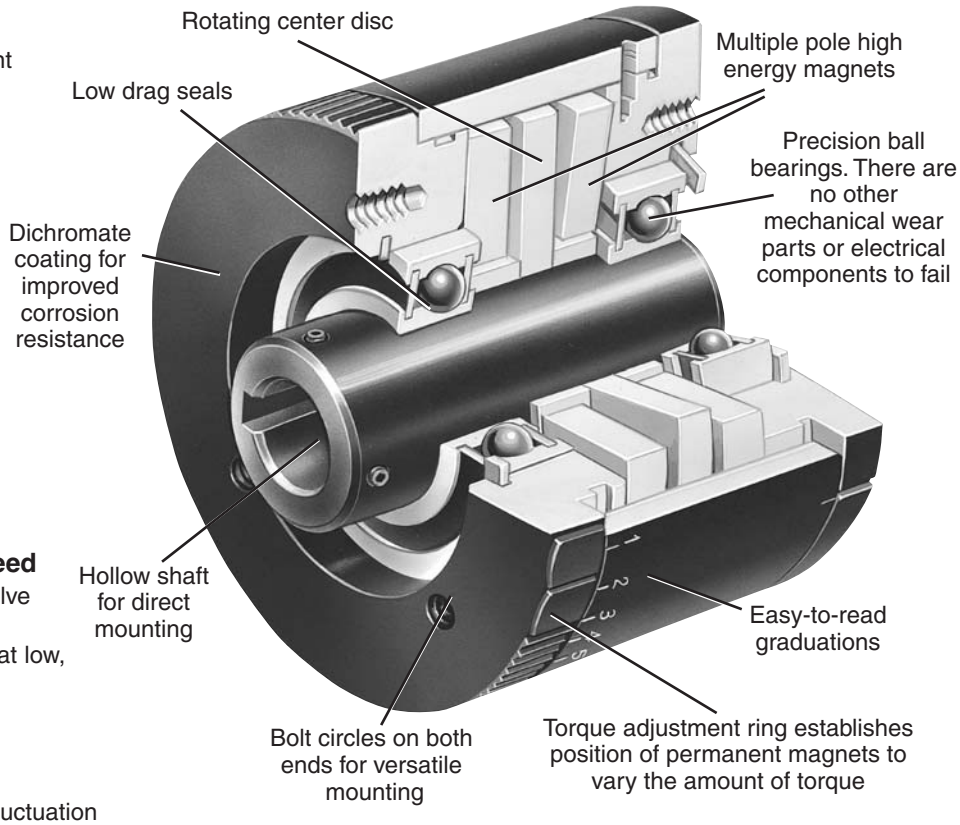
Fast, precise torque adjustment!

Precision Tork™ clutches and brakes

Precision Tork units provide constant torque independent of slip speed. They offer excellent overload and jam protection for all drive train components and also provide soft starts with zero slip when a preset torque is reached. Precision Tork permanent magnet clutches and brakes do not require maintenance and provide extremely long life.



Features and Benefits

Fast, precise torque adjustment

- Torque is set with a large knurled adjustment ring.
- Infinite adjustability between minimum and maximum settings. This allows units to be fine tuned to your unique requirement.
- Easy to read graduations.

Torque is constant with respect to speed

- By using the Precision Tork unit, you can solve almost any torque control problem.
- Torque is extremely consistent and smooth at low, as well as high speeds.

No external control or power source

- Simple to install
- Nothing to monitor
- Unaffected by power interruption or power fluctuation
- Safe to use

Dependable performance

- Smallest possible transition from static to dynamic torque. Virtually eliminates the “stick-slip” phenomenon associated with friction devices.
- Long life. The only wearing parts are the ball bearings.
- Extremely accurate. Precision Tork units out-perform all other devices at low RPM.

Versatile mounting: Easy to retrofit

- Clutches are available with hollow bores for mounting on motor shafts or jack shafts.
- Bolt circles allow for fixed mounting, adding a pulley, or stub shaft adapters.
- Brakes are available with solid shaft outputs.

Distributor item

- Off the shelf availability.
- Interchangeable with competitors’ products.

Special Applications

Specials are our business. . .

- Special shaft bores and keyways
- Shaft extensions
- System retrofits
- Metric bores and keyways
- Stainless steel construction
- Fixed torque units

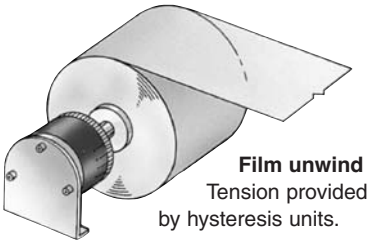
Stainless Steel

MC4D

Long Shaft Extension

Unwind tension control

Brake mounted on shaft of unwind spool or bobbin.



