Magnetic 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.

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

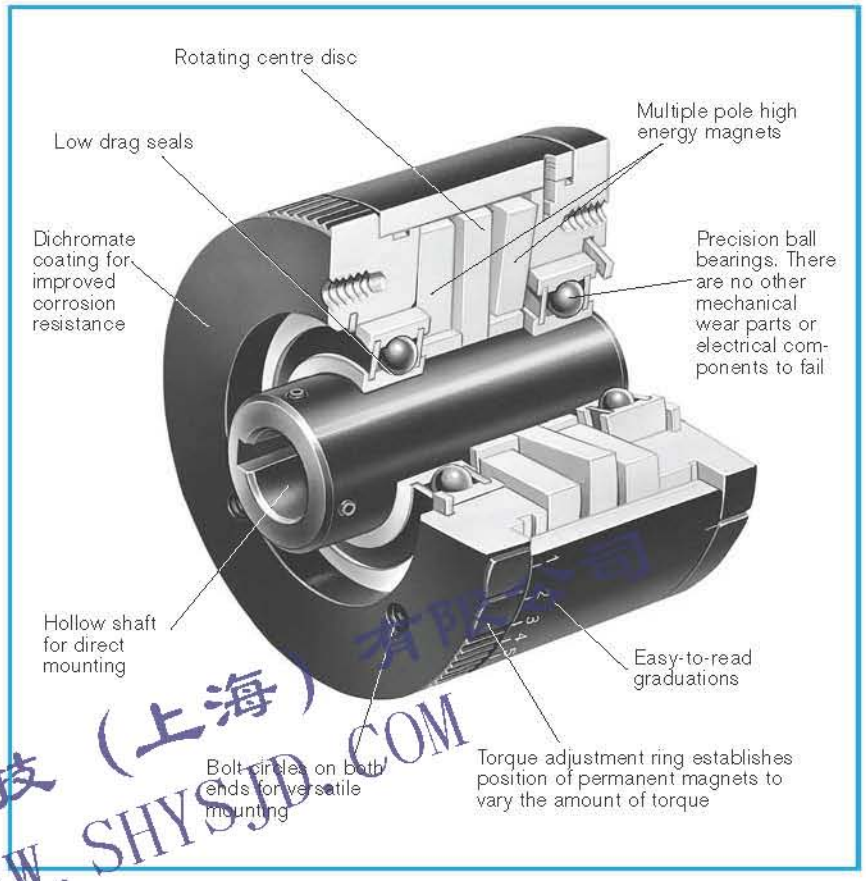
- ☐ Simple to install
- ☐ Nothing to monitor
- ☐ Unaffected by power interruption or power fluctuation
- ☐ Safe to use

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



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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



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Applications

Unwind tension control

Brake mounted on shaft of unwinds spool or bobbin



Film unwind
Tension provided by hysteresis units

Information required:
Full roll ø (m) = 0,15
ø core (m) = 0,1
Average tension (N) = 18
Velocity (m/mn) = 30

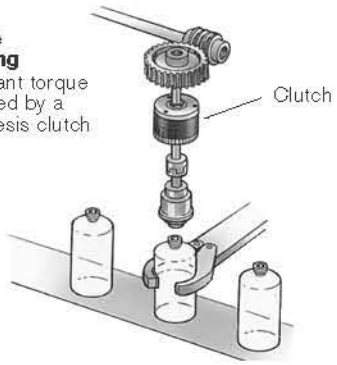
How to size:
Average radius = (Full roll ø + core ø) / 4 = (0,15 + 0,1) / 4 = 0,06 m

Average tension (Nm) =
Average tension · Average radius =
18 · 0,06 = 1,08 Nm

Check tension range:
Max. tension =
Torque · 2 / core ø =
1,08 · 2 / 0,1 = 21,6 N
Min. tension =
Torque · 2 / full roll ø =
1,08 · 2 / 0,15 = 14,4 N
Slip watts (watt) =
(Max. tension · velocity) / 60 =
(21,6 · 30) / 60 = 10,8 watts

