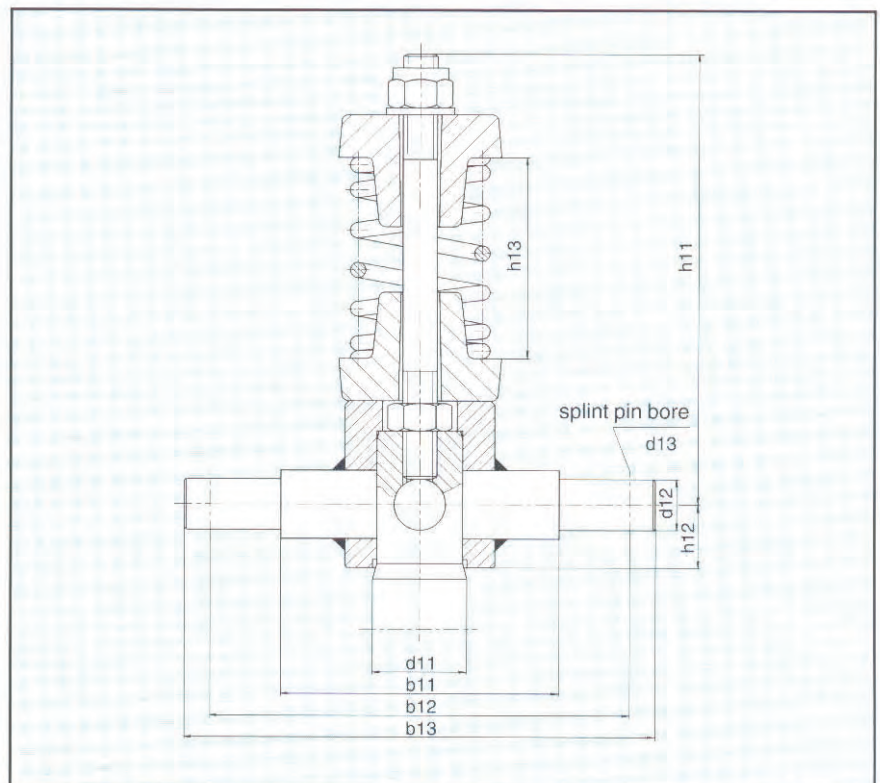
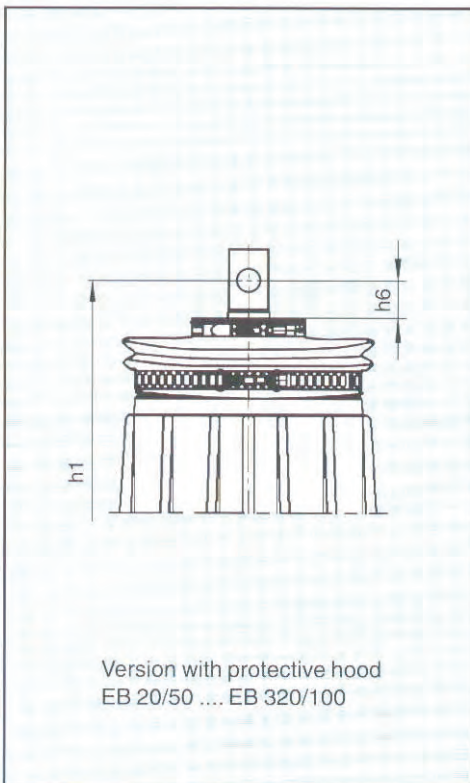
