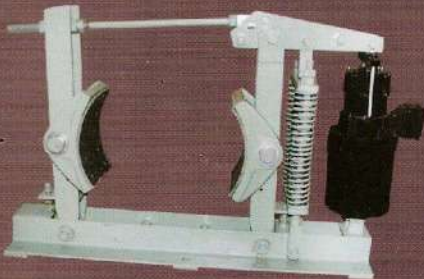


**ANAND**



**ELECTRO HYDRAULIC THRUSTORS**



**MILL DUTY THRUSTER BRAKES**



**LIMIT SWITCHES**



**MASTER / CAM CONTROLLERS**

far ahead by design...  
excellence in quality and commitment

**ANAND SYSTEMS**  
Engineering Pvt. Ltd.



# ELECTRO-HYDRAULIC THRUSTERS

## ► INTRODUCTION

Thruster is an electro hydraulic device, designed to exert a constant force to any mechanism to be operated.

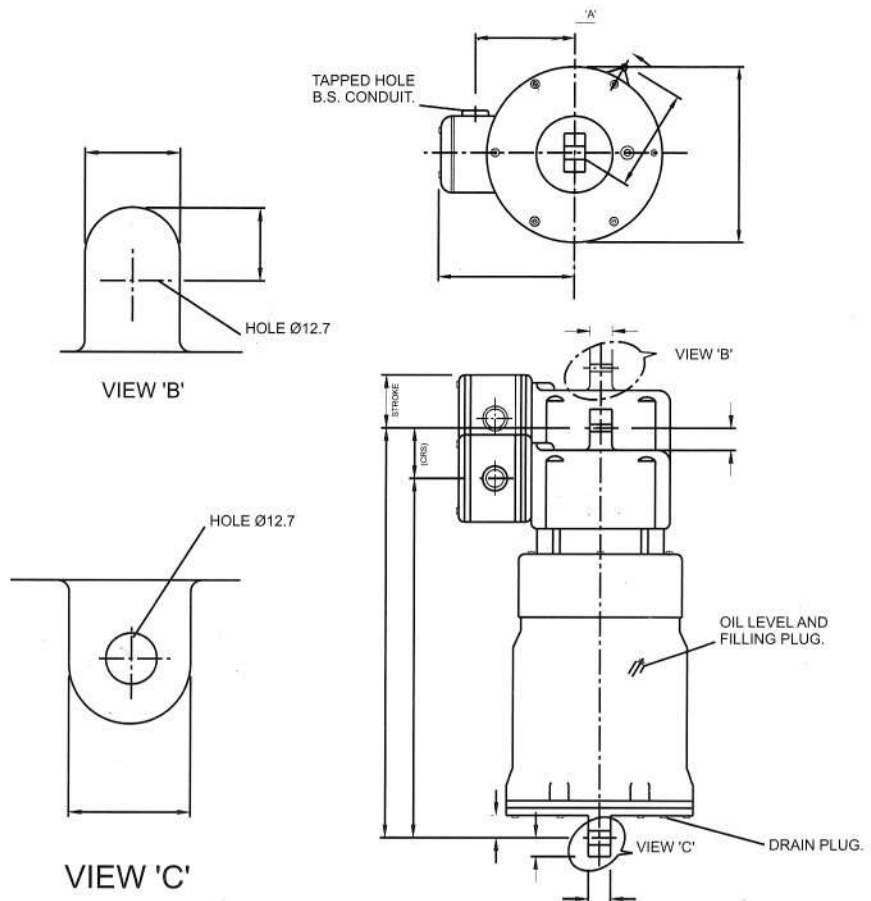
The Thruster works on a principle of hydraulics. On supply of electric power, motor driven centrifugal impeller draws the oil from the low pressure end of the chamber to the high pressure upper end. The piston mounted on the same shaft moves to the upper end with full thrust, till its movement is stopped by the stopper shoulder at the end of the stroke. Pressure build up stops when power is discontinued. Radial blade design of the impeller enables it to rotate both in clockwise and anticlockwise direction. Therefore power supply to star connection can be in any R-Y-B phase sequence.

## ► SPECIAL FEATURES

- Packaged self contained unit-No external piping and accessories required.
- Self aligned movement
- Rated force available for the entire stroke.
- Compatible for use with any existing or new system.
- Low power consumption
- Moving parts being immersed in oil, No frictional losses.
- Minimum maintenance.

