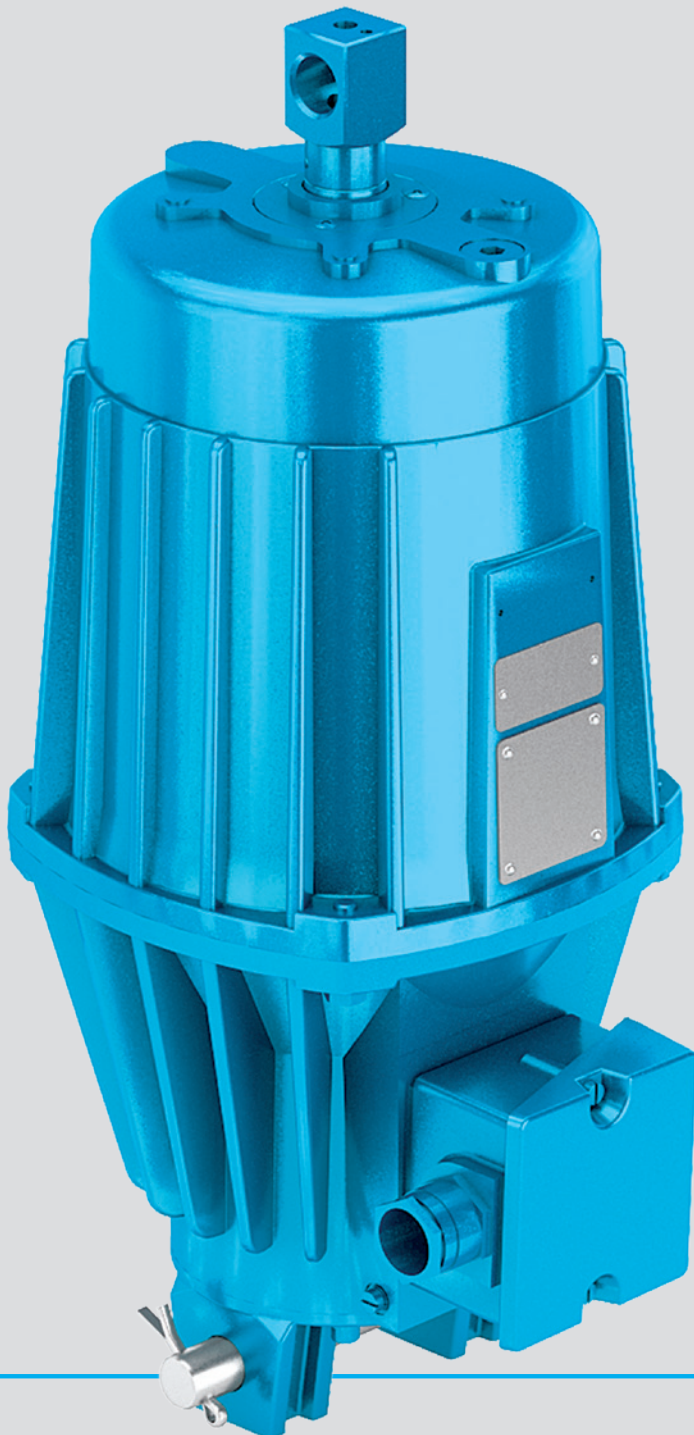


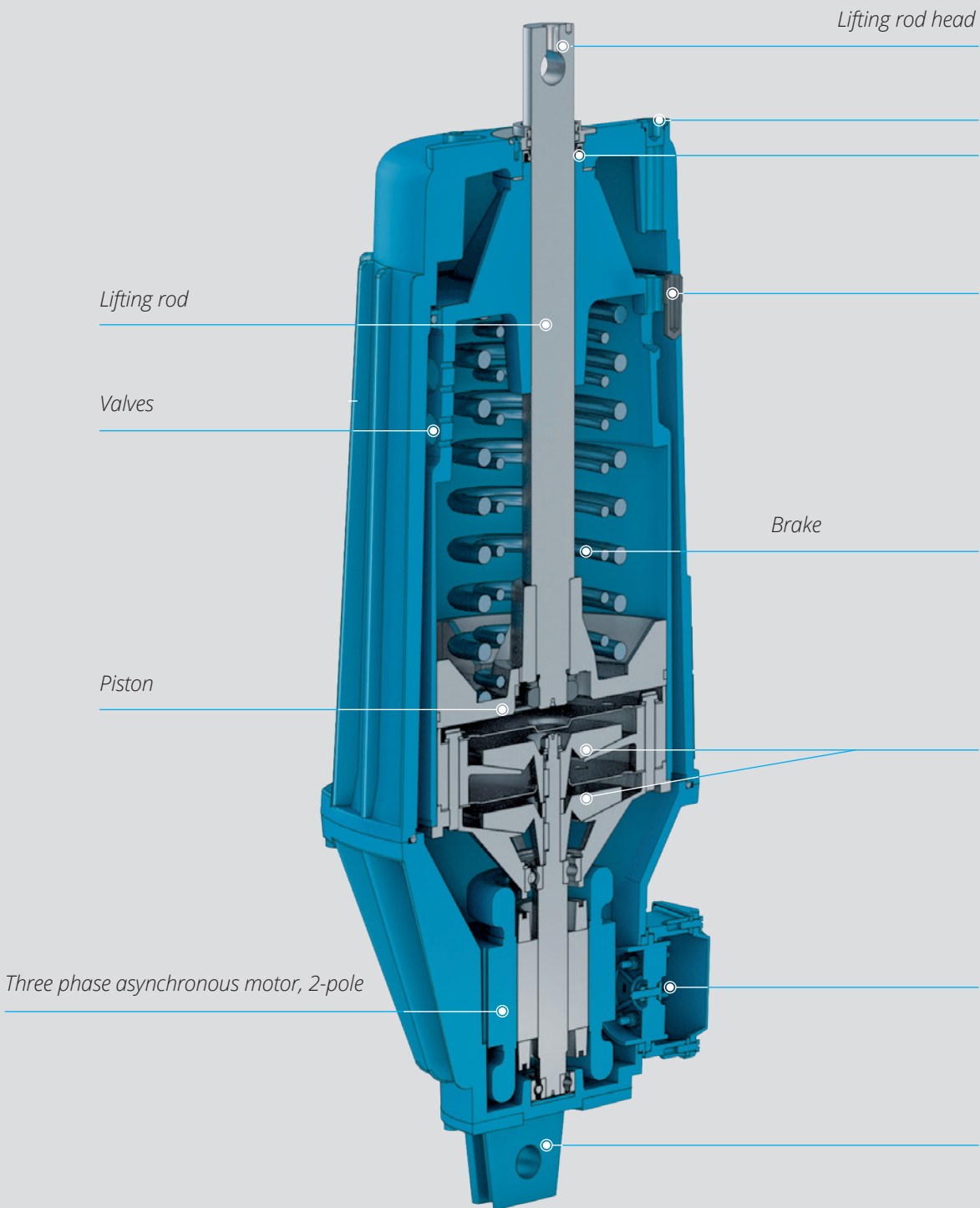
Electro hydraulic thrusters.
THE ORIGINAL. BE SAFE.

EMG ELHY® EB series



EMG ELHY® EB series

Design, function and advantages



¹⁾ Auxiliary equipment

Area of application

In addition to a wide range of applications in the mechanical engineering industry, materials lifting and handling can be considered as the main uses of industrial brakes offered on the market. Drive and brake problems can be solved using a drum brake or a shoe brake which is still quite common or by using industrial type disk brakes. As the requirements with respect to driving power, controllability and availability have clearly increased,

advanced electrical engineering and electronics have become ever more important catering for these demands. Although most components of modern systems are electrical and electronic, the mechanical safety brake, with the electrohydraulic EMG ELHY® brake thruster, still has the most important role to play: as the last link in the chain, it ensures safety for man and machine in the event of power failure.

