

# Crane Spare



AN ISO 9001 : 2015 Certified Company



Equipping Steel Industry  
at all Levels



Lawatherm is known for providing most appropriate material handling (EOT Crane) spare solutions to various industry segments. Lawatherm lifting equipment is operating in the most demanding industries and environments including steel and other primary metals, wood yards, petrochemical and mining, as well as ports, shipyards and intermodal terminals. We know cranes and machine tools and apply that knowledge in our supply of parts. Our spare part services cover any brand of crane and hoist, other lifting equipment or machine tools. Lawatherm technicians understand what it takes to keep your equipment working at top performance. We train our service team to understand the unique requirements of each installed brand and provide the appropriate services in accordance with original equipment manufacturer (OEM) specifications.

Our products are designed, based on the respective Indian standards and hence can be interchanged with other brands provided of course if the other manufacturer has also followed the correct Indian standards while designing and manufacturer his products. Also in our company we have an ongoing process of R&D for improving the quality for our products.

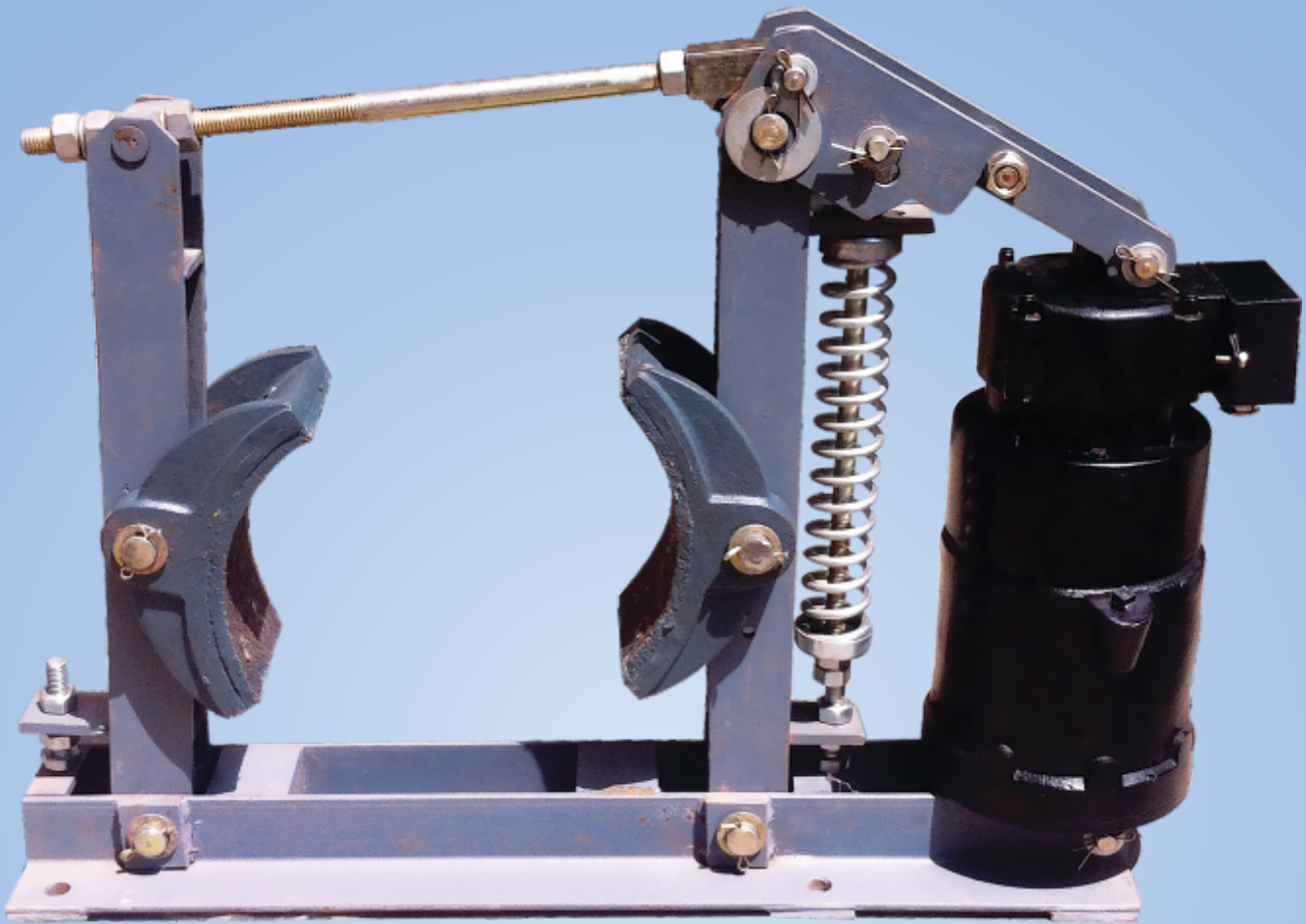
Since we are regularly manufacturing the products at times we can even supply material at short notice there by reducing the down time of the customer's system during maintenance or breakdown.

As a Leading the Indian overhead crane spare industry with the largest service network and a complete range of lifting equipment,

- Automotive
- Energy From Waste
- Intermodal and Rail
- Manufacturing
- Mining
- Nuclea
- Petrochemical
- Ports
- Power
- Pulp & Paper
- Shipyards
- Steel

In addition to the complete range of control gear equipment and keeping with our commitment to provide our customers with the best possible services, we also supply shrouded bus bar conductors as well as radio remote controls, so that our factory where we have a single outlet ,we can provide our customer be it a crane manufacturer or crane uses this unique service.





### ELECTRO HYDRAULIC THRUSTOR BRAKES

#### Introduction

Lawa Thruster brake is a device to retard the speed of moving machinery and to stop it accurately to the desired position. The braking force is applied to the brake shoes by a pre-stressed compression spring. The shoes press on the rotating brake drum retarding its speed, and finally stopping it. The releasing of the brake and compressing of the spring is done by thruster. Other release devices like pneumatic cylinder or manual release arrangements can be offered on request.

