

Disc Brake Selection Guide Lines

DB 10001

Issue 1

Date : Mar. 90

Pneumatic Brake :

Light to medium duty braking applications are best served by these Fast acting Calipers, using air pressure upto 7 bar, Sensitive and rapid response to air pressure also makes them ideal for tension control applications.

CMR Series :

Most powerfull Brakes, Braking forces with different thrusters are as follows at 5 bar air pressure :

- CMRE - 420 N at disc radius minus 30 mm. (12.7 mm Disc Thickness)
- CMRG - 1100 N at disc radius minus 30 mm. (12.7 mm Disc Thickness)
- CMRD - 2100 N at disc radius minus 30 mm. (12.7 mm Disc Thickness)
- CMRA - 4000 N at disc radius minus 30 mm. (12.7 mm Disc Thickness)
- CMRB - 8400 N at disc radius minus 30 mm. (12.7 mm Disc Thickness)
- CMRB-25 - 8400 N at disc radius minus 30 mm. (25.4 mm Disc Thickness)

CMR2 Series : Identical in specification to CMR Series except that the brake shoes are each Fitted with two pads to provide higher power ratings and/or longer pad life. The minimum Disc Dia is 450 mm. Torque ratings same as CMR Series Brake.

CMS Series :

The light weight side mounting caliper compliments the CMR series, using the same friction pads and discs and completes the torque range between CMU & CMR. It is an economic caliper for light duty.

Braking forces with different thrusters are as follows. All are suitable for 12.7 mm Brake Disc.

- CMSE - 170 N at disc radius minus 30 mm.
- CMSG - 440 N at disc radius minus 30 mm.
- CMSD - 840 N at disc radius minus 30 mm.
- CMSA - 1600 N at disc radius minus 30 mm.

GMRP Series : Heavy Duty Braking applications are best served by these GMRP Brakes, All Steel Body, Heavy Air thruster, which works on 7 bar pressure, torque Ratings up to 32000 N, Fast acting.

CMU Brake :

Smallest of the range with simple one bolt fixing. This caliper meets the demand for a light weight, low cost brake for tensioning duties upto 1 KW dissipating and for light stopping duties. It is used with disc of 150 mm and upwards in dia and from 3 to 8 mm thickness. Braking force at 5 bar air pressure is 190 N (at disc rad. minus 20mm)

CMX Series :

Improved version of CMR Series Brakes, Most power full, Braking forces with different thrusters are as follows at 7 bar air pressure.

- CMX D - 3600 N are radius minus 32 mm (12.7 mm Disc Thickness)
- CMX A - 6950 N are radius minus 32 mm (12.7 mm Disc Thickness)
- CMX B - 11900 N are radius minus 32 mm (12.7 mm Disc Thickness)
- CMX B-25 - 11900 N are radius minus 32 mm (25.4 mm Disc Thickness)
- CMX B-32 - 11900 N are radius minus 35 mm (32 mm Disc Thickness)

CMXK, CMXK-25 Series :

Light to medium duty spring applied air retracted are best for fail safe applications. These Brakes are similar to CMX Series Brakes, torque range 2400 N and working on 7 bar air pressure

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Torque ratings for CMR & CMS Series brake calipers with standard Discs at 5 bar pressure

CMRE										CMRG					CMRD					CMRA					CMRB					915	Disc Diameter in mm
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					810	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					710	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					610	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					515	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					460	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					405	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					355	
CMSE					CMSG					CMSD					CMSA																
CMRE										CMRG					CMRD					CMRA					CMRB					305	
CMSE					CMSG					CMSD					CMSA																
10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1000	2000	3000	4000	Torque in NM									

Mechanical Brakes :-

Lever and Spring applied brakes in CMR & CMS Series will provide an effective and economic solution for light drag or tensioning brakes where hand - setting can give adequate Braking control. The more power-full lever brakes can be engineered into machinery with variety of actuating systems, For example , Weight, Spring, air, hydraulic or electric actuators or hand or foot operated brake levers. A hand knob version or hand CMU caliper (CMUH) is also available.

CMRH : The lever may be set in any position through 270^0 , and the maximum operating force is 900 N, which gives a braking force of 5900 N (at disc rad. minus 30 mm)

CMRW : The simple vibration proof hand knob provides progressive spring thrust giving a braking force upto 2100 N. (at disc rad. minus 30mm)

CMSF : The universal Mounting lever can be used with actuating forces upto 800 N. Producing a braking force of 1600 N.

CMSH : Using the same vibration proof hand knob as the CMRW caliper. Progressive spring force is available to provide braking force up to 850 N (at disc rad - minus 30mm)

Hydraulic Disc Brakes

CMR-2H : This is a Hydraulically operated and spring released Disc Brake, working on high pressure oil up to 70 Kg/cm^2 and torque range from 15 to 225 Kgm. Brake pads are similar to that of CMR2B Brakes

CMRL : This is spring applied Brake, Hydraulically released working on High pressure oil of 40 Kg/cm^2 and torque range from 200 NM to 2200 NM. Brake pads similar to CMRB.

CE-2 : This is Hydraulically operated Brake with Automatic pad wear compensator working on 12 to 140 Kg/cm^2 High pressure oil. Torque ranging from 500 NM to 6000 NM.

VH : This is Hydraulically operated Brake with Automatic pad wear compensator, working on 10 to 100 Kg/cm^2 High pressure oil. Torque range from 5000 NM to 25,000 NM.

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Selection :

The type and number of brake calipers to be used and the diameter, thickness and material of the disc (or discs) must take into account all relevant factors, consisting of one or more of the following :

1. Braking torque required to stop the machine.
2. Braking torque required to hold the machine stationary.
3. Power dissipation.
4. Total heat dissipated in disc.
5. Frequency of stopping duty.
6. Acceptable pad replacement intervals.

7. Environmental Factors, such as oil pollution, corrosive atmosphere.
8. Max rotational speed and maximum braking speed.
9. Limiting installation Dimensions.
10. Statutory or other regulation requirement.

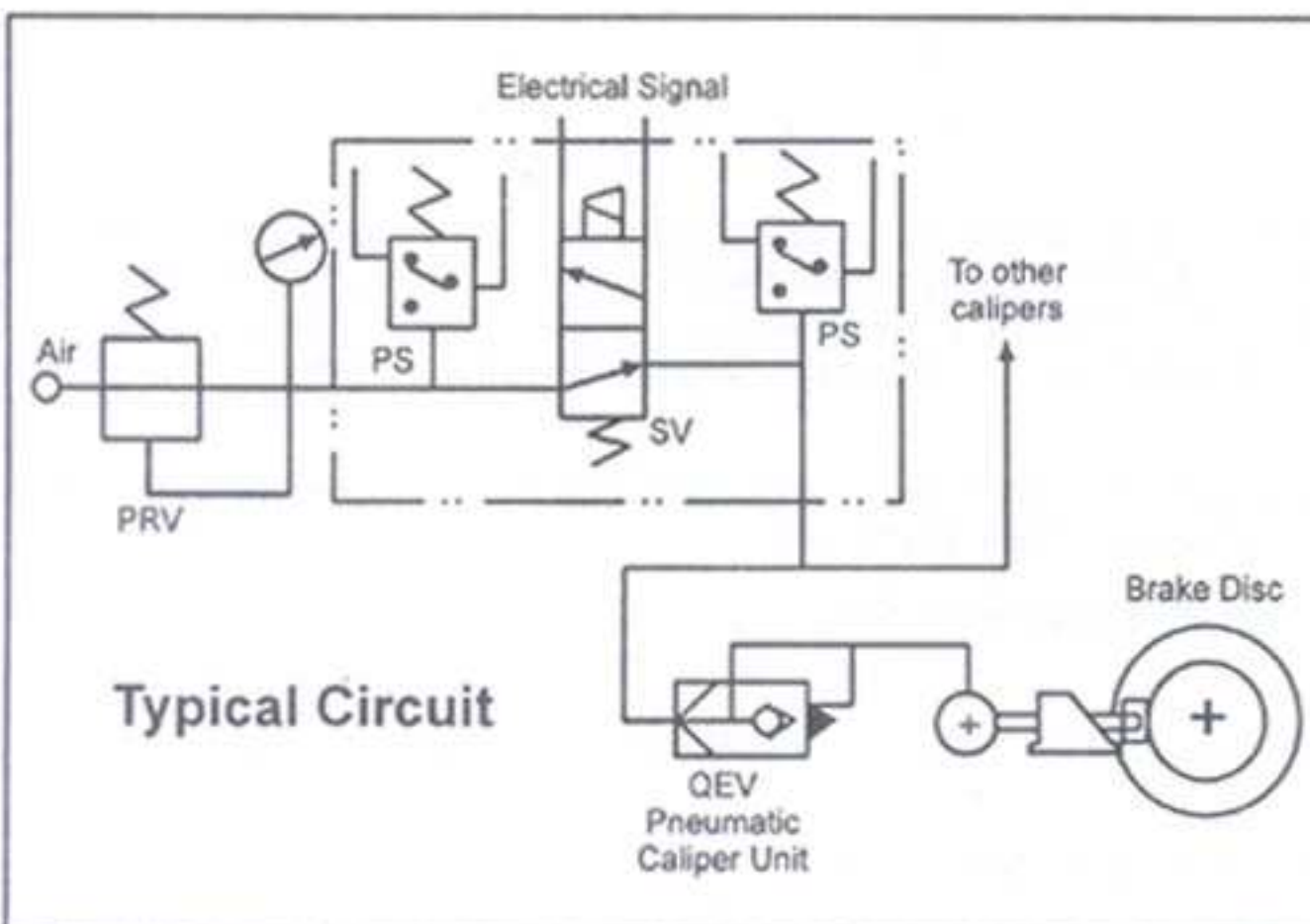
Fortunately, disc brakes can in the great majority of cases be selected on the basis of torque requirements only, but some guidance on power ratings and other relevant factors may be obtained from our factory.

For rotating inertial loads the braking torque required for a given stopping time is ;

$$\text{Brake Torque (NM)} = \frac{\text{Inertia (Kgm}^2\text{)} \times \text{Speed (Rpm)}}{9.55 \times \text{Stopping time (Sec)}}$$

Controllers :

Air Brakes require, essentially a valve to connect them or disconnect them from the air supply and a pressure regulators to maintain the supply at the required pressure. We offer complete system to operate these brakes if required.



Torque Rating :

If the braking torque required is not known the following guides may be useful.