Technical values

| Type TGL 35868 | Lifting force [N] | Stroke path [mm]** | Power con- sumption [W] | Current consumption [A] at 400 V 50 Hz | Switching frequency with S3 operation [c/h] | Weight [kg] |
|-------------------|----------------------|-----------------------|----------------------------|---|--|----------------|
| EB 12/... | 220 | 50 | 160 | 0.4 | 2000 | 12 |
| EB 20/... | 300 | 50 | 180 | 0.4 | 2000 | 11 |
| EB 50/... | 500 | 50 - 100 | 200 | 0.4 | 2000 | 14 - 15* |
| EB 80/... | 800 | 60 - 160 | 300 | 0.5 | 2000 | 19 - 26* |
| EB 125/... | 1250 | 60 - 160 | 400 | 0.7 | 2000 | 19 - 26* |
| EB 150/... | 1500 | 60 - 160 | 400 | 0.7 | 2000 | 19 - 26* |
| EB 250/... | 2500 | 60 - 160 | 500 | 0.9 | 2000 | 33 - 40* |
| EB 320/... | 3200 | 100 | 600 | 1.1 | 2000 | 40 |
| EB 630/... | 6300 | 120 | 850 | 1.6 | 240 | 45 |
| Type DIN 15430 | Lifting force [N] | Stroke path [mm]** | Power con- sumption [W] | Current consumption [A] at 400 V 50 Hz | Switching frequency with S3 operation [c/h] | Weight [kg] |
| EB 220-... | 220 | 50 | 160 | 0.4 | 2000 | 12 |
| EB 300-... | 300 | 50 | 180 | 0.4 | 2000 | 11 |
| EB 500-... | 500 | 60 - 120 | 200 | 0.4 | 2000 | 14 - 15* |
| EB 800-... | 800 | 60 - 120 | 300 | 0.5 | 2000 | 19 - 25* |
| EB 1250-... | 1250 | 60 - 120 | 400 | 0.7 | 2000 | 26 |
| EB 2000-... | 2000 | 60 - 120 | 500 | 0.8 | 2000 | 33 - 40* |
| EB 3000-... | 3000 | 60 - 120 | 600 | 0.9 | 2000 | 40 |
| EB 6300-... | 6300 | 120 | 850 | 1.6 | 240 | 45 |

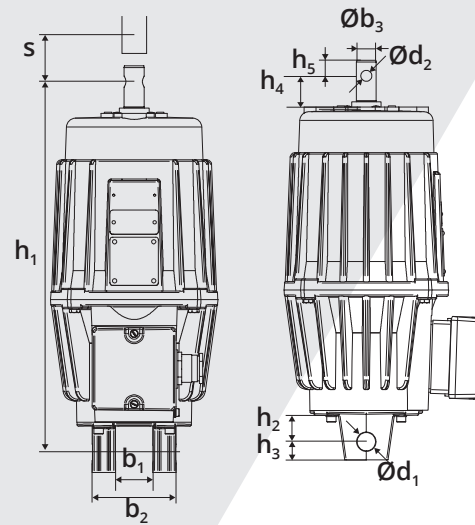
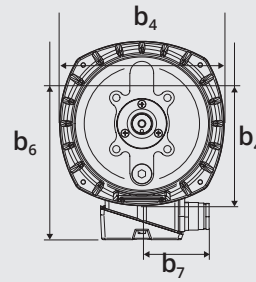
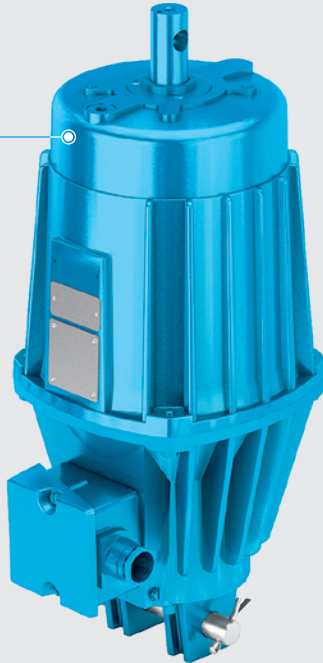
* depending on stroke path ** further on request

