ELDRO®

ELECTRO HYDRAULIC THRUSTERS

THE ORIGINAL. BE SAFE.

STANDARD SERIES ED
DESIGN, FUNCTION AND ADVANTAGES

- PRESSURE STRAP
- REDUNDANT DUST PROTECTION SEAL
- PISTON ROD PROTECTIVE TUBE
- PISTON ROD
- OIL FILLER OPENING
- REDUNDANT SEAL TO THE HYDRAULIC CHAMBER
- BRAKE SPRING (C-SPRING)
- HYDRAULIC CYLINDER
- OIL GUIDE RING
- HYDRAULIC PUMP
- TERMINAL BOX
- BASE FASTENING
- THREE-PHASE ASYNCHRONOUS MOTOR, 2-POLE

© Auxiliary equipment
ED DEVICE OVERVIEW

CHARACTERISTIC FEATURES

The electro hydraulic system of the ELDRO® devices, in conjunction with the straightforward integration in brake systems and the simple electrical start-up, result in the following features under the diverse application conditions:

- High operational safety
- Long service life due to wear-free work under constant self-lubrication
- Soft and impact-free mode of operation, as a systemic result of the hydraulic working principle
- Short actuating times
- Approved continuous operation S1 in standard temperature range of -25 °C up to +50 °C
- High switching frequency of up to 2,000 cycles per hour in switching operation S3
- Reversing operation without limitations
- Easy to install and de-install
- Arbitrary direction of motor rotation, meaning no changeover contactors required
- Overloading not possible during operation
- Arbitrary external limiting of the stroke path
- Stepless extension of the lifting and/or lowering times through the installation of valves
- The fill level of the operating medium is optimised according to the application conditions

TECHNICAL VALUES

<table>
<thead>
<tr>
<th>Type</th>
<th>Lifting force [N]</th>
<th>Stroke path [mm]**</th>
<th>Power consumption [W]</th>
<th>Current consumption [A] at 400 V/50 Hz</th>
<th>Switching frequency with S3 operation [c/h]</th>
<th>Weight [kg]</th>
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<td>120</td>
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<td>330</td>
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<td>24 – 27*</td>
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<td>2,000</td>
<td>60 – 120</td>
<td>450</td>
<td>1.30</td>
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<tr>
<td>Ed 301/…</td>
<td>3,000</td>
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<td>500</td>
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<td>400 – 1,500*</td>
<td>40 – 50*</td>
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<td>600</td>
<td>1.40</td>
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<td>5,000</td>
<td>80</td>
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<tr>
<td>Ed 630/…</td>
<td>6,300</td>
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<td>700</td>
<td>1.80</td>
<td>400</td>
<td>70</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Lifting force [N]</th>
<th>Stroke path [mm]**</th>
<th>Power consumption [W]</th>
<th>Current consumption [A] at 220 V DC</th>
<th>Switching frequency with S3 operation [c/h]</th>
<th>Weight [kg]</th>
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<tbody>
<tr>
<td>Eg 50/…</td>
<td>500</td>
<td>60 – 120</td>
<td>350</td>
<td>1.60</td>
<td>600 – 1,000*</td>
<td>27 – 31*</td>
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<tr>
<td>Eg 80/…</td>
<td>800</td>
<td>60 – 120</td>
<td>330</td>
<td>1.50</td>
<td>600 – 1,000*</td>
<td>27 – 31*</td>
</tr>
<tr>
<td>Eg 121/…</td>
<td>1,250</td>
<td>60 – 120</td>
<td>330</td>
<td>1.50</td>
<td>500 – 1,000*</td>
<td>43 – 44*</td>
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<td>2.00</td>
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<td>470</td>
<td>2.20</td>
<td>400 – 800*</td>
<td>43 – 44*</td>
</tr>
</tbody>
</table>

* depending on stroke path  
** further on request  

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

Ed 12/4  Ed 23/5  Ed 30/5  Ed 80/6

Ed 301/6  Ed 630/9
**ED 12**

- Type: ED 12
- Dimensions in mm:
  - A: 265
  - C: 20
  - D: 10
  - E: 12
  - E₁: 20
  - F: 12
  - G: 12
  - H: 110
  - K: 55
  - L: 45
  - M: 25
  - N: 178
  - O: 14
  - P: 100
- B = stroke path (variable) | E convertible to E₁ by removing the clamping bush

**ED 23 TO ED 25**

- Type: ED 23/ED 25
- Dimensions in mm:
  - A: 286
  - C: 26
  - D: 12
  - E: 12
  - E₁: 20
  - F: 16
  - G: 20
  - H: 160
  - K: 80
  - L: 80
  - M: 40
  - N: 200
  - O: 16
  - P: 92
- All dimensions in mm
- B = stroke path (variable) | E convertible to E₁ by removing the clamping bush
# ED 30 TO ED 80 AND ED 125

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<thead>
<tr>
<th>Type</th>
<th>Type</th>
<th>A</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>E₁</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>R</th>
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<tbody>
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<td>-</td>
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<td>20</td>
<td>23</td>
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<td>90</td>
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<tr>
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<td>-</td>
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<td>60</td>
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<td></td>
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<td>530</td>
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<td>-</td>
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<td>120</td>
<td>60</td>
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All dimensions in mm

