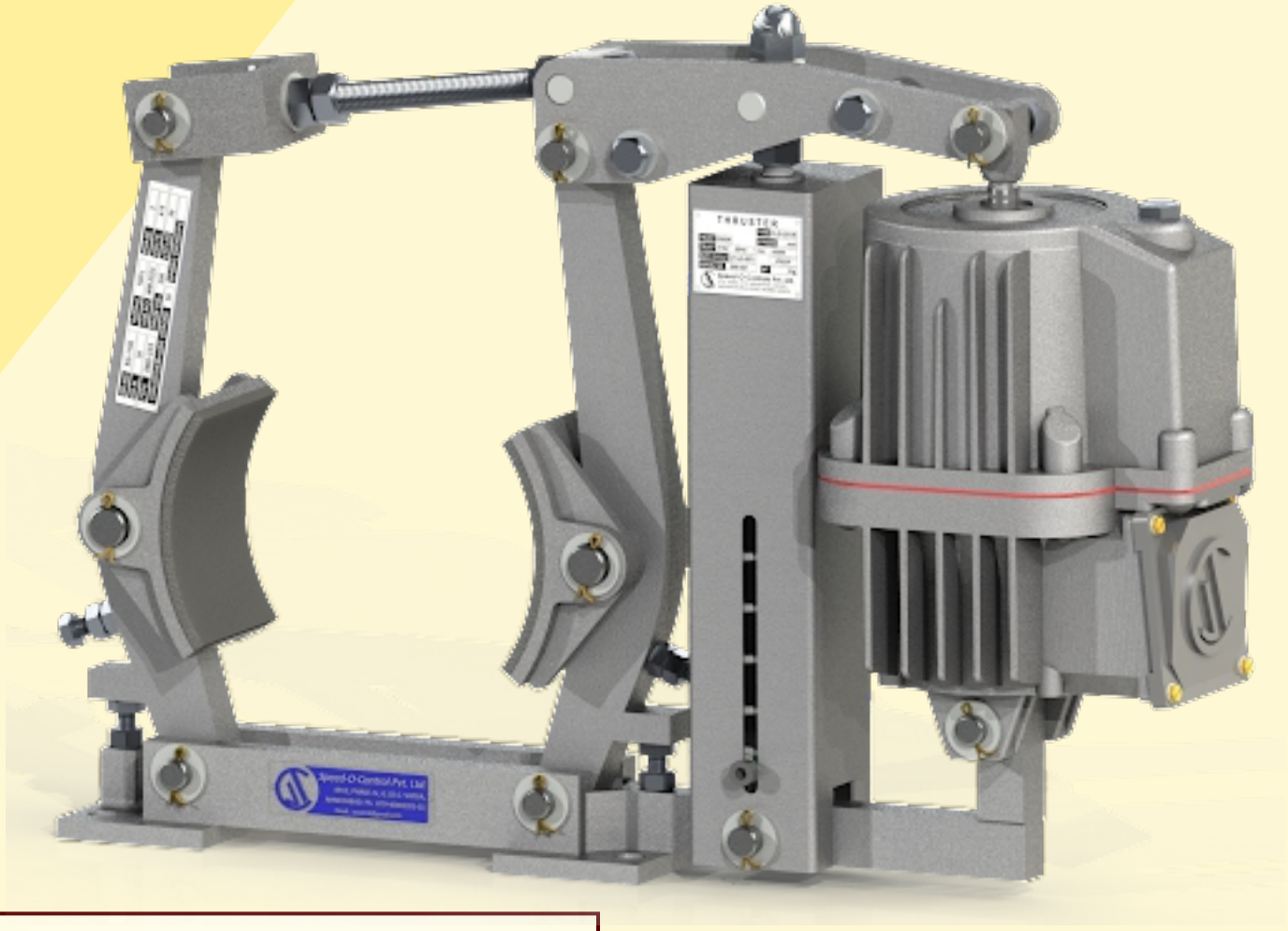
THRUSTER BRAKE TYPE (SMD WITH ELDY)