#### Construction And Operation

Thruster brake has a pair of cast iron shoes which are lined up with friction pads. The shoes are hinged on main arm and side arm of the brake. Each of them have a hinge pin fitted in the base. They are connected to each other on top by a tie rod, which is hinged in the main arm and locked to the swivel block in the side arm, by a lock nut.

A crank lever is hinged on the main arm, and the other end is fixed to the top clevis of the thruster by a hinge pin. A brake spring, is fixed on the main arm and is pre-loaded by a locknut on the lever, pre-tension in this spring decides the breaking torque. The thruster is fitted on the base by a hinge pin. When the thruster is not energized, the brake shoes are pressed on the brake drum fitted on the drive motor shaft and hold it under the effect of braking force provided by the spring. In such condition, the brake is applied, and the drum cannot rotate. When the thruster motor is energized, the thrust provided by the thruster lifts up the crank lever which move the arms and the shoes away from the brake drum, there by releasing the braking force. The spring is compressed and braking energy is stored for the next cycle.

## FOUNDATION

To install the brake, the foundation must be made ready with tapped holes of proper size as per the dimensions mentioned in the dimension table. Care must be taken to ensure the center line of the brake coincides with the centerline of the brake drum and also the level of mounting pads "h" is matching with the center height of the brake drum.

## INSTALLING BRAKE IN POSITION

To insert the brake in position the brake shoes are to be taken apart to clear the drum diameter. To do this, slacken the setting bolts and the tie-rod nuts in the side arm pull it slightly. This will increase the distance between the brake shoes and the brake can now be inserted on the foundation bolts and the shoes can be positioned on the brake drum. Re-tighten the setting bolt and the tie-rod nuts. Tighten the mounting bolts.

## INSTALLING THRUSTER ON BRAKE

The thruster to be filled with sufficient quantity of oil as mentioned in the Thruster Table. To mount the thruster on the brake, remove one side split pins on the thruster hinge pins of the brake and the lever. Remove both pins and re-insert them after positioning the thruster on the pin holes in the base and lever of the brake, replace both split pins, check that the thruster movement is unobstructed when the crank lever is pulled manually and the thrust rod of the thruster and connect 3-phase, 415 Volts power supply cables to the three terminals on the terminal plate inside the terminal box. Terminate the earthing lead on the earth terminal provided on the thruster or brake. Replace the terminal box cover on the terminal box. The thruster is ready for operation.

## ALIGNING AND SETTING OF BRAKE

Next, align the brake shoes with the diameter and surface of the brake drum and adjust the nuts on the tie-rod such that both shoes grip the brake drum equally. Energize the power cables. This will cause the thrust rod of the thruster to move up and the brake is released as the shoes released the brake drum. Adjust the gap between the drum and shoes to 0.3 to 0.5, equally by adjusting the setting bolts on both arms. For equal and uniform liner wear it is necessary to ensure that the shoes and the arms move equally. This is done automatically by the ball on one arm and a matching vee on the other arm.

### TECHNICAL DATA :

Diameter	Braking Torque
100 mm (4") x 18 kg	06 kgm
150 mm (6") x 18 kg	09 kgm
160 mm (6") x 18 kg	09 kgm
200 mm (8") x 18 kg	020 kgm
200 mm (8") x 34 kg	032 kgm
250 mm (10") x 18 kg	035 kgm
250 mm (10") x 34 kg	042 kgm
300 mm (12") x 18 kg	042 kgm
300 mm (12") x 34 kg	062 kgm
400 mm (16") x 34 kg	090 kgm
400 mm (16") x 68 kg	170 kgm
500 mm (20") x 46 kg	190 kgm
500 mm (20") x 68 kg	290 kgm
600 mm (24") x 114 kg	580 kgm

### ELECTRO HYDRAULIC THRUSTORS (ST)



#### ELECTRICAL SUPPLY

Unless otherwise specified, all thrusters are suitable for operation for 415 Volts, 3-phase, 50 Hz power supply. Thrusters for other voltages up to 600 VAC, 3-phase can be supplied against specific enquiries.

#### Connections

Lawatherm Thrusters operated equally well in both directions of rotation. Therefore, the three phase supply lines can be connected the Thrusters in any R-Y-B phase sequence. Provide adequate safety backups.

#### Oil Requirements

Thrusters are supplied without oil to avoid spillage during transportation. They must be filled with sufficient quantity of oil before installation. For all models of thrusters, it is recommended to use Transformer Oil as specified in BS : 148. Oil capacity requirements are listed in the table below.

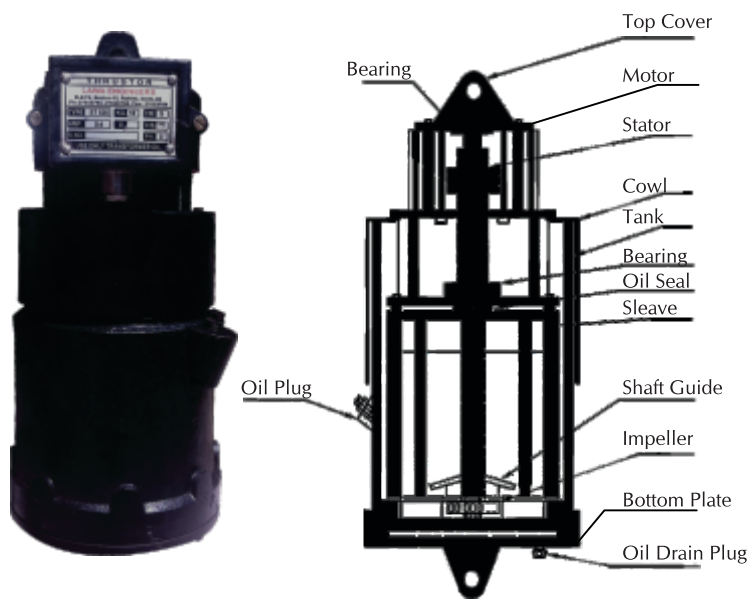
#### Installation Of Thrusters

Lawatherm Thrusters are suitable for vertical mounting only. After filling the thruster with required quantity of oil. Install it by using the clevis and hinge pins provided. Insert the locking spilt pins. Ensure that no excessive transverse forces are acting on the thrust rod. Wipe out the dust, paint or oil deposits from the operating section of the thrust rod pins by dry and clean cloth.

