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an ELEXIS company

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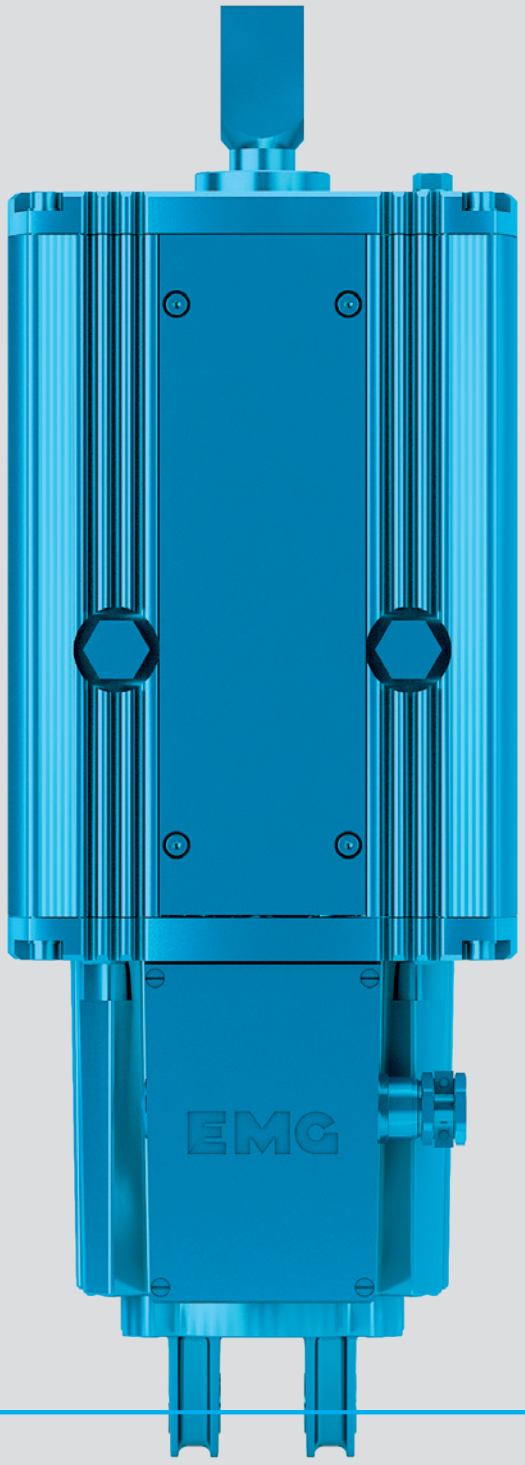
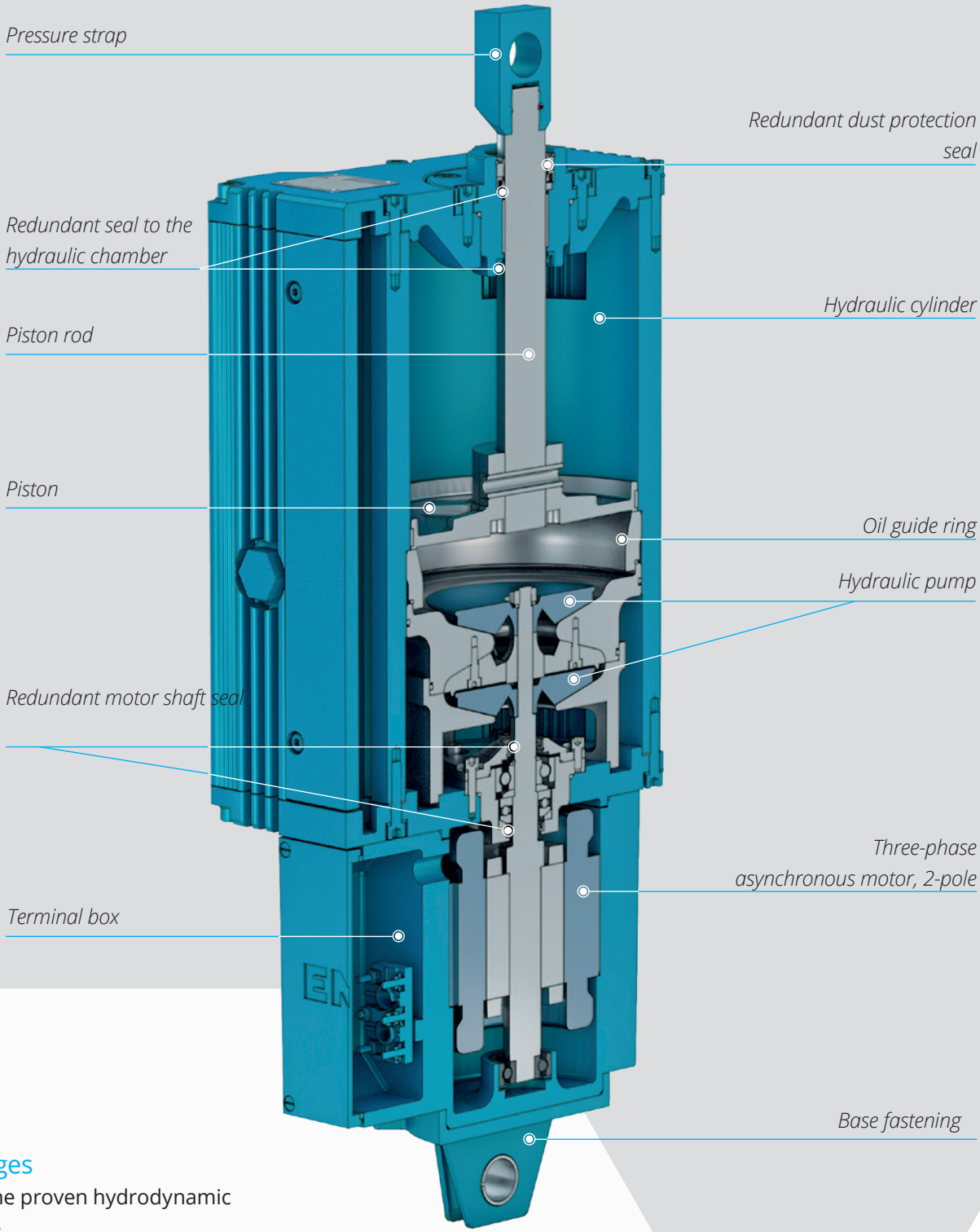
EMG ELDROdynamic®
Electro hydraulic thrusters