Film unwind
Tension provided by hysteresis units.

Information required:

Full roll diameter (in.) = 6 in.
Core diameter (in.) = 4 in.
Average tension (lbs.) = 4 lbs.
Velocity (feet per min.) = 100 fpm

How to size:

Average radius (in.) =

$$\frac{\text{Full roll dia. (in.)} + \text{Core dia. (in)}}{4}$$

$$= \frac{6 + 4}{4} = 2.5 \text{ in.}$$

Torque (lb.in.) =
Avg. tension (lbs.) x Avg. radius (in.)
= 4 x 2.5 = 10 lb.in.

Check tension range:

Max. tension = Torque (lb.in.) x

$$\frac{2}{\text{Core dia. (in.)}} = 10 \times \frac{2}{4} = 5 \text{ lbs.}$$

Min. tension = Torque (lb.in.) x

$$\frac{2}{\text{Full roll dia. (in.)}} = 10 \times \frac{2}{6} = 3.3 \text{ lbs.}$$

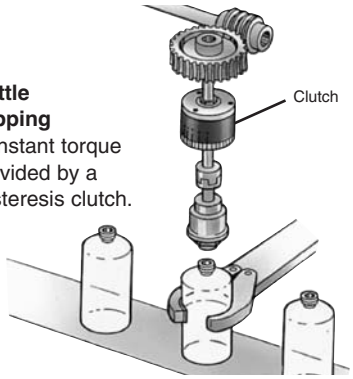
Slip watts =

$$\frac{\text{Max. tension (lbs.) x velocity (fpm)}}{44.2}$$

= 11.3 watts

Select Model MC4

Cycling



Bottle capping
Constant torque provided by a hysteresis clutch.

Information required:

Slip RPM = 500 RPM
Torque = 8 lb.in.
% slip time of total cycle time = 25%

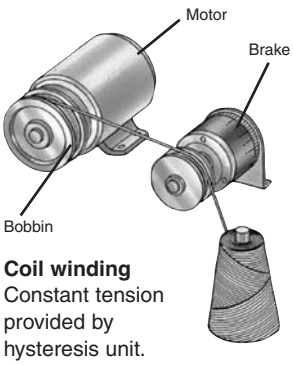
How to size:

*Watts = .0118 x torque (lb.in.) x slip RPM x % slip time = .0118 x 8 x 500 x .25 = 11.8 watts

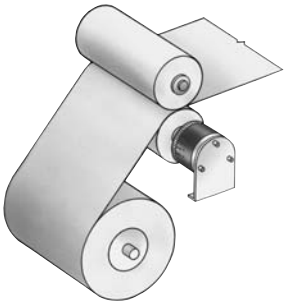
Select an MC4 from the specification chart.

*Note: Consult factory if peak slip watts are extremely high or if duration of slip period is in excess of 1 minute.

Nip roll or pulley tension control



Coil winding
Constant tension provided by hysteresis unit.



Film tensioning
Constant tensioning supplied by hysteresis unit.

Information required:

Pulley or nip roll diameter = 4 in. Tension = 6 lbs. Velocity = 100 fpm

How to size:

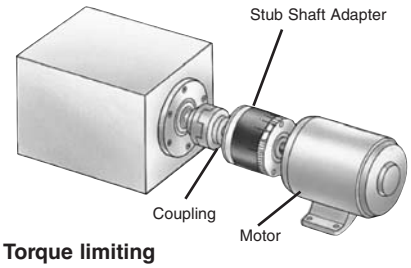
Torque (lb.in.) = Tension (lbs.) x $\frac{\text{Dia. (in.)}}{2}$ = 6 x $\frac{4}{2}$ = 12 lb.in.

Slip watts = $\frac{\text{Tension (lbs.) x velocity (fpm)}}{44.2} = \frac{6 \times 100}{44.2}$ = 13.5 watts

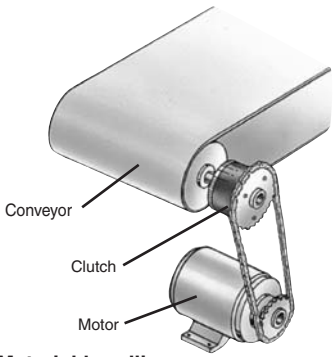
Select Model MC5

Overload protection/Torque limiting/Soft start

Motor horsepower method



Torque limiting
Hysteresis clutch provides overload protection.



Material handling
Hysteresis clutch can provide overload protection and soft start.