Type of plant	Brake Torque as a percentage of Motor Full load Torque
Rotating Machinery	75 %
Hoist Motions (125%FLT)	175 %
Crane Long Travel	75 %
Crane Cross Travel	100 %
Coilers, Un coilers	40 %
Conveyors Horizontal Stopping	75 %
Conveyors - Holding	15 %
Ventilating Fans	15 %

Note : Air supplies must be filtered (20 micron) and dry, max air pressure - 7 Kg/Cm²

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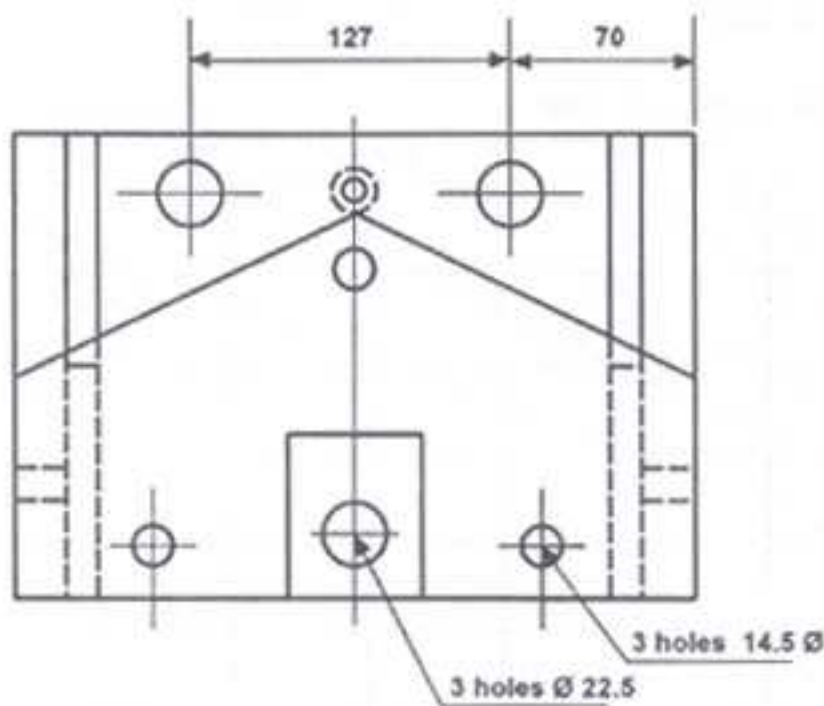
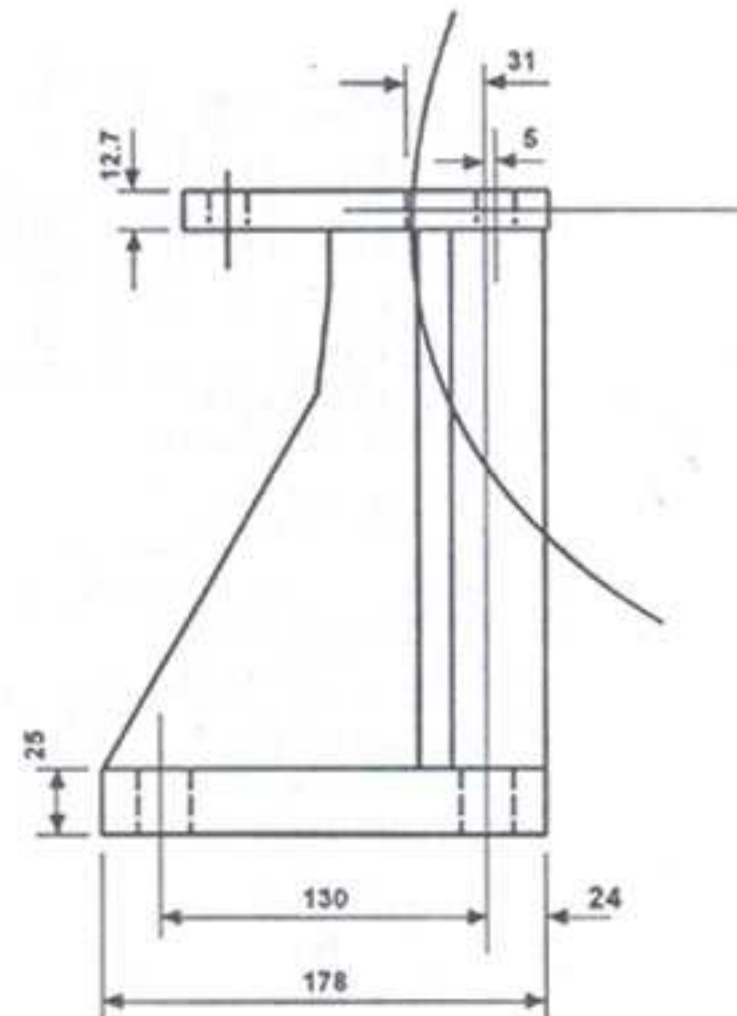
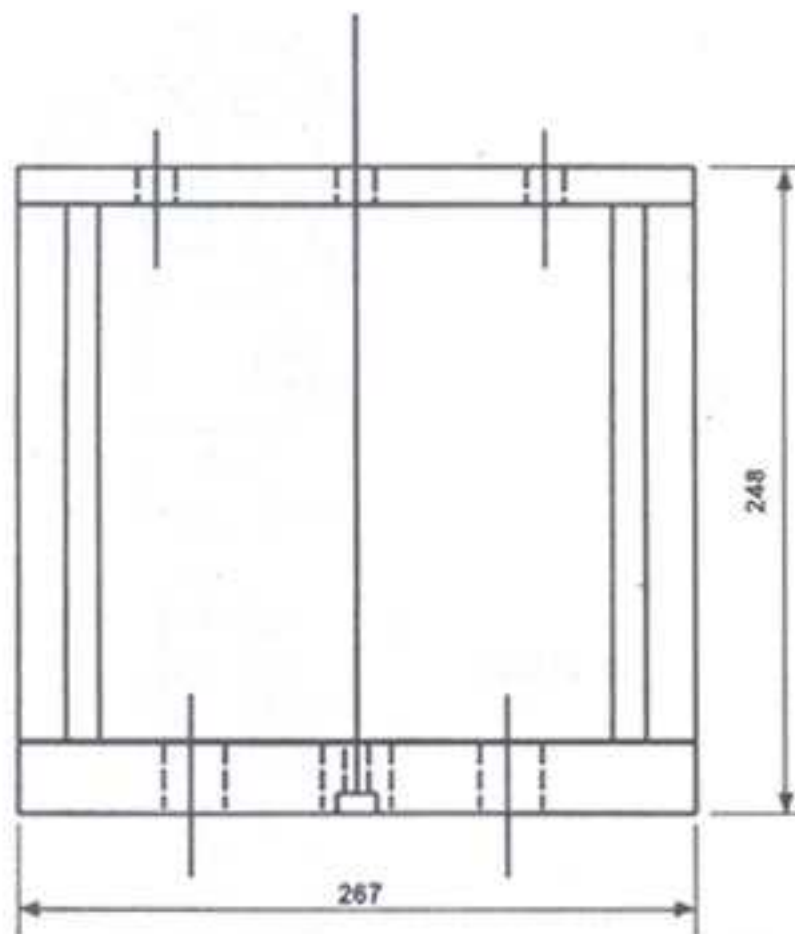
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**Disc Brake Type CMR
Mounting Arrangements**

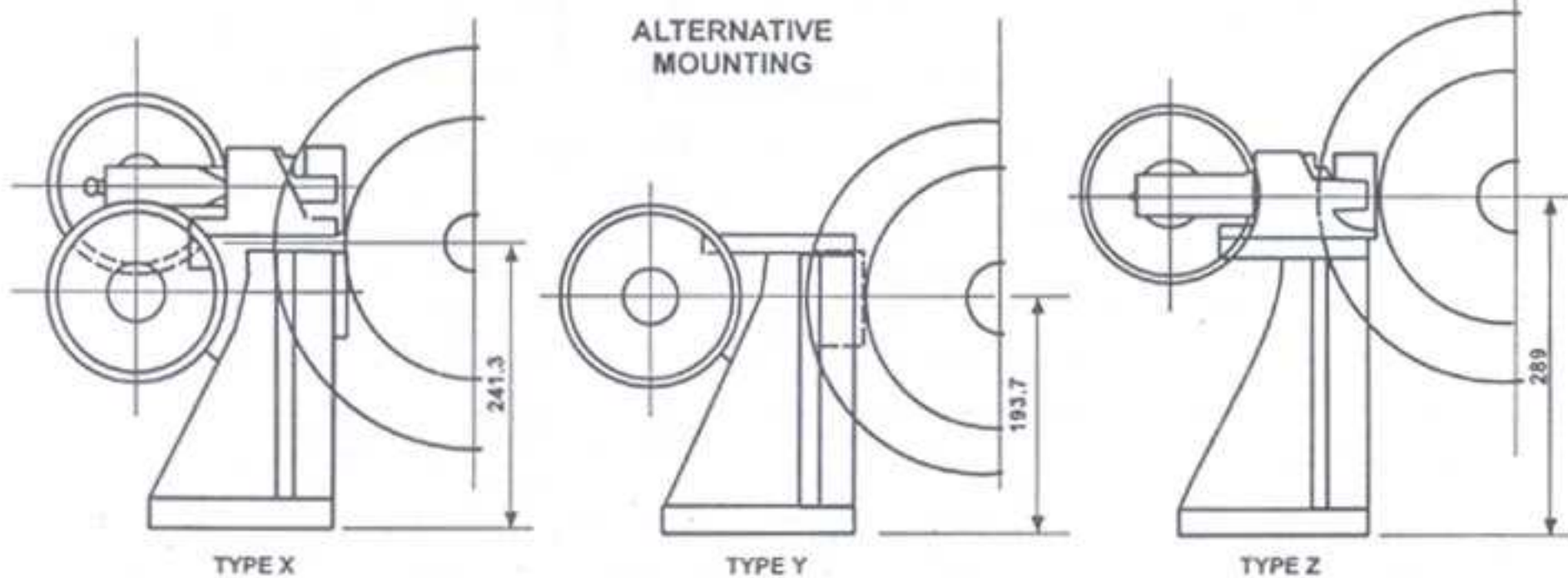
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STANDARD MOUNTING BRACKET



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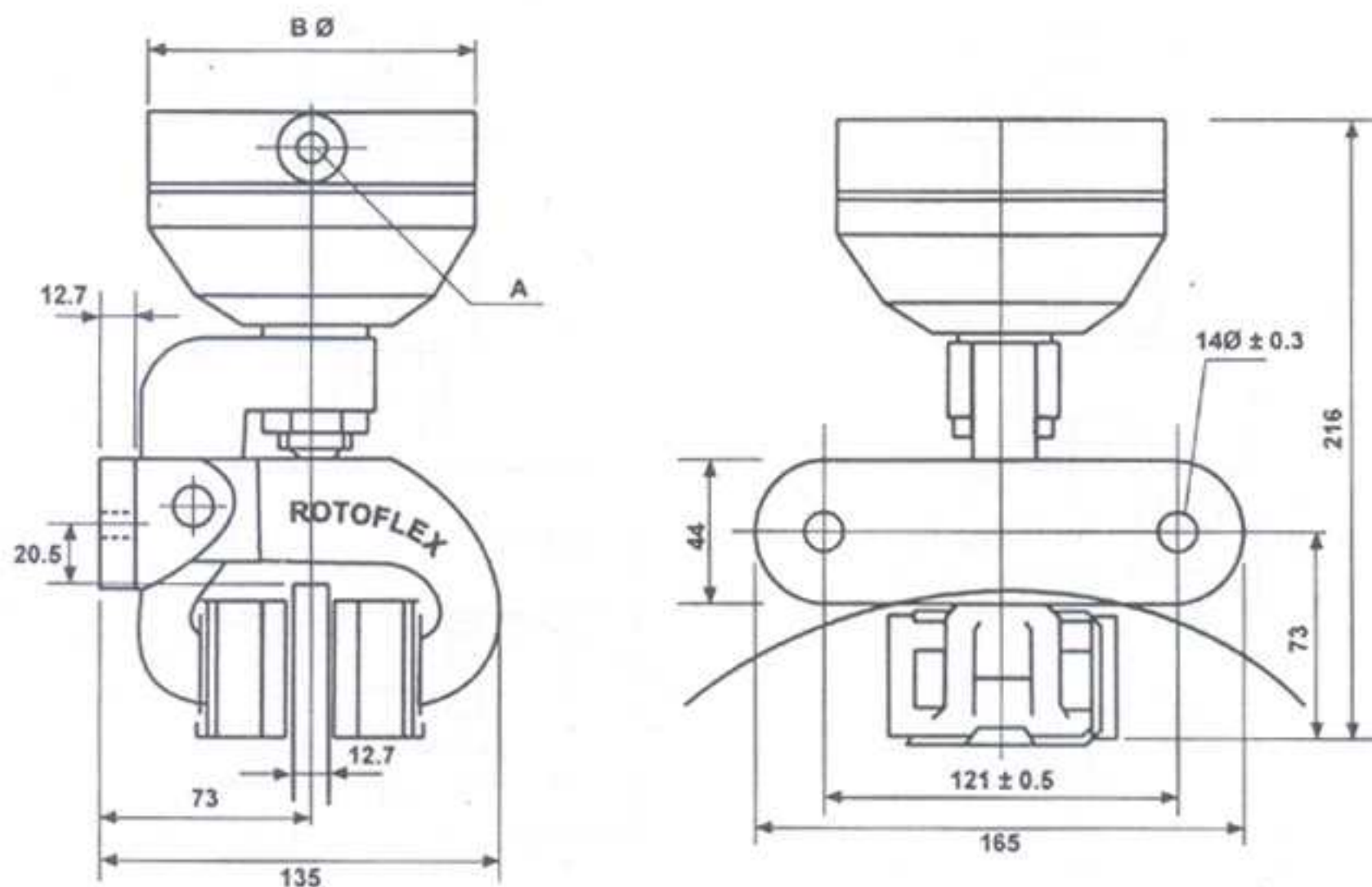
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Pneumatic Caliper type CMSA & CMSD
Air Applied and Spring return

