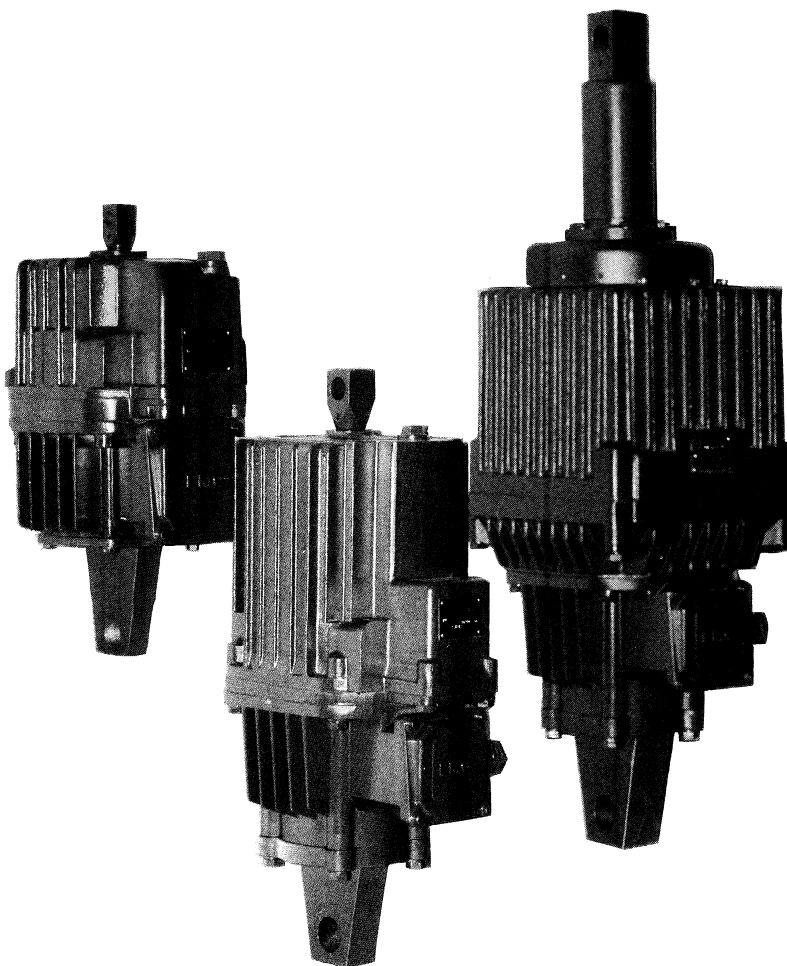
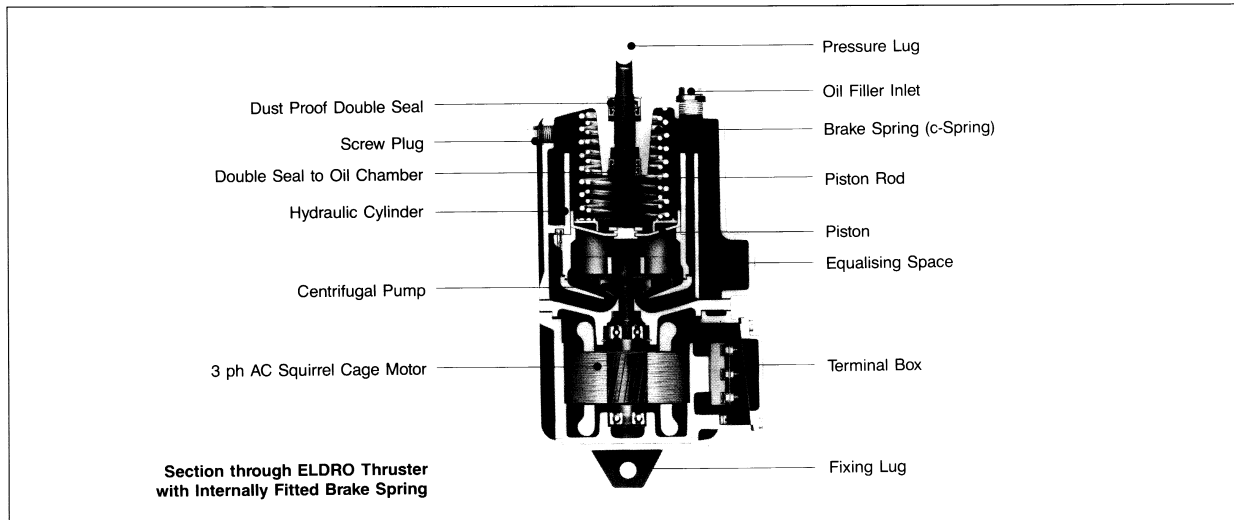


