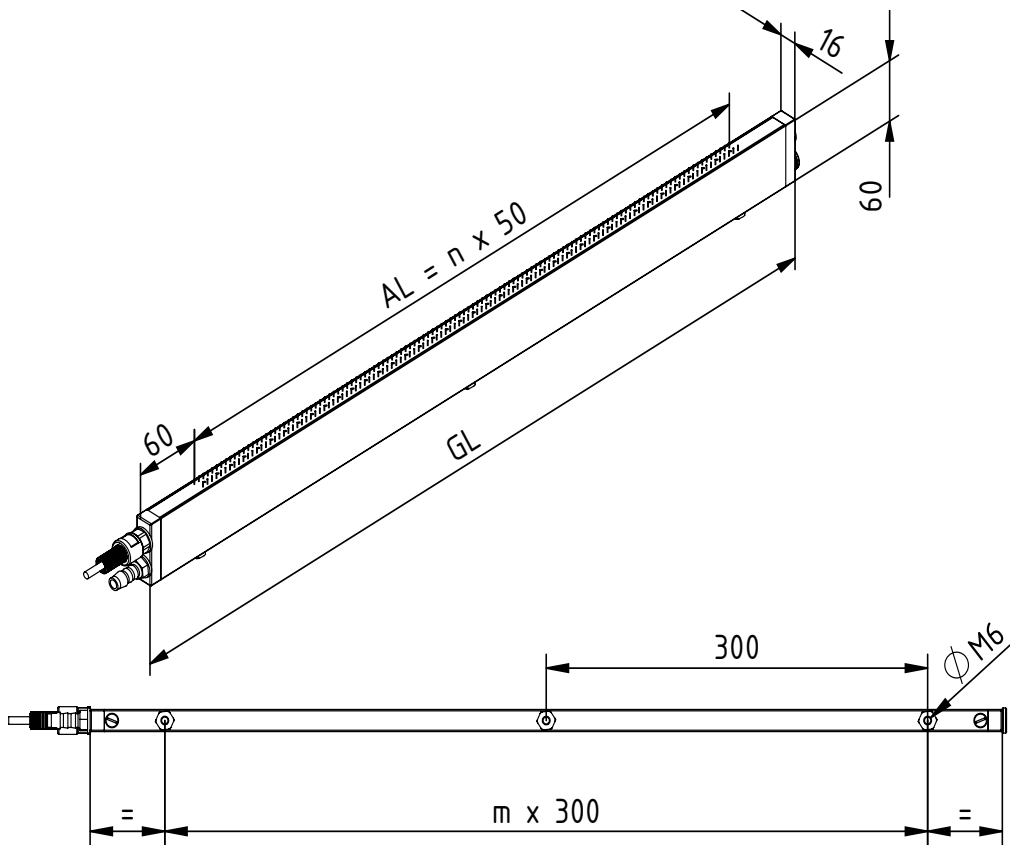
Supply voltage	230 VAC $\pm 10\%$, 50 Hz (HSG61EX_2__S09 / S10) 115 VAC $\pm 10\%$, 60 Hz (50 Hz: -5%) (HSG61/00_1__S09 / S10)
Overvoltage category II	according to IEC standard 60664-1
Power input	max. 300 VA
Ambient operating temperature	0...+40°C (+32...+104°F)
Ambient humidity	max. 80% r.h., no dewing
Enclosure	Sheet metal steel, 1.5 mm, enamelled, aluminium anodised
Protection class	IP 54
Dimensions with wall bracket	with discharge: 410 x 212 x 195 mm (H x W x D) without discharge: 410 x 212 x 135 mm (H x W x D)
Weight	with discharge: 14 kg; without discharge: 10.5 kg
Safety functions (Ex version)	Complying with the requirements of the bar approval BAS97ATEX2218X and BAS98ATEX2179X
Charging	
Output voltage	S09: 0...-19 kV ± 0.2 kV DC (accuracy 2% of full scale) S10: 0...+19 kV ± 0.2 kV DC (accuracy 2% of full scale) display resolution 100 V, adjustable in increments of 100 V
AC component of the output voltage	<3% at U_{max} and I_{max}
Output current	0...5 mA ± 0.05 mA (accuracy 2% of full scale) display resolution 0.01 mA, adjustable in increments of 0.01 mA
Operating modes	Current-constant, voltage-constant; system deviation <2%
Feedback control	I-Controller, load-adapted
Discharging (optional)	
Output voltage	5 kV AC
Output current	6.2 mA



The current approvals with their supplements can be found at: <http://service.eltex.de>.