DB 10012

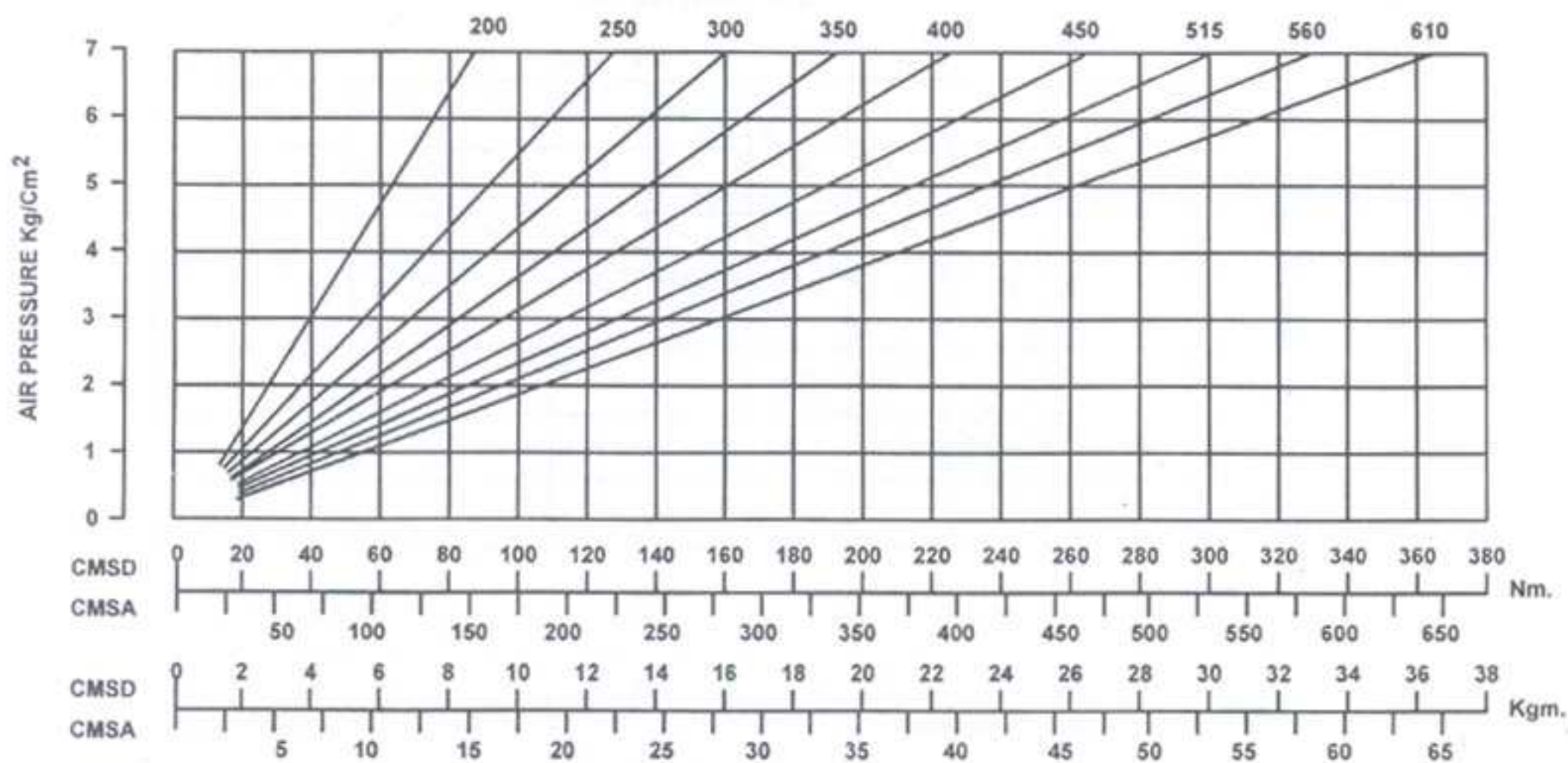
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Date : Mar. 90



Model	A BSP	B mm	Wt Kg	Compressed Air Consumption	Total Lining Area
CMSD	1/4	114	3.1	150 CC	58 cm ²
CMSA	1/8	140	4.5	300 CC	

DISC DIAMETER - MM



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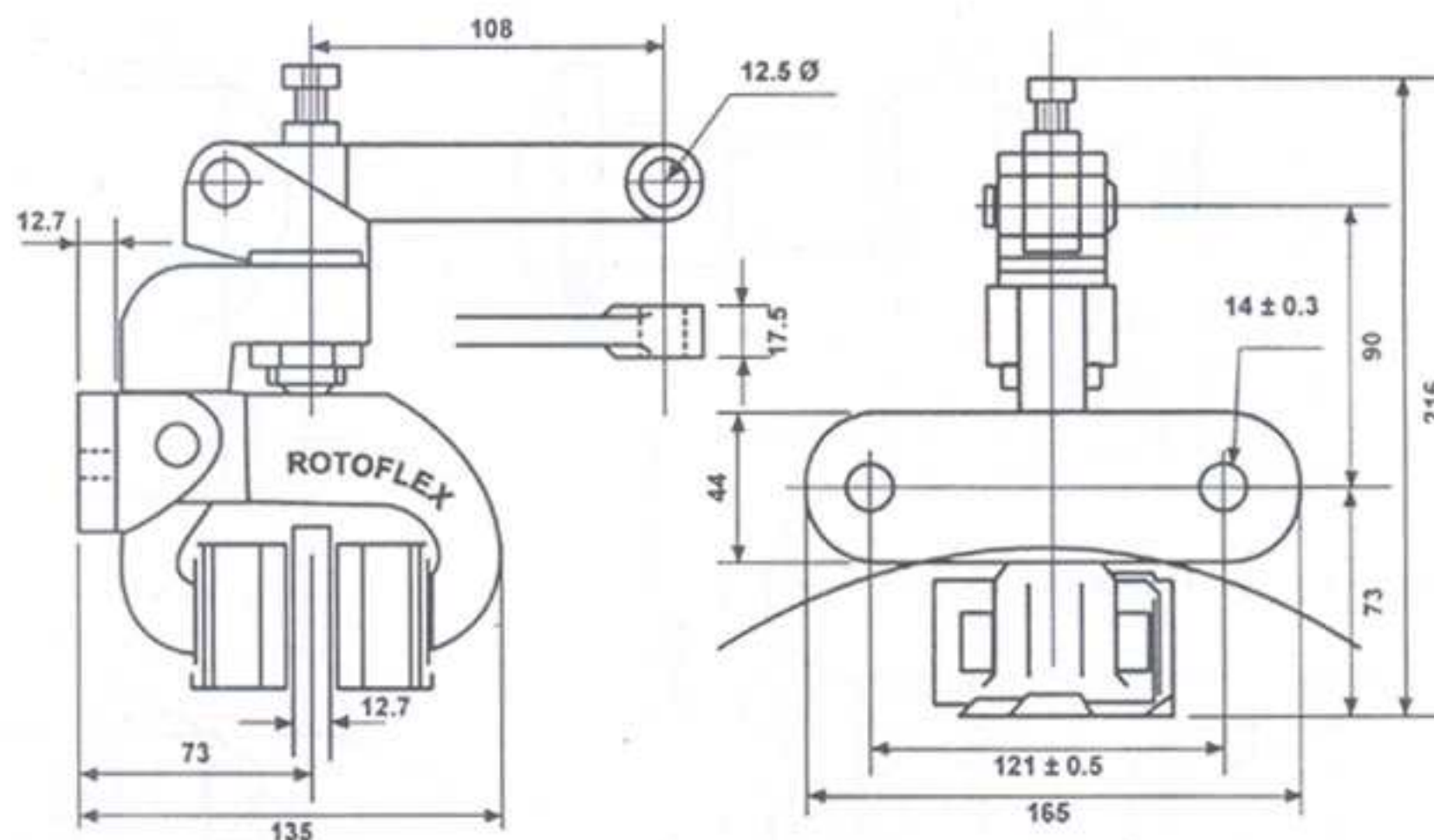
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Mechanical Caliper type - CMSF

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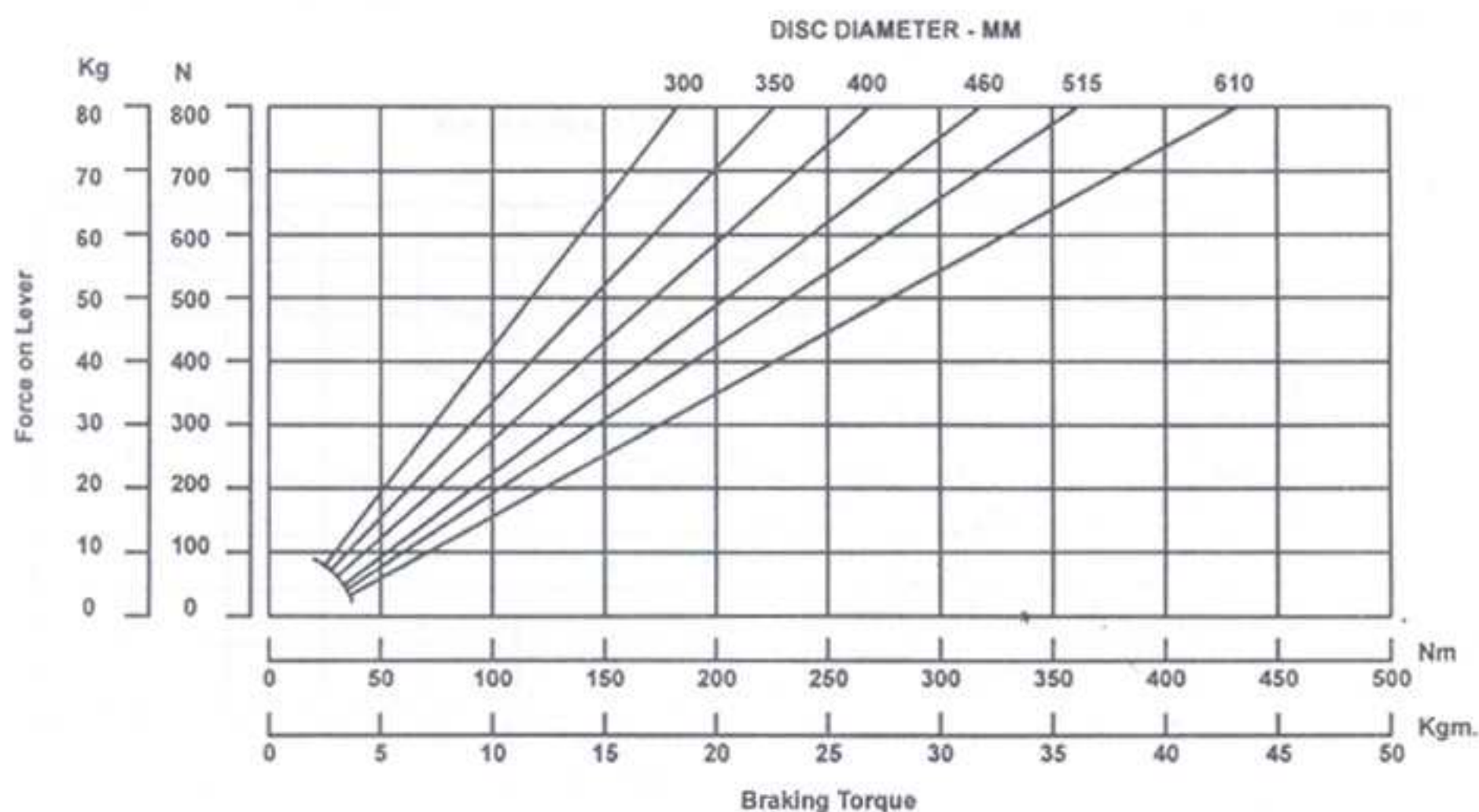
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Max. Force on Lever - 100 Kg