## ► THRUSTER : ST 520

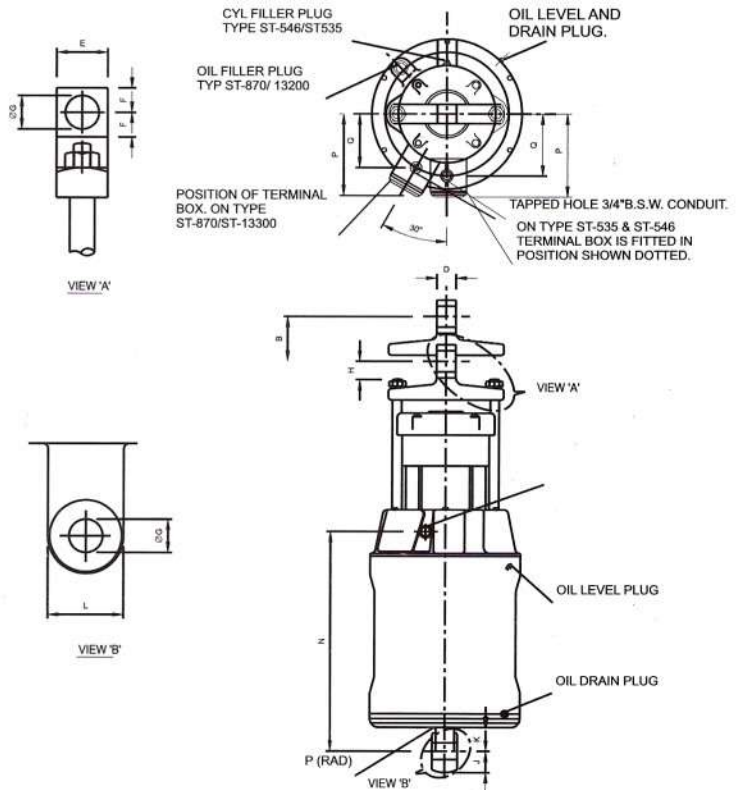
A compact 90watt, 415Volts,50cycles,3phase Electric motor is directly mounted on the top of a piston. The piston is housed in the C.I Tank filled with fluid. The piston moves the fluid from low pressure area to high pressure area. The specially designed impeller which is mounted on the motor shaft produces required fluid pressure.



### ► THRUSTER : ST 535 to ST13300

This range of thruster has two thrust rods and a common piston .The motor is mounted on the top cover of the tank. A separator plate divides the tank in two partitions-low pressure side and high pressure side. The spacer bushes control the thruster.

The models are suitable for large capacity, higher motor ratings and larger thruster forces.



### ► MAINTENANCE

The thruster is designed for long trouble free service and needs no maintenance .The motor bearings are adequately sized and windings are designed to meet the sudden jerks and shocks . Normal maintenance like topping of the oil levels, replacement of damaged worn out oil seal and gaskets is required. The terminal box must be cleaned periodically.

TYPE	Rated output		Input Watts	Dimensions in mm																Weight (kg.)	Oil Capacity Litres
	Thrust Kgs.	Stroke mm		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q			
ST 520	18	51	90	349	51	159	19	25	13	12.7	19	16	19	32	19	306	121	90	14	2.0	
ST 535	34	51	150	444	51	171	22	29	14	19.1	19	21	27	41	25	250	138	110	30	2.5	
ST 546	45	51	180	444	51	171	22	29	14	19.1	19	21	27	41	25	250	138	110	30	2.5	
ST 870	68	76	200	508	76	216	25	32	16	22.2	25	24	29	48	32	292	152	124	40	4.5	
ST 8110	114	76	250	508	76	216	25	32	16	22.2	25	24	29	48	32	292	152	124	40	4.5	
ST 13200	225	127	420	660	127	254	32	38	19	25.4	29	27	43	54	38	381	152	127	55	9.0	
ST 13300	295	127	580	660	127	254	32	38	19	25.4	29	27	43	54	38	381	152	127	55	9.0	



# THRUSTER BRAKES

## ► INTRODUCTION

Thruster Brake is a device to retard the speed and to hold the moving machinery when it is stationary. The braking force to the shoes is applied through the spring by means of lever/rod mechanism. The shoes are moved clear off the drum again through lever /arm linkage mechanism by thruster which overcomes spring force.

"Anand Systems" offers a complete range of Electro hydraulic thruster for the total range of thruster brakes.

## ► CONSTRUCTION

### 1. Base /Arms:

Rigid welded construction ,with accessible fixing

### 2. Shoes

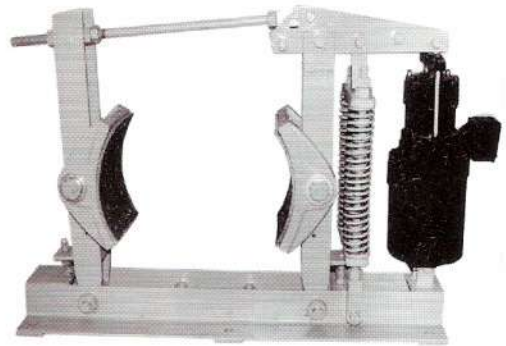
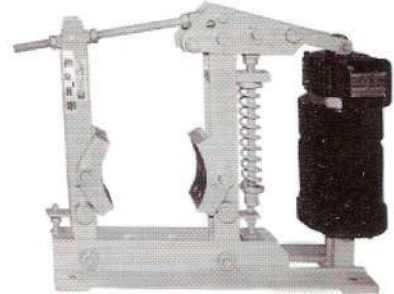
Self-aligning, easily removable high grade cast iron fitted with best quality fabric linings. Large cooling surface design prevents rubbing on drum when brakes are cleared.