# Technical Data for Electro-hydraulic Thrusters ELDRO®

Types Ed 23/5.5, Ed 50/6.5, Ed 80/6.5, Ed 80/6.6, Ed 201/12.5, Ed 301/12.5, Ed 350/20.2



# Characteristics



## Technical Data

| Type        | Lifting Force<br>N | Stroke<br>mm | Thrust<br>N cm | Power Consumption <sup>1)</sup><br>W | Current Consumption at 415 V <sup>1)</sup><br>A | Duty Rating at S3 – 60% Duty Cycle <sup>2)</sup><br>c/h | Weight<br>kg |
|-------------|--------------------|--------------|----------------|--------------------------------------|---|---|--------------|
| Ed 23/5.5   | 220                | 50           | 1100           | 165                                  | 0.5   | 2000  | 10           |
| Ed 50/6.5   | 500                | 60           | 3000           | 210                                  | 0.5   | 2000  | 23           |
| Ed 80/6.5   | 800                | 60           | 4800           | 260                                  | 0.55  | 2000  | 24           |
| Ed 80/6.6   | 1100               | 60           | 6600           | 310                                  | 0.6   | 2000  | 24           |
| Ed 201/12.5 | 2000               | 120          | 15000          | 450                                  | 1.2   | 1200  | 39           |
| Ed 301/12.5 | 3000               | 120          | 36000          | 550                                  | 1.3   | 900   | 40           |
| Ed 350/20.2 | 3500               | 200          | 70000          | 550                                  | 1.3   | 400   | 75           |

- All technical data are mean values related to operating temperature of unit.  
 1) Values at end-position of piston. During lifting operation the specified values multiply.  
 At – 25 °C operating temperature of unit the current consumption is approx. 1.5 times that of the current consumption at + 20 °C.  
 2) Continuous operation S1 and intermittent service S3 are permitted up to + 50 °C ambient temperature.

Approximate calculation for current consumption for non-standard voltages:

$$I_x = \frac{U_{(415 V)}}{U_{(x)}} \cdot I_{(415 V)}$$

## Performance in Service depending on Ambient Temperatures

| Temperature range                   | Hydraulic fluid               | Performance in service   |
|-------------------------------------|-------------------------------|--|
| – 25 °C to + 50 °C                  | HL 10, DIN 51524, part 1      | In the lower range of ambient temperatures the lifting times may increase up to four times the specified lifting times when the unit is operated the first time. The lowering times remain unaffected. |
| over + 50 °C                        | Special fluid                 | Enquire  |
| – 35 °C up to + 40 °C <sup>1)</sup> | Special low temperature fluid | Space heater not required.   |
| below – 25 °C <sup>1)</sup>         | HL 10, DIN 51524, part 1      | Space heater required in unit. Connect up heater in terminal box using an additional Pg 16 cable gland. 220 or 110 volt connected voltage. Thermostatic control to be provided by customer.            |

1) The details given apply for vertical positioning when temperatures drop below – 25 °C.

# Description

## Electrical Design

### Motor

3 ph AC squirrel cage motor, construction according to VDE 0530. For performance details refer to technical data. Insulation class F. Enclosure IP 65 (DIN 40050)

### Modes of Operation

Continuous operation S1 and intermittent service S3–60% duty cycle. > 50 °C ambient temperature technical data change – please enquire.