Advantages

- Use of the proven hydrodynamic principle
- Broad temperature range from – 45 °C to + 90 °C with additional equipment, e.g. heating and use
- of special operating media
- Mains voltage fluctuations only have a limited influence on the function of the thruster, because the motor speed is predominantly dependent on frequency and less on voltage
- No thermal protective circuit required
- Automatic driving back of the piston to the default position when switched off
- Linear lifting and lowering speeds (exception: motor start-up and run-down range)
- No sensitive electronic and sensory installation parts needed for the operating principle
- Long life and low maintenance

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Design, function and advantages

Function

All elements of a hydraulic actuation system are combined in the ELDROdynamic® to produce a compact assembly. When switched off, the hydraulic piston with the piston rod is located in its bottom limit position.
No electrical or electromechanical components are required for the basic function of the ELDROdynamic®. When switched on, the hydraulic pump pumps the operating fluid beneath the piston and in doing so generates the hydraulic pressure here. This moves the piston up to the maximum stroke path. When doing so, the counterforce – which is generated through an integrated brake or return spring, or an external load (e.g. a brake) – must be safely overcome.
In the respective piston limit position, the power consumption of the motor reduces in comparison to the power consumed during the lifting process due to the laws of hydraulics. The pressure in the thruster reaches its maximum value here. The drive motor is therefore relieved in the resting position of the piston. Mechanical overloading of the ELDROdynamic® thruster is not possible.

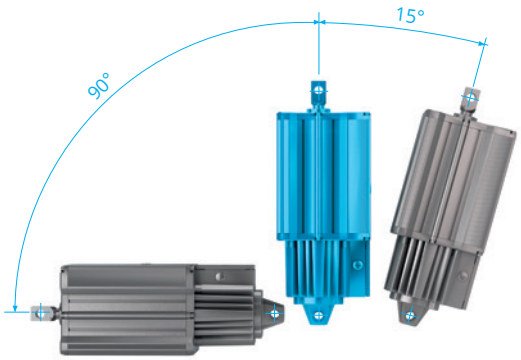
Design

Hydraulic assembly

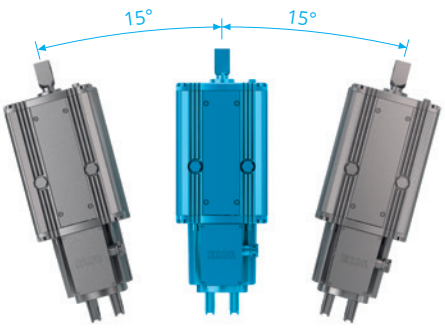
Pump system

Motor assembly

Installation position



The pivoting of the thruster must be ensured at the installation into the brake.