Stroke work (N cm) = Lifting force x stroke path

EMG ELHY® EB series

EB TGL 35868

EB 50/50

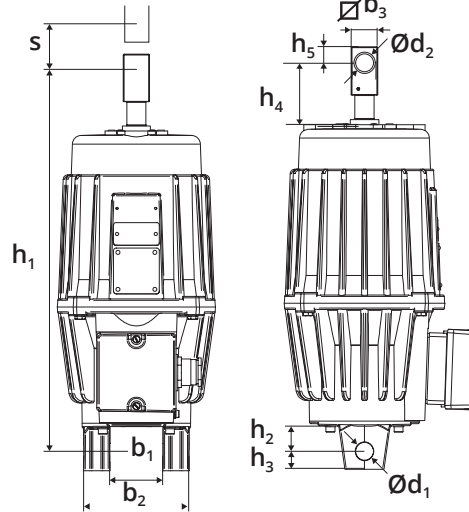
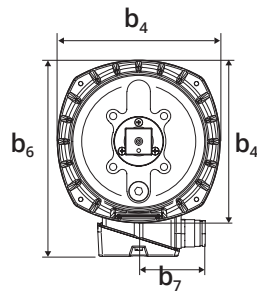


| Size | Type | h_1 +/-1 | s | b_1 +2 | b_2 +1 | b_3 e8 | b_4 | b_6 | b_7 | d_1 +0.1 | d_2 F9 | h_2 | h_3 +1 | h_4 +/-1 | h_5 |
|------|------------------------|---------------|-----|-------------|-------------|-------------|-------|-------|-------|---------------|-------------|-------|-------------|---------------|-------|
| 0 | EB 12 -1 ¹⁾ | 272 | 50 | - | - | 20 | 162 | 236 | 100 | 16.1 | 12 | - | - | 23 | 17 |
| | EB 12 -2 ²⁾ | 286 | 50 | 40 | 80 | 20 | 162 | 236 | 100 | 16.1 | 12 | 20 | 16 | 23 | 17 |
| | EB 12 -3 ³⁾ | 314 | 50 | 40 | 80 | 20 | 162 | 236 | 100 | 16.1 | 12 | 38 | 16 | 23 | 17 |
| 1 | EB 20 | 380 | 50 | 40 | 80 | 21.5 | 150 | 200 | 100 | 20.2 | 12 | 30 | 20 | 30 | 17 |
| 2 | EB 50 | 400 | 50 | 40 | 90 | 21.5 | 180 | 220 | 100 | 20.2 | 12 | 30 | 20 | 32 | 17 |
| | EB 50 | 452 | 100 | 40 | 90 | 21.5 | 180 | 220 | 100 | 20.2 | 12 | 30 | 20 | 32 | 17 |
| 3 | EB 80. 125. 150 | 458 | 60 | 40 | 90 | 27.5 | 208 | 232 | 100 | 20.2 | 16 | 30 | 25 | 36 | 21 |
| | EB 80. 125. 150 | 573 | 160 | 40 | 90 | 27.5 | 208 | 232 | 100 | 20.2 | 16 | 30 | 25 | 36 | 21 |
| 4 | EB 250 | 549 | 60 | 40 | 90 | 35.5 | 250 | 265 | 100 | 20.2 | 20 | 30 | 25 | 36 | 25 |
| | EB 250 | 660 | 160 | 40 | 90 | 35.5 | 250 | 265 | 100 | 20.2 | 20 | 30 | 25 | 36 | 25 |
| | EB 320 | 660 | 100 | 40 | 90 | 35.5 | 250 | 265 | 100 | 20.2 | 20 | 30 | 25 | 36 | 25 |
| 5 | EB 630 | 660 | 120 | 40 | 90 | 35.5 | 250 | 265 | 100 | 20.2 | 20 | 30 | 25 | 36 | 25 |

¹⁾ Flange version ²⁾ Basic unit with cast-on feet ³⁾ Unit with screwed foot plate