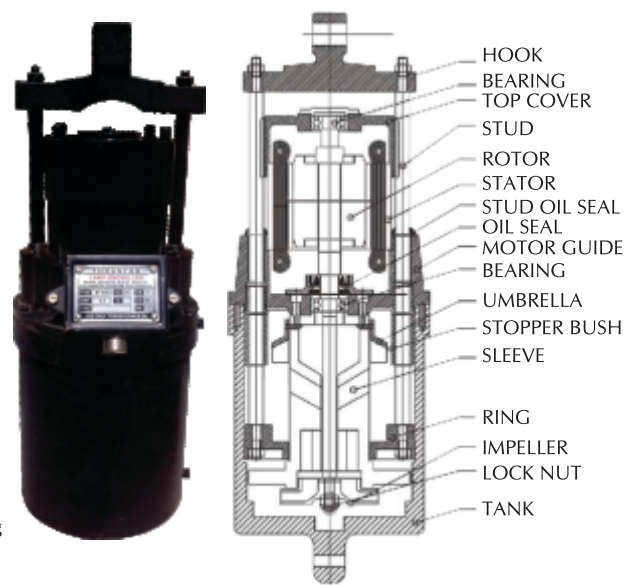
**MAINTENANCE**

Lawatherm Thrusters is designed for long trouble free service. The motor windings are designed to meet contingencies. The bearings are adequately sized.

Routine maintenance schedule includes checking the oil level and topping them if necessary. If oil contamination is detected, drain it out completely and refill with fresh oil. Check and correct the oil leakage if detected.

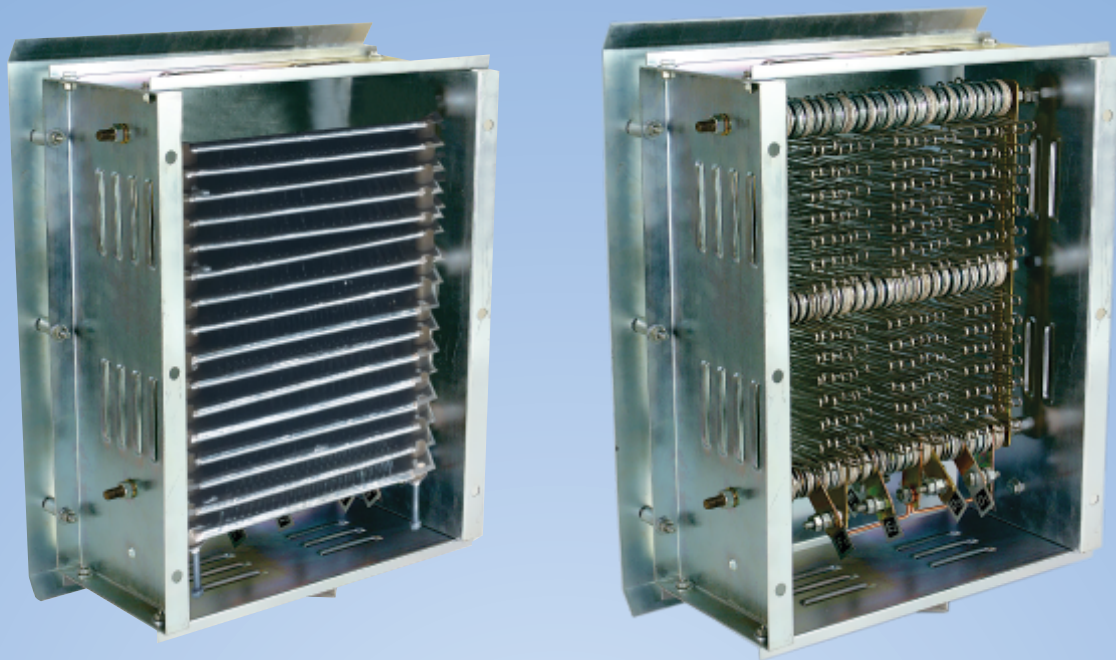


THRUSTOR ST-520



THRUSTOR ST-535

Dimensions																				
Type	Rated Thrust kgs. (N)	Output Stroke mm.	Input watts	A	B	C	D	E	F	G	H	J	K	L	M	P	Q	wt. (kg.)	Oil Capacity liters	
ST 520	18 (180)	51	90	349	51	159	19	25	13	12.7	19	16	19	32	19	110	90	14	2.0	
ST 535	34 (340)		150			444	171	22	29	14		19.7	21	27	41	25	138	118	30	2.5
ST 545	45 (450)		180																	
ST 870	68 (680)	76	200	508	76	216	25	32	16	22.2	25	24	29	48	32	152	132	40	4.5	
ST 8110	114 (1140)		250																	
ST 13200	225 (2250)	127	420	660	127	254	32	38	19	25.4	30	27	45	54	38	152	132	55	9.0	
ST 13300	295 (2950)		580																	



## WIRE GRID & PUNCH GRID

### Introduction

Lawtherm Resistance boxes are used to add resistance in an electric motor circuit for modifying the performance characteristic of Slip Ring Electric Motors of EOT Cranes, Rubber Mills, Steel Rolling Mills, Cement Plants, Power Plants, Conveyors, Coke Oven, Blowers etc. for speed control and developing starting torque with low starting currents. They are also used as Dynamic Breaking Resistor for V.V.V.F.A.C. Drives, electric loading of AC Altimeters, DC Generators and Dynamometers.

Resistors are designed to meet requirements of both A.C. & D.C. Application.

