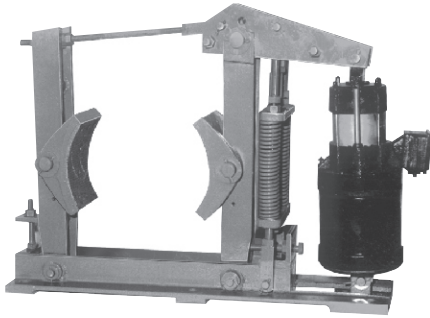


THRUSTER BRAKES SERIES (Mill Duty-MDT)



INTRODUCTION

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 stop 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

A thruster shoe 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. The pre-tension in this spring decides the braking torque. The thruster is fitted on the base by a hinge pin. When the thruster is not energised, 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 energised, the thrust provided by the thruster lifts up the crank lever which moves the arms and the shoe brakes away from the brake drum, and 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 of tapped holes 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 are aligned 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 and 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 :

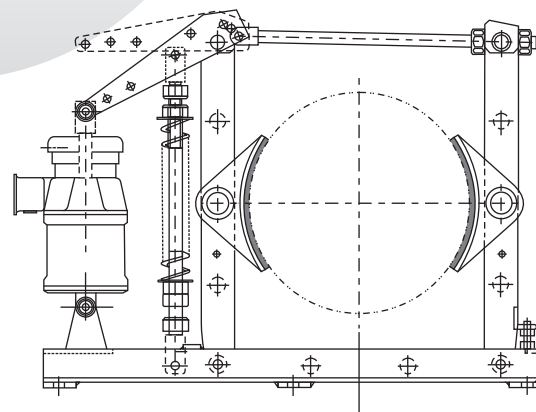
The thruster is to be filled with sufficient quantity of oil as mentioned in the Thruster Table. To mount the thruster on the brake, remove one side split pins on the thruster hinge pins of the brake and the lever. Remove both pins and re-insert them after positioning the thruster on the pin holes in 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 moves freely.

Open the terminal box cover 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 release the brake drum. Adjust the gap between the drum and shoes to 0.3 to 0.5 mm 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.



THRUSTER BRAKES SERIES (MILL DUTY-MDT)

SETTING OF BRAKE SHOES :

The shoe setting screws to be adjusted when the brake is released. Both shoes must have equal gap between the drum and the liner. Also the top and bottom corners of the liners are to be equal distance from the drum surface. The setting can be done with feeler gauge. The recommended gap between the liners and the drum is between

0.3 to 0.5mm. Ensure that brake drum is free to rotate when the brake is released.

REQUIRED BRAKING TORQUE :

The braking torque “M_B” (n-m) required to stop the rotating masses of total moment of inertia “J”(kg-msq),

From speed of “n” (rpm) in time “t” (s) is given by

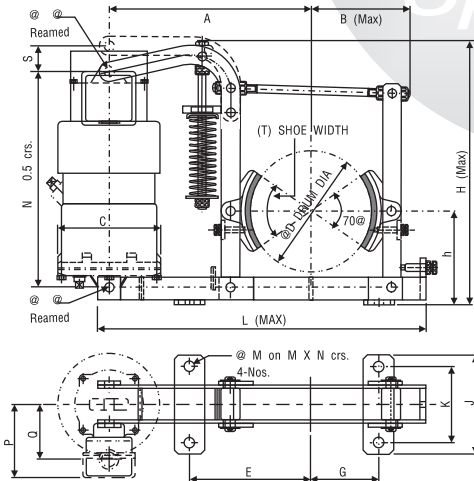
$$M_B = j \times n / (9.55 \times t) \text{ newton-meters.}$$

ADJUSTING BRAKING TORQUE :

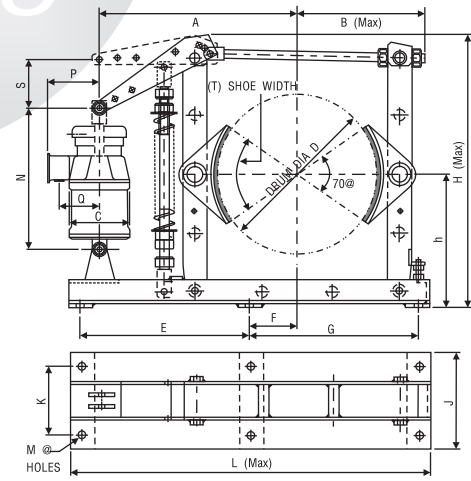
To adjust the braking torque to the desired value, the pre-loading of the compression spring is to be done by top nuts up the spring tie rod.