EMG ELHY® EB series

EB DIN 15430



EB 500/60



| Size | Type | h_1 +/-1 | s | b_1 +2 | b_2 +1 | b_3 e8 | b_4 | b_6 | b_7 | d_1 +0,1 | d_2 F9 | h_2 | h_3 +1 | h_4 +/-1 | h_5 |
|------|-------------------------|---------------|-----|-------------|-------------|-------------|-------|-------|-------|---------------|-------------|-------|-------------|---------------|-------|
| 0 | EB 120 -2 ²⁾ | 265 | 40 | 25 | 45 | 20 | 110 | 178 | 55 | 12.1 | 12 | 12 | 14 | 20 | 10 |
| | EB 120 -3 ³⁾ | 286 | 40 | 40 | 60 | 20 | 110 | 178 | 55 | 16.1 | 12 | 16 | 23 | 20 | 10 |
| | EB 220 -1 ¹⁾ | 272 | 50 | - | - | 20 | 162 | 236 | 100 | 16.1 | 12 | - | - | 26 | 15 |
| | EB 220 -2 ²⁾ | 286 | 50 | 40 | 80 | 20 | 162 | 236 | 100 | 16.1 | 12 | 20 | 16 | 26 | 15 |
| | EB 220 -3 ³⁾ | 314 | 50 | 40 | 80 | 20 | 162 | 236 | 100 | 16.1 | 12 | 38 | 16 | 26 | 15 |
| 1 | EB 300 | 370 | 50 | 40 | 80 | 25 | 150 | 200 | 100 | 16.1 | 16 | 18 | 16 | 32 | 15 |
| 2 | EB 500 | 435 | 60 | 60 | 120 | 30 | 180 | 220 | 100 | 20.1 | 20 | 30 | 20 | 67 | 18 |
| | EB 500 | 515 | 120 | 60 | 120 | 30 | 180 | 220 | 100 | 20.1 | 20 | 30 | 20 | 95 | 18 |
| 3 | EB 800 | 458 | 60 | 60 | 120 | 30 | 208 | 232 | 100 | 20.1 | 20 | 23 | 22 | 42 | 18 |
| | EB 800 | 530 | 120 | 60 | 120 | 30 | 208 | 232 | 100 | 20.1 | 20 | 23 | 22 | 39 | 18 |
| | EB 1250 | 645 | 60 | 40 | 90 | 40 | 208 | 232 | 100 | 25.1 | 25 | 30 | 25 | 108 | 25 |
| | EB 1250 | 705 | 120 | 40 | 90 | 40 | 208 | 232 | 100 | 25.1 | 25 | 30 | 25 | 168 | 25 |
| 4 | EB 2000 | 645 | 60 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 132 | 25 |
| | EB 2000 | 705 | 120 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 81 | 25 |
| | EB 3000 | 660 | 60 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 36 | 25 |
| | EB 3000 | 705 | 120 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 81 | 25 |
| 5 | EB 6300 | 705 | 120 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 83 | 25 |

Special versions according to DIN 15430

| Size | Type | h_1 +/-1 | s | b_1 +2 | b_2 +1 | b_3 e8 | b_4 | b_6 | b_7 | d_1 +0,1 | d_2 F9 | h_2 | h_3 +1 | h_4 +/-1 | h_5 |
|------|---------|---------------|-----|-------------|-------------|-------------|-------|-------|-------|---------------|-------------|-------|-------------|---------------|-------|
| 2 | EB 320 | 385 | 50 | 40 | 80 | 25 | 180 | 220 | 100 | 16.1 | 16 | 18 | 16 | 30 | 18 |
| | EB 320 | 493 | 100 | 40 | 80 | 25 | 180 | 220 | 100 | 16.1 | 16 | 18 | 16 | 85 | 18 |
| | EB 500 | 435 | 50 | 60 | 120 | 30 | 180 | 220 | 100 | 20.1 | 20 | 30 | 20 | 65 | 18 |
| | EB 500 | 515 | 100 | 60 | 120 | 30 | 180 | 220 | 100 | 20.1 | 20 | 30 | 20 | 95 | 18 |
| 3 | EB 800 | 573 | 160 | 60 | 120 | 30 | 208 | 232 | 100 | 20.1 | 20 | 23 | 22 | 42 | 18 |
| | EB 1250 | 705 | 160 | 40 | 90 | 40 | 208 | 232 | 100 | 25.1 | 25 | 30 | 25 | 168 | 25 |
| | EB 1500 | 645 | 60 | 40 | 90 | 40 | 208 | 232 | 100 | 25.1 | 25 | 30 | 25 | 108 | 25 |
| | EB 1500 | 705 | 160 | 40 | 90 | 40 | 208 | 232 | 100 | 25.1 | 25 | 30 | 25 | 168 | 25 |
| 4 | EB 2500 | 645 | 60 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 152 | 25 |
| | EB 2500 | 705 | 160 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 81 | 25 |
| | EB 3200 | 660 | 100 | 40 | 90 | 40 | 250 | 265 | 100 | 25.1 | 25 | 30 | 25 | 36 | 25 |