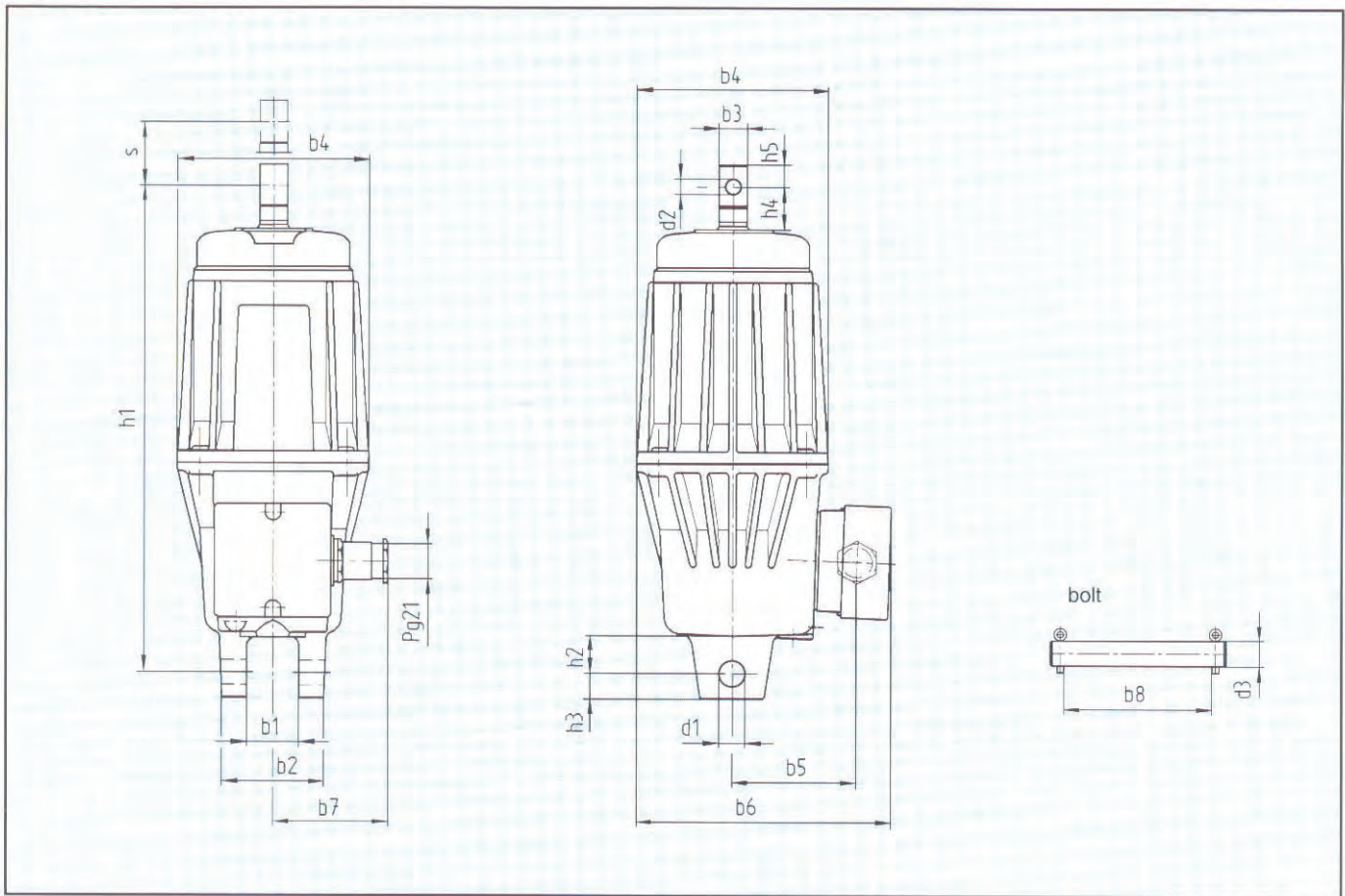