WITH ELD THRUSTERS



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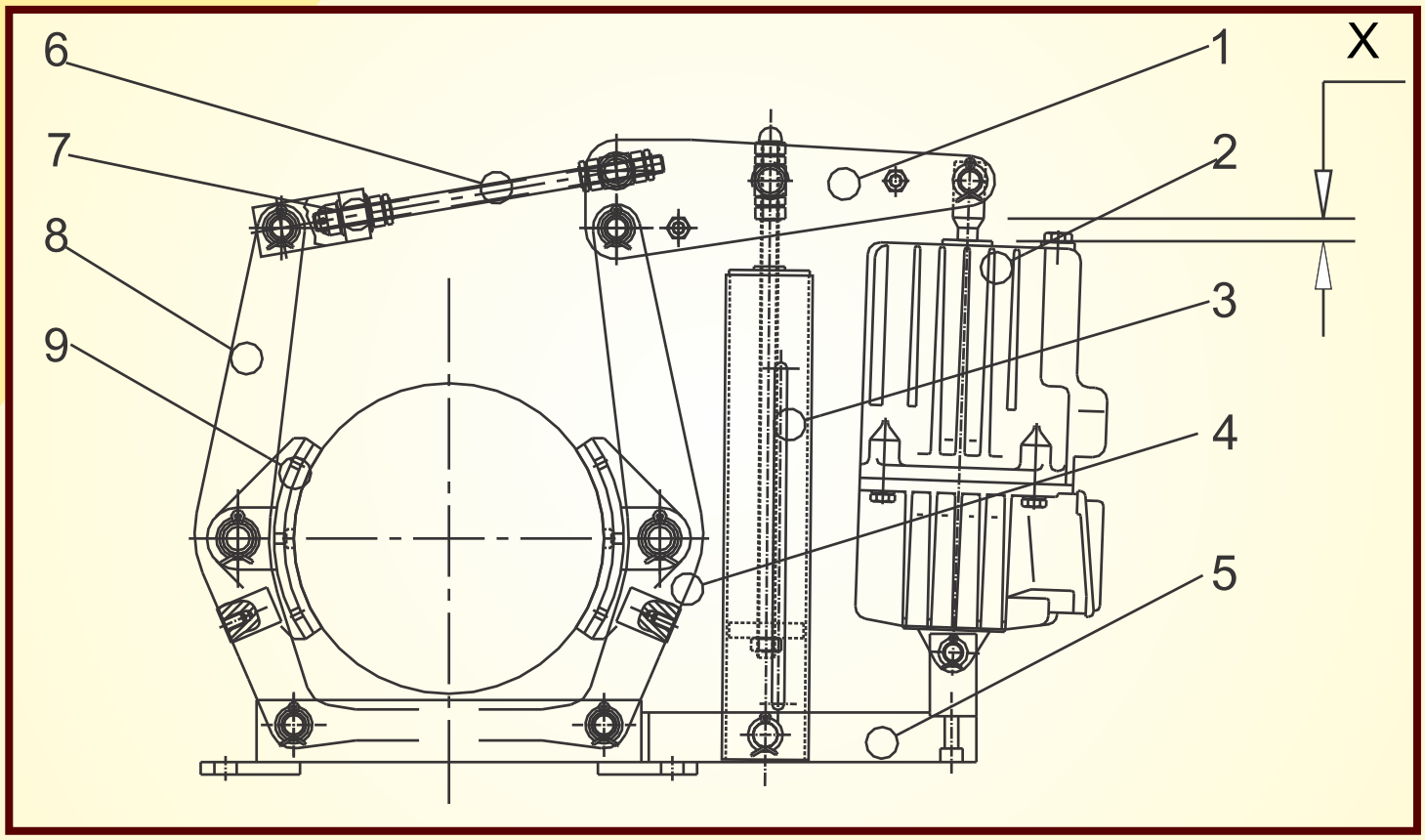
CRANE CONTROL GEAR

V2

THRUSTER BRAKE TYPE (SMD WITH ELDY)