¹⁾ Flange version ²⁾ Basic unit with cast-on feet ³⁾ Unit with screwed foot plate

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:
 - 400 V, 50 Hz, 3 ~
 - 500 V, 50 Hz, 3 ~
 - 690 V, 50 Hz, 3 ~
 - 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 devices 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 7.5 – 18 mm)

Operating modes

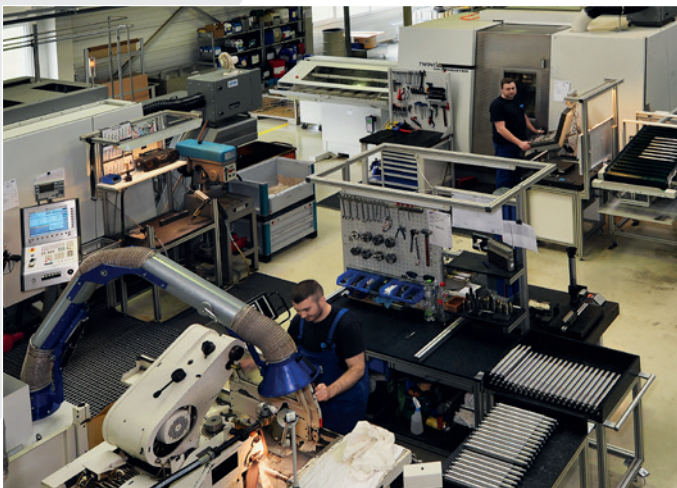
- » Continuous operation S1 and intermittent duty S3 – 60 % duty cycle standard
- » With ambient temperatures > 50 °C deviating technical values (available on request)

Terminal box

- » Terminal board 6-pole, with devices with position indicator Lk/La 3-pole
- » Supply line connection M5
- » Internal protective conductor connection: M5
- » External protective conductor connection: M5
- » Connection Lk/La: M4

Temperature range

- » Broad standard temperature range from – 25 °C to + 40 °C, expandable to – 40 °C to + 70 °C with additional equipment and use of special operating media
- » Deviating temperature on request



EMG ELHY® EB series

Mechanical version

Installation variants

- » The base fastening can be mounted offset through 90°.
- » The lifting rod head at the top rotates in all types.
- » In case of versions with a limit switch, minor modifications are required in order to rotate the pressure strap or fasten the base as required.

Operating fluid

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

Enclosure

- » Standard IP 56, in special version up to IP 66

Paint application per DIN EN ISO 12944

- » 2K Polyacryl coating, layer thickness 80 µm
- » Special paint up to corrosion load C5-M, layer thickness up to 240 µm
- » Standard colour RAL 5008 (grey-blue)

Protective measures

- » Redundant seal against dust and humidity from outside and against oil lost from inside
- » Piston rod QPQ
- » Protective tube against external mechanical influences



Electrical & mechanical auxiliary equipment

Control/Damping spring (R/d-spring)

- » Damping of the load change when closing and opening the brake.
- » The R/D-spring is only effective in conjunction with a C-spring.
- » The installation length "h1" of the device does not change.
- » When setting the working point of the brake, the spring characteristic must be taken into account.
- » Main application: ELHY® control brake

Brake spring (c-spring)

- » Integrated C-spring for generating the brake force. The indicated braking force of the C-spring refers to stroke 0 mm to maximum.

Lifting, lowering or throttling valve (H, S, D)

- » With a built-in lift, lowering or throttling valve, lifting or lowering times as well as both times can be infinitely increased. The adjustable minimum values attain 10 to 20-times the normal values
- » Integrated valves in "open position" result in an extension of the lifting and lowering times with short stroke thrusters of up to approx. 0.4 to 1.0 Sseconds, and with long stroke thrusters of up to approx. 0.7 to 2.0 seconds.
- » The desired lifting or lowering time is set externally on the device in standing position.