Spezial versions following DIN 15430

Size	Type EB	Rated stroke 1) [mm]	Rated actuating force 2) [N]	Spring version	Rated resetting force 3) at rated operating point 4) [N]	Admissible deviation [+N]	Power consumption 5) kW	Current input 5) A	Volume of operating fluid l	Weight with hydraulic fluid 6) kg	Setting time 7) s	Resetting time 7) s
2	320-50	50	320	C 180	180	22	0.6	0.3	2.6	13.0	0.32	0.32
				C 320	320	39						
	320-100	100	320	C 180	132	16	0.16	0.3	3.5	14.7	0.55	0.48
				C 320	300	36						
	500-50	50	500	C 180	180	22	0.20	0.4	2.6	13.1	0.36	0.30
				C 320	320	39						
				C 500	500	61						
	500-100	100	500	C 180	132	16	0.20	0.4	3.5	14.8	0.65	0.50
				C 320	300	36						
				C 500	432	52						
3	800-160	160	800	C 450	300	50	0.26	0.5	6.0	23.0	0.90	0.70
				C 800	520	75						
	1250-160	160	1250	C 450	300	50	0.38	0.6	6.0	24.2	1.25	0.65
				C 800	520	75						
				C 1250	820	125						
	1500-60	60	1500	C 450	450	54	0.40	0.7	4.3	20.6	0.65	0.28
				C 800	800	80						
				C 1250	1250	134						
	1500-160	160	1500	C 450	300	50	0.40	0.7	6.0	24.2	1.65	0.60
				C 800	520	75						
				C 1250	820	125						
4	2500-60	60	2500	C 700	700	70	0.50	0.7	9.0	32.8	0.60	0.30
				C 1300	1300	130						
				C 2000	2000	200						
	2500-160	160	2500	C 700	510	60	0.50	0.7	12.0	39.5	1.45	0.60
				C 1300	850	130						
				C 2000	1360	190						
	3200-100	100	3200	C 700	580	60	0.55	0.9	10.1	39.0	1.00	0.55
				C 2500 ⁸⁾	2300	230						
				C 3200 ⁸⁾	2950	295						

Assembly Dimensions



size	type	s	b ₁ +2	b ₂ +1	b ₃ e8	b ₄	b ₅	b ₆	b ₇	d ₁ +0.1	d ₂ F9	h ₁ ±1	h ₂	h ₃ +1	h ₄ ±1	h ₅	d ₃ h11	b ₈ +1	h ₆
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Standard series EB

0	EB 12 -1 ¹⁾	50	—	—	20	162	81	236	100	16.1	12	272	—	—	23	17	—	—	—
	EB 12 -2 ²⁾	50	40	80	20	162	81	236	100	16.1	12	286	20	16	23	17	16	104	—
	EB 12 -3 ³⁾	50	40	80	20	162	81	236	100	16.1	12	314	38	16	23	17	16	104	—
1	EB 20	50	40	80	21.5	150	97	200	100	20.2	12	380	30	20	30	17	20	114	28
2	EB 50	50	40	90	21.5	180	102	220	100	20.2	12	400	30	20	32	17	20	114	28
	EB 50	100	40	90	21.5	180	102	220	100	20.2	12	452	30	20	32	17	20	114	28
3	EB 80, 125, 150	60	40	90	27.5	208	102	232	100	20.2	16	458	30	25	36	21	20	114	27
	EB 80, 125, 150	160	40	90	27.5	208	102	232	100	20.2	16	573	30	25	36	21	20	114	27
4	EB 250	60	40	90	35.5	250	110	265	100	20.2	20	549	30	25	36	25	20	114	28
	EB 250	160	40	90	35.5	250	110	265	100	20.2	20	660	30	25	36	25	20	114	28
	EB 320	100	40	90	35.5	250	110	265	100	20.2	20	660	30	25	36	25	20	114	28
5	EB 630	120	40	90	35.5	250	110	265	100	20.2	20	660	30	25	36	25	20	114	28

size	type	b ₁₁ ±0.5	b ₁₂ +0.5	b ₁₃	d ₁₁ ±0.1	d ₁₂ e8	d ₁₃	h ₁₁	h ₁₂	h ₁₃ -1
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Adjusting spring for standard series EB