### 3. Tie Rod / Guide Rode

Large Section securely fixed in a lug. The tie rod transmits the spring force on the shoes by a simple lever system.

### 4. Springs:

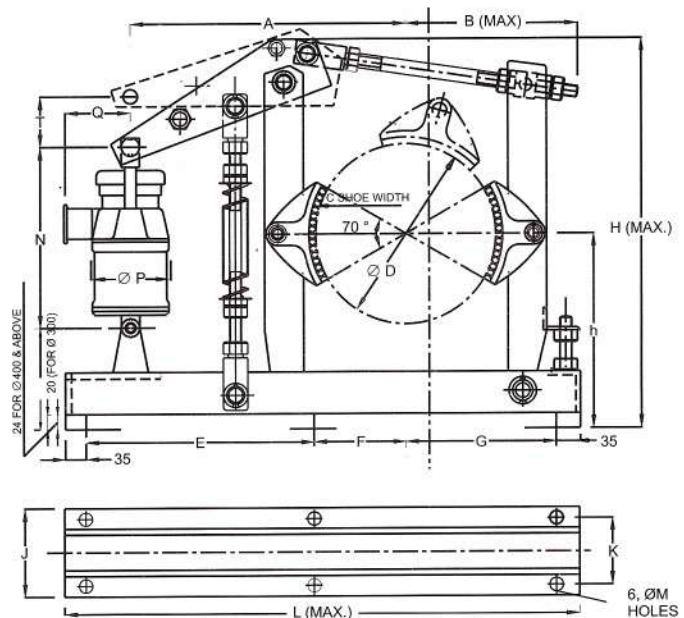
Compression springs are vertically mounted through the guide rods and are held securely between guide plates. One or more springs are used depending upon the brake size and thruster capacity to obtain the desired braking torque.



## MILL DUTY THRUSTER BRAKES ROLLING DIMENSIONS AND WEIGHTS

### TORQUE RATINGS

Brake Type	Drum Diameter (mm)	Thruster Capacity (Kgs)	Thruster Stroke (mm)	Braking Torque (Kg-M)
MDT 100-18	100	18	51	6
MDT 160-18	160	18	51	9
MDT 200-18	200	18	51	20
MDT 200-34	200	34	51	32
MDT 250-18	250	18	51	35
MDT 250-34	250	34	51	42
MDT 300-18	300	18	51	42
MDT 300-34	300	34	51	62
MDT 400-34	400	34	51	90
MDT 400-46	400	46	51	110
MDT 400-68	400	68	76	170
MDT 500-46	500	46	51	190
MDT 500-68	500	68	76	290
MDT 500-114	500	114	76	485
MDT 600-68	600	68	76	350
MDT 600-114	600	114	76	580

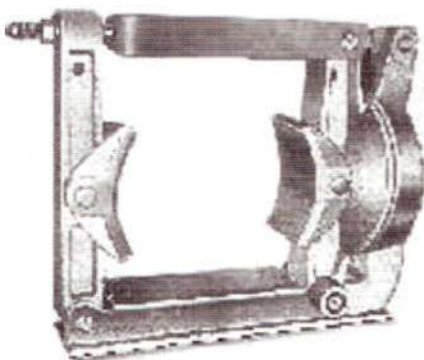
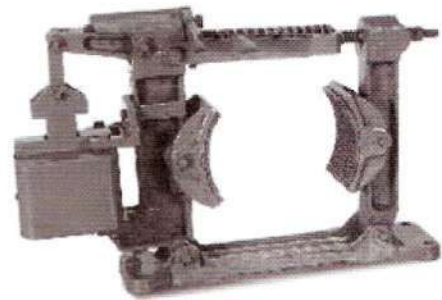


## DIMENSIONS DETAILS

Drums Dia D	100	160	200	250	300	400	500	600	700	800
A	235	265	360	355	430	503	618	688	905	955
B	165	195	215	240	285	350	410	480	585	635
C	70	70	88	100	140	180	200	240	280	320
E	150	150	360	320	460	508	680	765	960	1060
F	-	-	-	-	105	65	150	150	180	205
G	100	100	170	170	250	377	380	465	600	650
h	125	125	200	225	275	310	417	475	550	600
H	415	415	513	563	600	630	857	970	1260	1400
J	130	130	180	160	205	236	302	322	335	350
K	100	100	125	120	145	180	215	235	245	260
L	405	465	600	635	780	955	1130	1300	1650	1800
M	13	13	15	18	20	20	25	25	38	38
Wt Brake Kgs.	17	20	27	30	70	88	125	190	210	240

### A. C. ELECTRO MAGNETIC BRAKES

Brakes are suitable for single phase  
A.C. Supply up to 440V and are available for  
a wide range of drum size. 100mm to 375mm dia.



### D. C. ELECTRO MAGNETIC BRAKES

Brakes are suitable for 220 Volts DC power supply  
and are available for a wide range of drum size.  
100mm to 600mm dia.