Quick lowering switching

- » The lowering times are shortened through the use of three-phase motor capacitors, or by short-circuiting the stator winding via a contactor.
- » The lowering times reduce by approx. 15 %.

Increased corrosion protection

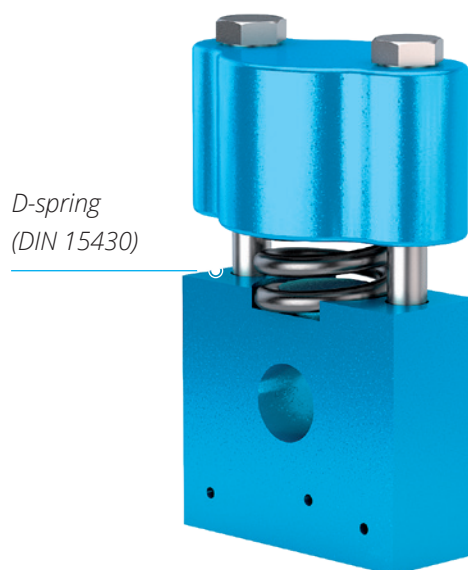
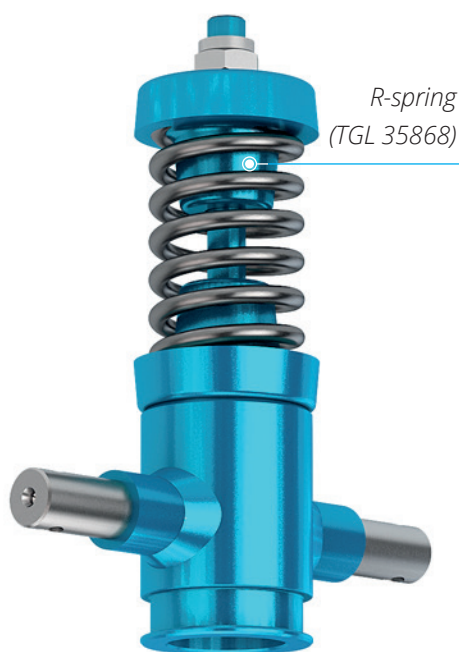
- » Increased corrosion protection is necessary with the use of ELHY® devices in environments of aggressive media and/or high relative humidity with the resultant formation of condensation.
- » Increased protection in the motor: The motor compartment is under oil and does not require any additional corrosion protection.
- » Increased external protection: Through special paint application, see "Mechanical version"



Versions with brake spring

| Type TGL 35868 | Brake spring force (c-spring) N] |
|-----------------|----------------------------------|
| EB 12/50 C12 | 110 - 160 |
| EB 20/50 C20 | 220 - 260 |
| EB 50/50 C32 | 370 - 450 |
| EB 50/50 C50 | 540 - 680 |
| EB 80/60 C80 | 740 - 1060 |
| EB 125/60 C125 | 1200 - 1630 |
| EB 150/60 C125 | 1200 - 1630 |
| EB 250/60 C200 | 1900 - 2500 |
| EB 320/100 C320 | 2540 - 3690 |

| Type DIN 15430 | Brake spring force (c-spring) N] |
|------------------|----------------------------------|
| EB 220-50 C220 | 200 - 290 |
| EB 300-50 C270 | 260 - 310 |
| EB 500-60 C500 | 540 - 680 |
| EB 800-60 C800 | 740 - 1060 |
| EB 1250-60 C1250 | 1200 - 1630 |
| EB 2000-60 C2000 | 1900 - 2500 |
| EB 3000-60 C3200 | 2540 - 3690 |



EMG ELHY® EB series

Electrical & mechanical auxiliary equipment

Internal level indicator (LK)

- » Indication whether the piston rod is retracted or extended (brake closed, open or lining wear)
- » Switching current max. 0.5 mA
- » Switching voltage max. 250 V AC/DC

Position measuring systems (LA)

- » Internal analogue measuring systems for monitoring the entire stroke path
- » Version depending on stroke length
- » Signal current 4...20 mA