Select **MC4 Model**

Cycling application



Bottle capping
Constant torque provided by a hysteresis clutch

Information required:
Slip = 500 tr/mn
Torque = 0,90 Nm
% slip time of total cycle time = 25%

How to size:

$$*\text{Watts} = \frac{\text{Torque} \cdot \text{slip}}{9,55} \cdot 0,25 = \frac{500 \cdot 0,9}{9,55} \cdot 0,25 = 11,8 \text{ watts}$$

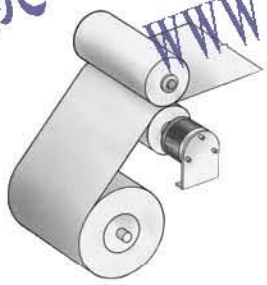
Select an **MC4 Model** from the specification chart.

* Consult factory if peak slip watts are extremely higher 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

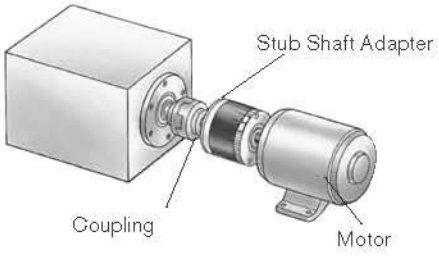
Information required:
Pulley or nip roll diameter = 0,1 m
Tension = 26 N
Velocity = 30 m/mn

How to size:
Torque = Tension · ø / 2 = 26 · 0,1 / 2 = 1,3 Nm
Slip watts = (max. tension · velocity) / 60
= (26 · 30) / 60 = 13 watts

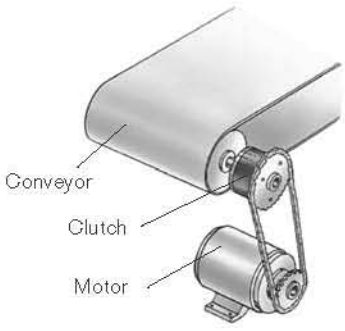
Select **MC5 Model**

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:
Power motor = 0,37 kw
Speed motor = 1750 RPM

How to size:
Torque = 9550 · kw / N =
9550 · 0,37 / 1750 = 2 Nm

Select an **MC5 Model** from the specification chart.

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Magnetic clutches and brakes



Clutch

Brake

Specifications

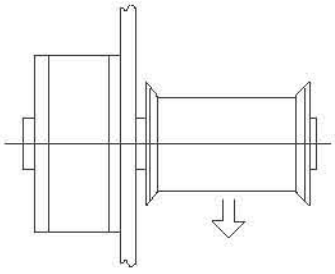
CLUTCHES								
Models	Torque	Dissipation (Watts)	Inertia (kgm^2)	Bending moment (Nm)	Speed (RPM)	Weight (kg)	Standard bores (Inch)	min. 15 pcs (mm)
MC1.5	0,071 - 0,71 Ncm	10	4,9 x 10-6	0,56	3600	0,31	1/4	Metric bores on request
MC2	0,071- 1,58 Ncm	10	4,9 x 10-6	0,56	3600	0,31	1/4	
MC3	0,033 - 0,68 Nm	18	4,6 x 10-5	1,1	1800	0,9	3/8	
MC4	0,056 - 1,24 Nm	22	9,4 x 10-5	1,1	1800	1,13	3/8,1/2,5/8	
MC5	0,11 - 3,4 Nm	72	5,4 x 10-4	2,82	1800	4,08	3/8, 1/2, 5/8, 3/4, 7/8, 1	
MC5.5	0,11 - 5,6 Nm	110	8,5 x 10-4	2,82	1800	4,99	5/8, 3/4, 7/8, 1	
MC6	0,22 - 7,9 Nm	150	1,4 x 10-3	2,82	1800	5,44	5/8, 3/4, 7/8, 1	
MC9	1,69 - 33,8 Nm	345	4,2 x 10-3	5,65	1200	20,41	5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4	