# LIMIT SWITCHES

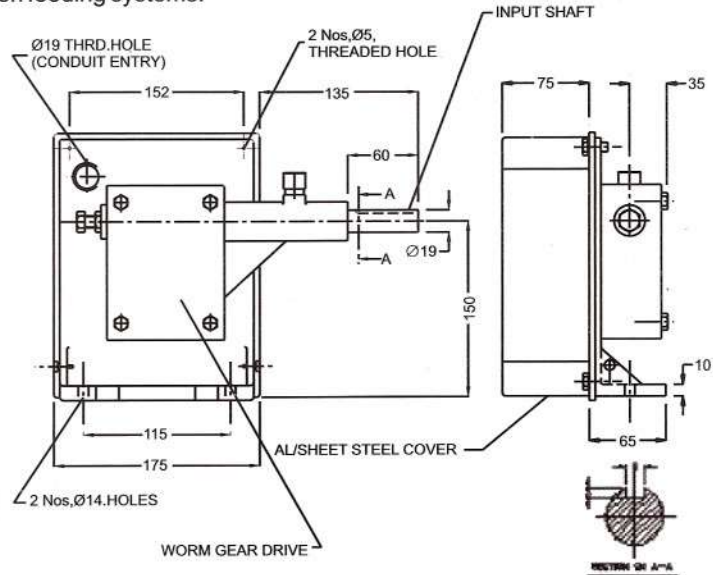
## ▶ ROTARY LIMIT SWITCH

Application:- Rotary geared type limit switches are used on control circuit of reversing drives so as to limit their rotation /movement to a pre-determined position. Suitable for use on reversing drives ,such as hoists, winches rolling mills ,various other mechanisms used in steel plants such as coke oven feeding systems.

### Construction :-

The unit consists of

- Cast Iron /cast Aluminum main casing with cover.
- Heavy duty worm Gear drives.
- Cam Shaft
- Cam with Adjustable actuators.
- Silver Lined Contacts..



### Technical data :

Body Material - Cast Iron / Cast Aluminium die cast  
Protection Degree - IP-55  
Confirming to IS-13947(Part-1)1993  
Gear Ratios - 1:48, 1 : 60  
Drive - Worm Drive  
Cable Entries - 3/4" Conduit

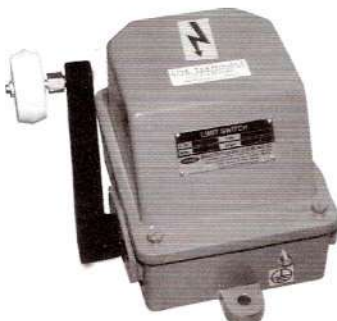
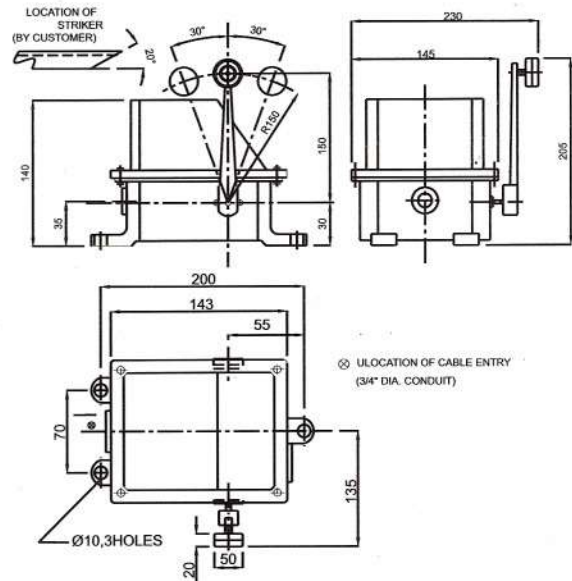
Contact Material - Double break Silver Cadmium  
Rated Voltage Insulation - 500 V. A. C.  
Thermal Test Current - 10 Amps.  
No. of contacts - 6 maximum  
Cam setting - adjustable  
Contacts - Normally open / Normally close

## ▶ LEVER TYPE LIMIT SWITCH :-

Limit switches are used for heavy duty E.O.T Cranes ,Wagon Shunting devices. Elevators, Material handling systems etc. to prevent over travel or traverse.

### Technical data :

Body Material - Powder coated aluminium die cast  
Protection Degree - IP-55  
Confirming to IS-13947(Part-1)1993  
Mounting position - Floor  
Cable Entries - 2, 3/4" Conduit  
No. of contacts - 2 / 3 / 4  
Contacts - double break Silver Cadmium  
Wire Connection - Screw terminal  
Rated Voltage Insulation - 500 V. A. C.  
Thermal Test Current - 10 Amps.  
Optional - 720 / hour