Lining Area - 58 cm²
Caliper Weight - 2.6 Kg



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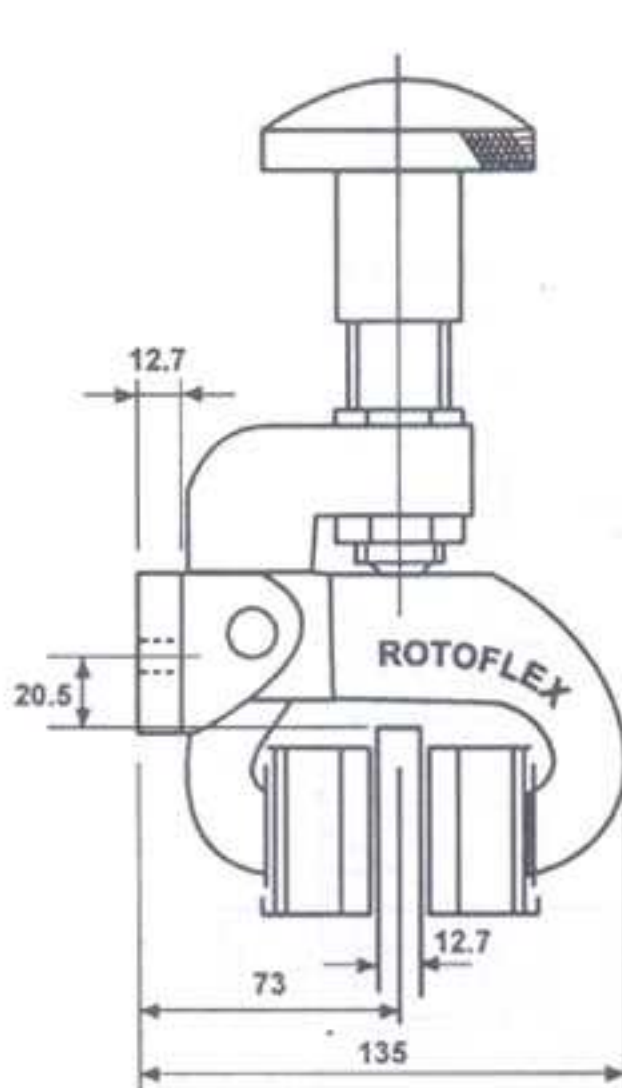
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Mechanical Caliper type - CMSH

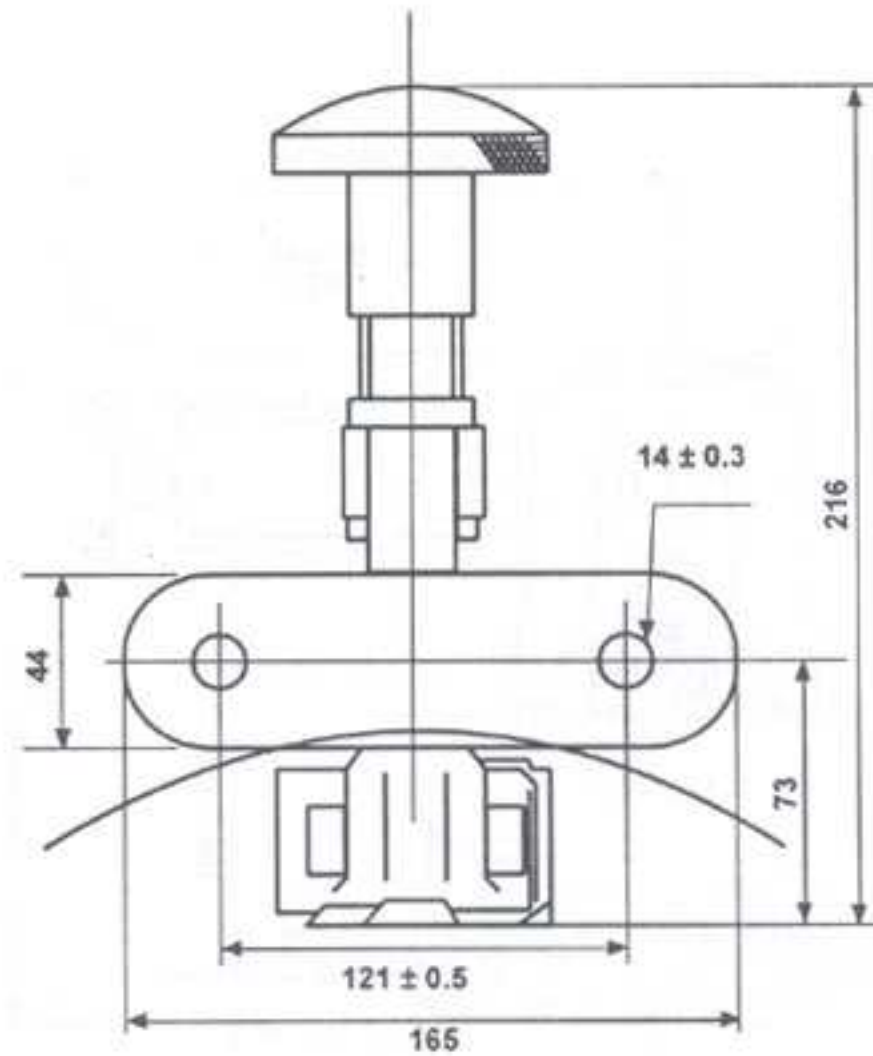
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Issue 1

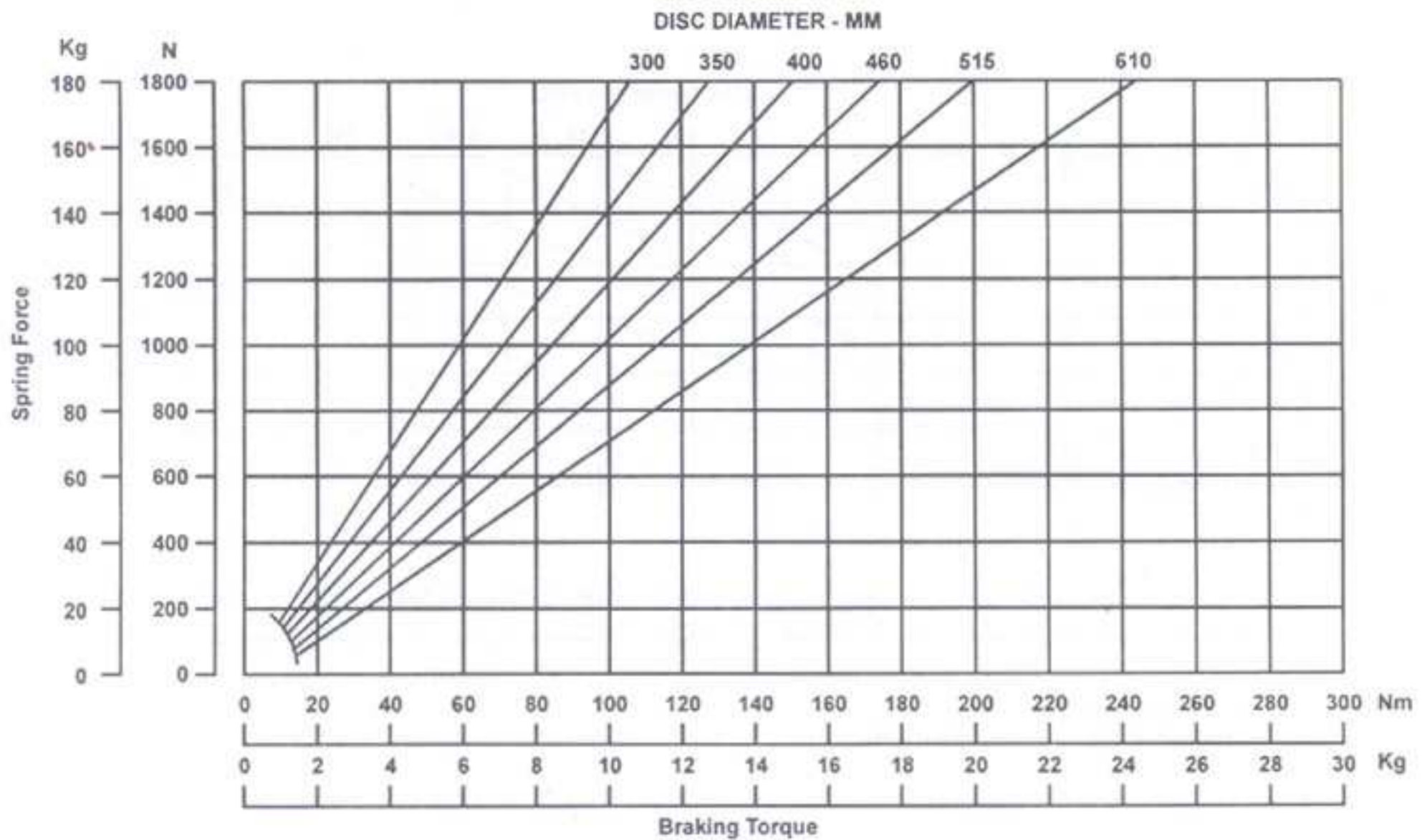
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One turn of Hand Wheel - 15 kg