### Type Of Resistors

The basic type of resistors are:

1. Stainless steel Wire Grid Resistors
2. Stainless Steel Punched Grid Resistors
3. Febral Punched Grid Resistors

### Current Ratings

Resistors are manufactured for current ratings from 10 to 800 Amps. Continuous duty resistors of higher ratings are made by using two-or more parallel paths. Resistors with short time rating up to 3000 Amps (or even higher), for neutral earthing are possible for system voltage up to and above 11KV.

### Stainless Steel Wire Grid Resistors

These resistors consist of stainless steel wires or strip in form of grids. The current rating generally range from 7 Amps to 100 Amps. For continuous duty applications with single or multiple paths.

### Stainless Steel Grid Resistors

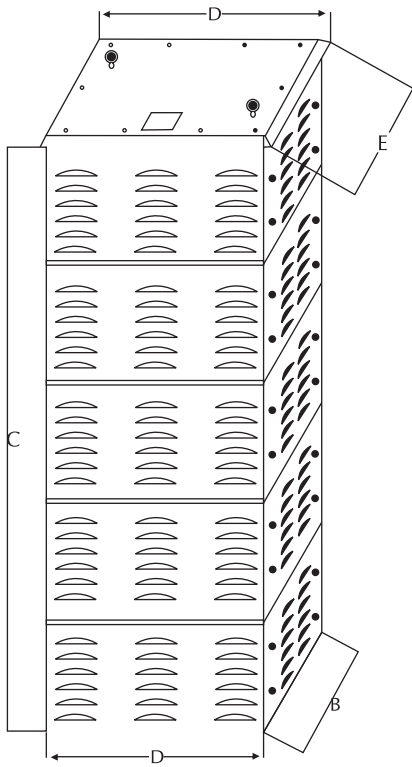
Punched steel grid resistors consist of grid punched from corrosion resisting nickel chromium alloy sheet steels. The punched steel grids are completely immune to shock & vibration. They function reliably under the worst operating conditions and are particularly suited for steel mill duty. These resistors are available in wide range of current ratings from 8 Amps to 800 Amps for continuous duty with single or multiple parallel paths.

### Features

- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1. Enclosure material           | - Galvanized Sheet Steel (Hot dip) |
| 2. Mounting                     | - Floor mounting                   |
| 3. Degree of protection         | - IP-21/22/23.                     |
| 4. Current Rating (SS W - Grid) | - 7 to 100 Amps Continues.         |
| 5. Current Rating (SS P - Grid) | - 7 to 800 Amps, Continues.        |
| 6. Cooling                      | - Air Cooled                       |
| 7. Temperature rise             | - 225°/250°/375°C                  |
| 8. Cable Entry                  | - Bottom                           |



DIMENSION DETAILS OF RESISTANCE BOXES



SS WIRE GRID TYPE  
ALL DIMENSIONS ARE IN MM

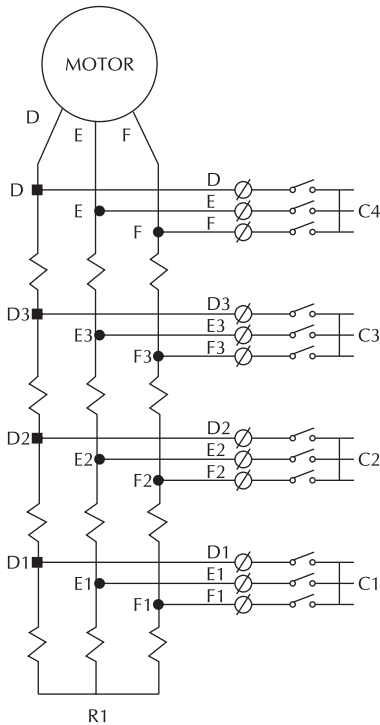
Type	Length (A)	Width (B)	Height (C)	Top Cover (D)	(E)
1 S-380	380	460	210	600	600
2 S-380	380	460	390	600	600
1L	600	460	210	760	630
2L	600	460	390	760	630
3L	600	460	570	760	630
4L	600	460	750	760	630
5L	600	460	930	760	630

SS PUNCHED GRID TYPE

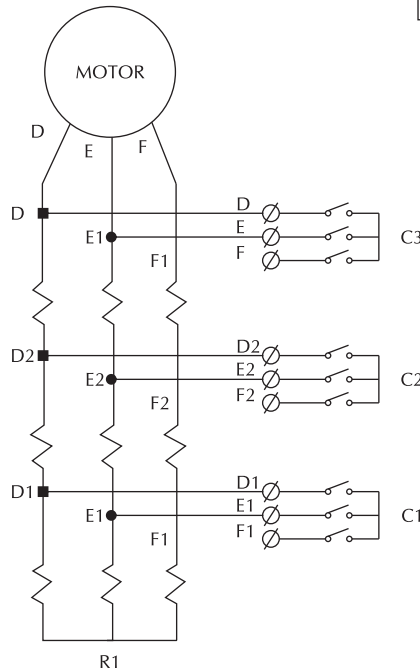
Type	Length (A)	Width (B)	Height (C)	Top Cover (D)	(E)
1 S	530	530	320	600	600
2 S	530	530	600	600	600
1L	680	530	320	760	630
2L	680	530	600	760	630
3L	680	530	880	760	630
4L	630	530	1160	760	630
5L	630	530	1440	760	630
1L-830	830	530	320	900	630
2L-830	830	530	600	900	630
3L-830	830	530	880	900	630
4L-830	830	530	1160	900	630
5L-830	830	530	1440	900	630
1L	1160	530	320	1250	645
2L	1160	530	600	1250	645
3L	1160	530	880	1250	645
4L	1160	530	1160	1250	645
5L	1160	530	1140	1250	645

In case of 3 Steps the no. of connections shall be 9 nos where as in case of 4 Steps the no. of connections shall be 12 nos