LS/2SH/2

R	O	F
X	X	
	X	X

LS/1SH/2

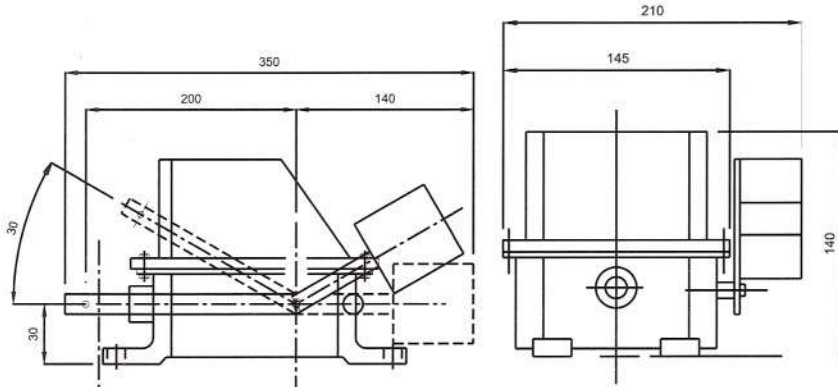
R	O	F
	X	
	X	

LS/1SH/1

R	O	F
	X	
	X	

### ► WEIGHT OPERATED LIMIT SWITCH:-

Limit switches are used to prevent over hoist motion with weight. Counterweight is provided. which lifts the wire rope to prevent over hoist position.



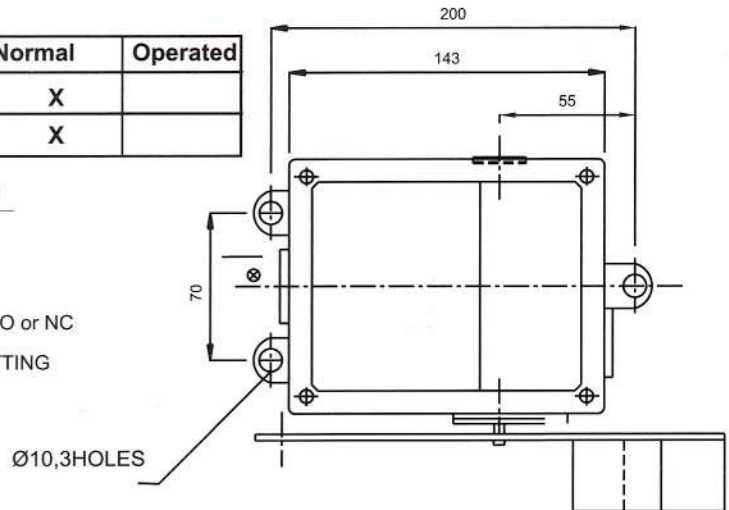
POSITION OF WIRE & DEAD WEIGHT

Contact No.	Normal	Operated
1	X	
2	X	

#### TECHNICAL CHARACTERISTICS

CONTINUOUS CURRENT : 40 AMPS  
 RATING AT 500 VAC  
 MAX. NO OF CONTACTS : 2 (1NO. 1 NC ) 2 NO or NC  
 MODE OF OPERATION : 1 WAY SELF RESETTING

Contact No.	Normal	Operated
1	X	



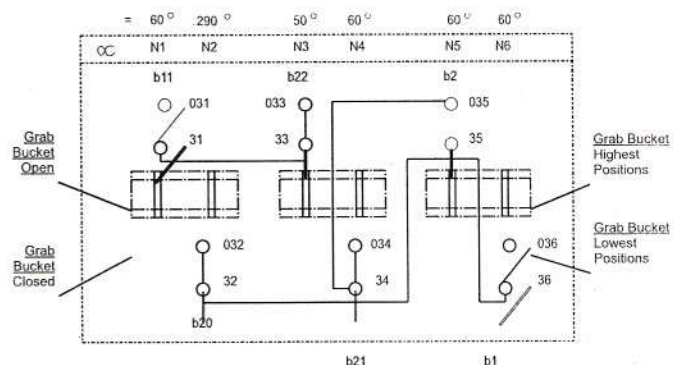
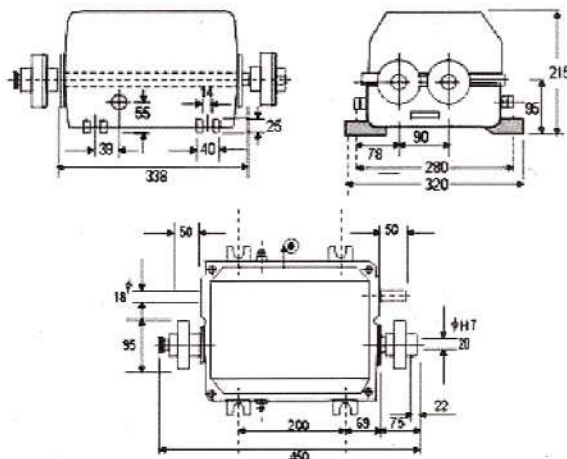
### ► GRAB DIFFERENTIAL LIMIT SWITCHES

**Application :-** The grab differential limit switch is driven by holding and closing winches and are used in auxiliary circuits for single lever grab control.

It is used for opening /closing and hoisting function of the motor at required preset position, It operates irrespective of the height of the grab, at the highest & lowest grab positions.

**Mode of Operation :-** The switches N5,N6 are Limit switches for the highest and lowest grab positions .The "grab Closed" and "Grab open" limit positions are monitored by the switches N1 and N4,whares N2 and N3 initiate the switching operations for single lever grab control.

**Accessories :-** A special wrench is needed to release the locking nut when adjusting the cam discs. This Wrench is included with the switch.