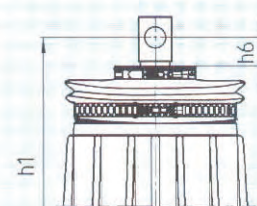
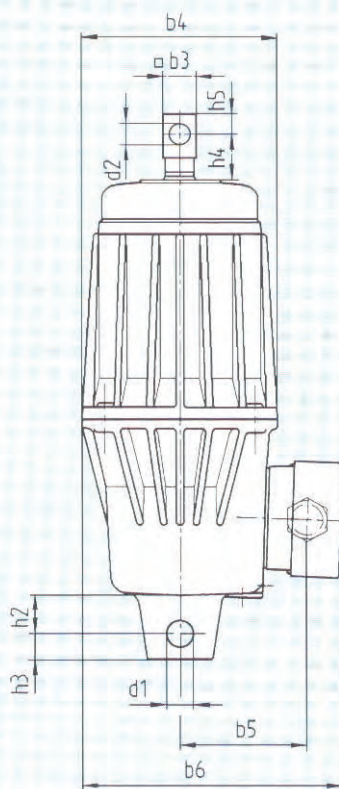
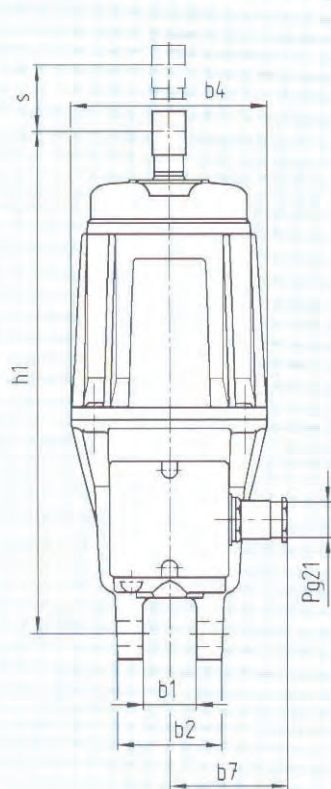
0	EB 12/50		65	98	110	20	12	5	106	15	47.5
1.2	EB 20/50, 50/50, 50/100		65	98	110	21.7	12	5	106	26	47.5
3	EB 80/60, 80/160, 125/60, 125/160		65	98	110	21.7	16	5	140	27	65
	EB 150/60, 150/160										
4	EB 250/60, 250/160, 320/100		70	105	120	35.7	20	5	189	30	102

¹⁾ flange mounting version

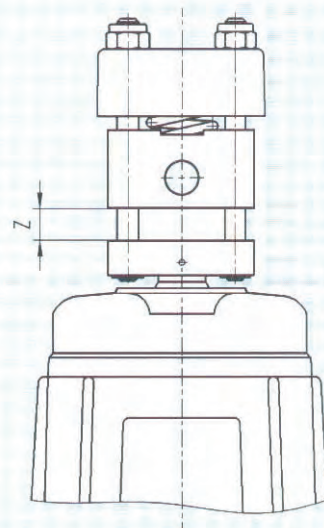
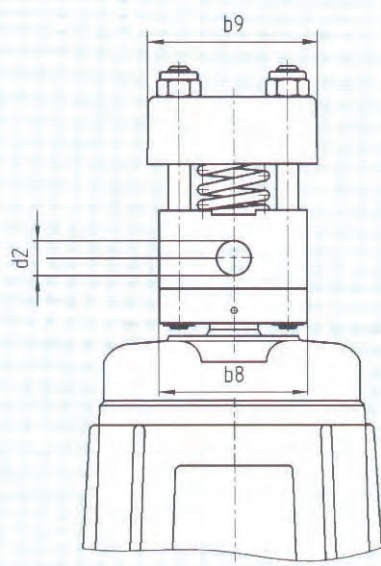
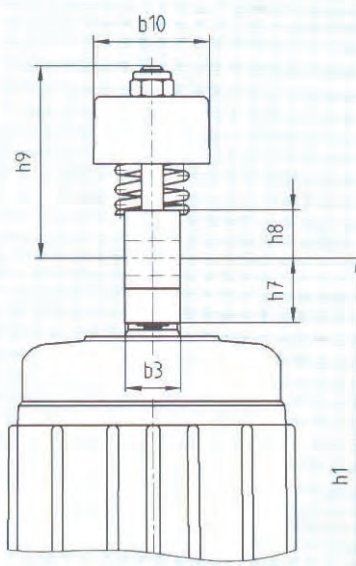
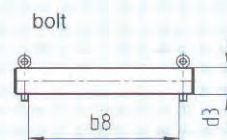
²⁾ thruster with cast-on eyes