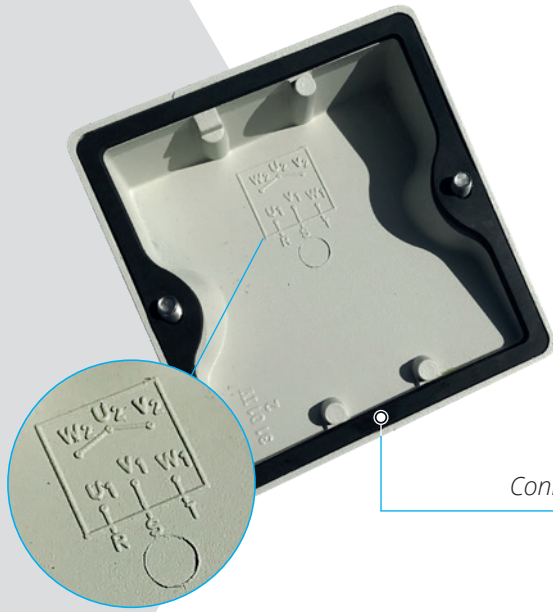
Limit switches (LI and LM)

- » Mechanical or inductive limit switches can be fitted to all ELHY® thrusters for electrical indication of the release and brake positions.
- » Detailed information available in the data sheet of the limit switches



EMG ELHY® EB series

Electrical connection



Connection diagram

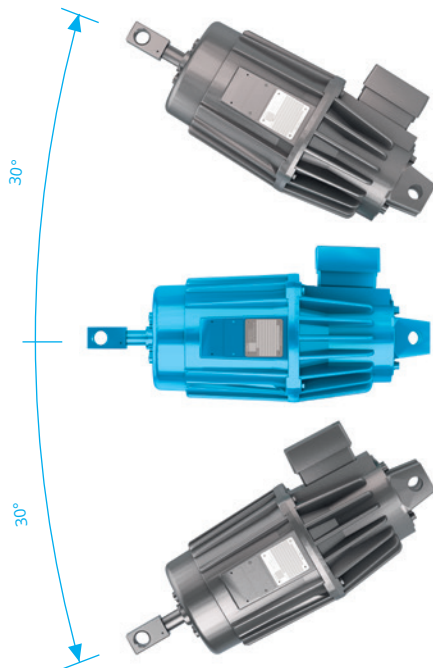
- » The connection diagram can be found in the terminal box cover
- » Motor is voltage interchangeable for delta (Δ) or star (Y) switching
- » The devices exhibit star (Y) switching when delivered. Phase sequence arbitrary with connection

ELHY® EB series

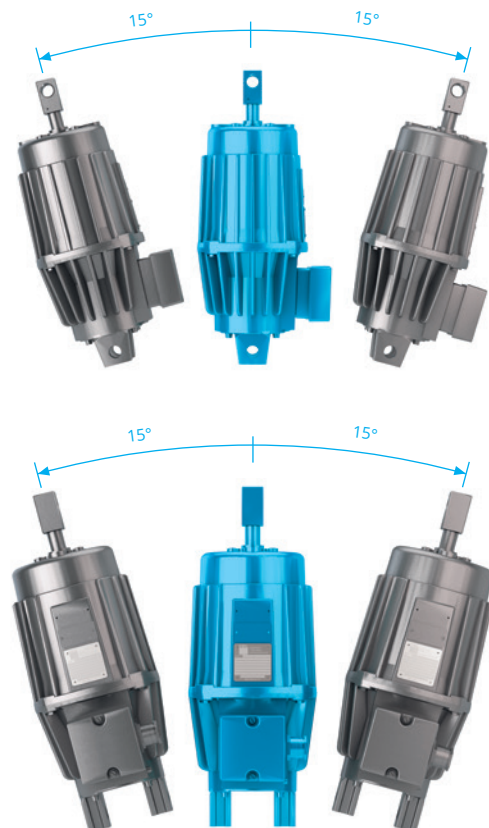
Installation position

- » The pivoting of the device must be ensured at the installation into the brake.
- » There must be no transverse forces on the piston bar.

Horizontal installation I



Vertical installation II



The logo for EMG, consisting of the letters 'EMG' in a bold, white, sans-serif font. The background of the entire page is a blue-tinted photograph of industrial machinery, with large circular components and a metal structure visible. A white line graphic starts from the left edge, goes down, then curves around the right side of the text area, and ends at the bottom right corner.

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