### Voltages and Frequencies

240/415 V, 50 Hz, 3 ph AC  
All units are on principle star (Y) connected at delivery.  
Special windings 110 V–660 V, 3 ph AC at extra charge.  
60 Hz design at extra charge.  
DC and AC versions on request.

### Terminal Box

6-pole terminal board with connection screws M4.  
Protective conductor terminal M4.  
Earthing screw M5 (outside on terminal box).

### Cable Gland

Cable gland Pg 21 for conductor sizes up to 4x2.5 mm<sup>2</sup> (∅ 17–19 mm).

### Motor Circuit Brakers

When protecting the units by motor circuit brakers the thermal trigger should not be set on 1.5 times the holding current (see rating plate) for all types.

## Key to Types

Example:  
Ed 50/6.5 H, S, E, EB

|        |                          |
|--------|--------------------------|
| Ed     | ELDRO, 3 ph AC version   |
| 50/6.5 | Type                     |
| H      | Lifting valve            |
| S      | Lowering valve           |
| E      | Limit switch, mechanical |
| EB     | Limit switch, inductive  |

## Mechanical Design

### Assembly Dimensions

refer to dimension tables.

### Mounting Positions

Vertical: piston rod uppermost.  
Horizontal and intermediate positions: rating plate to be on top.

### Mounting Options

(except units with limit switches)  
The base mounting is bolted and 90° rotatable. The top pressure lug is rotatable. For details refer to dimension drawings.

### Working Fluid

Hydraulic oil HL 10 acc. to DIN 51524, part 1, filled at factory.

### Safety Measures

Piston rod chromium plated to size.  
Dust proof double seal.  
Double seal to oil chamber.  
Piston rod tube to protect against the ingress of foreign bodies with type Ed 350.

### Standard Paint

Synthetic resin lacquer varnish, impact and scratch resistant.  
Coating thickness ~ 40 μ.  
Tint: RAL 7022 (umbergrey), other colours and coating 'Increased Protection against Corrosion' at extra charge.

## Additional Equipment

All additional equipment is to be ordered separately at extra charge.

### Lifting or Lowering Valve (H, S, HS)

Built-in lifting (H) and/or lowering (S) valves for stepless prolongation of normal lifting or lowering times. The adjustable minimum values obtain a level 10–20 times the standard values.  
Built-in valves in setting 'open' result in increased lifting and lowering times for short stroke units of approx. 0.1 to 0.2 seconds and for long stroke units of approx. 0.2 to 0.4 seconds.  
The valves can be adjusted externally.

### High-Speed Lowering Circuit

By means of motor capacitors, or by short-circuiting the stator winding and inserting a contactor. The lowering times are reduced by approx. 15%.

### Heater

For operation below –25 °C a heating element must be installed; also to be used as a stand-by heater.

### Increased Protection against Corrosion

Application: aggressive media and/or high relative humidity and the resulting danger of formation of condensate.  
Motor: vacuum fully potted stator, applicable also instead of idling space heater (on request).  
Special paint: Polyurethane lacquer (KOR).  
Primer: one coat zinc phosphate.  
Paintfinish: two coats polyurethane varnish.  
Tint: RAL 7022 (umbergrey).

### Limit Switches

For electrical indication of a freely selectable position of the piston or of brake lining wear, mechanical or inductive limit switches can be fitted as standard.  
The appropriate types of switches are listed in the technical data sheet 'Limit Switches'.