Information required:

Motor HP = 1/2 HP
Motor RPM = 1750 RPM

How to size:

Torque (lb.in.) = $\frac{\text{HP x 63000}}{\text{RPM}}$ =

$\frac{1/2 \times 63000}{1750}$ = 18 lb.in.

Select an MC5 from the specification chart.

Magnetic Brakes and Clutches

M Series – Permanent Magnet

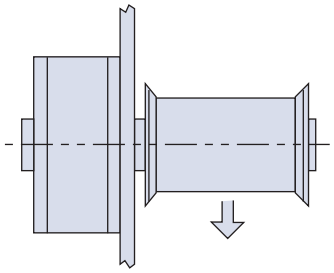
Specifications

Hollow Bore Configurations

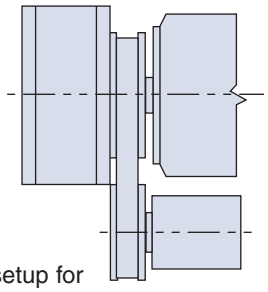
Solid Shaft Configurations

Model Size	Torque	Heat Dissipation (watts)	Inertia (lbs. sq. in.)	Bending Moment (lb. in.)	Max. RPM	Weight (lbs.)	Bore Range/Shaft Dia. (in.)
MC1.5	1–10 oz. in.	10	0.02	5	3600	10.5 oz.	1/4
MC2	0.5–20 oz. in.	10	0.02	5	3600	11 oz.	1/4
MC2.5	0.5–3 lb. in.	15	0.11	10	1800	1.5	3/8, 1/2
MC3	0.5–6 lb. in.	18	0.14	10	1800	2.5	5/16, 3/8
MC4	0.7–11 lb. in.	22	0.32	10	1800	3.5	3/8, 1/2, 5/8
MC5	1–30 lb. in.	72	1.72	25	1800	9.5	3/8, 1/2, 5/8, 3/4, 7/8, 1
MC5.5	1–50 lb. in.	110	2.74	25	1800	12	3/8, 1/2, 5/8, 3/4, 7/8, 1
MC6	4–70 lb. in.	150	4.28	25	1800	12	3/8, 1/2, 5/8, 3/4, 7/8, 1
MC6D	6–140 lb. in.	300	8.52	25	1800	24	1/2, 5/8, 3/4, 7/8, 1
MC9	15–300 lb. in.	345	65.74	50	1200	48	5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4
MB1	0-1.1 oz. in.	3	0.001	1	3600	2.5 oz.	3/16
MB1.5	1–10 oz. in.	10	0.02	5	3600	11 oz.	1/4
MB2	1–20 oz. in.	10	0.02	5	3600	11.5 oz.	1/4, 3/8
MB2.5	.5–3 lb. in.	15	0.11	10	1800	2.5	3/8, 1/2
MB3	0.5–6 lb. in.	18	0.14	10	1800	2	3/8
MB4	0.5–11 lb. in.	22	0.33	10	1800	3.5	1/2, 5/8
MB5	1–30 lb. in.	72	1.76	25	1800	10	1
MB5.5	1–50 lb. in.	110	2.79	25	1800	12.5	1
MB6	2–70 lb. in.	150	4.33	25	1800	12	1
MB6D	6–140 lb. in.	300	8.68	25	1800	26	7/8
MB9	15–300 lb. in.	345	66.09	50	1200	48	1

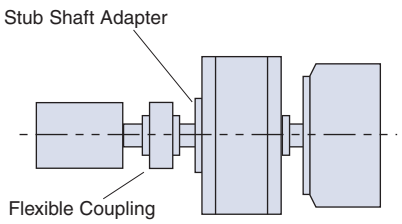
Typical Mounting Arrangements



Brake:
Typical setup for tensioning wire, film and fibers.



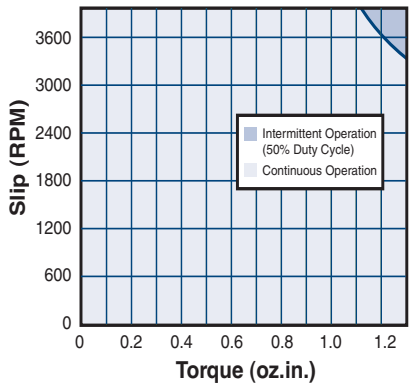
Clutch:
Typical setup for material handling, soft starts and torque limiting.