COMPONENTS & OPERATION



The brake mounting base (**5**) has two arms, Main arm (**4**) and sidearm (**8**) fitted on it by hinge pins. Each of the arms carries a cast-iron brake shoe (**9**) fitted with a woven brake liner pad. A tie rod (**6**) connects the operating lever (**1**) to the sidearm by a swivel block (**7**). A hinge pin connects the lever to the main arm (**4**). The lever (**1**) operated by the thrust exerted by electro-hydraulic thruster (**3**) Which is hinged to the base in a clevis. The brake torque setting arrangement (**5**) pulls down the lever by pre-loaded compression spring. Lower ends of the arms are inter-connected by synchronisation mechanism. The arms have a screw for setting the brake shoe to prevent rubbing of the liners on the brake drum when the brake is released. When the thruster is energized, the thrust rod moves up and turns the lever clockwise with a hinge in the main arm as the pivot, and the sidearm turns anti-clockwise and moves the brake shoe away from the drum. Simultaneously, the synchronizing arrangement turns the main arm clockwise and releases the shoe from the drum. The shoes free the brake drum with a pre-set gap. The brake is now released Turning of lever pulls out the spring and stores energy. When the thruster is de-energised, the spring force pulls down the lever and pulls the side and main arms and the shoes clamp with the braking force with spring force multiplied by the leverage of the mechanism. The thrust rod is pushed down by the spring force.

The braking torque MB is proportional to the drum radius RB, co-efficient of friction of liner on drum surface μ and the normal force F exerted by the spring at the brake shoe.

MB = μ x F x RB.

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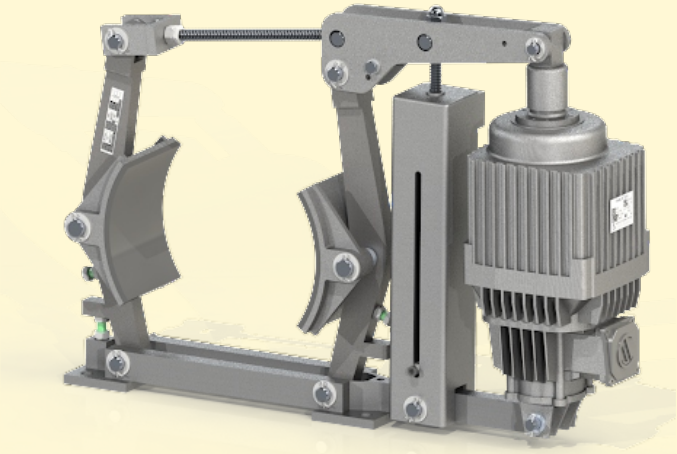
THRUSTER BRAKE TYPE (SMD WITH ELDY)

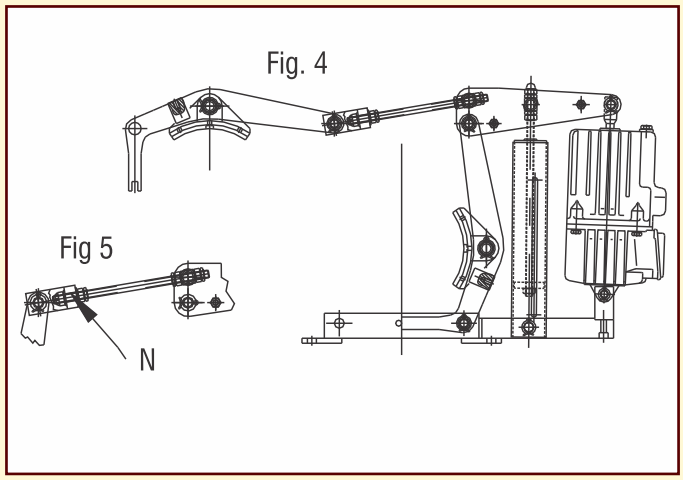
FEATURES

1. Robust and rugged design to withstand arduously the environment in Steel and Rolling Mills, Lift and Elevators, Cement and Concur plant machines
2. Good designs and manufacturing process ensures reliable product.
3. Consistent braking torque due to properly selected and tested brake liner material.
4. The design ensures the efficient distribution of forces.
5. Sturdy components and Thruster ensure Long, trouble free service and requires no major attention.
6. Ease of maintenance and replacement of brake shoes without dismounting the brake.
7. Compact designs and elegant aesthetic looks.
8. Synchronizing mechanism ensure equal drum-liner clearance by.