Lining Area - 58 cm²
Caliper Weight - 3 Kg



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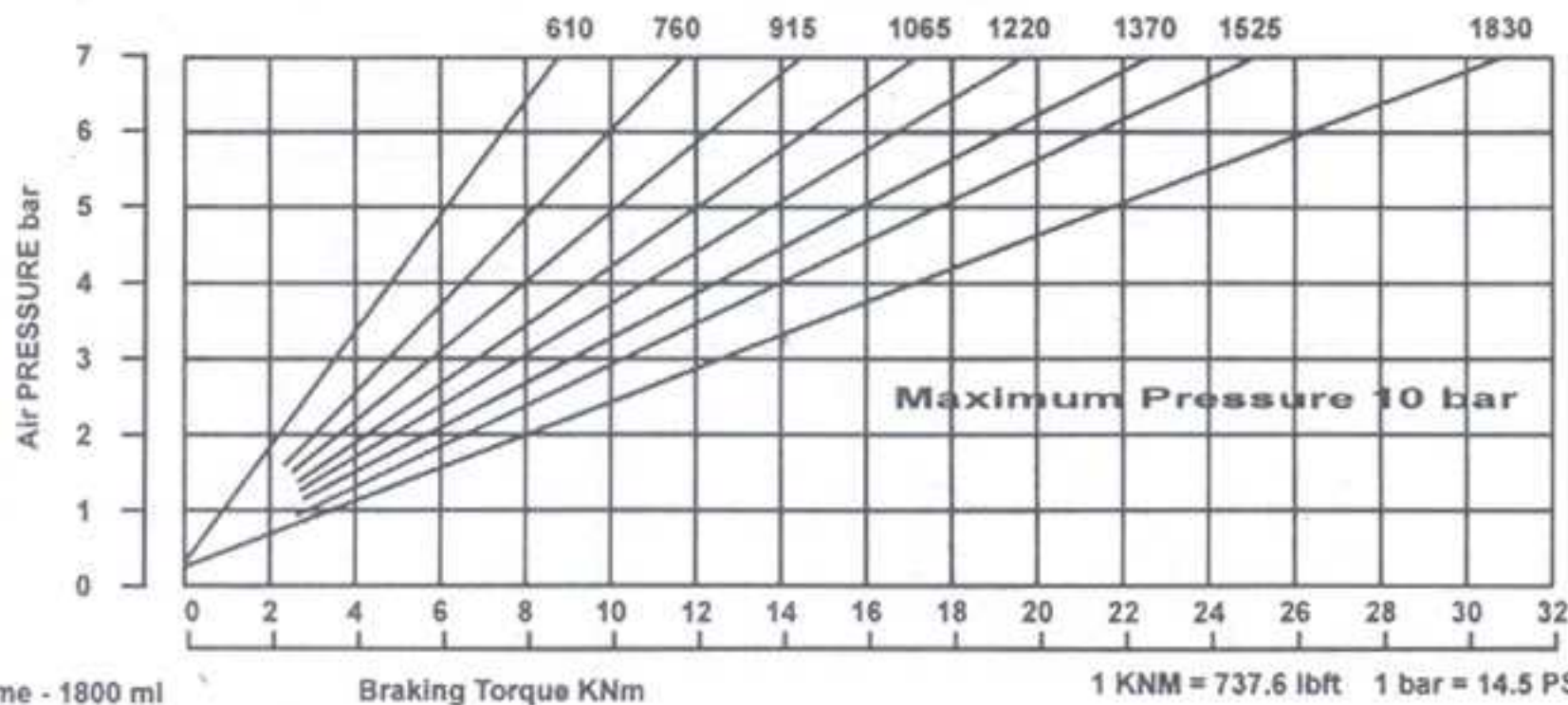
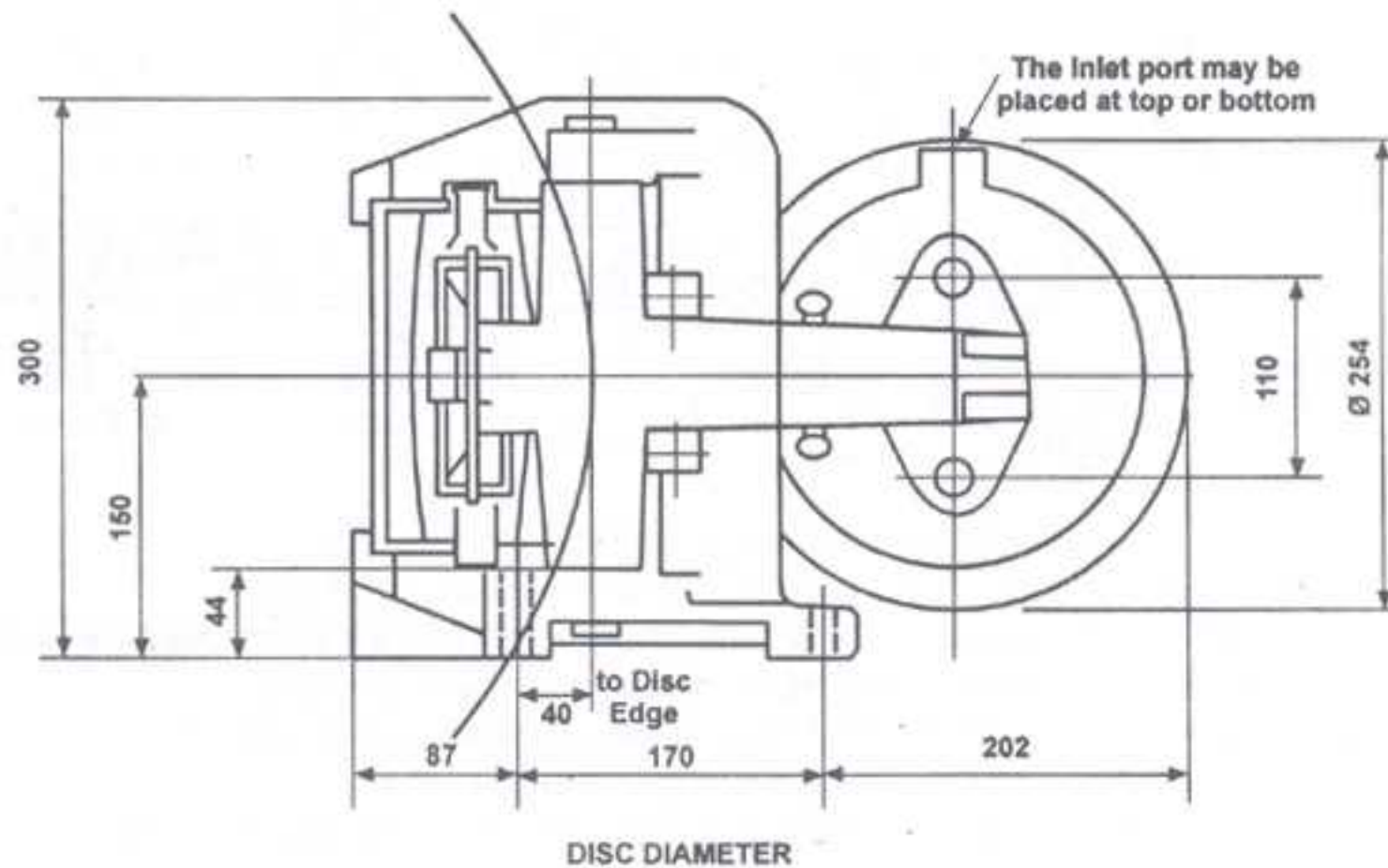
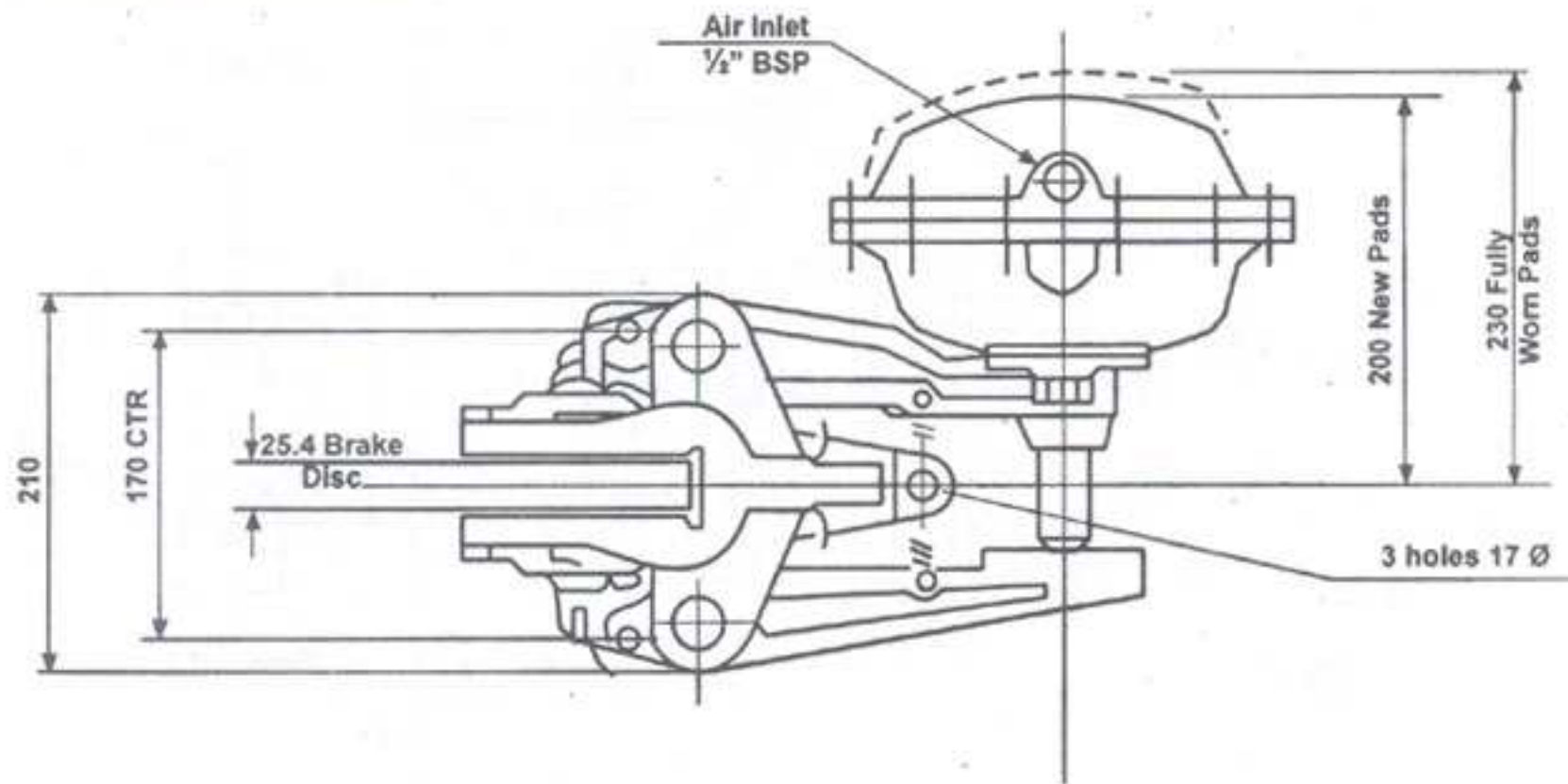
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Disc Brake - Caliper type GMR-P
Air applied - Spring released

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Max displacement volume - 1800 ml
 Total pad Area - 408 cm²
 Weight of Complete Brake - 42 Kg

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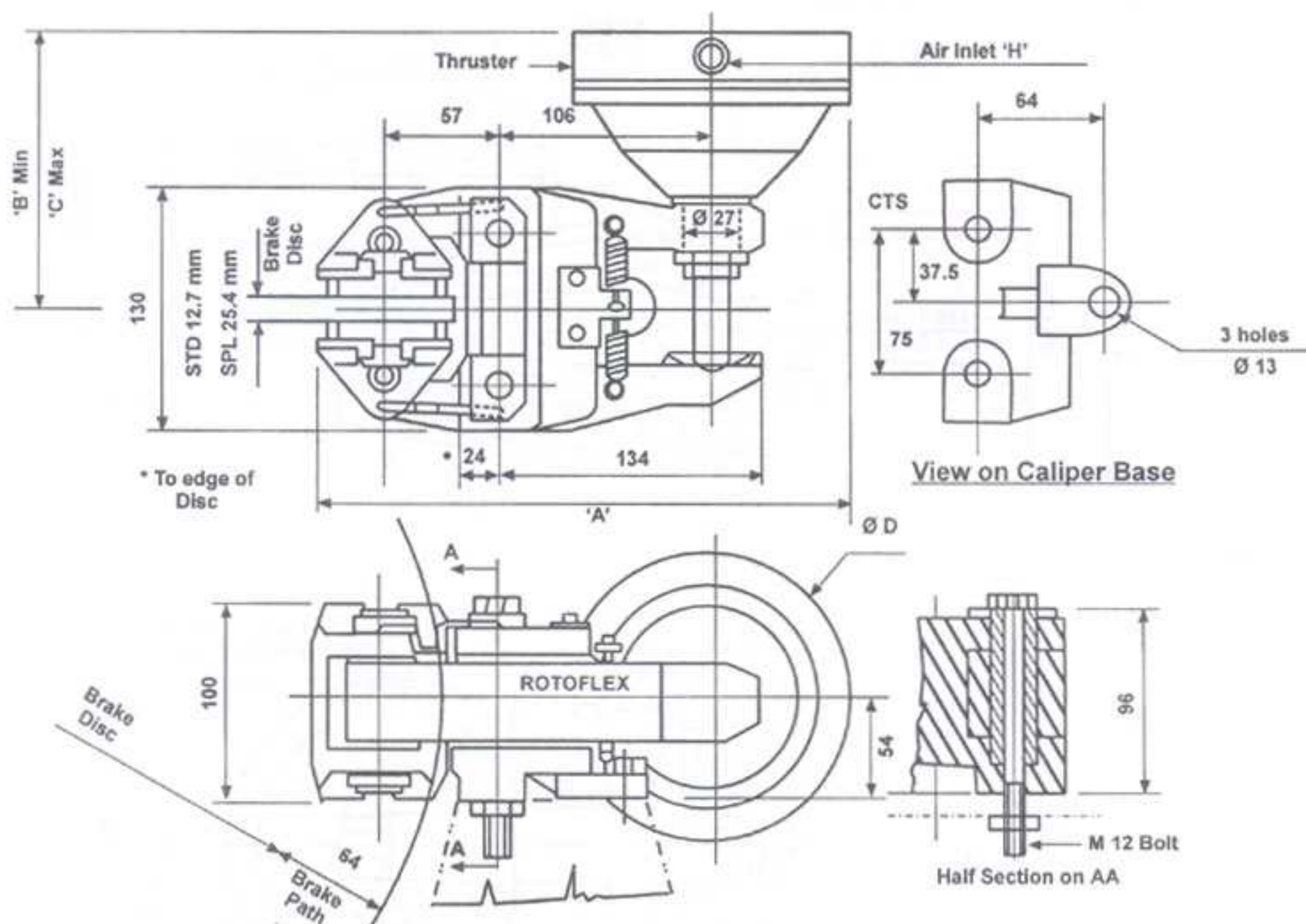
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Pneumatic Caliper type Disc Brake type CMXD, CMXA, CMXB
CMXD - 25, CMXA - 25, CMXB - 25