³⁾ thruster with bolted bottom plate

dimensions in mm



Version with protective hood
EB 300 – 50 EB 3200/120



size	type	s	b ₁ +2	b ₂ +1	□ b₃ -0.1	b ₄	b ₅	b ₆	b ₇	d ₁ +0.1	d ₂ F9	h ₁ ±0.1	h ₂	h ₃ +1	h ₄ ±0.1	h ₅	d ₃ h11	b ₈ +1	h ₆
Series acc. to DIN 15430																			
0	EB 120 -2 ²⁾	40	25	45	20	110	100	178	100	12.1	12	265	12	14	20	10	—	—	—
	EB 120 -3 ³⁾	40	40	60	20	110	100	178	100	16.1	12	286	16	23	20	10	—	—	—
	EB 220 -1 ¹⁾	50	—	—	20	162	81	236	100	16.1	12	272	—	—	26	15	—	—	—
	EB 220 -2 ²⁾	50	40	80	20	162	81	236	100	16.1	12	286	20	16	26	15	16	104	—
	EB 220 -3 ³⁾	50	40	80	20	162	81	236	100	16.1	12	314	38	16	26	15	16	104	—
1	EB 300	50	40	80	25	150	97	200	100	16.1	16	370	18	16	32	15	16	104	21
2	EB 500	60	60	120	30	180	102	220	100	20.1	20	435	30	20	67	18	20	144	46
	EB 500	120	60	120	30	180	102	220	100	20.1	20	515	30	20	95	18	20	144	59
3	EB 800	60	60	120	30	208	102	232	100	20.1	20	458	23	22	42	18	20	144	24
	EB 800	120	60	120	30	208	102	232	100	20.1	20	530	23	22	39	18	20	144	24
	EB 1250	60	40	90	40	208	102	232	100	25.1	25	645	30	25	108	25	25	114	88
	EB 1250	120	40	90	40	208	102	232	100	25.1	25	705	30	25	168	25	25	114	78
4	EB 2000	60	40	90	40	250	110	265	100	25.1	25	645	30	25	132	25	25	114	107
	EB 2000	120	40	90	40	250	110	265	100	25.1	25	705	30	25	81	25	25	114	56
	EB 3000	60	40	90	40	250	110	265	100	25.1	25	660	30	25	36	25	25	114	29
	EB 3000	120	40	90	40	250	110	265	100	25.1	25	705	30	25	81	25	25	114	61
5	EB 6300	120	40	90	40	250	110	265	100	25.1	25	705	30	25	83	25	25	114	63

Special versions following DIN 15430

2	EB 320	50	40	80	25	180	102	220	100	16.1	16	385	18	16	30	18	16	104	46
	EB 320	100	40	80	25	180	102	220	100	16.1	16	493	18	16	85	18	16	104	39
	EB 500	50	60	120	30	180	102	220	100	20.1	20	435	30	20	65	18	20	144	46
	EB 500	100	60	120	30	180	102	220	100	20.1	20	515	30	20	95	18	20	144	59
3	EB 800	160	60	120	30	208	102	232	100	20.1	20	573	23	22	42	18	20	144	29
	EB 1250	160	40	90	40	208	102	232	100	25.1	25	705	30	25	168	25	25	114	78
	EB 1500	60	40	90	40	208	102	232	100	25.1	25	645	30	25	108	25	25	114	88
	EB 1500	160	40	90	40	208	102	232	100	25.1	25	705	30	25	168	25	25	114	88
4	EB 2500	60	40	90	40	250	110	265	100	25.1	25	645	30	25	152	25	25	114	107
	EB 2500	160	40	90	40	250	110	265	100	25.1	25	705	30	25	81	25	25	114	56
	EB 3200	100	40	90	40	250	110	265	100	25.1	25	660	30	25	36	25	25	114	29