# WIRE / PUNCHEDS STAINLESS STEEL GRID RESISTORS

## ► INTRODUCTION

Resistors are supplied for both AC & DC requirements. The basic types of resistors are stainless steel wire and punched steel. Suitable for current rating 10 to 800 amps. Multiple paths are used for system having higher ratings.

## ► STAINLESS STEEL WIRE GRID RESISTORS

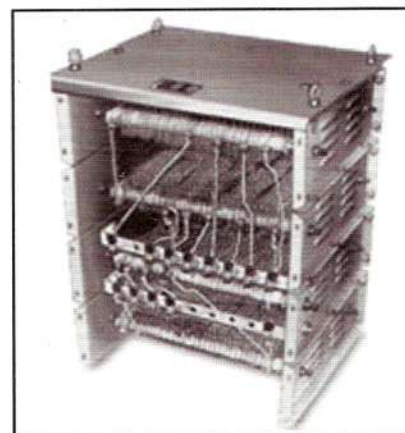
These resistors consist of stainless steel wires or strip form of grids. The standard modules with current rating from 7 Amps to 400 Amps Single or multiples options are available.

## ► PUNCHED STEEL GRID RESISTORS

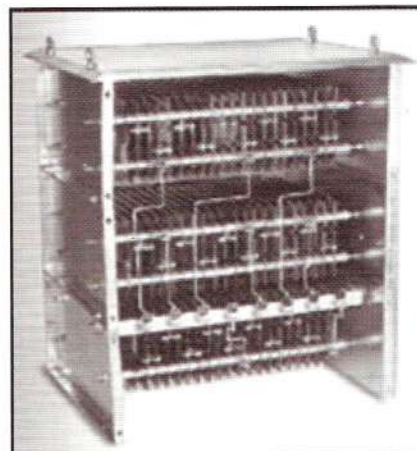
Punched grid resistors consist of grids punched from sheet of corrosion resistant nickel chromium alloy sheet steels. The punched steel grids are very robust with no effect of jerks, shocks or vibration. Ideal for heavy duty operating conditions like steel mill application. Available in current rating 8 Amps to 800 amps.

### Technical data / Features :

Enclosed	- Sheet Steel duly galvanised / painted
Mounting position	- Floor
Protection Degree	- IP - 11 / IP - 21 / IP-23 / IP - 33
Current rating (s.s.grid) continuous	- 7 - 400 Amps
Current rating (p.s.grid) continuous	- 7 - 800 Amps
Cooling	- Air / oil cooled
Temperature rise	- 2250C / 2500C / 3750C
Cable entry	- Bottom



Rated Value Ohms	Grid Type	Current Rating for various duty factors (Amps)			
		25% ED	40% ED	60% ED	100% ED
0.010	PS 10	390	325	280	234
0.022	PS 22	265	220	190	158
0.032	PS 32	220	182	153	131
0.046	PS 46	185	151	130	110
0.068	PS 68	152	126	110	90
0.100	PS 100	125	103	88	74
0.150	PS 150	101	84	72	61
0.220	PS 220	83	70	59	50
0.300	PS 300	82	59	50	43
0.460	PS 460	58	48	40	35
0.720	PS 720	47	39	33	28
1.000	PS 1000	40	33	28	24
1.500	PS 1500	32	27	23	19
2.500	PS 2500	25	21	18	15
4.500	PS 4500	15	13	11	8





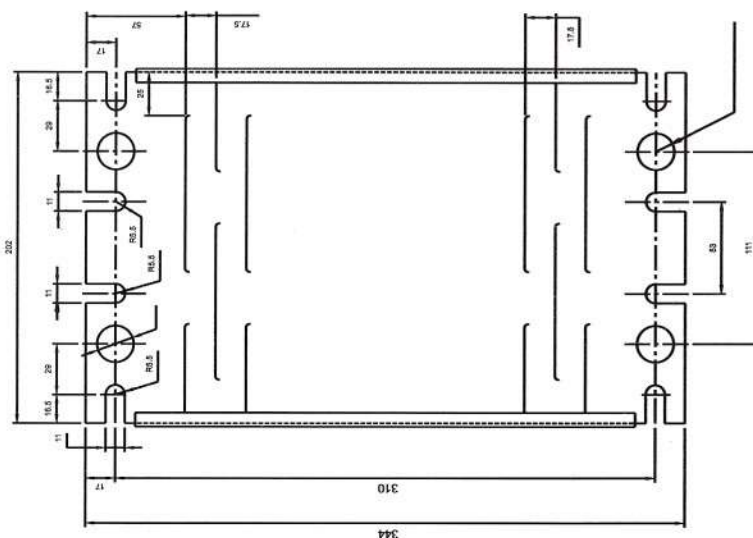
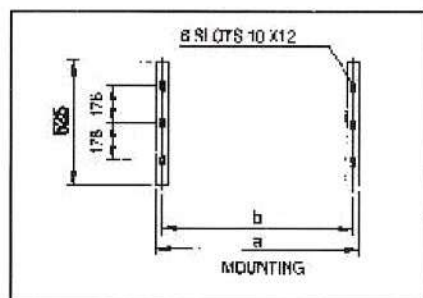
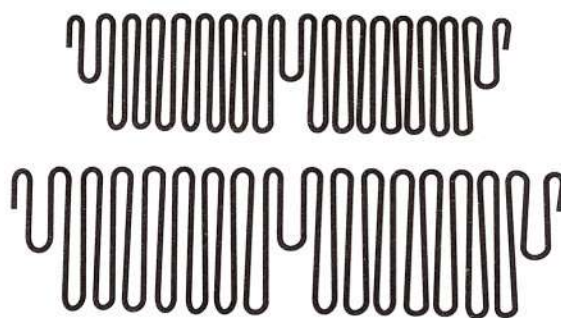
End view