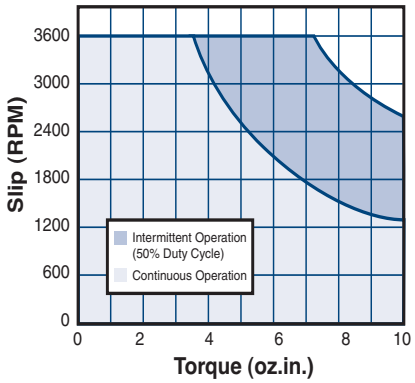
Clutch Coupling:
Typical setup for torque limiting protection used for labeling, capping and printing applications.

Heat Dissipation Charts

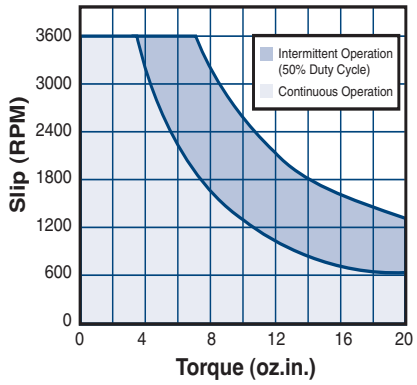
MB1



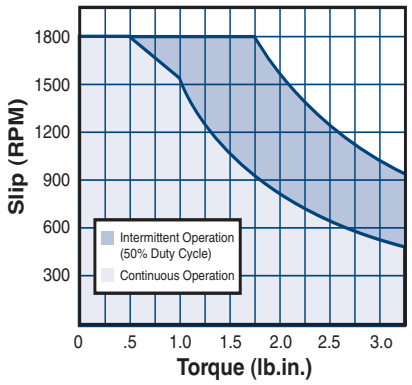
MC1.5/ MB1.5



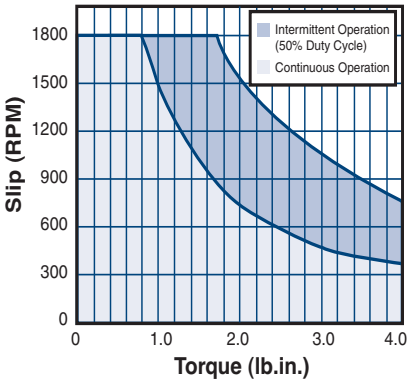
MC2/MB2



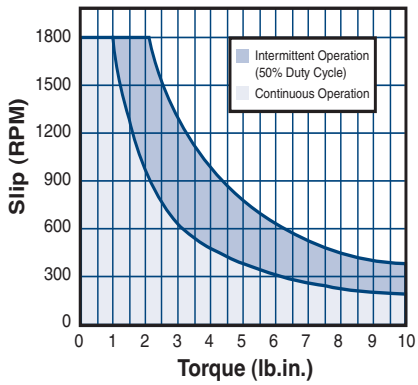
MC2.5/MB2.5



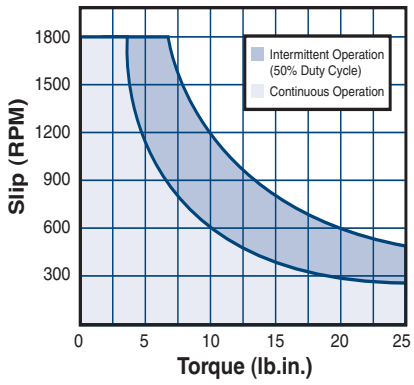
MC3/MB3



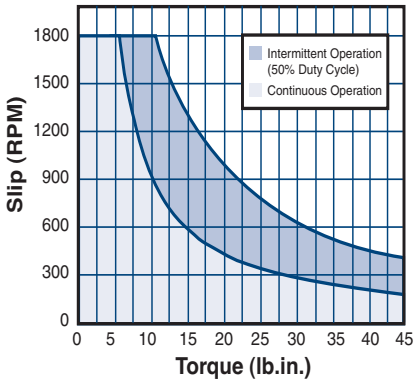
MC4/MB4



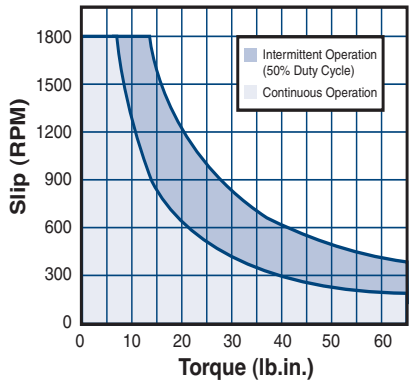
MC5/MB5



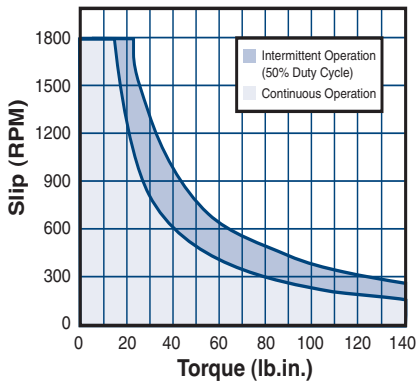
MC5.5/MB5.5