size	type	b ₃	b ₈	b ₉	b ₁₀	d ₂ F9	h ₇	h ₈	h ₉	Z
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Attenuation spring (series acc. to DIN 15430 / special versions following to DIN 15430)

0	EB 220 – 50	20	68	78	52	12	36	20	89	15
1	EB 300 – 50	25	68	78	52	16	30	20	75	15
2.3	EB 320 – 50, 320 – 100									
	EB 500 – 50, 500 – 100									
	EB 500 – 60, 500 – 120	30	68	78	52	20 ⁴⁾	36 ⁵⁾	20	100	20 ³⁾
	EB 800 – 60, 800 – 120, 800 – 160									
3.4	EB 1250 – 60, 1250 – 120, 1250 – 160									
	EB 1500 – 60, 1500 – 160									
	EB 2000 – 60, 2000 – 120									
	EB 2500 – 60, 2500 – 160	40	110	116	76	25	38	35	175	20
	EB 3000 – 60, 3000 – 120									
	EB 3200 – 100									

¹⁾ flange mounting version

²⁾ thruster with cast-on eyes

³⁾ thruster with bolted bottom plate

⁴⁾ EB 320 – 50 h₇ = 30 mm, d₂ = 16 mm

⁵⁾ EB 320 – 50 und 500 – 50 z = 15 mm

dimensions in mm

Design, Engineering and Putting into Operation

Installation

The Elhy device is connected to the unit to be actuated by means of two bolts. These bolts should fit well, however, must not impair the slewing capacity of the device to avoid any jamming which might affect the motion of the lifting rod or even cause damage to its support, guide and packing.

Service positions

It is possible to use the Elhy devices in vertical, horizontal (lifting rod in horizontal position $\pm 30^\circ$) or inverted position. In the vertical position, installation and operation are easiest. In the horizontal and inverted positions, the device may be installed so that the terminal box will be located at the side, provided the symbol 'II' was added after the type designation in the order. If in the horizontal service position space considerations require to mount the terminal box either on top or on the bottom, a modification of the device is required and has to be carried out by a specialist. When ordering this version, the symbol 'I' must be added after the type designation. If Elhy devices are to be used in an inverted position (lifting rod vertically downwards $\pm 60^\circ$), Consultation with the manufacturer is necessary.

Connecting the motor

To ensure unimpaired slewability, the motor shall be connected via a free connecting lead. Since motor operation is independent of the direction of rotation, the three feed lines can be connected to terminals U, V, W in optional sequence.

Filling-in the hydraulic fluid

The Elhy devices are delivered in filled state. When filling the devices, e.g. after maintenance and repair work, the following notes shall be observed:

Insulation oil shall be used exclusively. Best suited for normal operating conditions is transformer oil with viscosity properties of

approx: 20 mm²/sec at +20°C

approx: 1000 mm²/sec at -30°C

such as Addinol TRF-HX Transformer oil.