BRAKES								
Models	Torque	Dissipation (Watts)	Inertia (kgm^2)	Bending moment (Nm)	Speed* (RPM)	Weight (kg)	Standard bores (Inch)	min. 15 pcs (mm)
MB1	0 - 0,078 Ncm	3	2,5 x 10-7	0,11	3600	0,057	3/16	Metric shafts on request
MB1.5	0,071 - 0,71 Ncm	10	6,3 x 10-6	0,56	3600	0,31	1/4	
MB2	0,071 - 1,58 Ncm	10	6,3 x 10-6	0,56	3600	0,31	1/4	
MB3	0,033 - 0,68 Nm	18	4,9 x 10-5	1,13	1800	0,9	3/8	
MB4	0,055 - 1,24 Nm	22	9,7 x 10-5	1,13	1800	1,13	5/8	
MB5	0,11 - 3,4 Nm	72	5,8 x 10-4	2,82	1800	4,08	1	
MB5.5	0,11 - 5,6 Nm	110	8,8 x 10-4	2,82	1800	4,99	1	
MB6	0,22 - 7,9 Nm	150	1,4 x 10-3	2,82	1800	5,44	1	
MB9	1,69 - 33,8 Nm	345	4,2 x 10-3	5,65	1200	20,41	1	

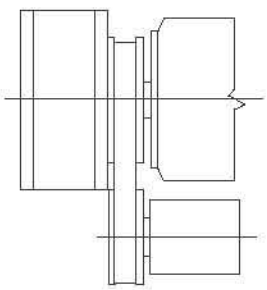
*Minimum speed = 2 RPM

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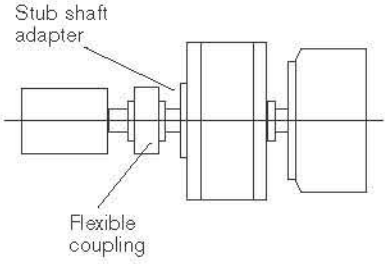
Typical mounting



Brake
Typical setup for tensioning wire, film and fibers



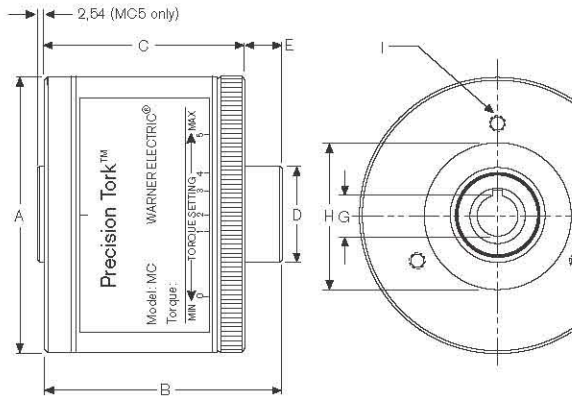
Clutch
Typical setup for material handling, soft starts and torque limiting



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

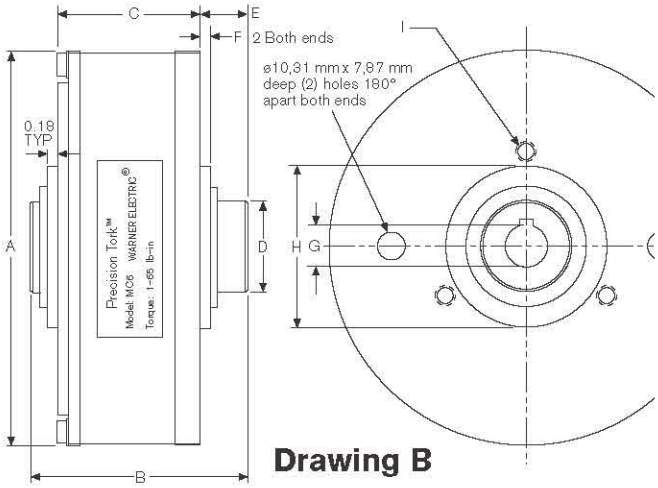
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Magnetic clutches