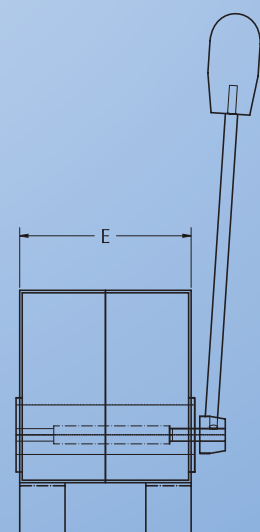
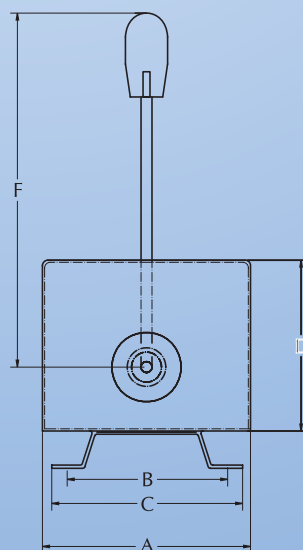
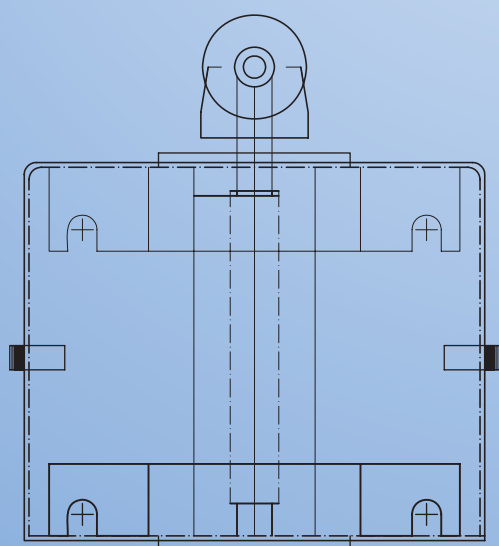
DIMENSION DETAILS OF PUNCHED GRID TYPE RESISTANCE BOXES



C1 - C4 = RESISTANCE CONTACTOR  
R1 = RESISTANCE BOX  
D - F3 = TERMINALS OF RESISTANCE BOX



C1 - C3 = RESISTANCE CONTACTOR  
R1 = RESISTANCE BOX  
D - F2 = TERMINALS OF RESISTANCE BOX



## MASTER/CAM CONTROLLERS

### Introduction

Lawatherm Master Controllers are used for remote operation of Contactors in equipment such as E.O.T. Cranes & Rolling mills drives. The Controllers are made in dust proof enclosure in IP-41 degree of protection, up to 6 notches either side with maximum 24 contacts as per desired sequence.

Spring return arrangement & Dead man's handle arrangement are also available.

### General

Master Controllers are of cam type where in contacts are actuated by individual cams mounted on operated shaft.

The Shaft are cut accordingly to the type of sequence required by the customers.

For this a blank sequence diagram can be provided by us to be filled in by the customers.

### Construction

Master Controller is housed in enclosure and provided with an easily removable cover with ample area for maintenance.

The cam shaft is mounted on bearing bushes on walls of housing.

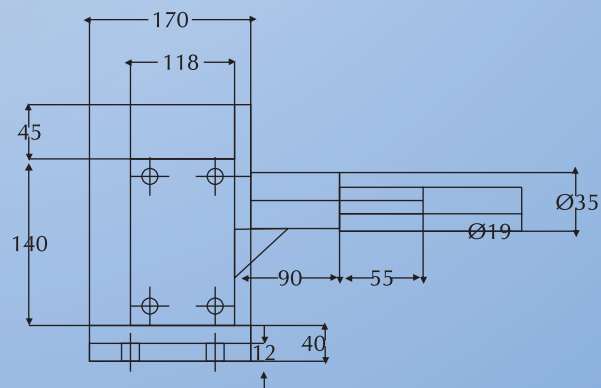
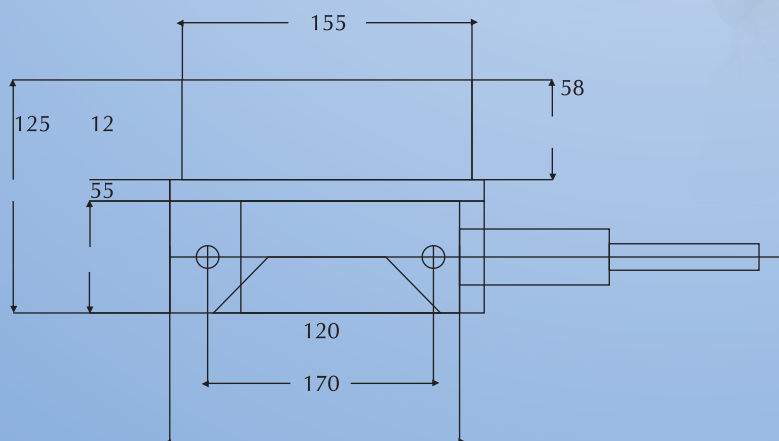
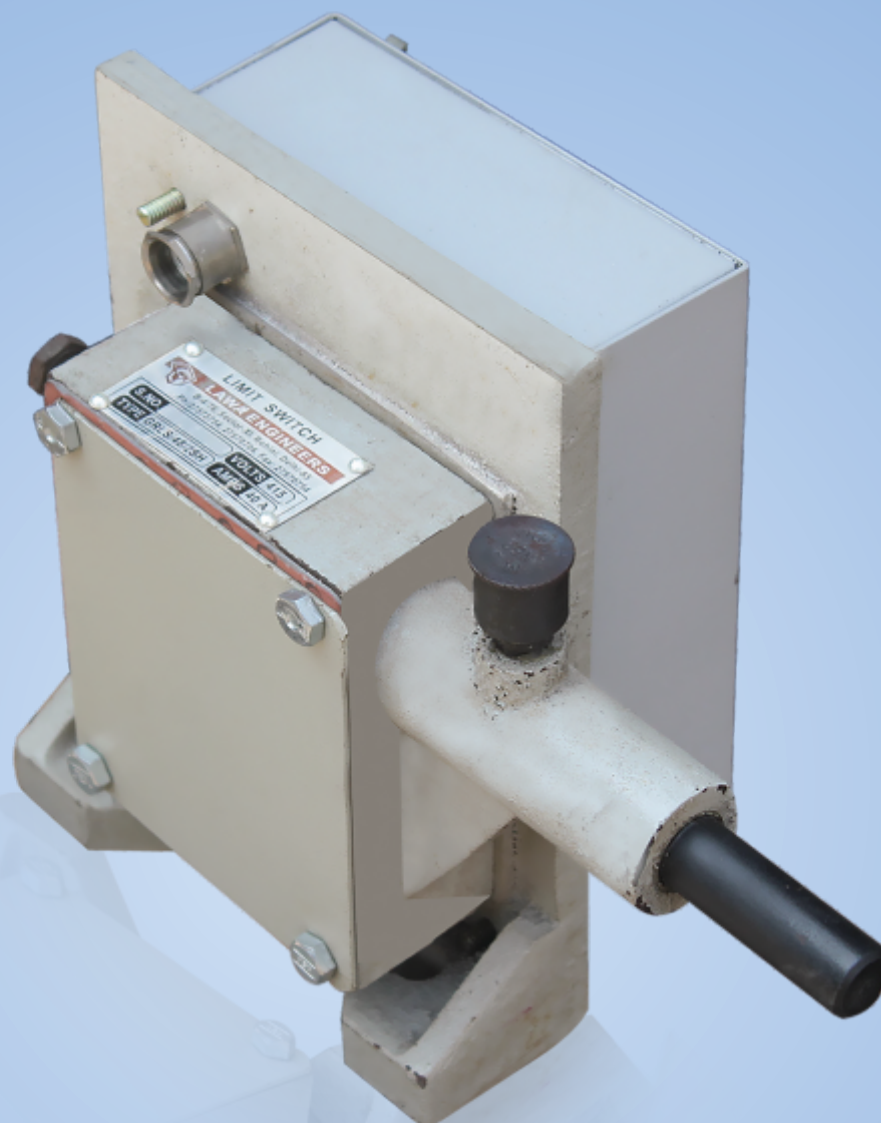
The cams are made of delrin material and fixed on square.