Charging Bar R170A3



EL = Installation length
GL = Total length
AL = Active length

n, m = whole number
 = depending on the active length

Plastic or metal sliding nuts and bolts

Bolt depth max. 6.5 mm

Torque 4 Nm (metal)

Torque 0.4 Nm (plastic)

If necessary, cut bolt to size and secure (e.g. Loctite 243)

The charging bar R170A3 is used to charge particles. The bars are supported in an H-profile made of flame-retardant GRP material. The GRP profile is fastened by a light metal fixture to the available attachment at the machine wall.

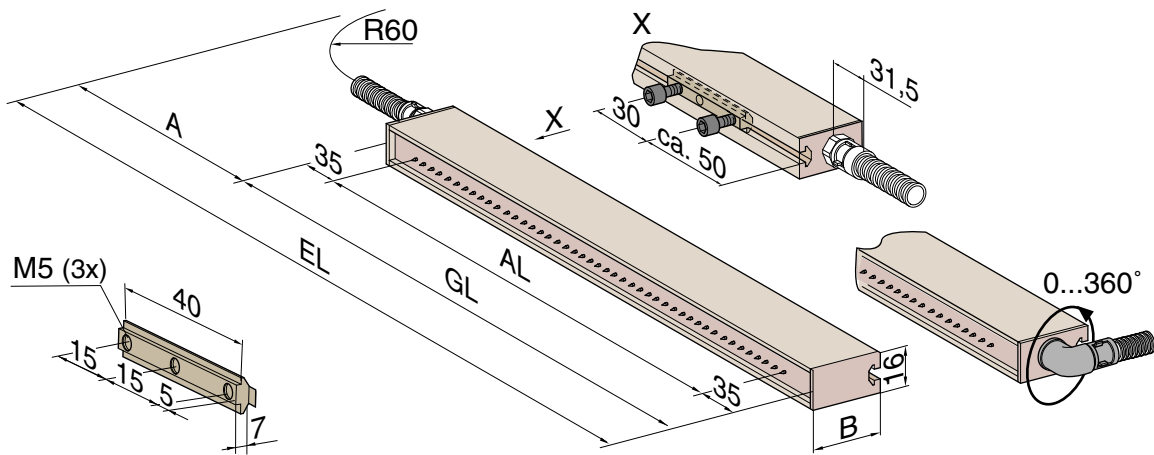
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Technical specifications Charging Bar R170A3

Material, bar element	GRP, casting compound PU
Emission tips	Stainless steel
Ambient operating temperature	0...+60°C (+32...+140°F)
Ambient humidity	max. 60% r.h., non-dewing
Operating voltage	max. ±19 kV DC
Operating current	max. 3 mA per meter of active bar length
High voltage power supply	via Eltex high voltage generators HSG61
High voltage cable	prefabricated high voltage cable in plastic tube with plug for the high voltage generator, length 1...99 m (standard length 5 m)
Air supply	integrated air profile air exit openings Ø 1,5 mm spacing 15 mm (depending on design variant)
Air connection	hose DN 9 mm, apparatus air free of oil and water, up to a max. length of 40 m (see figure)
Air pressure	max. 3 bar
Air consumption	150...600 l/min per 1 meter active bar length bei 0,1 ... 1 bar air pressure
Bar total length	max. 3,970 mm
Dimensions	see figure
Weight	1 kg/m



Discharging Bar EXR50



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- EL = Installation length
- GL = Total length
- AL = Active length
- A = 95 mm with axial connection
= 34 mm with radial connection
- B = 40 mm

Plastic or metall sliding nuts and bolts
 Bolt depth max. 6.5 mm
 Torque 4 Nm (metall)
 Torque 0.4 Nm (plastic)
 If necessary, cut bolt to size and secure (e.g. Loctite 243)

Two discharging bars in the outlet eliminate the inevitable charge resulting from the process.