DB 10029

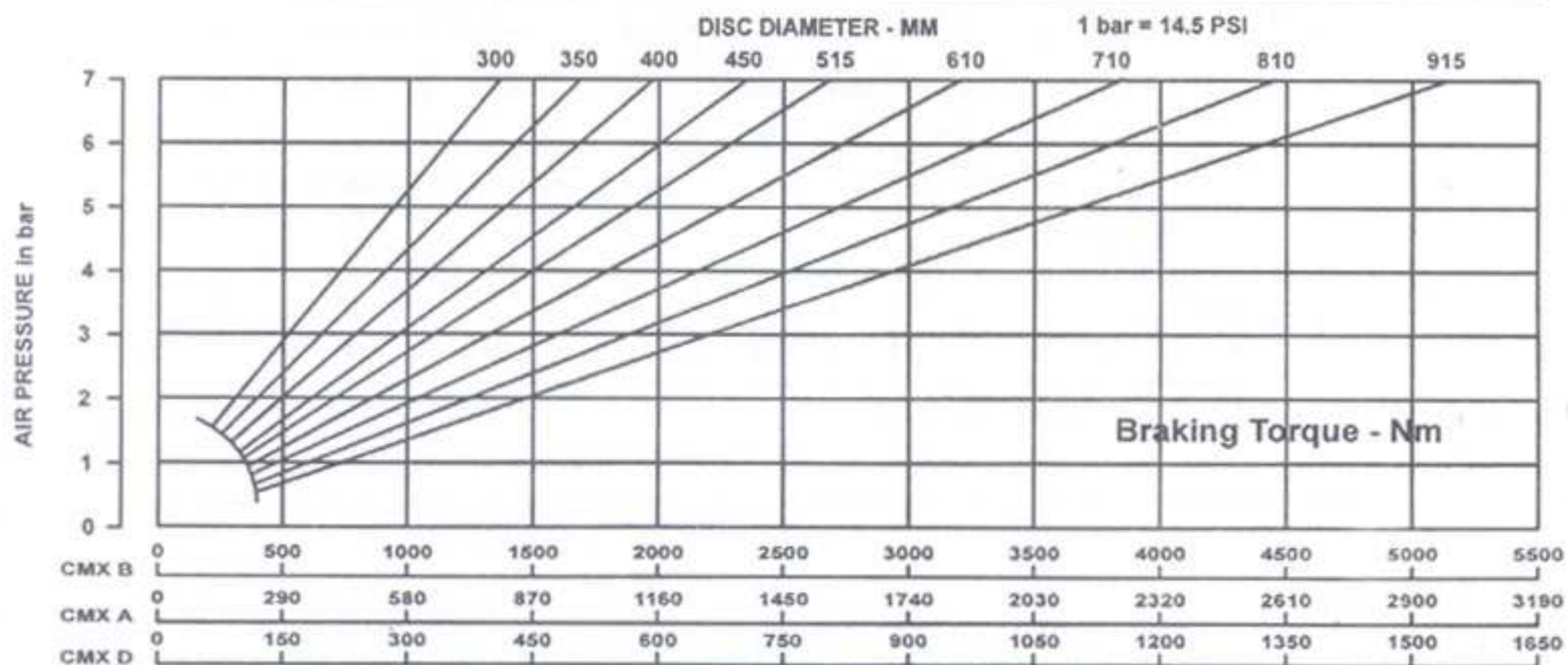
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Date : Mar. 90



- CMXB-25 is CMXB Brake suitable for 25.4 mm TH Disc
- Brake torque (Nm) = Braking Force (N) x effective disc radius (m)
- Calipers should preferably be mounted Horizontally in 3 or 9 o'clock positions in relation to the disc.
- Caliper constructed from SG Iron & thruster from Aluminium Alloy.
- Approximate weight 12 to 12.5 Kg. & Volume displacement air - 426 ml.
- Total pad Area - 104 cm² (2 pads), pad size - 60X90X13 TH

Brake Type		A	B	C	H	Max Braking Force at 7 bar	Ø D
CMXD	CMXD-25	260	133	142	1/4" BSP	3600 N	115
CMXA	CMXA-25	270	135	144	3/8" BSP	6950 N	140
CMXB	CMXB-25	290	133	142	3/8" BSP	11900 N	180

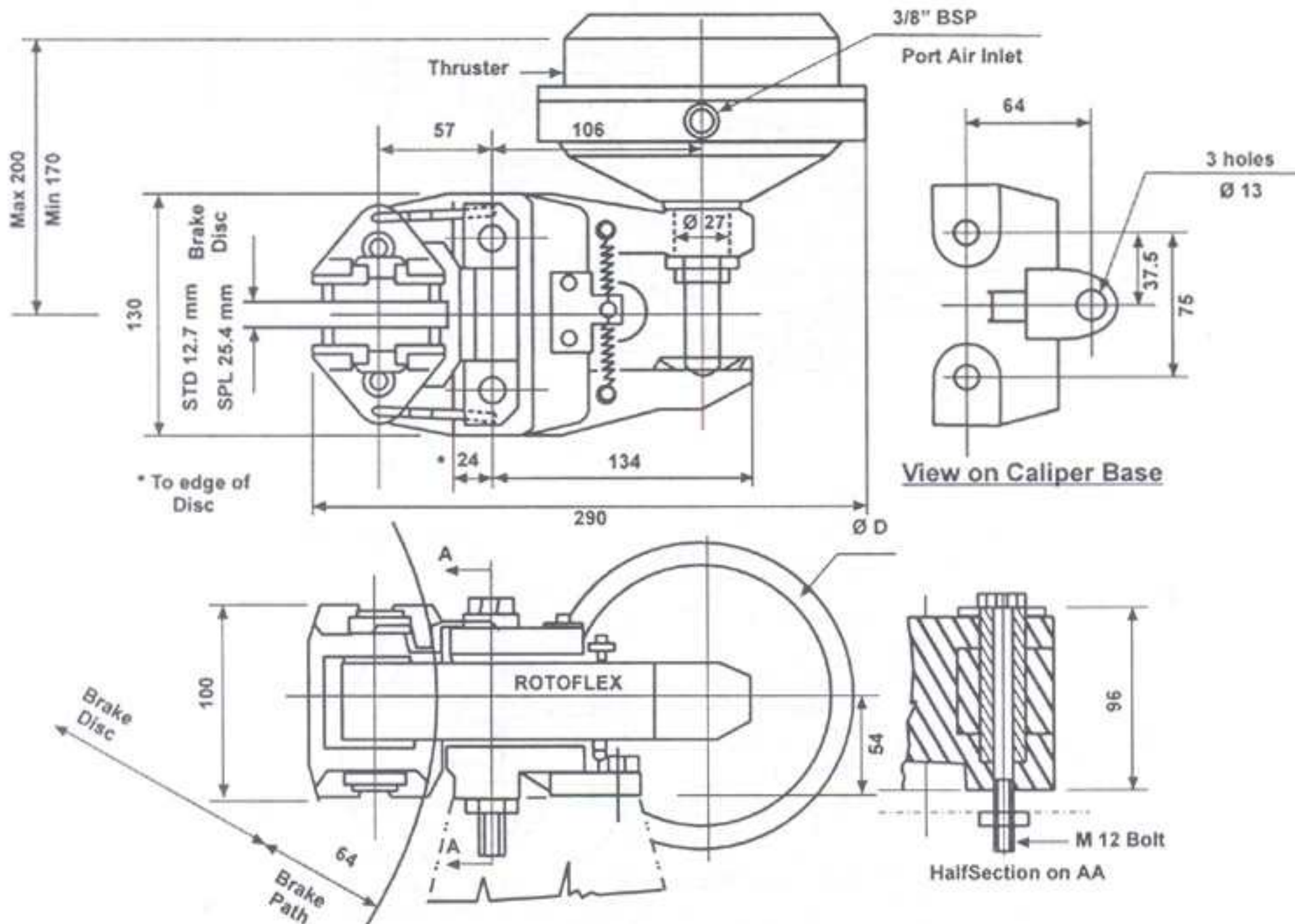


Caliper type Brake Model CMXK
Spring applied - Air Retracted - CMXK - CMXK-25

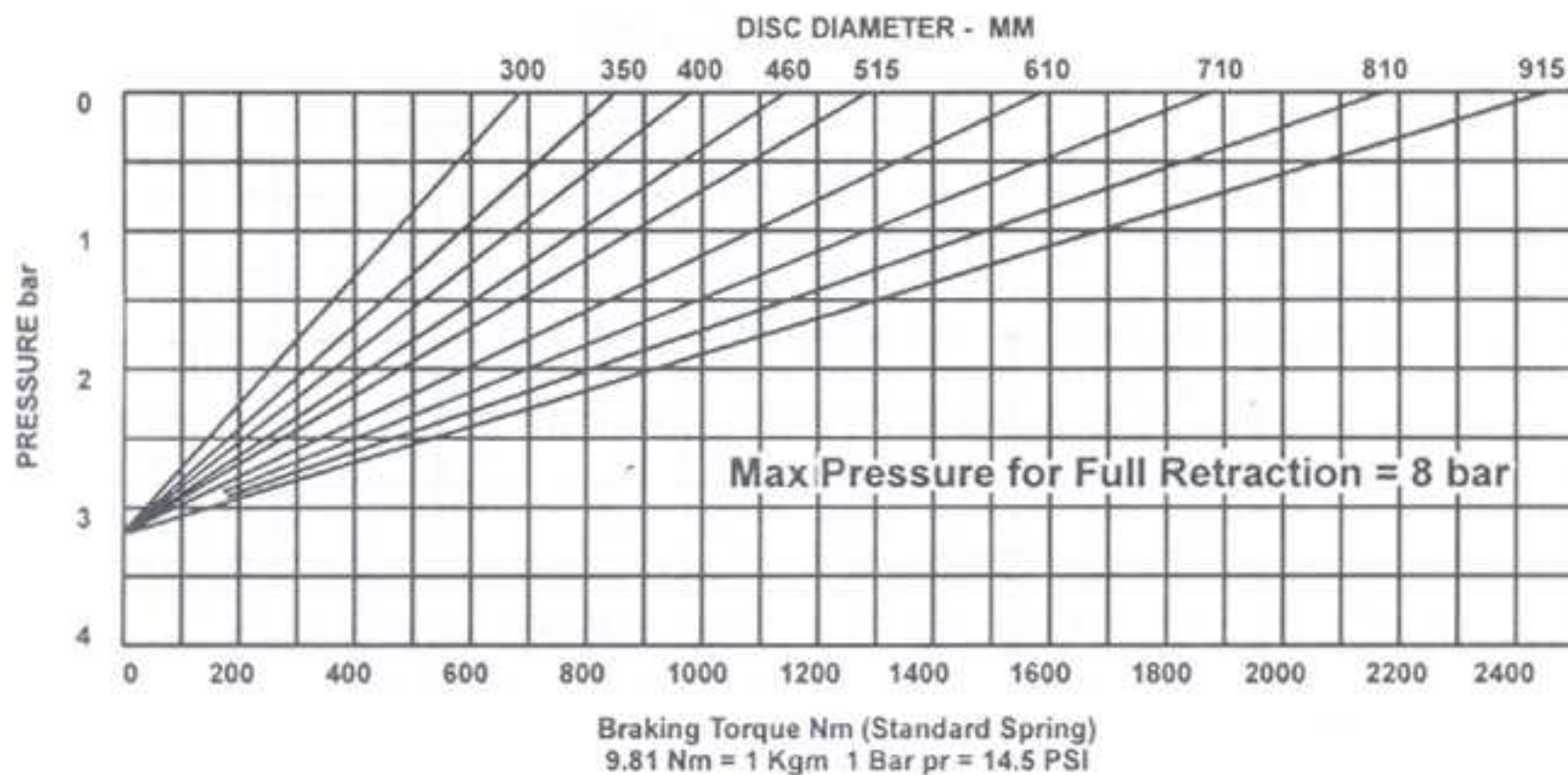
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Date : Mar. 90