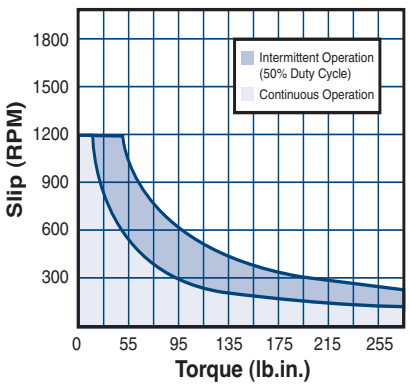
MC6/MB6



MC6D/MB6D

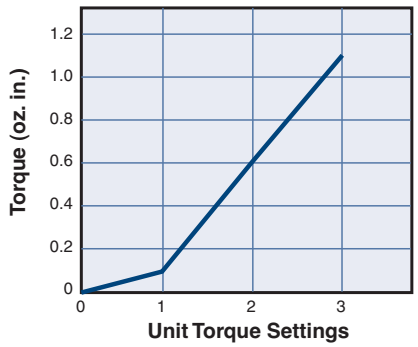


MC9/MB9

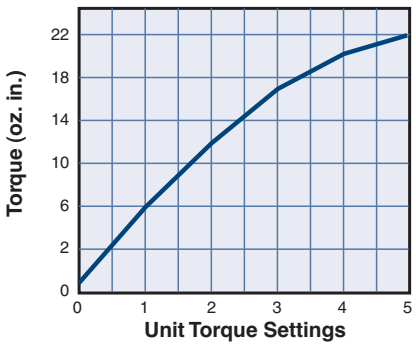


Torque Setting Charts

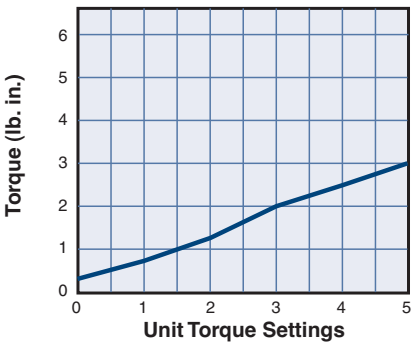
MB1



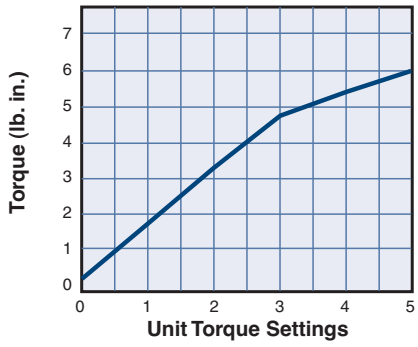
MC2/MB2



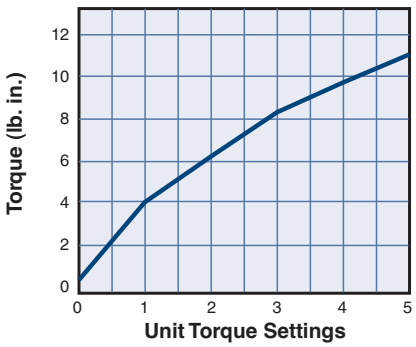
MC2.5/MB2.5



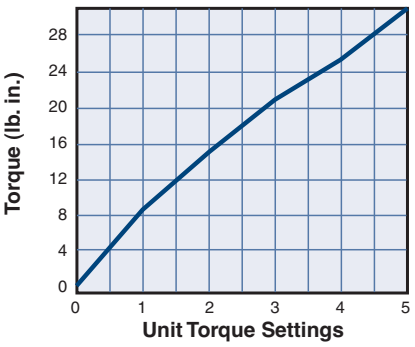
MC3/MB3



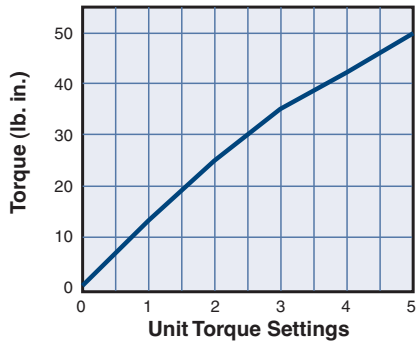
MC4/MB4



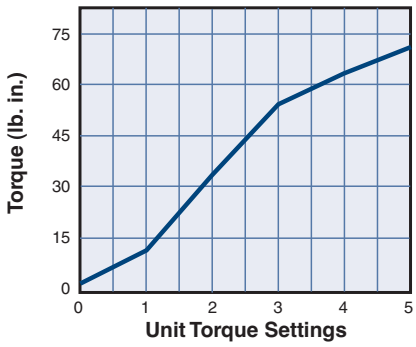
MC5/MB5



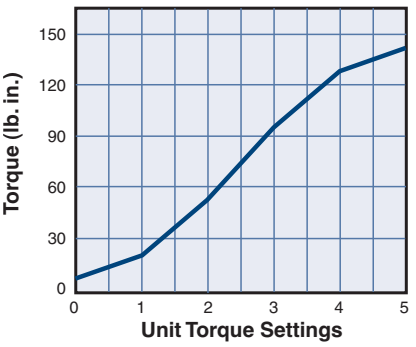
MC5.5/MB5.5



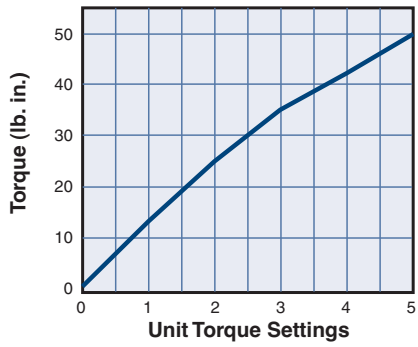
MC6/MB6



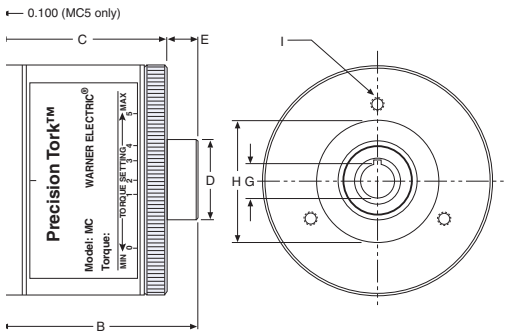