### Technical Data:

Body Material	- Sheet Steel (POWDER COATED)
Protection Degree	- IP-41
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	- 2x20Ø 2x2Ø standard conduit
Frequency of operation	- 1000 switching per hour
No. of contacts	- 24 maximum
No. of steps	- 6-0-6 maximum
Optional	- Spring return / Deadman's Handle arrangement

A	B	C	D	E	F
FOR 1/2, 1/3, 3/5, 4/6, 4/7, 4/8,					
190	127	154	155	136	250
FOR 4/10, 4/12, 5/8, 5/10, 5/12, 5/13					
190	128	154	155	198	

## ROTARY GEARED LIMIT SWITCHES



## ROTARY GEARED LIMIT SWITCHES (MODEL GRLS)

### Introduction

Lawatherm Rotary Geared Limit Switch GRLS is used to trip supply when the moving loads reach the extreme end positions of working zone.

### Operation

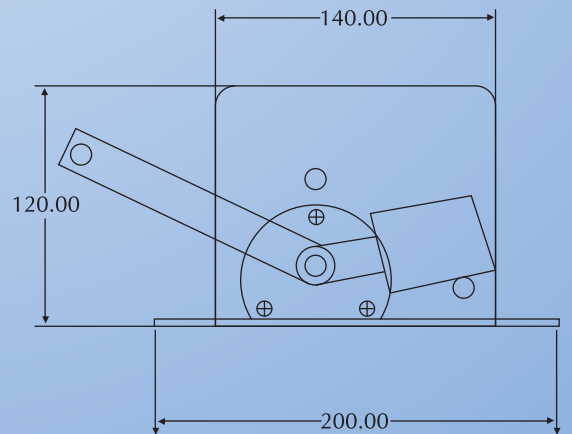
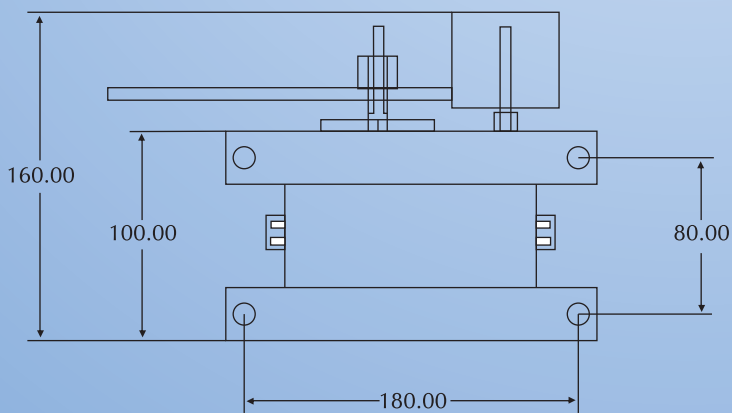
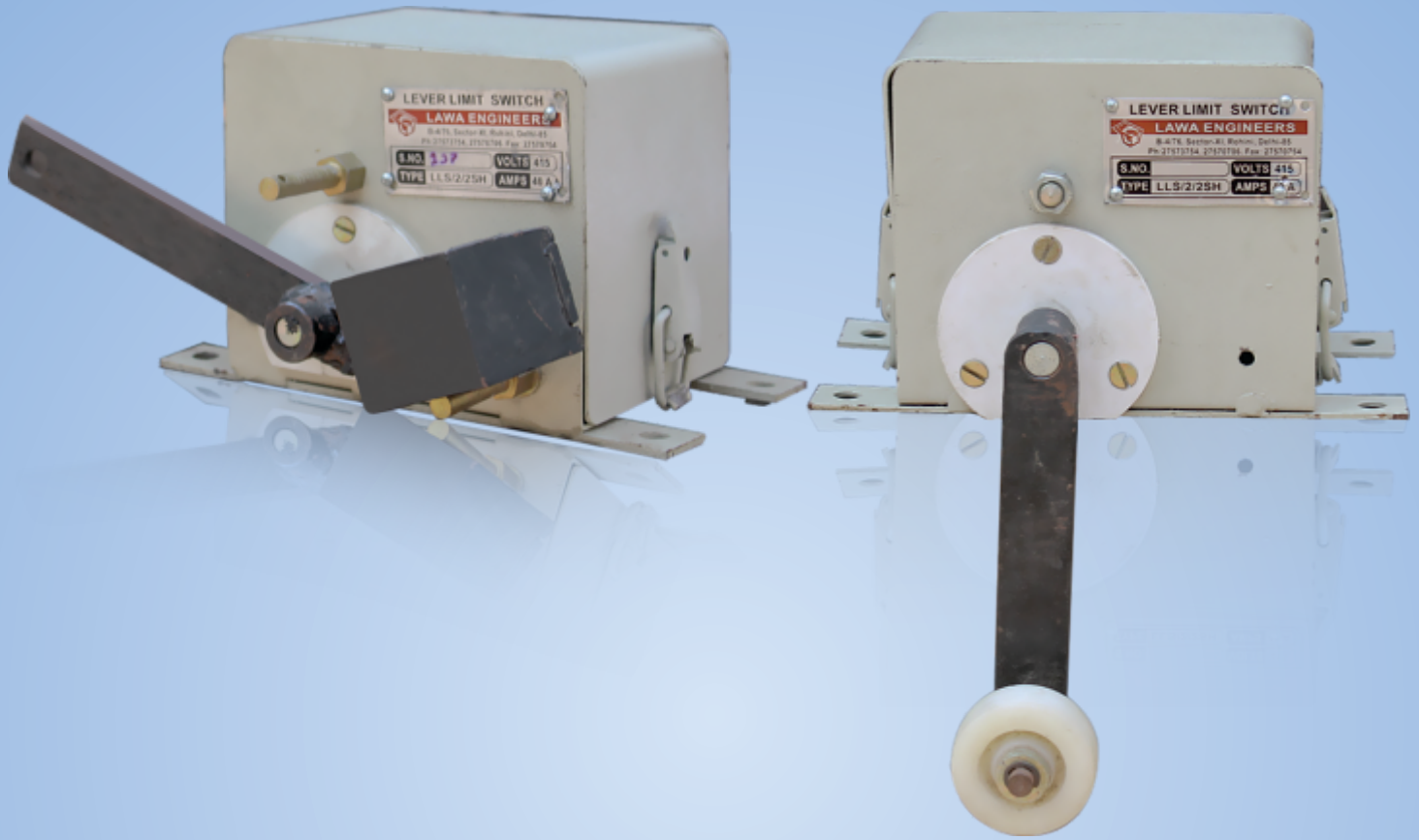
A two (or more) Contact Elements are operated by respective rotating Cams, suitably adjusted on a Cam Shaft which rotates with fixed speed ratio of the drive motor shaft. The cams can be suitably positioned so that they trip motor supply and stop the motion at the required point of travel.