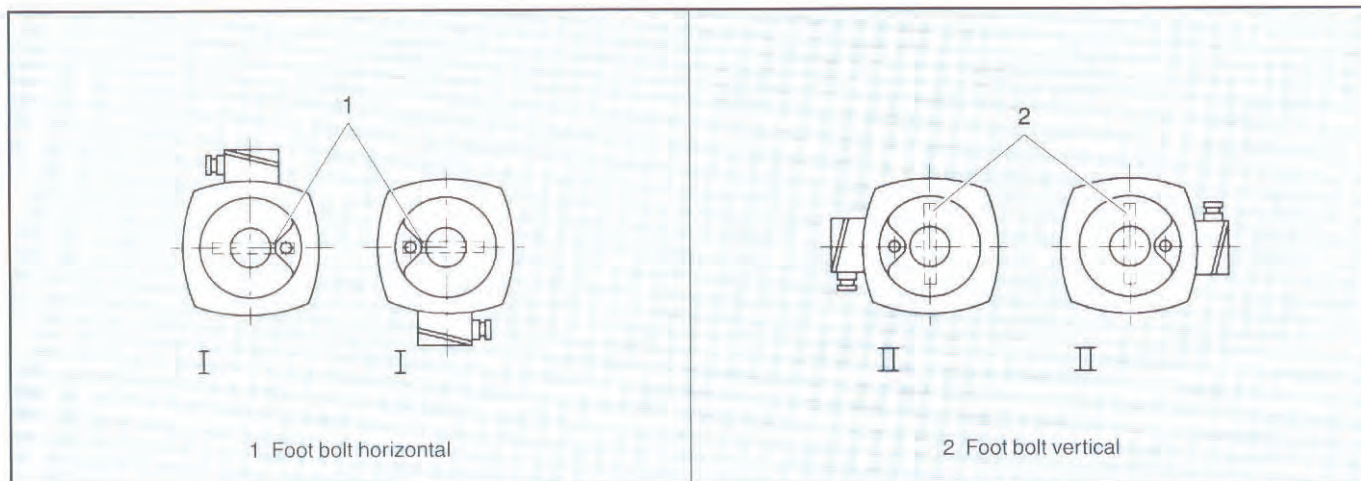
For temperatures colder than -25°C use should be made of silicone oil with viscosity properties of

approx: 50 mm²/sec at +20°C

approx: 500 mm²/sec at -50°C

200 Fluid 10 cs from Dow corning

These mediums are well tested with regard to lifting rod sealing. The hydraulic fluid must not contain any water droplets. The devices should be filled in vertical position. To this end, the regulating plug shall be removed and the fluid filled in through the inlet opening. During filling, the piston should be completely moved in. In the vertical position, the Elhy device is correctly filled when the hydraulic fluid level reaches the lower edge of the inlet opening. After completed filling it is recommended to move the piston several times by hand to force any entrapped air to the top. For devices equipped with a pull-back spring, this can be accomplished electrically.



Putting into Operation

When putting the device into operation make sure that the lifting rod is not exposed to any shearing forces. It is necessary, above all, to ensure that the motion of the elements to be driven will take place at the same level as the slewing motion of the device around the fastening bolts. If the device does not work properly, make sure first of all that the requirements mentioned above including the filling are satisfied. In addition make sure that the lifting rod is neither damaged nor dirty, e.g. by paint residues due to subsequent painting of the equipment. This might damage the lifting rod packing. The lifting rod is resistant to external corroding effects. However, in very dirty or humid environments (severe impact of dirt, water and the like) it is recommended to protect both lifting rod and lifting rod packing by a protective guard.



Dragline ESH 90/15 - main hoist drive equipped with electrohydraulic disc brakes operated by ELHY[®] - thrusters