MC6D/MB6D



MC9/MB9

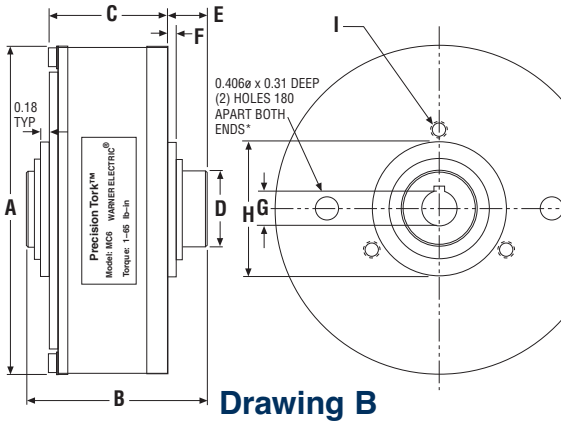


*Torque values are approximate.



Drawing A

*Set screw adjustment



Drawing B

*Spanner wrench adjustment

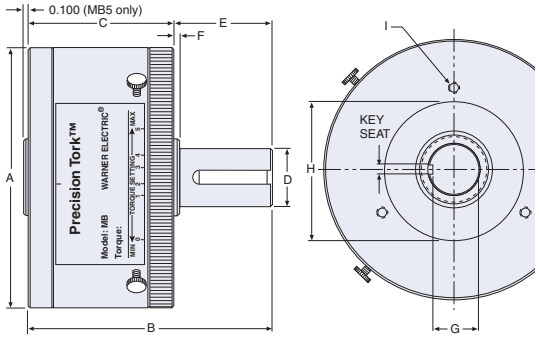
Model	Drawing	A	B	C	D	E	F
MC1.5	A	1.85	1.62	1.38	0.375	0.24	–
MC2	A	1.85	1.62	1.35	0.375	0.27	–
MC2.5	A	2.31	2.52	2.23	0.79	0.29	–
MC3	A	2.74	2.22	1.98	0.590	0.24	–
MC4	A	3.23	2.27	2.01	0.98	0.26	–
MC5	A	4.65	3.18	2.64	1.372	0.45	–
MC5.5	A	5.29	3.21	2.64	1.372	0.57	–
MC6	B	6.05	3.18	2.02	1.372	0.76	0.18
MC6D	B	7.15	5.03	4.06	1.378	0.35	0.21
MC9	B	9.40	4.18	3.49	1.77	0.56	0.13