INSTALLATION OF BRAKE

The brake foundation is made as per the dimensional catalogue Mount as follows :



1. Increase brake shoe clearance to about 5 mm by turning tie rod adjusting nut. (N Fig).

2. Pull out pin #1. (Fig 3) in base and side arm.

3. Swing side arm upwards. (Fig 4)

4. Push base frame below brake drum.

5. Align brake in radial and axial directions.

6. Swing down side arm and fix it to the base by pin #1.

7. Install thruster unit.

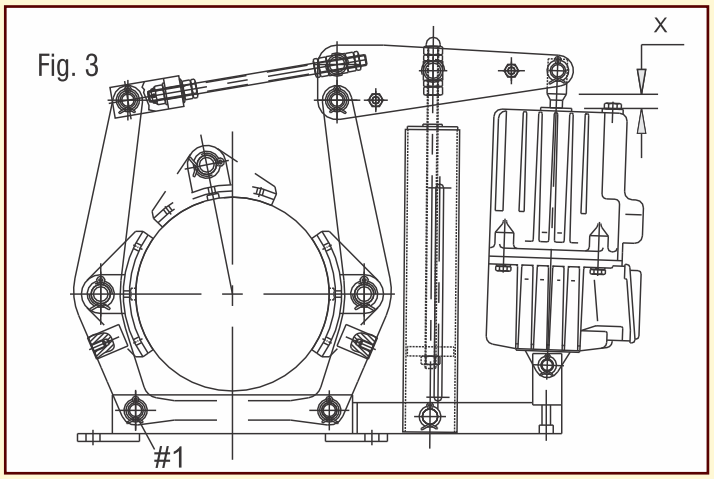
8. Fix base frame on foundation.

Align brake shoes with the drum within ± 0.3 mm in all axis.

ADJUSTMENT OF RESERVE STROKE

The brake should be adjusted such that only about 80% of thruster stroke is used. This is done to ensure the brake is applied fully and also the wear of the brake liner is accounted for. This is done while installing the brake

REPLACEMENT OF WORN OUT SHOES



1. Unscrew tie rod nut n to release brake shoes from the drum.

2. Remove hinge pin in the shoe and remove brake shoe by sliding it over the drum as shown

3. Replace brake shoe with a new one in a similar manner and install it by putting hinge pin in arm

4. Repeat (**2**) and (**3**) for the second arm.

5. Re adjust the brake

RELEASE DEVICES

The brakes are of a fail-safe design and stop moving components in the event of mains supply failure. Manual release, or other release devices like Pneumatic or Hydraulic cylinders the arrangement can be offered, in place of or in addition to the thruster.