There must be no transverse forces on the piston rod.

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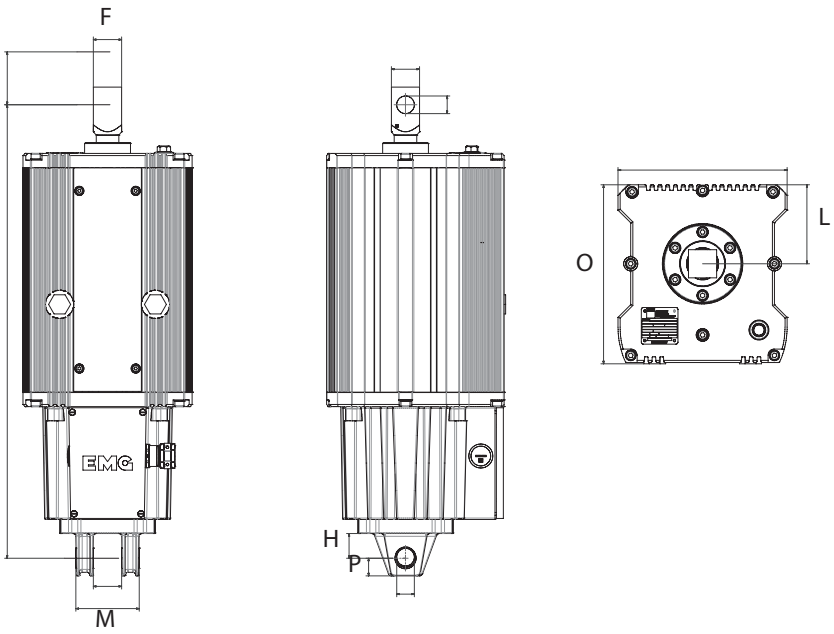
Characteristic features

The electro-hydraulic system of the ELDROdynamic® thrusters in con-junction with their easy integration into brake systems and the simple electrical commissioning result in the following features for a wide range of application conditions:

- Lower power consumption and self-heating due to the use of efficiency class IE3 motors and optimi- sed pump geometry
- Closing times ≤ 200 ms and stroke times ≤ 700 ms are achieved with ELDRO®dynamic (determined at 80 mm stroke)
- Maintenance and service friendly due to modular design
- Stroke lengths up to 500 mm are possible, differing requirements on request
- High operational reliability (failsafe)
- Long service life due to wear-free operation
- Soft and shock-free operation, due to the hydro- dynamic mode of operation
- Approved continuous operation S1 and switching operation S3 up to 2,000 operations per hour
- Any motor rotation direction
- Overloading during operation is not possible
- Continuous adjustment of lifting and/or lowering times by installing valves



Dimensions

A	B	E	F	G	H	K	L	M	N	O	25
645	60/80	25	40	25	35	240	112	90	40	260	25

Technical values

Type	Lifting force [N]	Stroke path [mm]	Switching frequency with S3 operation [c/h]	Weight [kg]
ED 1500	1500	60	2000	59
ED 2500	2500	60	2000	59
ED 3500	3500	60	2000	59
ED 4500	4500	80	1200*	60

*with additional equipment

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Mechanical version

Installation variants

» The base fastening can be mounted offset through 90°
» The pressure strap at the top can rotate

Operating fluid

» Mineral hydraulic oil or silicone oil depending on the operating conditions, e.g. ambient temperature, factory-filled

ENCLOSURE

» Standard IP 65, in special version up to IP 68

Paint application per DIN EN ISO 12944

» Standard for corrosion load C1, layer thickness 70 µm
» Special paint up to corrosion load C5-M, coating thickness to 280 µm
» Standard colour RAL 9006 (white aluminium)

Protective measures

» Redundant dust protection seal
» Redundant seal with the hydraulic chamber
» Piston rod chromium plated to dimension