Drawing A

*Set screw adjustment



Drawing B

*Spanner wrench adjustment

Models	Drawing	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
MC1.5	A	46,99	40,89	34,29	9,525	6,6	–
MC2	A	46,99	40,89	34,29	9,525	6,6	–
MC3	A	69,85	56,89	50,8	14,99	6,1	–
MC4	A	82,04	57,4	50,8	24,99	6,6	–
MC5	A	118,11	80,77	67,31	35	10,67	–
MC5.5	A	134,37	82,55	67,31	35	15,24	–
MC6	B	154,94	80,77	51,816	35	18,54	4,57
MC9	B	238,76	105,92	88,65	44,96	13,97	3,3

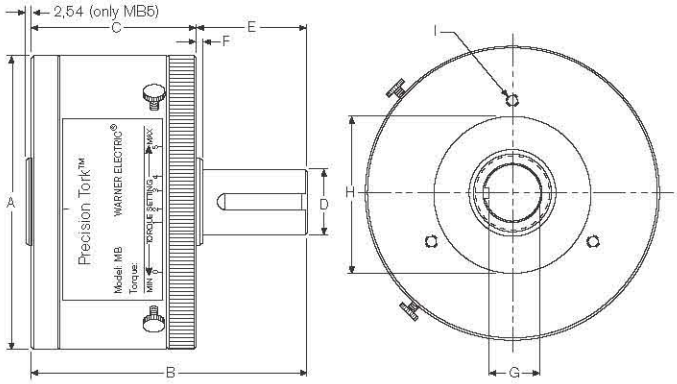
Bore & Keyseat Sizes

Models	"G" Bore (Inch)	Keyway (Inch)	Metric bore and key min. 150 pcs	"H" centring diameter x deep in mm (both side)	"I" bore (Inch)	Setting locking
MC1.5	1/4	Without	On request	22.225/22.20 x 2	3) 6-32 x 5/16 dp 1.25 B.C.	Pin 3/32
MC2	1/4	Without		22.225/22.20 x 2	3) 6-32 x 5/16 dp 1.25 B.C.	Pin 3/32
MC3	3/8	Without		35.13/35.08 x 3.05	3) 10-32 x 7/16 dp 1.875 B.C.	Set screws
MC4	3/8	Without		46.99/46.965 x 2	3) 10-32 x 7/16 dp 2.375 B.C.	Set screws
	1/2	1/8				Set screws
	5/8	3/16				Set screws
MC5	3/8	Without		62/61.97 x 2.54	3) 10-32 x 1/2 dp 3.00 B.C.	Set screws
	1/2	1/8				Set screws
	5/8	3/16				Set screws
	3/4	3/16				Set screws
	7/8	3/16				Set screws
	1	1/4 Shallow key				Set screws
MC5.5	5/8	3/16		62/61.97 x 2.54	3) 10-32 x 1/2 dp 3.00 B.C.	Set screws
	3/4	3/16				Set screws
	7/8	3/16				Set screws
	1	1/4 Shallow key				Set screws
MC6	5/8	3/16		62/61.97	3) 1/4-20 x 5/16 dp 2.875 B.C.	Set screws
	3/4	3/16				Set screws
	7/8	3/16				Set screws
	1	1/4 Shallow key				Set screws
MC9	5/8	3/16		82.55/82.5	4) 5/16-18 x 1/2 dp 5.875 B.C.	Set screws
	3/4	3/16				Set screws
	7/8	3/16				Set screws
	1	1/4				Set screws
	1-1/8	1/4				Set screws
	1-1/4	1/4				Set screws

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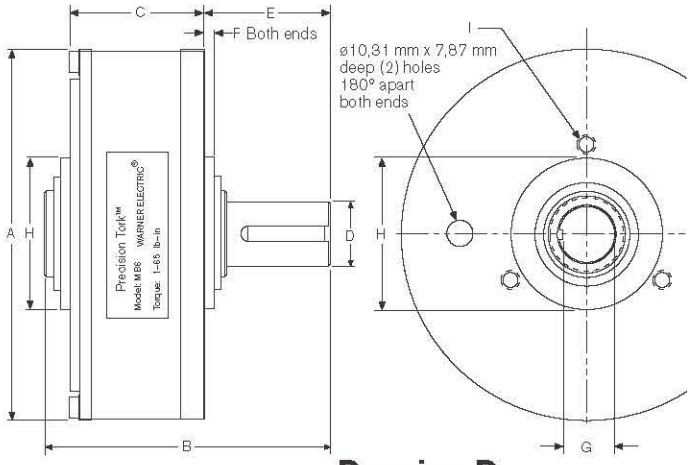
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Magnetic brakes