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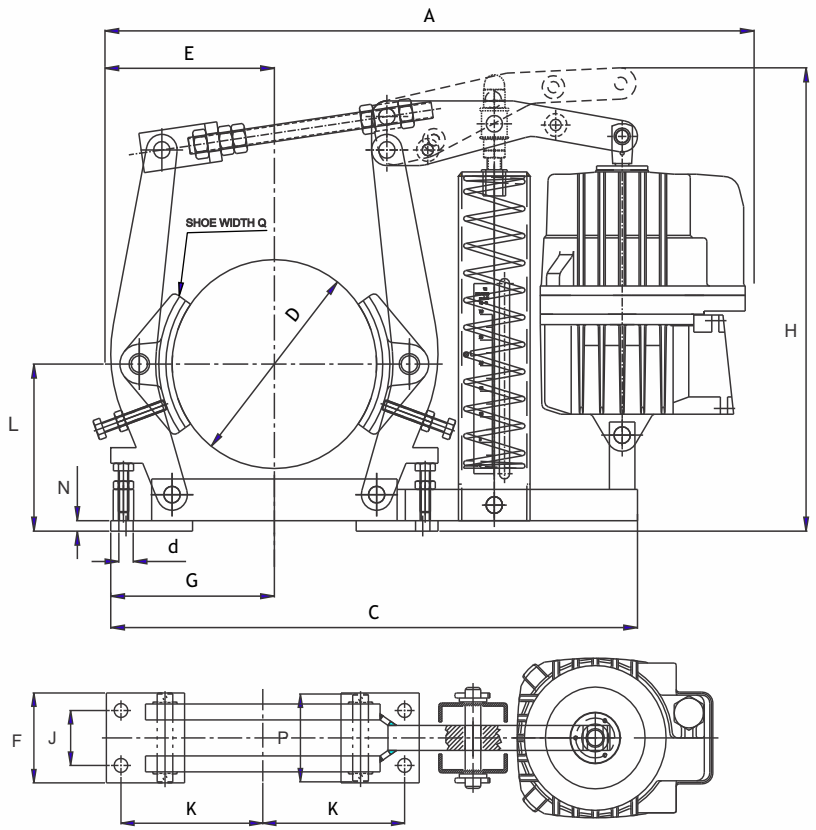
CRANE CONTROL GEAR

THRUSTER BRAKE TYPE (SMD WITH ELDY)

WITH EXTERNAL TORQUE SPRING



When ordering please advice :
*** Order- no., For SMD 200 Eld - 23/5**
*** optional feature such as limit switch manual release, drum, coupling, enclosure**

Brake Type	Thruster Type	Stroke	Mbr TORQUE μ = 0.4 (Nm)	(kg-m)	A	B	C	D	E	F	G	H	J	K	L	N	P	Q	R	d	*kg
SMD 160	Eld - 23/5	50	200	20	590	160	467	160	140	85	135	440	55	120	125	8	75	56	80	12	12
SMD 200	Eld - 23/5	50	300	30	640	160	515	200	170	90	160	475	55	145	160	10	75	70	80	14	19
	Eld - 30/5	50	400	40	640	160						490									
SMD 250	Eld - 23/5	50	320	32	725	160	615	250	210	100	200	550	65	180	190	10	95	90	80	16	30
	Eld - 30/5	50	420	42	725	160															
SMD 300 SMD 315	Eld - 23/5	50	420	42	850	160	740	300	240	115	240	690	80	220	230	12	118	110	80	18	50
	Eld - 30/5	50	520	55	865	160															
	Eld - 50/6	60	870	105	864	195		315	230												
	Eld - 80/6	60	1550	170	864	195															
SMD 380 SMD 400	Eld - 30/5	50	570	57	1000	160	900	380	300	150	300	765	100	270	280	16	150	140	80	22	85
	Eld - 50/6	60	1100	110	1000	195													120		
	Eld - 80/6	60	1800	180	1000	195	940	400				775							100		
	Eld - 121/6	60/120	2750	275	1000	240													90		130
SMD 500	Eld - 50/6	60	1400	140	1225	195	1040	500	385	190	370	870	130	325	340	13	190	180	120	22	130
	Eld - 80/6	60	2200	220	1225	195													100		
	Eld - 121/6	60/120	3400	340	1215	240													90		
	Eld - 201/6	60/120*	5400	540	1215	240													90		
SMD 600 SMD 630	Eld - 121/6	60/120*	3300	330	1365	240	1175	600	465	250	455	1000	170	400	420	15	236	225	90	27	206
	Eld - 201/6	60/120*	5500	550	1365	240		630													
	Eld - 301/6	60/120*	8200	820	1365	240															
SMD 700 SMD 710	Eld - 121/6	60/120*	3800	380	1500	240	1355	700	525	270	500	1140	190	450	470	15	210	255	90	27	280
	Eld - 201/6	60/120*	6300	630	1500	240		710													
	Eld - 301/6	60/120*	9400	940	1500	240															

*HIGHER STROKE ON REQUEST

*** Weight without Thrustor**

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THRUSTER BRAKE TYPE (SMD WITH ELDY)

ELECTRO-HYDRAULIC THRUSTERS (ELD)

THRUSTER SPECIFICATIONS :

The centrifugal pump and motor are immune from external overloading Standard motor design are suitable for 415 Voltes /50 Hz /3-phase supply. Other voltages (wye) connected, class'F' windings have internal star point and the three supply phases can be connected on the terminal board, irrespective of the phase sequence. The bi-directional radial flow impeller works with equal performance efficiency in both directions.