### Application

Rotary Geared Limit Switches are suitable for use on reversing drives such as Hoists, Winches, Rolling Mills and various other mechanisms used in Steel Plants such as Coke Oven, Feeding machinery etc.

Body Material	MS Sheet ( Powder Coated )
Protection Degree	IP-41 Confirming to IS-13947(PART)-1)1993
Gear Ratio	48 : 1                  60 : 1                  96:1
Drive	Worm Drive
Cable Entries	2 X 3/4" Conduit
Contact Material	Silver Cadmium
Rated Voltage Insulation	500 V.a.c.
Thermal Test Current	10 Amps. / 40 Amps.
No. Of Contact	2 Nc Or 4 Nc
Cam Setting	Adjustable

Rotation Rotations	Effective Rotation	Useful Model	2 Contacts Model	Contacts
48:1	42	40	GRLS/48/2SH	GRLS/48/4SH
60:1	52	50	GRLS/60/2SH	GRLS/60/2SH
96:1	84	80	GRLS/96/2SH	GRLS/96/4SH



## LEVER/COUNTER WEIGHT OPERATED LIMIT SWITCHES

### Introduction

Lawatherm Lever ( and weight operated ) type Limit Switch LLS / CWLS operates the control change-over Contacts of motor of an moving equipment when a Cam moving with loads actuates the Lever of limit switch. This turns the cams on a square shaft and operates the NO / NC contact elements.

### Operation

Two or more Contact Elements are operated by respective rotating Cams, which are suitably fixed on a square Cam Shaft turned by a lever or weight. The contacts operate at 14 from central neutral position.

### Design

The Sheet Steel body, Lever and Cover of the Limit Switch are finished by powder coating treatment. The Cam Shaft is mounted in the housing on moulded Nylon bushes ( bearing) and are fixed through the front & rear walls.

### Technical Data :

Body material	Powder coated sheet
Degree of protection	IP- 41
Mounting position	Floor mounting
Cable entries	Twin. 3/4' BS conduit
No. of contact	2 / 3 /or 4
Wire connection	Silver-cadmimum
Rated voltage	500 V ac
Thermal test current	10 A

### Operating Executions :

The operating mechanism can be offered in two executions:

#### 1. Roller Operating A Lever :

These Limit Switches are used for E.O.T. Cranes, Wagon Shunting devices, Elevators, Travel mechanism or such linearly moving mechanisms to prevent over-travel. The position of operating lever is in up / down, and can be changed in steps of 90 at site.

#### 2. Lever Actuated By A Dead Weight :

These Limit Switches are used to prevent over hoist motion with weight. Counter weight is provided in this case. The same is lifted with wire rope to prevent over hoist position.



## FLEXIBLE GEARED COUPLINGS

The Lawatherm Flexible Geared Couplings are suitable for over coming the following type of misalignments.

Parallel Offset: Where axis of connected shafts are parallel but not within the same straight line.

Angular: Axes of shafts intersect at the center of coupling.





Combined Angular: Offset axes of shafts are neither parallel nor do they intersect.