Technical specifications Discharging Bar EXR50

Material, bar element	GRP, casting compound PU
Emission tips	encapsulated and electrically decoupled, low capacitance
Ambient operating temperature	0...+40°C (+32...+104°F)
Ambient humidity	max. 70% r.h., no dewing
Operating voltage	max. 5 kV AC
Approval (Ex version)	BAS98ATEX2179X II 2 G IIA T6 II 2 G IIB T6 II 3 D T100°C Please note all special conditions regarding Ex approval.

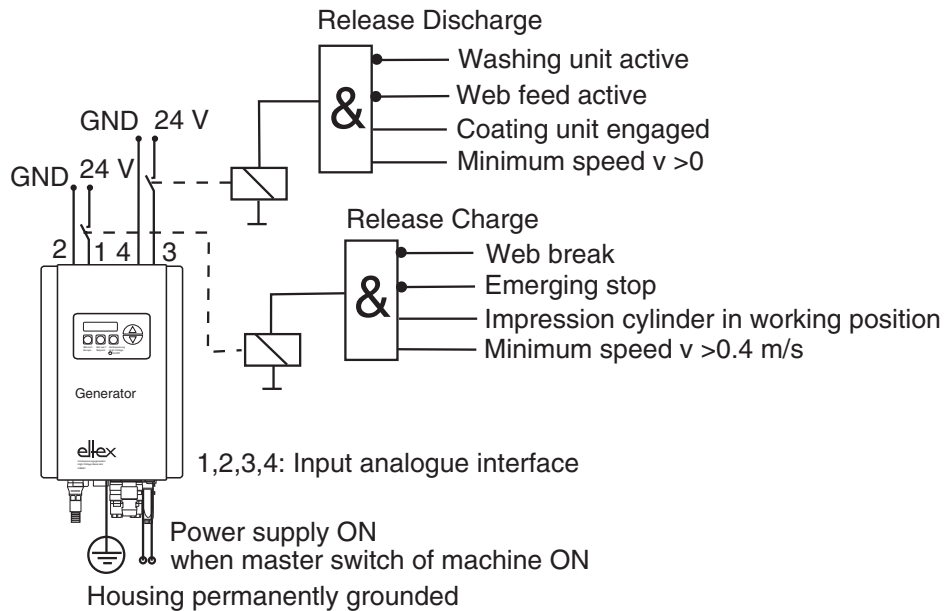


Protective Circuit, Enable Signals

For each coating unit a protective circuit with the following functions (see figure) must be realized.

Protective circuit installed by customer	Generator
Master switch of machine ON	Supply voltage ON
Machine speed >0 and printing unit engaged and coating unit engaged and web feed not active	Enable discharging
Machine speed >0.4 m/s and impression cylinder in working position and no web break and no emergency stop	Enable charging

To guarantee the safe operation of the system in the coating unit even under explosion-hazard conditions, the following enabling conditions must be observed.



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Protective circuit

Web infeed active

If the web infeed is activated, the discharging function must be disabled.

Impression Cylinder Contact

High voltage should not be enabled before a safe electrical contact is made between impression cylinder and transfer roller!

For the lift-off of the impression cylinder the protective circuit must be designed such that the enabling mechanism of the high voltage is switched off before the impression cylinder lifts off, i.e. before there is no longer any contact with the substrate and the transfer roller

This can be implemented by one of the following methods:

- use of hydraulic or pneumatic pressure switches which respond to the increase in pressure (back pressure) after setting down the impression cylinder, provided that this pressure is high enough (PRESSOSTAT).
- limit switches or initiators may be used if the impression cylinder is lowered mechanically, provided that an appropriate overtravel corresponding to the line pressure is available after setting down, e.g. via an eccentric shaft.

Verwenden Sie keine Endschalter, die nur auf den Hub des Gegendruckzylinders reagieren, da bei Formatwechsel immer eine Neueinstellung erforderlich ist.