LAUBAG open-cast mine at Welzow-Süd, 3 Es 3150 with 582 ELHY[®] units

Order instruction ELHY-thrusters

1. Series																			
1.1.	Standard series	EB		/															
1.2.	Series following DIN 15430	EB		-															
2. Setting (lifting) force																			
			(Given in kp for standard series; given in N for series following DIN and special versions)																
3. Setting (lifting) length (given in mm)																			
4. Built-in resetting spring		C																	
4.1.	Resetting force in kp for standard series																		
4.2.	Resetting force in N for series following DIN and special versions																		
5. Adjusting / attenuation spring		R																	
6. Version for controlled braking		B																	
7. Valve type																			
7.1.	Lifting valve	H																	
7.2.	Lowering valve	S																	
7.3.	Throttle valve	D																	
8. Service / installation position																			
8.1.	Vertical, inverted, horizontal terminal box located at the side	II																	
8.2.	Horizontal terminal box at top or bottom	I																	
9. Position indicator		L																	
9.1.	Inductive switch (-es)	i																	
9.2.	Position indicator inside	k																	
9.3.	Mechanical switch (-es)	m																	
9.4.	Installed on cylinder jacket																		
9.5.	Installed at parting plane height	v																	
9.6.	Switch combination (see prospectus)	1...7																	
9.7.	analogue, 4 – 20 mA	a																	
10. Special versions																			
10.1.	Tropical version	T																	
10.2.	Arctic version	F																	
10.3.	Maritime version	M																	
10.4.	Explosion-proof version	EExe																	
11. Protective hood		Z																	
11.1.	With pressing ring	m																	
11.2.	Without pressing ring	o																	
12. Voltage (V)																			
13. Frequency (Hz)																			

How to order Elhy Devices

To ensure correct selection of the devices, the following information is required when ordering. This page may be used for ordering and can be enclosed with the official

order term. If you want to order a stand-by device, please indicate the device No. of the unit which is already in your possession.

1. Application
(e.g. as brake magnet,
for flap actuation etc.)
2. Service voltage/Frequency
☐ 220 V ☐ 220/380 V ☐ 50 Hz
☐ 230 V ☐ 230/400 V ☐ 60 Hz
☐ 380 V ☐ 380/660 V
☐ 400 V ☐ 400/690 V
☐ 660 V
☐ 690 V V Special voltage
3. Stroke required: mm
4. Actuating (Lifting) force required: N
5. Resetting force required: N
6. Prolongation of actuating time: yes/no
7. Prolongation of resetting time: yes/no
8. Service position of the Elhy device:
 - ☐ Vertical
with lifting rod vertically upwards
 - ☐ Horizontal
with lifting rod in horizontal position
($\pm 30^\circ$)
 - ☐ Inverted
with lifting rod vertically
downwards
- 8.1 Position of the terminal box
☐ top ☐ bottom
 shifted:
☐ L.H. 90° ☐ R.H. 90°
9. Type of duty
 - ☐ Continuous duty
 - ☐ Intermittent service S3 with:
 - switching operations per hour,
same direction of rotation of
Elhy motor,
 - percentage run time per hour
 - ☐ Intermittent service S3 with:
 - switching operations per hour,
alternating direction of rotation
of Elhy motor,
 - percentage run time per hour
10. Monitoring device
(Layer indication)
 - ☐ Inductive
 - ☐ Mechanical
- 10.1 Monitoring function for:
 - ☐ Lifted position
 - ☐ Braking position
 - ☐ Wear control (Li only)
- 10.2 Arrangement for one-sided
installation of switching
equipment (looking to the
name plate)
 - ☐ switch on the left
 - ☐ switch on the right
11. Environmental conditions
Ambient temperature
minimum °C maximum °C
 - ☐ outdoor installation, unroofed
 - ☐ outdoor installation, roofed
 - ☐ indoor installation
12. Particular requirements on site
(e.g. due to severe dirt, coal dust,
ash, drifting sand, fertilizers, cement
dust, aggressive media, sea water,
explosion protection)
13. Assembly dimensions
EB Standard Series
EB Series in compliance with DIN 15430
EB Special versions following DIN 15430

EMG

Worldwide competence

Änderungen vorbehalten

EMG/Werk ELTMA/Produktbeschreibung englisch/2006

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Internet: www.emg-automation.com
www.emg-eltma.de
e-mail: info@emg-automation.com

U.S.A.

Brazil

Germany

Germany

Germany

India

BST Pro Mark Technologies, Inc.

EMH-Elektromecânica e Hidráulica Ltda.

EMG Automation GmbH, Werk ELTMA

EMG Automation GmbH

BST International GmbH

BST SAYONA Web Control Systems Ltd.