Calipers should preferably be mounted Horizontally in 3 or 9 o'clock position in relation to the disc.
 Total pad area - 104 cm² (2 pads), Pad size - 60 X 90 X 12.5 TH
 Approximate Weight - 14 Kg & Volume displacement air - 400 ml/stroke



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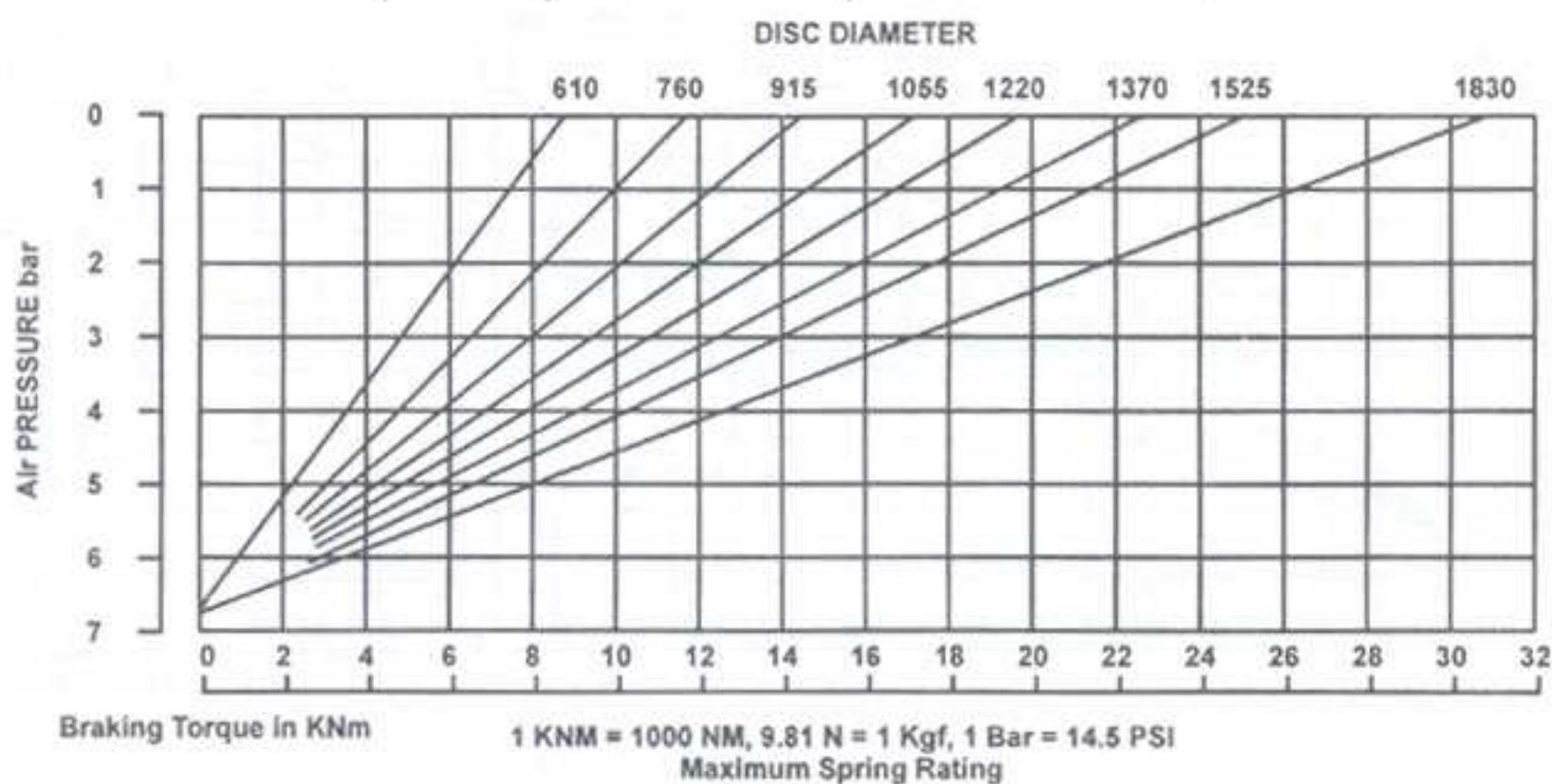
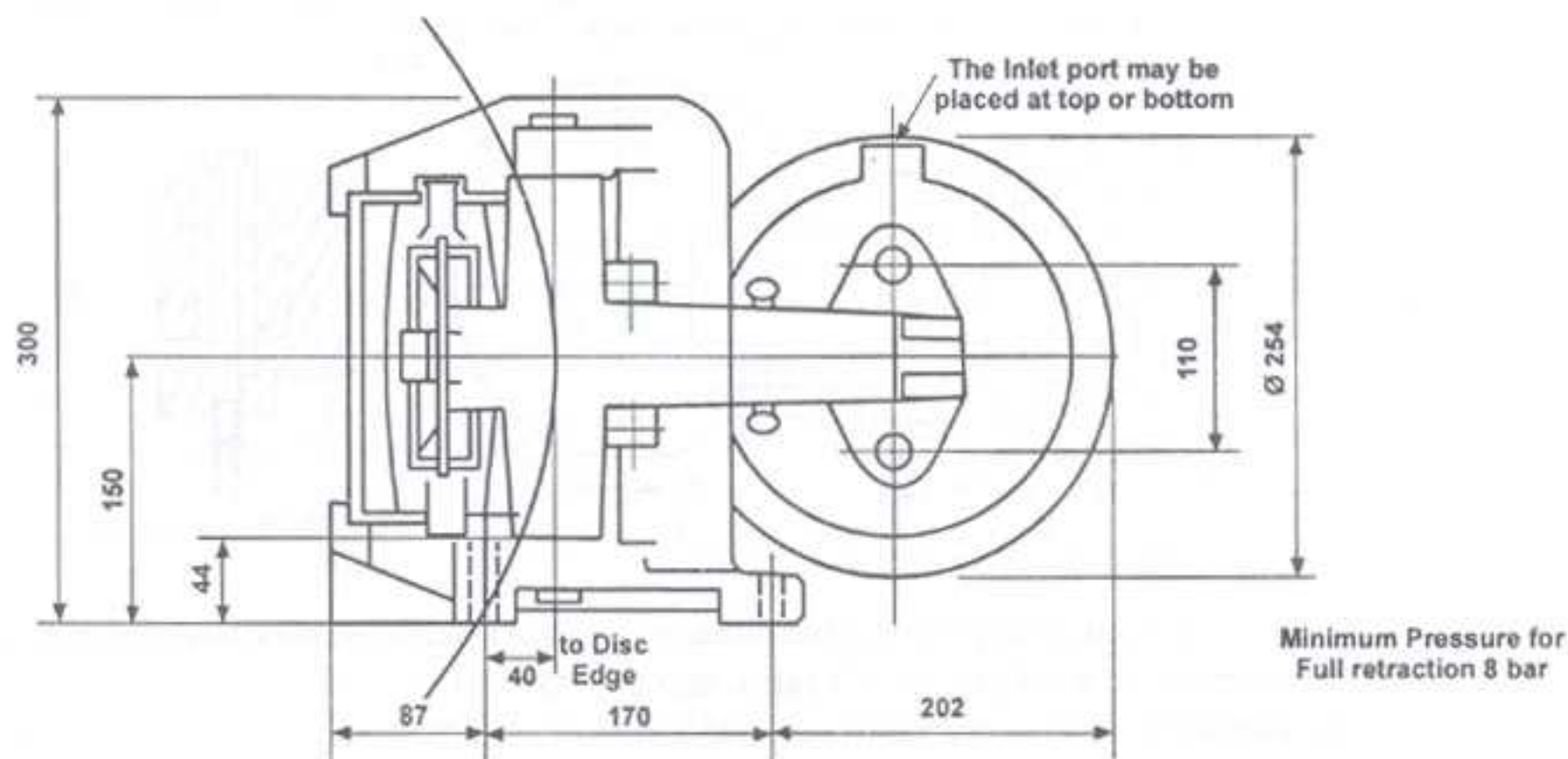
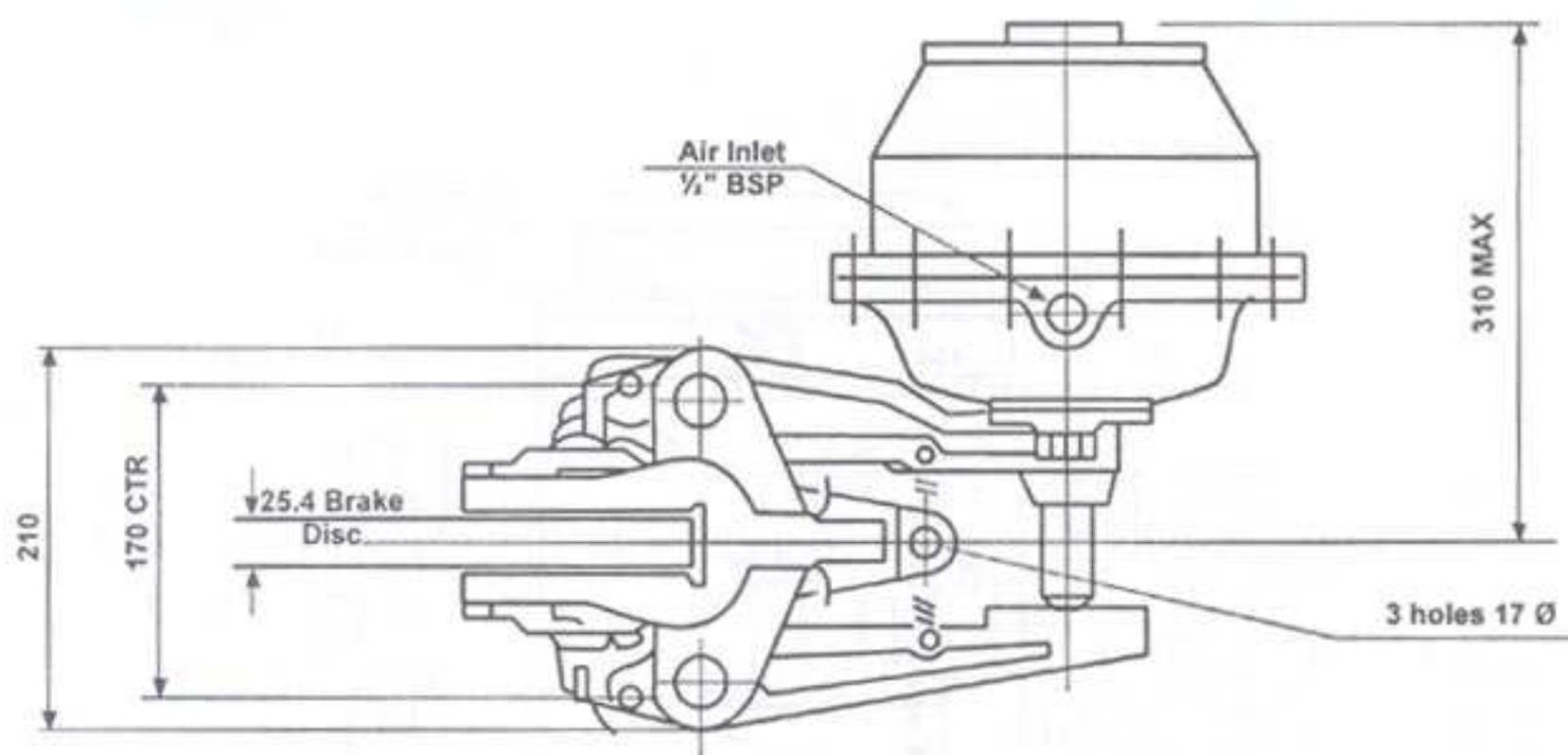
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Disc Brake - Caliper type GMR-S
Spring applied - Air released