To increase torque, turn nuts clockwise. The adjustment of the braking torque is very critical. High braking torque result in rapid stoppage. For most applications, braking torque of about 150 to 250% of rated torque of the drive motor is sufficient.

THRUSTER BRAKE Ø 100....Ø 250



THRUSTER BRAKE Ø 300....Ø 600



TECHNICAL DATA :

Brake Model	Brake Torque		Thruster Details			C	N	P	Q	Mass kg.		
	Brake Drum Dia. mm	kg-m	N-m	Model	Force Kg.						Force (N)	Stroke (S)
MDT - 100 - 15	100	5	50	ST 515	15	150	51	135	280	105	85	17
MDT - 150 - 15	150	7.5	75	ST 515	15	150	51	135	280	105	85	20
MDT - 160 - 15	160	7.5	75	ST 515	15	150	51	135	280	105	85	20
MDT - 200 - 15	200	16	160	ST 515	15	150	51	135	280	105	85	27
MDT - 100 - 18	100	6	60	ST 520	18	180	51	159	349	110	90	17
MDT - 150 - 18	150	9	90	ST 520	18	180	51	159	349	110	90	20
MDT - 160 - 18	160	9	90	ST 520	18	180	51	159	349	110	90	20
MDT - 200 - 18	200	20	200	ST 520	18	180	51	159	349	110	90	27
MDT - 250 - 18	250	35	250	ST 520	18	180	51	159	349	110	90	30

DIMENSIONS :

Brake Model	A	B	E	G	h	H	J	K	L	M	SHOE WIDTH
MDT - 100 - 15	235	165	160	100	125	350	130	100	385	13	70
MDT - 150 - 15	265	195	160	100	125	350	130	100	445	13	70
MDT - 160 - 15	265	195	160	90	125	350	130	100	433	13	70
MDT - 200 - 15	360	215	360	170	200	465	180	125	600	15	88
MDT - 100 - 18	235	165	150	100	125	415	130	100	405	13	70
MDT - 150 - 18	265	195	150	100	125	415	130	100	465	13	70
MDT - 160 - 18	265	195	150	100	125	415	130	100	465	13	70
MDT - 200 - 18	360	215	360	170	200	513	180	125	600	15	88
MDT - 250 - 18	355	240	320	170	225	563	160	120	635	18	100

TECHNICAL DATA :

Brake Model	Brake Torque		Thruster Details			C	N	P	Q	Mass kg.		
	Brake Drum Dia. mm	kg-m	N-m	Model	Force Kg.						Force (N)	Stroke (S)
MDT - 250 - 34	250	42	420	ST 535	34	340	51	171	444	138	110	30
MDT - 300 - 34	300	62	620	ST 535	34	340	51	171	444	138	110	70
MDT - 400 - 46	400	90	900	ST 545	46	460	51	171	444	138	110	85
MDT - 400 - 68	400	110	1100	ST 870	68	680	76	215	508	152	124	88
MDT - 500 - 46	500	190	1900	ST 545	46	460	51	215	444	152	110	125
MDT - 500 - 68	500	290	2900	ST 870	68	680	76	215	508	152	124	125
MDT - 500 - 114	500	485	4850	ST 8110	114	1140	76	215	508	152	124	125
MDT - 600 - 68	600	350	3500	ST 870	68	680	76	215	508	152	124	190
MDT - 600 - 114	600	580	5800	ST 8110	114	1140	76	215	508	152	124	190

DIMENSIONS :

Brake Model	A	B	E	F	G	h	H	J	K	L	M	SHOE WIDTH
MDT - 250 - 34	355	240	320	-	170	225	563	180	120	635	15	100
MDT - 300 - 34	430	285	480	105	250	275	600	205	145	780	20	140
MDT - 400 - 36	503	350	508	65	377	310	630	236	180	955	20	180
MDT - 400 - 68	503	350	508	65	377	310	630	236	180	955	20	200
MDT - 400 - 46	618	410	680	150	380	417	857	302	215	1130	25	200
MDT - 500 - 68	618	410	680	150	380	417	857	302	215	1130	25	200
MDT - 500 - 114	618	410	680	150	380	417	857	302	215	1130	25	200
MDT - 600 - 68	688	215	765	150	485	475	970	322	235	1300	25	240
MDT - 600 - 114	688	480	765	150	485	475	970	322	235	1300	25	240