# Stroke-Time-Diagrams

Diagrams taken under load  
at + 20 °C operating temperature  
of unit

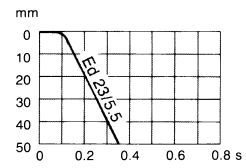
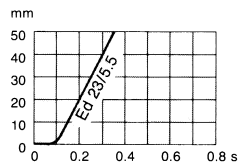
When applying the high-speed lowering circuit,  
the given lowering times are reduced by approx. 15%

Types

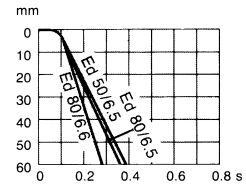
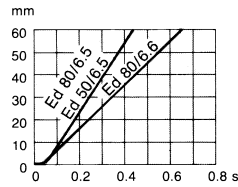
Lifting

Lowering

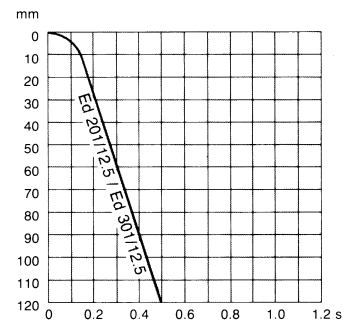
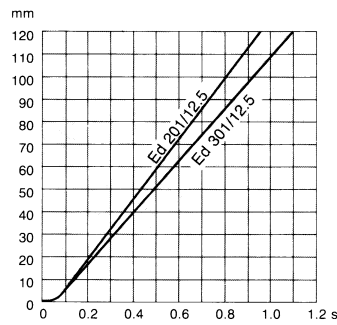
Ed 23/5.5



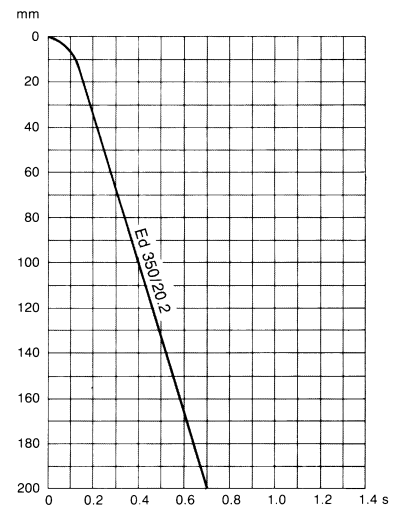
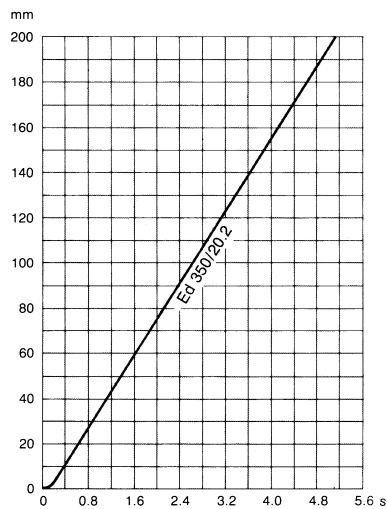
Ed 50/6.5, Ed 80/6.5, Ed 80/6.6



Ed 201/12.5, Ed 301/12.5

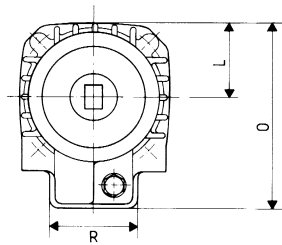
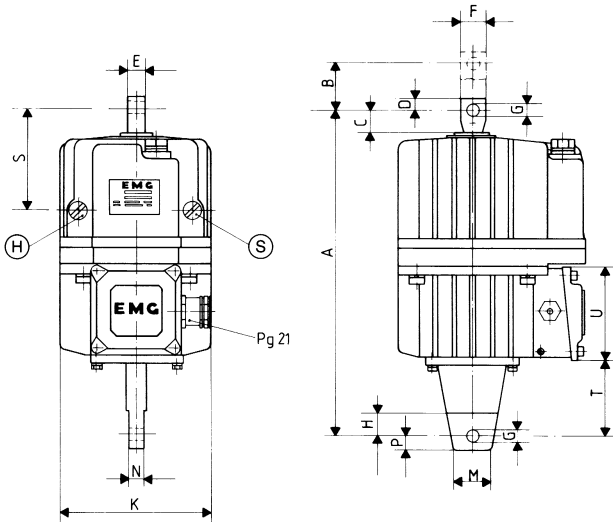


Ed 350/20.2



# Dimension Drawings

## Ed 23/5.5



(H) = Lifting valve      (S) = Lowering valve

The motor housing with terminal box can be rotated in steps of 90° (indicate when ordering).

