

4 THRUSTER DISC BRAKES



1.0 MD Series Thruster Disc Brakes Models



TDB-MD-16-RH Series



TDB-MD-16-LH Series



TDB-MD-20 Series



TDB-MD-23 Series



TDB-M-28 Series



TDB-M-37 Series



2.0 Principles of Operation



THRUSTER

This is an electro-mechanical hydraulic actuator which is used as the principal means of brake release.

 F_{S} = Spring Force F_{C} = Clamping Force

 F_B = Braking Force = 2 x F_C x μ

Nominal values of µ

(Average friction factor of standard material combination)



2.1 Principles of Operation MD & M Series TDB Braking Torques

	MAXIMUM BRAKING TORQUE (Nm), μ=0.4 (STATIC)													
	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-	TDB-
	MD16	MD16	MD20	MD20	MD20	MD20	M23	M23	M23	M28	M28	M28	M28	M37
	ES-23-	ES-30-	ES-23-	ES-30-	ES-50-	ES-80-	ES-50-	ES-80-	ES-121-	ES-121-	ES-201-	ES-301-	ES-301-	ES-301-
DISC Ø	050	050	050	050	060	060	060	060	060	060	060	060	120	120
Ø(mm)	Nm													
250	195	270												
280	225	315												
315	260	365												
355	300	420	420	590	830	1540	935							
400	345	485	490	690	960	1790	1090	1600	2940					
450	395	555	560	800	1110	2070	1260	1850	3400	2730				
500	445	625	640	910	1260	2350	1430	2100	3860	3120	5040			
560					1440	2690	1630	2400	4420	3590	5800	8460		
630					1650	3080	1870	2750	5060	4130	6680	9750	13250	
710								3150	5800	4760	7690	11220	15250	21100
800									6530	5460	8820	12880	17500	24400
900												14720	20000	28000
1000												16560	22500	31600
1250														



3.0 Design Highlights



 Robust design with all bearings and pivot points fitted with maintenance free close tolerance self lubrication bushings.

- All coil springs designed for 1 million + cycles.
- All thrusters built to DIN15430 standard.
- 50% fewer parts than all competitors' brakes.
- All parts designed to mill standard with minimum safety factor of 4:1.
- Sintered friction linings standard.
- All brakes tested and torque set as per customer's requirement.
- Brake weight dramatically reduced important factor for machinery house structural design. 30% lighter than competitors brakes.
- Bearing torque independent of DISC rotating direction.
- Easily replaceable asbestos free brake linings for high circumferential speed up to 85m/sec. and maximum DISC temperature of up to 850 °C.
- Equal DISC lining clearance due to Hillmar synchronized linkage.
- No right hand & left hand design.



4.0 Standard Features



- Equipped with Automatic Wear Compensator.
- Equipped with Manual Release Device.
- Brake speeds comparable to magnetic brakes can be attained.
- All component parts designed for maximum durability.
- Stainless steel spindles used throughout.
- Self-lubricating bushings used at all pivot points.
- Thruster brake release 3-phase AC supply.
- Enclosed adjustable brake spring with torque scale.
- High performance asbestos-free brake linings.
- Sintered metal brake linings for high speeds.
- Thruster can be installed horizontally for industrial vertical-motor applications like slewing.
- Precise torque selection for maximum service.
- Ease of Maintenance; less parts; lighter weight.
- Quick change insert type brake linings.
- Streamlined design halves maintenance time.
- Sure and easy adjustment.
- Easy maintenance after initial adjustment.



5.0 Design Options



- BRAKE RELEASE
- RESERVE STROKE
- PAD WEAR MANUAL RELEASE





- Switch
 - 1. Proximity switch brake release
 - 2. Proximity switch pad wear
 - 3. Proximity switch manual release
 - 4. Proximity switch reserve stroke
- Disc

Complete range of discs thickness 20 mm & 30 mm

- Couplings
 - 1. RKM Rigid Couplings
 - 2. PKM Polyurethane Couplings
 - 3. GKM Gear Couplings
 - 4. RKSM Rigid Couplings
- Computer monitoring system option See section 5.1.
- Steel Mill options See section 5.2.



5.1 CMS option



Computer monitoring system option is designed to provide a full range of monitoring of the brake.

Monitoring including:

- Manual Release Proximity Switch
- Brake release Proximity Switch
- Pad wear Proximity Switch
- Reserve stroke Proximity Switch
- Pad Temperature Sensor
- Contact Force Sensor(load cell)

These systems are recommended for equipment which is remote operated.

5.2 Steel Mill option



- Steel mill equipment requires additional protection to allow operation in the harsh steel mill operating environments.
- Steel mill options included thruster provided with hydraulic fluid (a*viation hydraulic fluid*) to operate at elevated temperature of up to 90°C.
- Proximity Switch.
- Proximity Switch Wiring.
- Wiring Junction Box.
- Thruster Disc Brake dust protection.

6.0 Brake Friction Linings



Sintered metallic brake lining

- Large pad areas standard
- Easy replacement
- Interchangeable parts

Organic brake lining

- Noise free formulation
- Large pad areas standard
- Easy field replacement
- Interchangeable parts

Linings

All linings are certified to provide brake performance in accordance with customers application specifications



7.0 Standards



All Hillmar products are designed & manufactured in accordance with the following standards.

- 7.1 Design standards.
- 7.2 Performance standards.
- 7.3 Document standards.
- 7.4 Production & Quality standards.
- 7.5 Packaging standards.

All Hillmar products are delivered with Hillmar commitment to customer satisfaction, in accordance with DIN 10204-2.1