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Electrical version

motor

» Three-phase asynchronous motor, 2-pole
» For power data see “Technical values”
» Standard insulation per insulation class F
» Special version in insulation class H

Voltages and frequencies

» Standard:
230/400 V, 50 Hz, 3 ~
290/500 V, 50 Hz, 3 ~
400/690 V, 50 Hz, 3 ~
» Special versions
110 V to 690 V, 3 ~,
50 Hz and 60 Hz possible
» All thrusters are star (Y) connected on delivery
» Alternating current versions (with capacitor for Steinmetz circuit) on request

Cable inlet

» Threaded cable gland M 25 x 1.5 for cable cross-sections to 4 x 2.5 mm2 (Ø 12 – 18 mm)

Operating modes

» Continuous operation S1 and intermittent duty S3 – 60 % duty cycle standard
» With ambient temperatures > 50 °C deviating technical values (available on request)

Terminal box

» Terminal board 6-pole, thrusters with heating the terminal board is 9-pole
» Supply line connection M4
» Internal protective conductor connection: M4
» External protective conductor connection: M6
» Special version: 1. Terminal block 2. Plug connection

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MECHANICAL & ELECTRICAL AUXILIARY EQUIPMENT

Pressure sensor

» The pressure sensor measures the internal pressure of the thruster
» IO link compatible

Analogue transducer

» Analogue measuring system for monitoring the entire stroke length
» IO link compatible

Temperature sensor

» The temperature sensor measures the temperature of the hydraulic medium in the thruster
» IO link compatible

Force measuring sensor

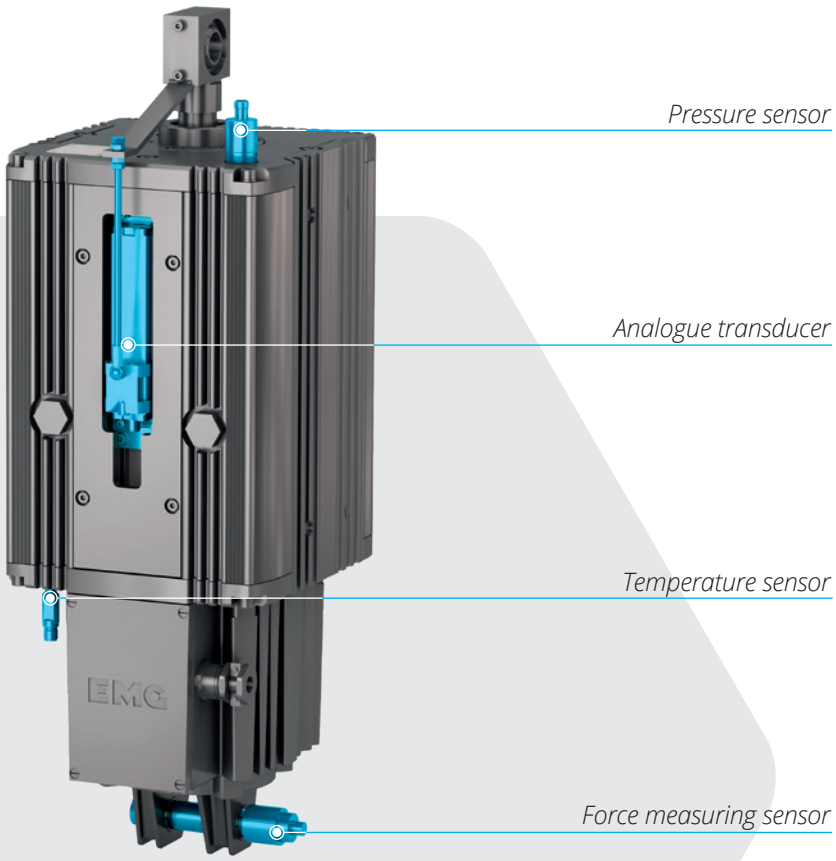
» Recording of the preset brake spring force, changes are detected immediately