Bore & Keyseat Sizes

Model	Keyseat	Lockdown Method	G (Bore)	H (Pilot-Both Ends)	I (Both Ends)
MC1.5	None	3/32 Roll Pin	1/4	0.877–0.876 x 0.08 dp	3) 6-32 x 5/16 dp 1.25 B.C.
MC2	None	3/32 Roll Pin	1/4	0.877–0.876 x 0.08 dp	3) 6-32 x 5/16 dp 1.25 B.C.
MC2.5	None	2) Set Screws	3/8	1.655–1.653 x 0.10 dp	3) 10-32 x 7/16 dp 1.875 B.C.
	1/8 Key	2) Set Screws	1/2		
MC3	None	2) Set Screws	5/16	1.383/1.381 x .120 dp	3) 10-32 x 7/16 dp 1.875 B.C.
	None	2) Set Screws	3/8		
MC4	None	2) Set Screws	3/8	1.854–1.852 x 0.08 dp	3) 10-32 x 7/16 dp 2.375 B.C.
	1/8 Key	2) Set Screws	1/2		
	3/16 Key	2) Set Screws	5/8		
MC5	None	2) Set Screws	3/8	2.441/2.440 x .26 dp	3) 10-32 x 1/2 dp 3.00 B.C.
	1/8 Key	2) Set Screws	1/2		
	3/16 Key	2) Set Screws	5/8		
	3/16 Key	2) Set Screws	3/4		
	3/16 Key	2) Set Screws	7/8		
	1/4 Shallow	2) Set Screws	1		
MC5.5	None	2) Set Screws	3/8	2.441/2.440 x .100 dp	3) 10-32 x 1/2 dp 3.00 B.C. and 3) 5/16–18 x 0.62 dp 3.50 B.C.
	1/8 Key	2) Set Screws	1/2		
	3/16 Key	2) Set Screws	5/8		
	3/16 Key	2) Set Screws	3/4		
	3/16 Key	2) Set Screws	7/8		
	1/4 Shallow	2) Set Screws	1		
MC6	None	2) Set Screws	3/8	2.441/2.440	3) 1/4-20 x 5/16 dp 2.875 B.C.
	1/8 Key	2) Set Screws	1/2		
	3/16 Key	2) Set Screws	5/8		
	3/16 Key	2) Set Screws	3/4		
	3/16 Key	2) Set Screws	7/8		
	1/4 Shallow	2) Set Screws	1		
MC6D	3/16 Key	2) Set Screws	5/8	3.250/3.248	3) 5/16-18 x 1/2 dp 4.00 B.C.
	3/16 Key	2) Set Screws	3/4		
	3/16 Key	2) Set Screws	7/8		
	1/4 Shallow	2) Set Screws	1		
MC9	3/16 Key	2) Set Screws	5/8	3.250/3.248	4) 5/16–18 x 0.50 dp 5.875 B.C. and 3) 5/16-18 x 1/2 dp 4.25 B.C.
	3/16 Key	2) Set Screws	3/4		
	3/16 Key	2) Set Screws	7/8		
	1/4 Key	2) Set Screws	1		
	1/4 Key	2) Set Screws	1-1/8		
	1/4 Key	2) Set Screws	1-1/4		

