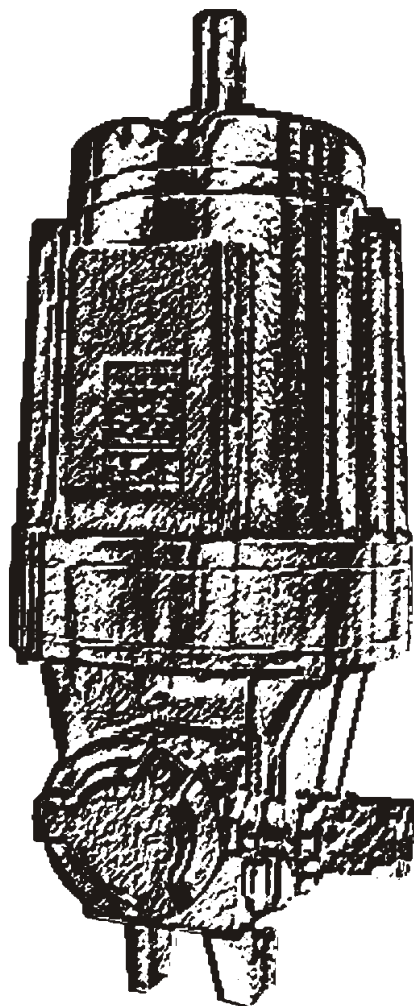


ELDRO[®] electrohydraulic thrusters

EdEx series

Electrical devices with an explosion-proof design,
ignition protection provided by a "pressure-proof housing"

Operating manual



EMG Automation GmbH
Factory Oschersleben



Technical Data

Type	Nominal actuating power	Nominal stroke	C spring	Brake/reset force ¹⁾	Power consumption ²⁾	Power at 400 V AC 3-ph ²⁾	Power consumption ²⁾	Power at 400 V AC 3-ph ²⁾	Filling quantity	Weight
	[N]	[mm]		[N]	[W]	[A]	[W]	[A]	[l]	[kg]
Short-stroke devices										
EdEx 32/50	320	50	C 18	170... 215	150	0,30	140	0,35	2,4	32,0
			C 32	370... 440						
EdEx 50/50	500	50	C 18	170... 215	180	0,38	180	0,38	2,4	32,0
			C 32	370... 440						
			C 50	540... 655						
EdEx 80/60	800	60	C 45	460... 570	220	0,48	210	0,55	3,9	45,0
			C 80	740...1080						
EdEx 80/75	800	75			220	0,48			3,9	45,0
EdEx 125/60	1250	60	C 45	460... 570	250	0,52			3,9	45,0
			C 80	740...1080						
			C 125	1200...1650						
EdEx 125/75	1250	75			250	0,52			3,9	45,0
EdEx 150/60	1500	60	C 45	460... 570	360	0,63			3,9	20,6
			C 80	740...1080						
			C 125	1200...1650						
EdEx 150/75	1500	75			360	0,63			3,9	20,6
EdExB 200/60	2000	60	C 45	460... 570	320	0,64	350	0,70	7,4	65,0
			C 70	650... 910						
			C 130	1250...1600						
			C200	1900...2510						
EdEx 250/60	2500	60	C 45	460... 570	360	0,69			7,4	65,0
			C 70	650... 910						
			C 130	1250...1600						
			C200	1900...2510						
EdEx 320/100	3200	100	C 70	530...940	550	0,90	450	0,80	10,8	80,0
			C250	2080...3700						
			C320	2610...4640						
Long-stroke devices										
EdEx 80/160	800	160	C 45	260... 520	210	0,48			6,0	54,0
			C 80	350...1000						
EdEx 125/160	1250	160	C 45	260... 520	250	0,52			6,0	54,0
			C 80	350...1000						
			C 125	610...1520						
EdEx 150/160	1500	160	C 45	260... 520	300	0,57			6,0	54,0
			C 80	350...1000						
			C 125	610...1520						
EdEx 200/160	2000	160	C 45	260... 520	310	0,64			11,1	80,0
			C 70	270... 900						
			C 130	620...1600						
			C200	890...2500						
EdEx 250/160	2500	160	C 45	260... 520	350	0,66			11,1	80,0
			C 70	270... 900						
			C 130	620...1600						
			C200	890...2500						
EdEx 320/120	3200	120	C 70	530...940	550	0,90			10,8	80,0
			C250	on request						
			C320	on request						

The technical data is based on average values related to a temperature of devices of +20 °C.