Mounting options, except units with limit switches:

The base mounting is bolted and 90° rotatable, the top pressure lug is rotatable

Mass with oil 10 kg

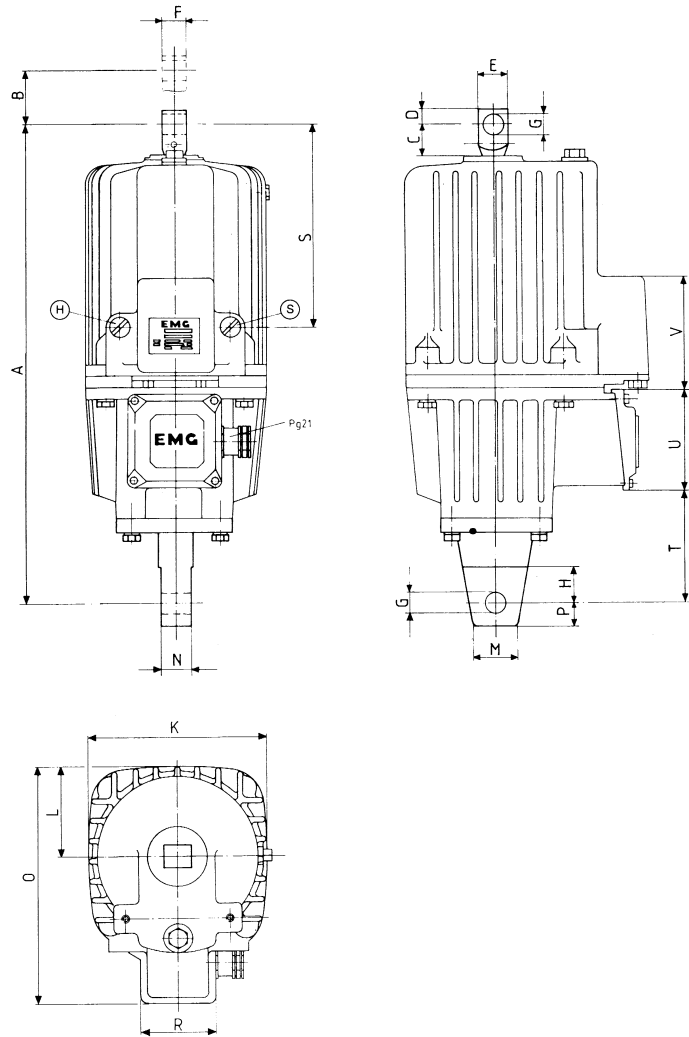
### Dimension Table

|           |     | A     | B    | C    | D    | E    | F    | G <sub>max.</sub> | G <sub>min.</sub> | H    | K   | L    | M    | N    | O    | P    | R    | S    | T    | U    |
|-----------|-----|-------|------|------|------|------|------|-------------------|-------------------|------|-----|------|------|------|------|------|------|------|------|------|
| Ed 23/5.5 | mm  | 349   | 50   | 26   | 13   | 19   | 26   | 12.731            | 12.725            | 26   | 160 | 80   | 41   | 19   | 200  | 16   | 92   | 110  | 81   | 100  |
|           | in. | 13.74 | 1.97 | 1.02 | 0.51 | 0.75 | 1.02 | 0.503             | 0.501             | 1.02 | 6.3 | 3.15 | 1.61 | 0.75 | 7.87 | 0.63 | 3.62 | 4.33 | 3.19 | 3.94 |

Subject to modification without notice due to quality control, research and development.