The best possible option with respect to safety is a switch signal supplied by the machine manufacturer which indicates that the impression cylinder makes contact with an adequate line pressure, e.g. 15 N/mm (PRESSOSTAT).

If the impression cylinder is allowed to lift off before the applied voltage is switched off, sparking may occur. This must be avoided at all cost.

Web Break

The charge enable function must be switched off by the protective circuit of all connected generators immediately after a web break occurs. Some machines allow the operator to continue in spite of the web break sensor responding (web break override). Blocking the enable function must be safeguarded in this case.

Minimum Speed

Since the speed in a production machine with several coating units is the same in all coating units, it is sufficient to fit a speed-dependent switch (ramp function generator) which acts on the protective circuits of the individual generators.

The minimum printing speed for enabling the charging function is 0.4 m/sec. Basically, the enabling function should be set in just below the minimum production speed. After charging has been enabled, maintenance and cleaning work is no longer permitted! If necessary, charging should be enabled at higher speeds.

The speed for enabling the discharging function must be >0 .

The plant operator is responsible for the proper function of the protective circuits.

Connecting the oil and water free compressed air

If compressed air is necessary to support the static electrical effect of the ink mist suppression (mainly for highly viscous inks and coatings), or if air is used to cool the bar through the integrated air channel (hotmelt application printing unit), the air must be free of oil and water. Air contaminated with oil and water may damage or even destroy the bar.

The number of air connections depends on the length of the bar.

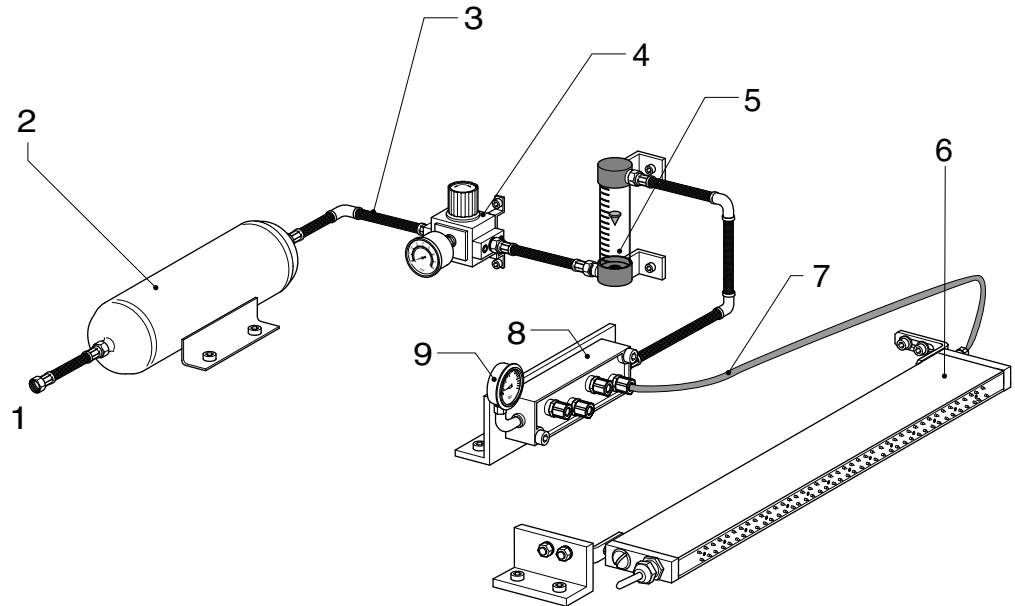


Fig. 1:
Installing the compressed air supply

Installation schematic for the air supply

- 1 Compressor
- 2 Pressure source
- 3 Hose DN 20
- 4 Air regulator
- 5 Rota Flowmeter
- 6 Charging bar R170A3
- 7 Air hose
- 8 Distributor
- 9 Pressure gauge

The components of the compressed air supply (items 1 - 5 and 7 - 9) are not included with the delivery.

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Eltex offices and agencies

The addresses of all
Eltex agencies can be
found on our website at
www.eltex.com



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