Front view

90 max

Cable entry from bottom

mounting channel 75 - 60 to be arranged by customer



Unit Size	A	a	b	Unit Size	A	a	b	Unit Size	A	a	b	h
SS1	430	381	355	SL1	650	600	574	SB1	880	830	810	180
SS2	430	381	355	SL2	650	600	574	SB2	880	830	810	360
SS3	430	381	355	SL3	650	600	574	SB3	880	830	810	540
SS4	430	381	355	SL4	650	600	574	SB4	880	830	810	720
SS5	430	381	355	SL5	650	600	574	SB5	880	830	810	900
SS6	430	381	355	SL6	650	600	574	SB6	880	830	810	1080

# MASTER / CAM CONTROLLERS

## ► INTRODUCTION

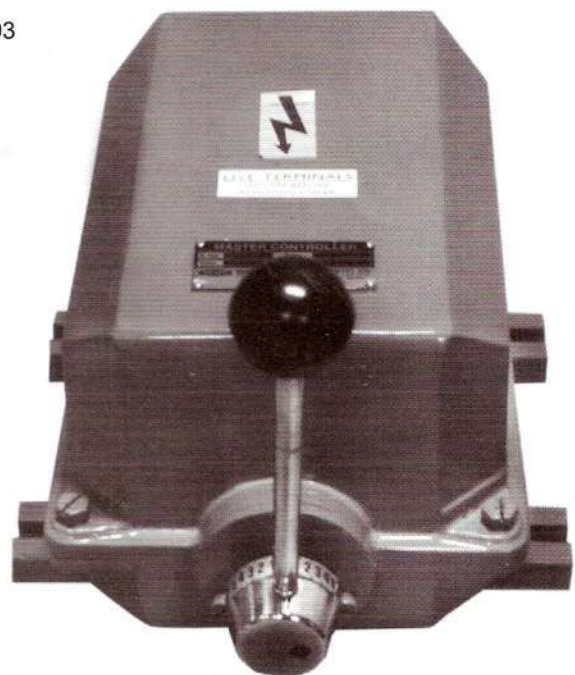
Master controller are used for remote operation of the equipment like E. O. T cranes & rolling mills drives etc. The enclosure of the controller confirms to I. P 54 degrees of protection, making it dust proof. It has up to 6 notches either side with maximum 24 contacts as per desired sequence. Controller are provided with spring & Dead man's handle arrangement. They are compact up to 4-0-4.step. Suitable for Hoist-Grab ,Cross Travel Long Travel. Up to 16 contacts per motion with spring return arrangement is provided.

## ► SALIENT FEATURES

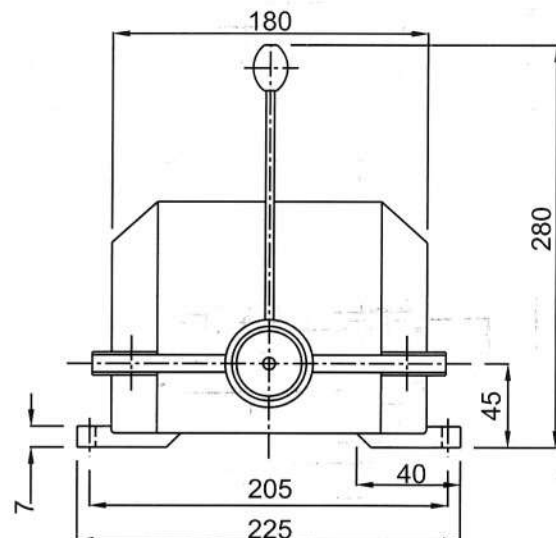
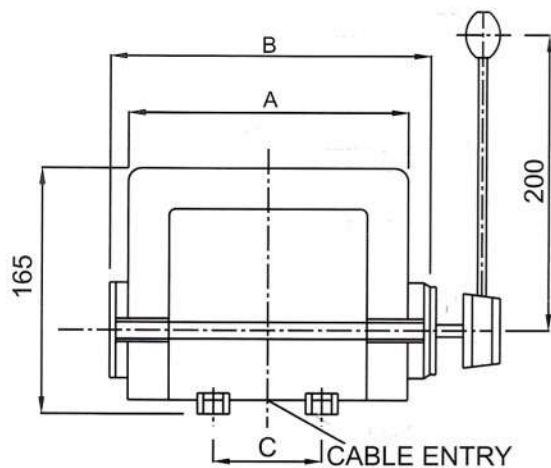
1. Long Life :-Millions of operations are possible without significant wear to melamine cams and contacts which are rated for 40amps at 500 V A.C.
2. Simple Maintenance:- Maintenance is simplified through the use of individual interchangeable contact blocks. Contact tips can be easily inspected without removing the block or disturbing connections. When contacts are worn, only fixed and moving contacts can be replaced by removing only one screw. The remaining contact blocks and circuits are undisturbed.
3. Wide Electrical Clearance:- The design of contact block provides generous electrical creepage and clearance, preventing arcing between contact blocks or to ground. Heavy duty terminal screws are located for convenience and ease of wiring.