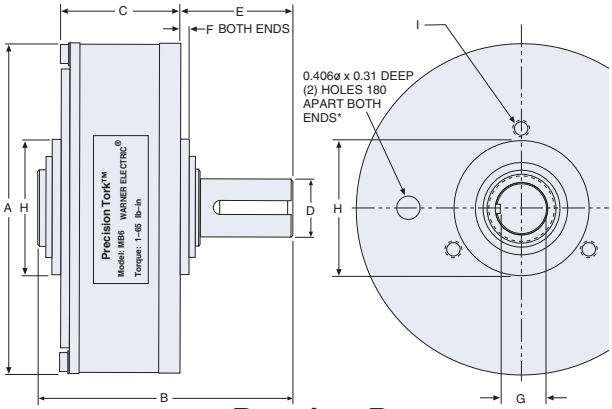
Magnetic Brakes and Clutches

M Series – Permanent Magnet



Drawing C

*Thumb screw adjustment

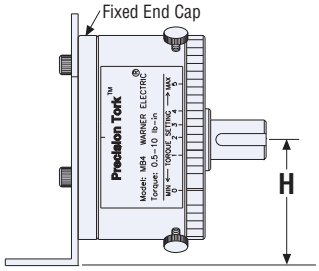


Drawing D

*Spanner wrench adjustment

Model	Drawing	A	B	C	D (Shaft)	E	F	G	KEY SEAT	H (Pilot-Both Ends)	I (Both Ends)
MB1	C	0.99	1.37	0.86	3/16	0.51	–	0.170 Flat	–0.300/0.302 x 0.12 dp		3) 4-40 x 1/4 dp 0.610 B.C.
MB1.5	C	1.85	2.36	1.38	1/4	.98	–	0.230 Flat	–	0.876/0.877 x 0.08 dp	3) 6-32 x 5/16 dp 1.250 B.C.
MB2	C	1.85	2.36	1.35	1/4	1.01	–	0.230 Flat	–	0.876/0.877 x 0.08 dp	3) 6-32 x 5/16 dp 1.250 B.C.
	C	1.85	2.36	1.35	3/8	1.01	–	0.355 Flat	–	0.876/0.877 x 0.08 dp	3) 6-32 x 5/16 dp 1.250 B.C.
MB2.5	C	2.31	3.35	2.23	3/8	1.12	–	0.355 Flat	–	1.653/1.655 x 0.10 dp	3) 10-32 x 7/16 dp 1.875 B.C.
	C	2.31	3.35	2.23	1/2	1.12	–	0.430/0.414	0.125	1.653/1.655 x 0.10 dp	3) 10-32 x 7/16 dp 1.875 B.C.
MB3	C	2.74	3.02	1.98	3/8	1.04	0.04	0.355 Flat	–	1.383/1.381 x 0.12 dp	3) 10-32 x 7/16 dp 1.875 B.C.
MB4	C	3.23	2.98	2.01	1/2	0.97	0.09	0.430/0.414	0.125	1.852/1.854 x 0.08dp	3) 10-32 x 7/16 dp 2.375 B.C.
	C	3.23	2.98	2.01	5/8	0.97	0.09	0.518/0.502	0.188	1.852/1.854 x 0.08dp	3) 10-32 x 7/16 dp 2.375 B.C.
MB5	C	4.65	4.48	2.64	1	1.75	0.12	0.860/0.844	0.250	2.441/2.440 x 0.100 dp	3) 10-32 x 1/2 dp 3.000 B.C.
MB5.5	C	5.29	4.53	2.65	1	1.88	0.25	0.860/0.844	0.250	2.441/2.440 x 0.26 dp	10-32 x 1/2 dp 3.000 B.C. and 3) 5/16-18 x 0.62 dp 3.500 B.C.
MB6	D	6.05	4.48	2.02	1	2.06	0.18	0.860/0.844	0.250	2.441/2.440	3) 1/4-20 x 5/16 dp 2.875 B.C.
MB6D	D	6.95	6.23	4.06	7/8	1.81	0.21	0.771/0.755	0.188	3.250/3,248	3) 5/16-18 x 1/2 dp 4.000 B.C.
MB9	D	9.40	5.39	3.49	1	1.77	0.13	0.860/0.844	0.250	3.250/3.248	3) 5/16-18 x 1/2 dp 5.875 B.C. and 3) 5/16-18 x 1/2 dp 4.250 B.C.

Optional Mounting Bracket



Note: Mount bracket to fixed end cap – side opposite knurled adjustment ring.

Model	Fits Size	A	B	C	D	E	F	G	H	I
MPB-2B	MB2	0.270	1.750	1.155	0.390	0.280	2.500	0.755	1.500	3.000
	MC2	(6.9)	(44.5)	(29.3)	(9.9)	(7.1)	(63.5)	(19.2)	(38.1)	(76.2)
MPB-15B	MB3/MC3	0.270	2.500	1.155	0.390	0.280	3.500	1.130	2.000	4.000
	MB4/MC4	(6.9)	(63.5)	(29.3)	(9.9)	(7.1)	(88.9)	(28.7)	(50.8)	(101.6)
MPB-70B	MB5/	0.270	4.875	1.155	0.390	0.280	6.000	1.630	3.500	6.000
	MC5	(6.9)	(123.8)	(29.3)	(9.9)	(7.1)	(152.4)	(41.4)	(88.9)	(152.4)
MPB-120B	MB5.5	0.270	4.875	1.155	0.390	0.280	6.000	1.630	3.500	6.250
	MC5.5	(6.9)	(123.8)	(29.3)	(9.9)	(7.1)	(152.4)	(41.4)	(88.9)	(158.8)
MPB-240B	MB6	0.270	4.875	1.155	0.390	0.280	6.500	2.445	4.000	7.500
	MC6	(6.9)	(123.8)	(29.3)	(9.9)	(7.1)	(165.1)	(62.1)	(101.6)	(190.5)

All dimensions are nominal unless otherwise noted. ( ) denotes (mm)