# Dimension Drawings

Ed 50/6.5, Ed 80/6.5, Ed 80/6.6



The motor housing with terminal box can be rotated in steps of 90° (indicate when ordering).  
 Mounting options, except units with limit switches:  
 The base mounting is bolted and 90° rotatable,  
 the top pressure lug is rotatable

(H) = Lifting valve      (S) = Lowering valve

Ed 50/6.5: Mass with oil 23 kg  
 Ed 80/6.5: Mass with oil 24 kg  
 Ed 80/6.6: Mass with oil 24 kg

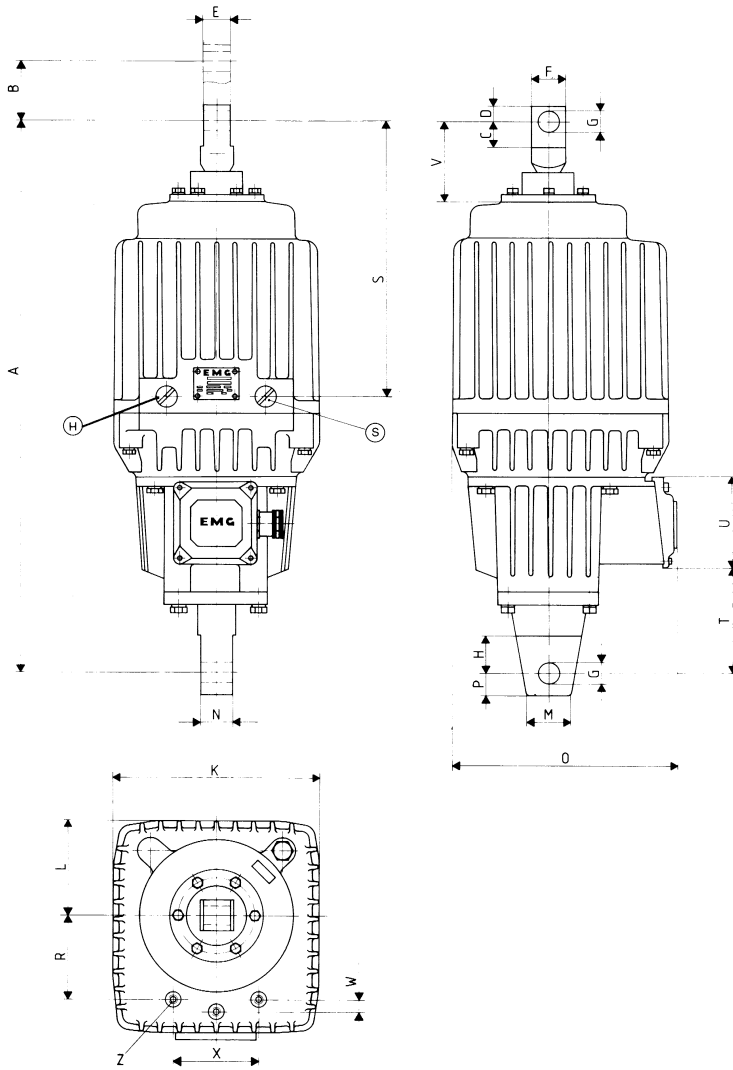
**Dimension Table**

|                  |     | A     | B    | C    | D    | E    | F    | G <sub>max.</sub> | G <sub>min.</sub> | H    | K    | L    | M    | N    | O   | P    | R    | S    | T    | U    | V    |
|------------------|-----|-------|------|------|------|------|------|-------------------|-------------------|------|------|------|------|------|-----|------|------|------|------|------|------|
| <b>Ed 50/6.5</b> | mm  | 445   | 60   | 36   | 14   | 29   | 22   | 19.13             | 19.08             | 27   | 195  | 97   | 41   | 25   | 254 | 21   | 90   | 217  | 62   | 100  | 120  |
|                  | in. | 17.52 | 2.36 | 1.42 | 0.55 | 1.14 | 0.87 | 0.753             | 0.751             | 1.06 | 7.68 | 3.82 | 1.61 | 0.98 | 10  | 0.83 | 3.54 | 8.54 | 2.44 | 3.94 | 4.72 |
| <b>Ed 80/6.5</b> | mm  | 508   | 60   | 36   | 16   | 30   | 25   | 22.3              | 22.25             | 38   | 195  | 97   | 48   | 32   | 254 | 24   | 90   | 217  | 110  | 100  | 120  |
|                  | in. | 20    | 2.36 | 1.42 | 0.63 | 1.18 | 0.98 | 0.878             | 0.876             | 1.5  | 7.68 | 3.82 | 1.89 | 1.26 | 10  | 0.94 | 3.54 | 8.54 | 4.33 | 3.94 | 4.72 |
| <b>Ed 80/6.6</b> | mm  | 508   | 60   | 36   | 16   | 30   | 25   | 22.3              | 22.25             | 38   | 195  | 97   | 48   | 32   | 254 | 24   | 90   | 217  | 110  | 100  | 120  |
|                  | in. | 20    | 2.36 | 1.42 | 0.63 | 1.18 | 0.98 | 0.878             | 0.876             | 1.5  | 7.68 | 3.82 | 1.89 | 1.26 | 10  | 0.94 | 3.54 | 8.54 | 4.33 | 3.94 | 4.72 |