CONSTRUCTION FEATURES & OPERATION :

The two main sub-assemblys of the hydraulic thruster, the electric motor and the hydraulic unit are co-axially assembled to form the working unit.

In the switched off state (de-energised), the piston is at is lowest position due to external load (as brake spring of the drum brake),and the brake is applied. When energized, the electric, motor drives the centrifugal pump and delivers working fluid under the piston, under high pressure. This moves the piston axially in the guided path, and delivers thrust of force required to operate the attached device (like thruster brake) via the piston rod and the eye-lug attached device to it. The working stroke can be step-lessly controlled by external load.

TECHNICAL DATA

PAINTING	Hammertone Gray Paint
LAF	Asbestos Free Liner
OPTIONAL	
SCD	Aluminum Brake Shoe as per DIN - 15435
LWA	Lining Wear Adjuster
LWI	Lining Wear Indicator Limit Switch
SS	AISA 420 Hardened & Tampered Stainless Steel Pins
PN	Lubricators on Pins
OL	Open Brake Limit Switch
MS	Manual Opening & Locking Systems

The delivered thrust is jerk-free, smooth, in constant magnitude and perfectly linear. Except at the end positions, the power intake of the motor is reduced as compared to the power demand while lifting. Thus, the thruster is insensitive to external over-loading. This makes the thermal overload protection to the motor unnecessary.

PERFORMANCE FEATURES :

- Compact, light weight and elegant design.
- Reliable and maintenance free operation.
- Smooth jerk free perfectly linear motion.
- Low noise, and does not emit electrical disturbances.
- IP-55,IP-65 degree of protection.
- Suitable for out-door installation.
- Low power input.
- Up to 720 operations per hour.
- Easy mounting and dismounting.
- Bi-direction operation.
- Immune from external over loading
- Immune from supply voltage variations.
- Class F insulation scheme.
- Windings for any voltages up to 600V AC.3 Ø

SELECTION OF BRAKE SIZE

- SMD Thruster brakes are steel fabricated frames with Eldy Thruster as per din standard.
- Excellent designs & good manufacturing process ensure a reliable product.

The brake torque must be => than motor full load as referred with drum. Formula as below:

$$T = \text{Torque in Kgm} = \frac{716 \times Hp}{rpm}$$

$$T = \text{Torque in Nm} = \frac{9552 \times Kw}{rpm}$$

Where Hp/Kw = motor output & rpm = Rev/minute

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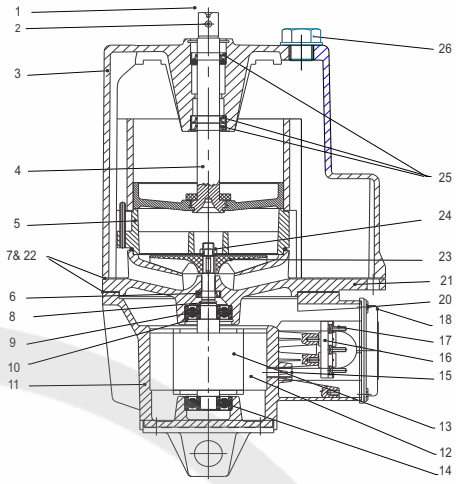
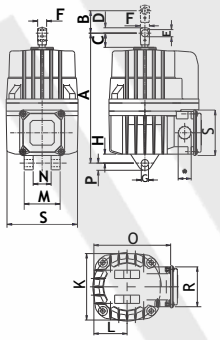
THRUSTER BRAKE TYPE (SMD WITH ELDY)