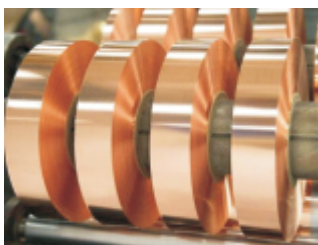
Hubs of Lawatherm make Couplings are machined from EN-9 Steel forgings to close tolerances for accurate alignments and proper balance.



## LIFTING MAGNET

Lawatherm is known for providing most appropriate magnetic material handling insulation spare solutions to various industry segments. We specialize in magnet systems for the scrap, steel and railroad industries. What has made us successful is our service to the customer and the well thought out design and quality of our systems. You demand maximum performance, durability and long life. We'll keep you up and running! Whether you are new to magnet systems or a long time user, Lawa is here for you! Experience counts and we've got it! Take a look at what we have to offer and give us a call. We'll set you up with what's right for you. We are your magnetic material handling specialists!

Application	Conductor Insulation	Deck Separator	Core Insulation	Coil leads
Product	PSA Mica Tape 	Mica Washer 	Mica Paper 	Mica Sheet 
Composition	silicone bonded glass-backed mica taps	machined, thick mica plate in micapaper or micapaper or flake	micapaper glass backed or without backing	silicone bonded mica flake flexible
Properties	high temperature resin rich, highly flexible tape which huges the conductor	low thermal conductivity prevent heat build-up in coll; compressive strength	heat barrier	highly stable at high voltages



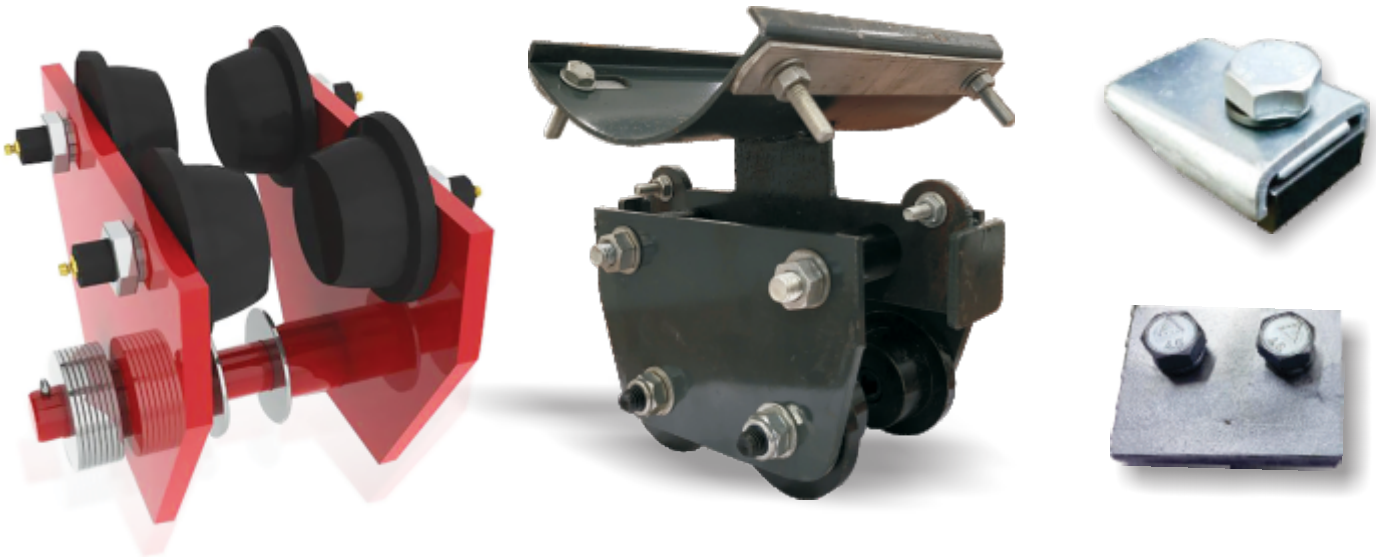
**Coil Core (copper/aluminium)**  
LAWATHERM using of Copper/Aluminium strips are highest grade of copper/aluminium that is sourced from the reliable and trusted mfg co

Dimension Details:-	Thickness: 1mm (min)-10mm Width: 1mm-20mm
Conductivity :-	Above 97% IACS min in Half Hard Above 99.95% in annealed
Purity :-	Copper/aluminium - 99%
Specifications (OFC):-	Copper/aluminium : 99.99%, O2: <10ppm Copper/aluminium : 99.95%, O2: <10ppm
Supply Condition:-	coils

## Lifting Magnet Repair

Lawatherm does Lifting Magnet Division repair & rewinding of lifting magnets of both copper & aluminium of all brands as well as the manufacturing of new. We understand the importance of getting your magnet back up and running in optimal condition in order to minimize downtime. We offer exceptional repair services for all brands magnets.





**CABLE TROLLEY & CLAMP**

Lawatherm hoist trolleys provide the connection between the lifting device and the bridge. The trolleys are designed for effortless movement along the bridge.

The stamped body fits most rigid hook or eye lifting device. Festoon clamps anchor the festooning at the start of the runway and bridge. Festoon trolley is used to support flat cable or air hose along the runway or bridge. The trolleys have four wheels and a pivoting festoon saddle support. They are ideally suited for long runways or with round cable or air hose..



**SYSTEMSPRING OPERATED CRD**

Lawatherm make spring operated cable reeling drums are powered with springs and has an automatic rewind feature which provides an extremely simple way of supplying power to machines such as cranes and hoists. These spring cable reeling drums are used for both AC and DC applications. These reels recovers and store the cable in multiple layers on the drum.

Standard reels are supplied for the cable fed in the clockwise direction, when viewed from the slipping side. The same can be provided for anticlockwise feed of cable also. These reels are extremely simple to mount, and can be mounted on the structure with the help of a supporting flange - If no suitable structure is available, then Vibrator Motor (Unbalanced) can be connected to the flange and this can be fixed to the floor or tray etc.

The springs used in these reels are manufactured from the highest quality materials and are of clock spring type. A wide range of characteristics can be obtained by assembling these springs singly or in series or in parallel.



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