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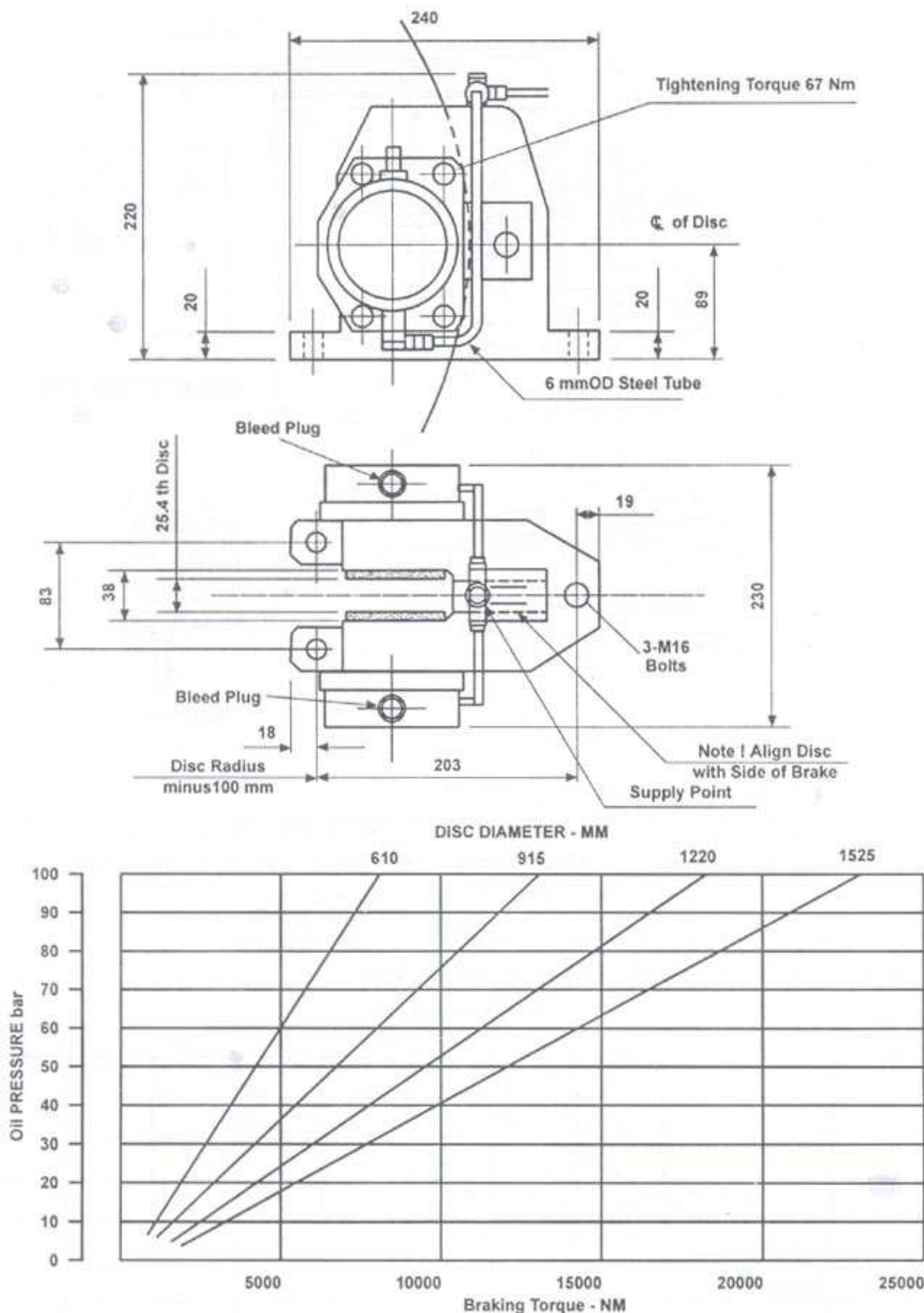
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Disc Brake - Hydraulically Operated - Model VH
Spring return, with Automatic wear Compensator-

DB 10040

Issue 1

Date : Mar. 90



INLET	Weight	Total Lining Area	Hydraulic Fluid
6 mm OD Tube	25Kg	122 Cm ²	Mineral Based Hyd.Oil

1 NM = 0.74 lbf ft
1 bar = 14.5 PSI - 1kgCm²

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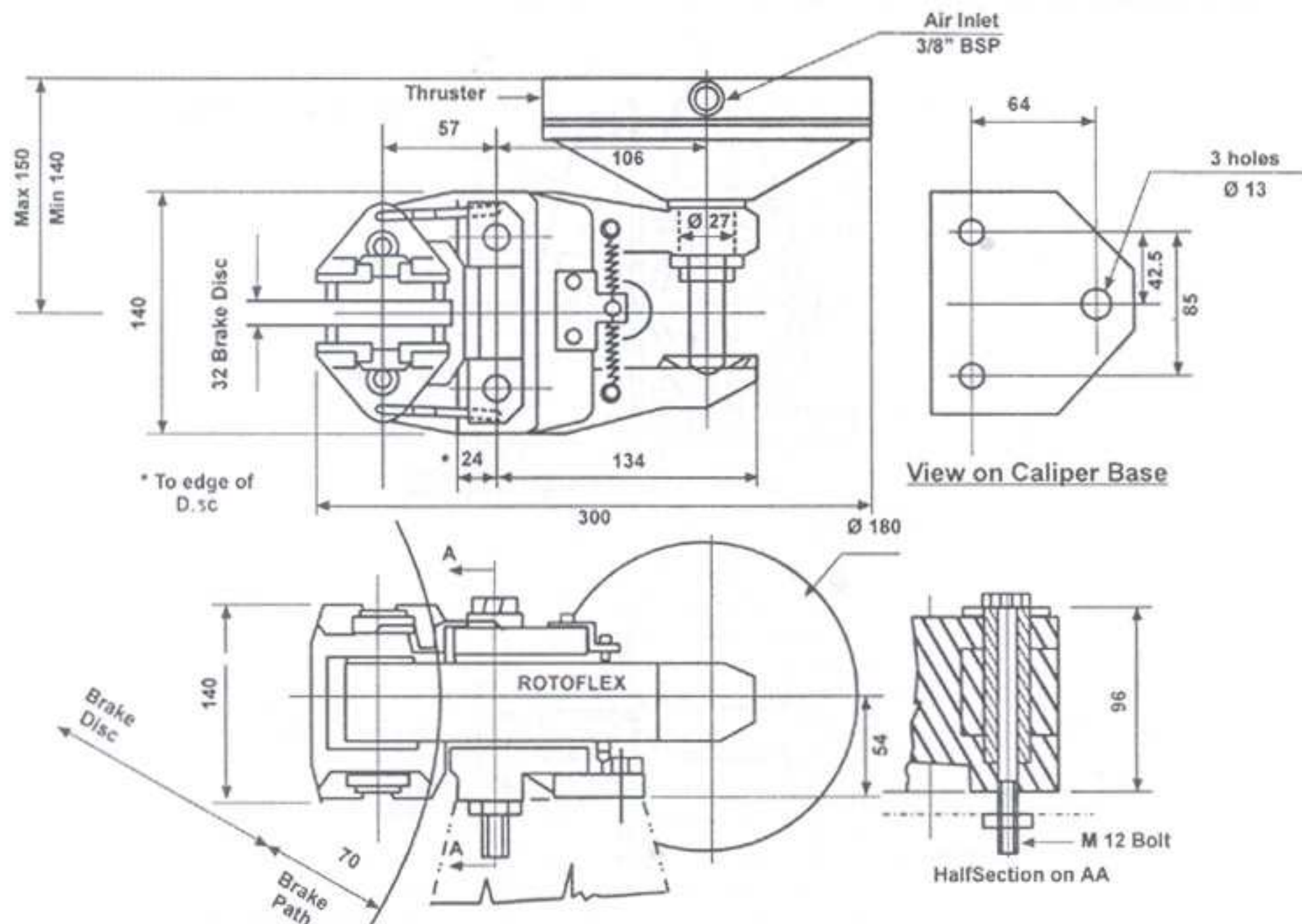
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Pneumatic Caliper type Disc Brake
Type CMXB - 32 Air applied Spring return

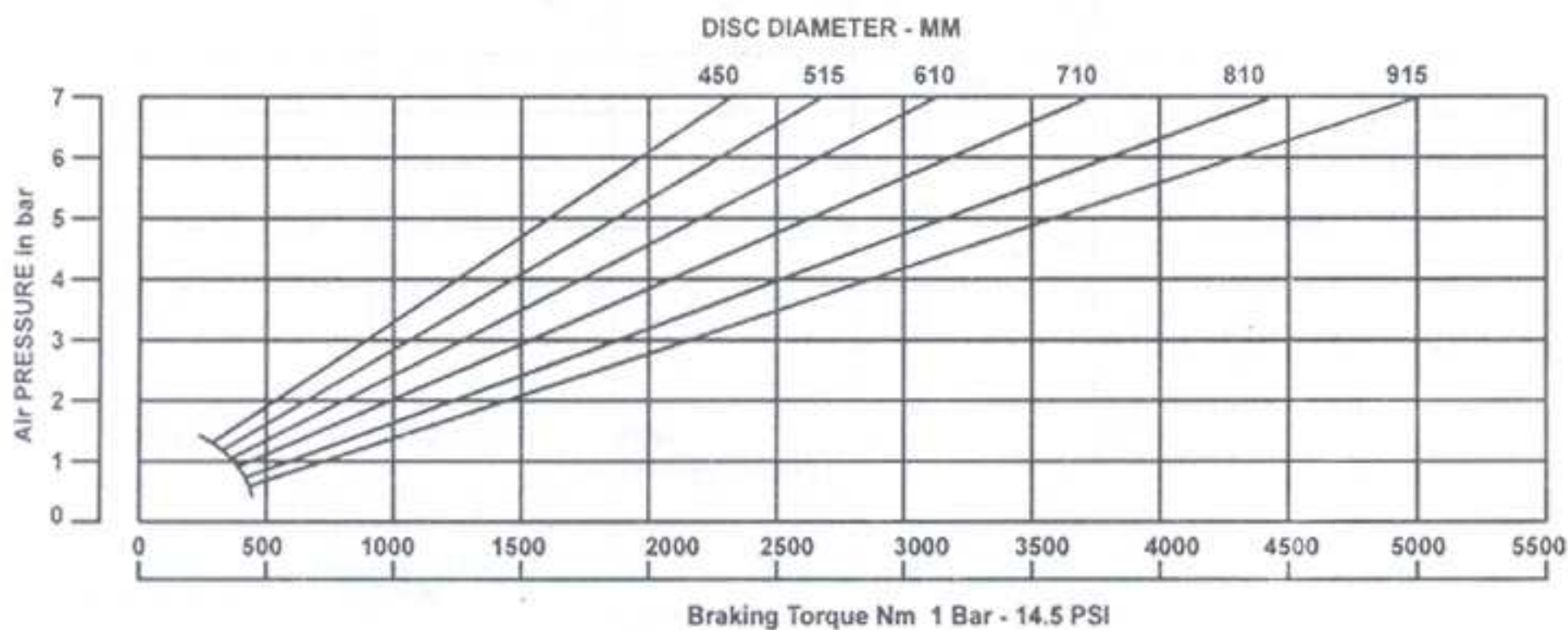
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- CMXB-32 is CMXB Brake suitable for 32 mm TH Disc
- Brake torque (NM) = Braking Force (N) X effective disc Radius (m) - Max Braking Force at 7 bar Pressure is 11900 N
- Calipers should preferably be mounted Horizontally in 3 or 9 O'clock positions in relation to the Disc.
- Caliper constructed from SG Iron / Steel & Thruster from Alluminium Alloy.
- Approximately weight 12 to 13 Kg & Volume displacement of air - 426 ml / str.
- Total Pad Area - 182 Cm² (2pads). Pad Size 65 X 140 X 13 TH



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