1) Values for devices with integral brake/reset spring

2) Values measured at operational temperature; if the temperature during activation of the device is below 0 °C, the power consumption is about twice as much as for a device with a temperature of > +20 °C.

Setting times

ELDRO® thrusters are mainly used in brake systems. Therefore, the most important factor is the lowering time. The table on the right lists times for lowering and resetting, calculated for thrusters without an integral lowering valve, at constant nominal weight loads, at a device temperature of +20 °C.

Detailed data for adjustable delays in the case of integral lowering valves should be determined by the manufacturer based on case-by-case tests. This requires exact information concerning the conditions of use.

Type	Lowering time (w ithout low ering valve)	Adjustable lowering time (w ith integral low ering valve)	
		min. s	max. s
EdEx 32/50 ...	0.45	Please see the delivery documents for the corresponding data. If necessary, please consult the manufacturer.	Please see the delivery documents for the corresponding data. If necessary, please consult the manufacturer.
EdEx 50/50 ...	0.36		
EdEx 80/60 ...	0.48		
EdEx 80/75 ...	0.62		
EdEx 125/60 ...	0.36		
EdEx 125/75 ...	0.49		
EdEx 150/60 ...	0.34		
EdEx 150/75 ...	0.44		
EdEx 200/60 ...	0.4		
EdEx 250/60 ...	0.35		
EdEx 320/100 ...	0.6		
EdEx 80/160 ...	0.9		
EdEx 125/160 ...	0.7		
EdEx 150/160 ...	0.65		
EdEx 200/160 ...	0.85		
EdEx 250/160 ...	0.8		
EdEx 320/120	0.62		

Explosion proofness

Applied Standards

EN 13463-8:2004: Non-electric devices for use in potentially explosive areas – part 8 - Protection by liquid encapsulation “k”

EN 60079-0:2009: Explosive atmosphere - part 0 – Devices – General requirements

EN 60079-1:2007: Explosive atmosphere - part 1 – Device protection by pressure-proof housing “d”

EN 60079-7:2007: Explosive atmosphere- part 7 – Device protection by increased safety “e”

EN 60079-31:2009: Explosive atmospheres – Part 31. Equipment dust ignition protection by enclosure “t”

Please note:

The maximum gap length and width for the purpose of additional explosion protection are dimensioned to deviate from the provisions as per EN 60079-1, tab. 1 and 2. Higher gap lengths and lower gap widths must not be changed as these form the basis for practical tests and type examination test certificates.

Identification

- a) For use in pits exposed to firedamp (methane gas)
E I M2 k Ex d I Mb or
E I M2 k Ex de I Mb
- b) For use in other explosive areas
E II 2G k Ex d IIB T4 Gb or
E II 2G k Ex de IIB T4 Gb,
E II 2G k Ex d IIC T4 Gb or
E II 2G k Ex de IIC T4 Gb
E II 2G k Ex d IIC T5 Gb
(upon request)
E II 2G k Ex de IIC T5 Gb
(upon request)
- c) For dust explosion protection
E II 2D k Ex tb IIC T130 °C Db Ip65

Zonal structure

ELDRO® thrusters with the identification

E I M2 ... for zones 1 and 2

E II 2G ... for zones 1 and 2

E II 2D ... for zones 21 and 22

Test certificate

BVS 05 ATEX E 074 X

The max. surface temperature does not exceed a value of 130 °C even in the event of failure. The ignition temperature of gases must therefore not fall below a value of 130 °C as per the latest version of DIN EN 14522.

Mechanical design

Installation position

In a vertical position and intermediate positions up to 60° off the vertical position (identification "II"), the lifting rod should allow unlimited upward movement but should on no account be moved in a downward direction.

For a horizontal position and intermediate positions up to 30° off the horizontal position (identification "I"), please consult the manufacturer.

Coatings

For ELDRO devices for gas of group IIA/IIB, external coatings and/or non conductive coatings must not exceed 2 mm, for gas of group IIC they must not exceed 0.2 mm.

Paint

Colour RAL 5008, grey-blue
(other RAL shades optional)

Paint structure, corrosion protection

Two-component epoxy primer filler,
two component polyacrylic primer,
two-component single layer topcoat
based on polyacrylate, scratch and shock
resistant, total dry layer thickness 80 µm
(optional multilayer structure up to 180 µm)

Electric design

Motor

3 phase squirrel-cage motor, design to VDE 0530, performance data to "technical values" section or to the details on the name plate, insulation and insulation material class F to VDE 0530, for performance data see section "technical data" or name plate, insulation according to material class F.