Subject to modification without notice due to quality control, research and development.

# Dimension Drawings

Ed 201/12.5, Ed 301/12.5



The motor housing with terminal box can be rotated in steps of 90° (indicate when ordering).  
 Mounting options, except units with limit switches:  
 The base mounting is bolted and 90° rotatable,  
 the top pressure lug is rotatable

(H) = Lifting valve      (S) = Lowering valve

Ed 201/12.5: Mass with oil 39 kg  
 Ed 301/12.5: Mass with oil 40 kg

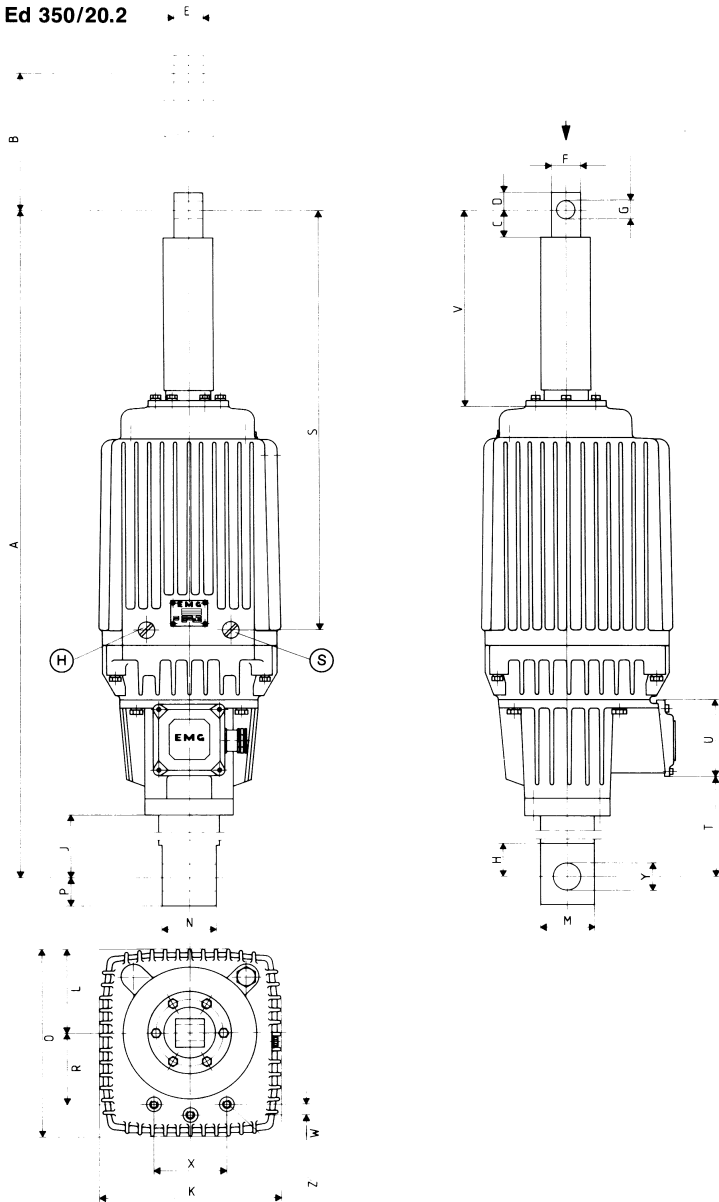
## Dimension Table

|                    | A   | B     | C    | D    | E    | F    | G <sub>max.</sub> | G <sub>min.</sub> | H     | K    | L    | M    | N    | O   | P     | R    | S    | T     | U    | V    | W    | X    | Z    |    |
|--------------------|-----|-------|------|------|------|------|-------------------|-------------------|-------|------|------|------|------|-----|-------|------|------|-------|------|------|------|------|------|----|
| <b>Ed 201/12.5</b> | mm  | 660   | 120  | 29   | 19   | 32   | 40                | 25.48             | 25.43 | 43   | 240  | 112  | 54   | 38  | 260   | 27   | 100  | 361   | 130  | 100  | 96   | 15   | 100  | M8 |
|                    | in. | 25.98 | 4.72 | 1.14 | 0.75 | 1.26 | 1.57              | 1.003             | 1.001 | 1.69 | 9.44 | 4.40 | 2.13 | 1.5 | 10.24 | 1.06 | 3.94 | 14.21 | 5.12 | 3.94 | 3.78 | 0.59 | 3.94 | M8 |
| <b>Ed 301/12.5</b> | mm  | 660   | 120  | 29   | 19   | 32   | 40                | 25.48             | 25.43 | 43   | 240  | 112  | 54   | 38  | 260   | 27   | 100  | 327   | 130  | 100  | 96   | 15   | 100  | M8 |
|                    | in. | 25.98 | 4.72 | 1.14 | 0.75 | 1.26 | 1.57              | 1.003             | 1.001 | 1.69 | 9.44 | 4.40 | 2.13 | 1.5 | 10.24 | 1.06 | 3.94 | 12.87 | 5.12 | 3.94 | 3.78 | 0.59 | 3.94 | M8 |