## Technical Data :

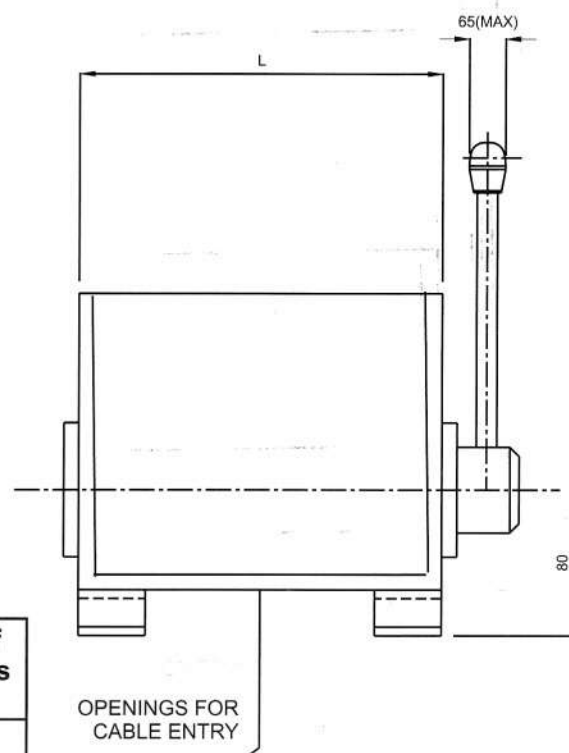
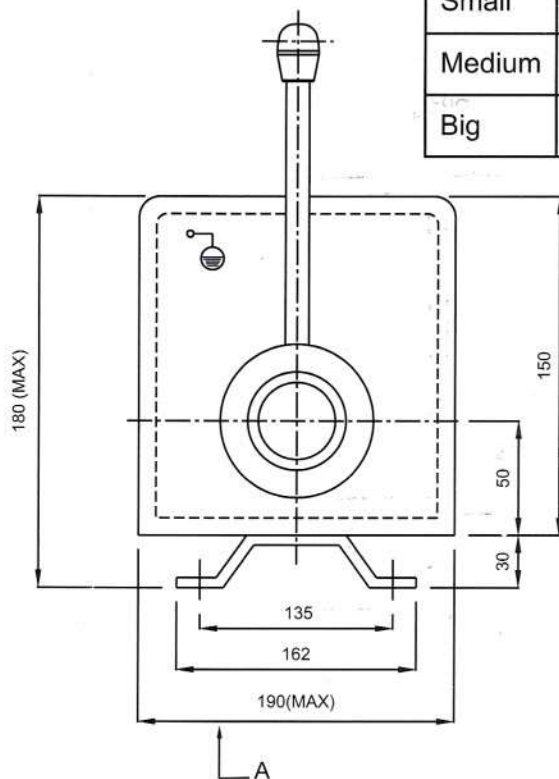
Body Material	- Sheet Steel / Aluminium Die cast
Protection Degree	- IP-44 / IP-54 Confirming to IS-13947(Part-1)1993
Mounting position	- Horizontal / Vertical
Contact Material	- Silver Cadmium
Rated Voltage Insulation	- 500 V A. C.
Thermal Test Current	- 10 Amps.
Cable entries	- 2X20 Ø 2x26Ø standard Conduit
Frequency of operation	- 1000 switching per hour
Contacts	- Single / double break
No. of contacts	- 24 maximum
No. of steps	- 7 - 0 - 7 maximum
Optional	- Spring return / deadman's handle arrangement







Type	A	B	C	D	No of Contacts	No of Cable Entries	
						Dia 20	Dia 25
Small	170	220	90	70	8	1	1
Medium	285	225	140	140	16	2	2
Big	370	435	140	140	24	2	2



Size	L	D	No. of Cams	No. of cable dia	No of entries
				20	20
A	135	105	6	2	2
B	195	165	12	2	4
C	245	215	18	2	4
D	305	265	24	2	6

## **OUR RANGE INCLUDES**

**A. C. ELECTRO MAGNETIC BRAKES**

**DRUM CONTROLLERS**

**CURRENT COLLECTORS**

**CABLE TROLLEYS**

**D. C. ELECTRO MAGNETIC BRAKES**

**GEARED COUPLINGS**

**BRAKE DRUMS**

**MASTER / CAM CONTROLLERS**



**ANAND**

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