1. Pressure strap
2. Tubular pin
3. Housing
4. Piston assembly.
5. Guide ring
6. Oil seal.
7. Gasket
8. Circlip
9. D.G.B.Bearing
10. Circlip.
11. Motor housing.
12. Startor with winding.
13. Rotor assembly.
14. D. G. B. Bearing.
15. Grub screw.
16. Terminal board.
17. Cable screw nut.
18. Terminal box cover.
19. Terminal box gasket.
20. Fixing screw.
21. Middle flange.
22. Gasket.
23. Impeller.
24. Hex.Nut.
25. Oil seal.
26. Oil plug.
27. Hex. Socket head cap screw.

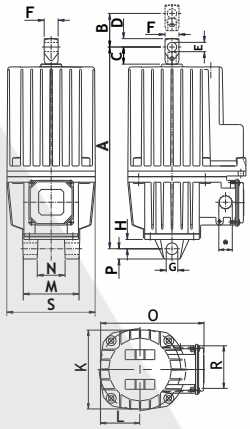


Electro-Hydraulic Thrusters (Eld)

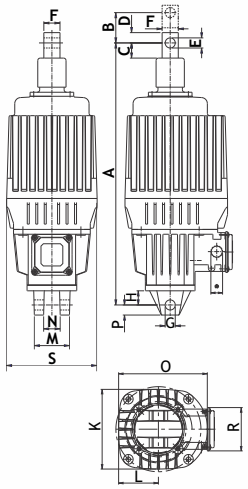
All cable entry 3/4" B S Conduit Threads



ELDY 23/5



ELDY 30/5, 50/6, 80/6



ELDY 121/6, 201/6, 301/6

TYPE	Lifting Force		Stroke MM	Power consu-mption W	Current consu-mption A	Oil Capacity Litres	Weight K. G.	A	B	C	D	E	F	G	H	K	L	M	N	O	P	R	S
	Nm	Kg-m																					
ELD-23/5	230	23	50	165	0.5	1.6	11	286	50	26	12	16	20	16	20	160	80	80	40	200	16	100	160
ELD-30/5	300	30	50	200	0.5	1.9	14	370	50	34	15	16	25	16	18	160	80	80	40	197	16	100	160
ELD-50/6	500	50	60	330	0.5	4.2	23	435	60	36	18	20	30	20	23	195	97	120	60	254	22	100	195
ELD-80/6	800	80	60	330	1.2	4.2	25	450	60	36	18	20	30	20	23	195	97	120	60	254	22	100	195
ELD-121/6	1210	121	60	330	1.2	9.4	42	645	60	38	25	25	40	25	35	240	112	90	40	260	25	100	240
ELD-201/6	2010	201	60	550	1.3	9.4	42	645	60	38	25	25	40	25	35	240	112	90	40	260	25	100	240
ELD-301/6	3010	301	60	550	1.4	9.4	44	645	60	38	25	25	40	25	35	240	112	90	40	260	25	100	240
ELD-121/12*	1210	121	120	330	1.2	9.4	44	705	120	38	25	25	40	25	35	240	112	90	40	260	25	100	240
ELD-201/12*	2010	201	120	550	1.3	9.4	42	705	120	38	25	25	40	25	35	240	112	90	40	260	25	100	240
ELD-301/12*	3010	301	120	550	1.4	9.4	44	705	120	38	25	25	40	25	35	240	112	90	40	260	25	100	240

* **Higher Stroke On Request**

The base mounting with type Eld- 50 , Eld-80, Eld- 121 , Eld-201 & Eld-301 is bolted and 90* rotatable, the top pressure lug is rotatable on all units.
Working fluid use transformer oil filled at factory
Safety Measures
Actuation time for all ELD Thrusters is Max 1.5 sec.
Dust proof double seal. Double seat to oil chamber. Piston rod chromium plated to size.Piston rod tube to protect against ingress of foreign bodies with types Ed 121, Ed 201, Ed 301

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