Operating modes

Continuous duty S1 and switching operation S3 at max 240 c/h, up to 60 % duty cycle.

Ambient temperature, voltage, frequency

See name plate

Type of protection

IP65

Connection

Junction plate, 4 pole (L1, L2, L3, N), conductor cross-section up to 4 x 2.5 mm² grounding outside M5

Cable entry for Ex d and Ex de designs

Thread M20x1.5
up to max. cable outside diameter of 16 mm
thread M25x1.5
up to max outside cable diameter of 26 mm
type HAWKE 653 (E I M2) or
type HAWKE ICG 653 (E II 2G and 2D)
thread 3/4" NPT
up to max. outside cable diameter of 19 mm
type GOTHE 2602.NPT 3/4 A (E II 2G and 2D)

Cable entry only for Ex d design

Thread M28x1.5
up to max. outside cable diameter of 18 mm
type GOTHE 54232.18 M28 (E I M2, II 2G and 2D)

Cable entry only for Ex de design

Thread M28x1.5
up to max. outside cable diameter of 18 mm
type GOTHE 54242.18 M28 (E I M2, II 2G and 2D)

Exchange or replacement only with metal cable entries certified for the application!

Additional equipment

Lifting, lowering and throttle valve

The integral valve system enables the continuous extension of the adjusting and/or reset times. The adjustment is made using an adjusting screw which can be found inside the device and is accessible once the external locking screw (see illustration page 3) has been removed. The tool needed for this is an 8 mm Allen key. The adjusting range goes from 0 to 6 revolutions (0 = CLOSED = max. delay). If no time has been defined, 3 revolutions (starting from the zero position) is the factory setting. Adjusting diagrams can be obtained from the manufacturer upon request.

Brake/reset spring (C spring)

integral C spring to generate the braking/reset force

Control/dampening spring (R spring)

to dampen acyclic settling of the brake to match the lifting rod

Position indicator, sensors, limit switches (L...)

See separate sensor/switch name plates

Commissioning

For ELDRO® characteristics, see name plate (1)

The device comes ready to put into operation, filled with hydraulic liquid (for the type, see the name plate (1)). Filling screws must not be opened by unauthorized people, as a loss of liquid could affect the technical values or lead to malfunction.

For the installation position, please see the above information. Take care with regard to the working direction of the lifting rod (2).

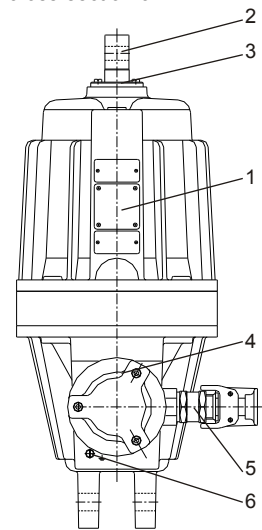
Movability of the device must be ensured, and the lifting rod (2) must not be subject to lateral forces.

Keep the terminal box (4) clean. Make sure the seal is correctly positioned and intact. Firmly close the terminal box (4). Check for tightness and ensure that the cable entry has been properly installed (5).

ELDRO® thrusters with integral brake springs are identified on the name plate (1) by "C...". Make sure that the brake has no spring and is not subject to load.

When painting the device after delivery, protect the lifting rod (2) and the gasket system (3). Risk of leakage!

Check the voltage supply against the data on the name plate (1), then make the electrical connection in line with the terminal diagram on the inside of the terminal box frame (4). The phases may be carried out in any sequence. Earthing must have a grounding resistance of < 106 Ohm. Connect to the grounding screw (6) using a suitable cable lug, with a minimum conductor cross-section of 4 mm².



Operation

To avoid a layer of dust thicker than 5mm from accumulating on the device, clean it on a regular basis.

Make sure the device does not come into contact with substances that could affect the material it is made of.

Attention:

Never open the device while it is hot. Only open it away from explosive areas. Any hydraulic fluid which leaks could lead to serious injuries. Prior to servicing, allow the device to cool down at least to room temperature.

EMG Automation GmbH
Factory Oschersleben
Am Pfefferbach 20
39387 Oschersleben, Germany

Phone +49 3949 928-500
Fax +49 3949 928-513
E-Mail info@emg-automation.com
Web www.emg-automation.com