B = stroke path (variable) | E convertible to E₁ by removing the clamping bush
**Electro Hydraulic Thrusters ELDRO®**

**ED 121 TO ED 630**

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<tr>
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<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>R</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>Ed 121/…</td>
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<td>25</td>
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<td>25</td>
<td>-</td>
</tr>
<tr>
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<td>42</td>
<td>25</td>
<td>25</td>
<td>40</td>
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<td>44</td>
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<td>80</td>
<td>260</td>
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<td>-</td>
</tr>
<tr>
<td>Ed 201/…</td>
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<td>38</td>
<td>25</td>
<td>25</td>
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<td>35</td>
<td>240</td>
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<td>40</td>
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<td>-</td>
</tr>
<tr>
<td>Ed 301/…</td>
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<td>25</td>
<td>40</td>
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<td>35</td>
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<tr>
<td>Long stroke thrusters</td>
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<tr>
<td>Ed 121/…</td>
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<td>Ed 185/…</td>
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<td>Ed 201/…</td>
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<td>Ed 301/…</td>
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<td>Ed 301/…*</td>
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<td>40</td>
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<td>-</td>
</tr>
<tr>
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<td>40</td>
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<td>40</td>
<td>328</td>
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<td>-</td>
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</tbody>
</table>

*All dimensions in mm

B = stroke path (variable) | * from 130 mm stroke path
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

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

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 devices are star (Y) connected on delivery
- Alternating current versions (with capacitor for Steinmetz circuit) on request
- DC current version see separate brochure

TERMINAL BOX
- Terminal board 6-pole, with devices with heating the terminal board is 9-pole
- Supply line connection M4
- Internal protective conductor connection: M4
- External protective conductor connection: M6

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

INSTALLATION VARIANTS
- In case of types from Ed 50, the base fastening can be mounted offset through 90°.
- With the types Ed 23/5 and Ed 30/5, the base fastening is cast on the motor.
  - Here, 90° offset installation is possible with a special motor housing.
- The pressure strap 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 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 7022 (umbra grey)

PROTECTIVE MEASURES
- Redundant dust protection seal
- Redundant seal with the hydraulic chamber
- Piston rod chromium plated to dimension
- With Ed 121, Ed 201, Ed 301, Ed 350, Ed 630 additional piston rod protective tube against external mechanical influences
DAMPING SPRING (D-SPRING)
- Damping of the load change when closing and opening the brake.
- The D-spring is only effective in conjunction with a C-spring.
- With the installation of the D-spring, it is not possible to fit a limit switch.
- The installation length “A” of the device does not change.
- When specifying the working point of the brake, dimension “z” must be taken into account (see device specific dimension drawing).
- Main application: ELDRO® control brake

BRAKE SPRING (C-SPRING)
- Integrated C-spring for generating the brake force. The specified brake force of the C-spring is reached at 1/3 of the nominal stroke.

VERSIONS WITH BRAKE SPRING

<table>
<thead>
<tr>
<th>Type</th>
<th>Brake spring force (C-spring) [N]</th>
</tr>
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<tbody>
<tr>
<td>Ed 23/5</td>
<td>180</td>
</tr>
<tr>
<td>Ed 30/5</td>
<td>270</td>
</tr>
<tr>
<td>Ed 50/6</td>
<td>460</td>
</tr>
<tr>
<td>Ed 80/6</td>
<td>750</td>
</tr>
<tr>
<td>Ed 121/6</td>
<td>1,200</td>
</tr>
<tr>
<td>Ed 185/6</td>
<td>1,900</td>
</tr>
<tr>
<td>Ed 201/6</td>
<td>1,900</td>
</tr>
<tr>
<td>Ed 301/6</td>
<td>2,700</td>
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</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Brake spring force (C-spring) [N]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eg 50/6</td>
<td>460</td>
</tr>
<tr>
<td>Eg 80/6</td>
<td>750</td>
</tr>
<tr>
<td>Eg 121/6</td>
<td>1,200</td>
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<td>Eg 201/6</td>
<td>1,900</td>
</tr>
<tr>
<td>Eg 301/6</td>
<td>2,700</td>
</tr>
</tbody>
</table>
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.
- Integrated valves in “open position” result in an extension of the lifting and lowering times with short stroke thrusters of up to approx. 0.1 to 0.2 seconds, and with long stroke thrusters of up to approx. 0.2 to 0.4 seconds.
- The desired lifting or lowering time is set externally on the device.

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 %.

HEATING
- With ambient temperatures below ~ 25 °C and use of the standard operating fluid, the ELDRO® devices must be equipped with low temperature heating.
- The task of the heating lies in keeping the operating fluid within the liquid range.
- In order to avoid condensation in the motor at high humidity, the ELDRO® devices can be equipped with parking heaters. The temperature of the ELDRO® device is kept slightly above the ambient temperature and the formation of condensation is thereby avoided.

INCREASED CORROSION PROTECTION
- Increased corrosion protection is necessary with the use of ELDRO® devices in environments of aggressive media and/or high relative humidity with the resultant formation of condensation.
  - Increased protection in the motor:
    Vacuum full potting of the stator or the use of a parking heater
  - Increased external protection:
    Through special paint application, see “Mechanical version”