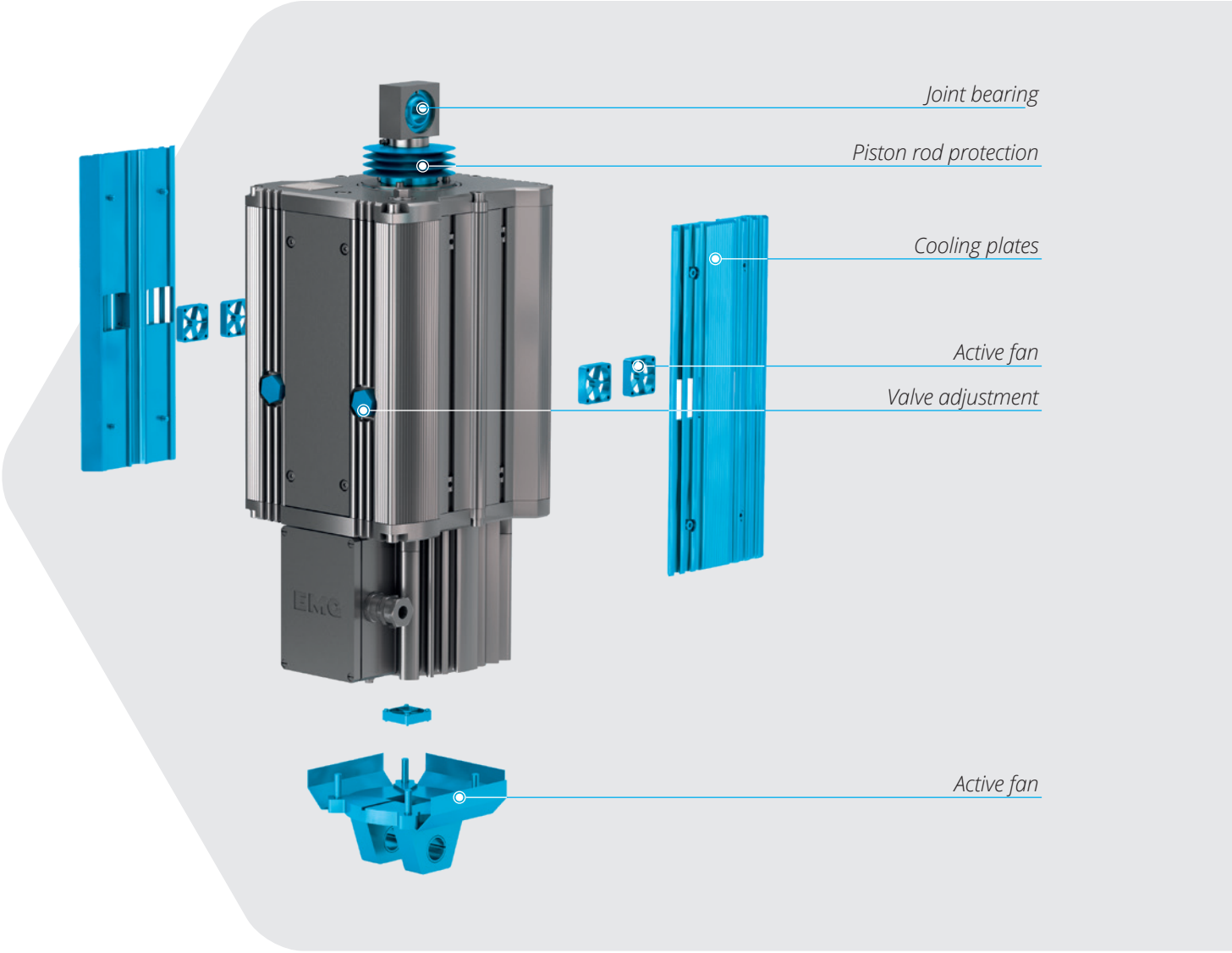
End position survey

» Detection of the upper and lower end position of the piston
» Residual stroke monitoring

Heating

» Low temperature heating at temperatures ≤ -25 °C
» Standstill heating to avoid condensation water in the thruster





Cooling plates

» The cooling plates are used at elevated ambient temperatures (> 50°C) for better heat dissipation at the thruster

Active fan

» For extreme ambient temperature ranges, for optimum heat dissipation, the unit can be equipped with active fans

Joint bearing

» The joint bearing is used to avoid transverse forces at mechanical tension of the thruster within the brake

Lifting and/or lowering valve (H, S, HS)

» The lifting and lowering times can be steplessly extended with an integrated lifting and/or lowering valve. The adjustable minimum values attain 10 to 20-times the normal values.

Piston rod protection

» Use of protective sleeve to avoid mechanical damage and penetration of abrasive dusts

ELDRO®dynamic

» Evaluation electronics for the acquisition and advance evaluation of sensor/operating data for connection to a condition monitoring system

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