Subject to modification without notice due to quality control, research and development.

# Dimension Drawings

Ed 350/20.2



The motor housing with terminal box can be rotated in steps of 90° (indicate when ordering).  
 Mounting options, except units with limit switches:  
 The base mounting is bolted and 90° rotatable,  
 the top pressure lug is rotatable

(H) = Lifting valve      (S) = Lowering valve

Mass with oil 75 kg

**Dimension Table**

|             | A   | B    | C    | D   | E    | F    | G <sub>max.</sub> | G <sub>min.</sub> | H     | J    | K    | L    | M    | N    | O    | P     | R    | S    | T     | U     | V    | W     | X    | Y <sub>max.</sub> | Y <sub>min.</sub> | Z     |    |
|-------------|-----|------|------|-----|------|------|-------------------|-------------------|-------|------|------|------|------|------|------|-------|------|------|-------|-------|------|-------|------|-------------------|-------------------|-------|----|
| Ed 350/20.2 | mm  | 1092 | 200  | 38  | 25   | 40   | 40                | 22.3              | 22.25 | 55   | 244  | 250  | 117  | 80   | 75   | 265   | 40   | 100  | 587   | 307   | 100  | 275   | 15   | 100               | 38.18             | 38.12 | M8 |
|             | in. | 43   | 7.87 | 1.5 | 0.98 | 1.57 | 1.57              | 0.878             | 0.876 | 2.17 | 9.60 | 9.84 | 4.60 | 3.15 | 2.95 | 10.43 | 1.57 | 3.94 | 23.11 | 12.09 | 3.94 | 10.83 | 0.59 | 3.94              | 1.503             | 1.501 | M8 |

Elektro-Mechanik GmbH  
 Industriestraße 1  
 5963 Wenden  
 Phone (02762) 612-0  
 Telefax (02762) 612-320  
 Telex 876416

Subject to modification without notice due to quality control, research and development.