*Set screw adjustment

Drawing C



*Spanner wrench adjustment

Drawing D

Models	Drawing	A (mm)	B (mm)	C (mm)	D shaft (Inch)	D shaft (mm)	E (mm)	F (mm)	G (Inch)	"H" Centring diameter x deep in mm (both side)	"I" Bores (Inch)
MB1	C	25,4	35,31	21,59	3/16		14,73	-	0.170 Plat	7,645/7,68 x 2,54	3) 4-40 x 1/4 dp 0.610 B.C
MB1.5	C	46,99	59,69	34,29	1/4	On request	25,4	-	0.230 Plat	22,225/22,20 x 2	3) 6-32 x 5/16 dp 1.250 B.C
MB2	C	46,99	59,69	34,29	1/4	min. 15 pcs	25,4	-	0.230 Plat	22,225/22,20 x 2	3) 6-32 x 5/16 dp 1.250 B.C
MB3	C	69,85	76,71	50,8	3/8		26,16	0,76	0.350 Plat	35,13/35,08 x 2,05	3) 10-32 x 7/16 dp 1.875 B.C
MB4	C	82,04	75,44	50,8	5/8		24,64	2,29	0.518/0.503	46,99/46,965 x 2	3) 10-32 x 7/16 dp 2.375 B.C
MB5	C	118,11	111,76	67,31	1		44,45	2,79	0.859/0.844	62/61,97 x 2,54	3) 10-32 x 1/2 dp 3.000 B.C
MB5.5	C	134,37	115,06	67,31	1		47,75	6,35	0.859/0.844	62/61,97 x 2,54	3) 10-32 x 1/2 dp 3.000 B.C
MB6	D	154,94	114,3	51,82	1		56,39	4,57	0.859/0.844	62/61,97	3) 1/4-20 x 5/16 dp 2.875 B.C
MB9	D	238,76	137,41	88,65	1		45,72	3,3	0.859/0.844	82,55/82,5	3) 5/16-18 x 1/2 dp 5.875 B.C

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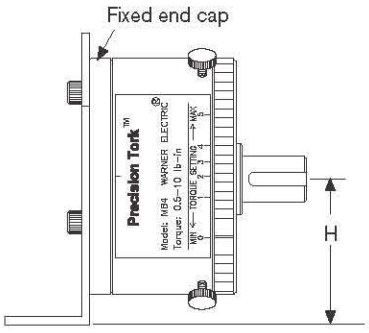
Option :

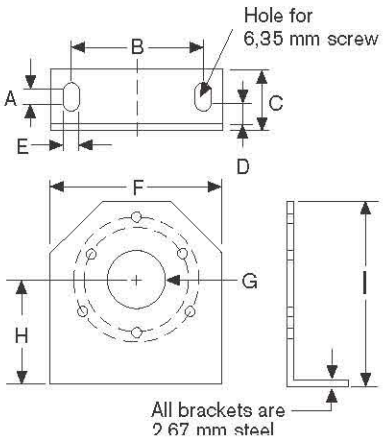
Mounting Bracket

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

Models	Size	A	B	C	D	E	F	G	H	I
MPB-2B	MB2 MC2	6,9	44,5	29,3	9,9	7,1	63,5	19,1	38,1	76,2
MPB-15B	MB3/MC3 MB4/MC4	6,9	63,5	29,3	9,9	7,1	88,9	28,6	50,8	101,6
MPB-70B	MB5 MC5	6,9	123,8	29,3	9,9	7,1	152,4	41,3	88,9	152,4
MPB-120B	MB5.5 MC5.5	6,9	123,8	29,3	9,9	7,1	152,4	41,3	88,9	158,8
MPB-240B	MB6 MC6	6,9	123,8	29,3	9,9	7,1	165,1	62,0	101,6	190,5

Dimensions in mm





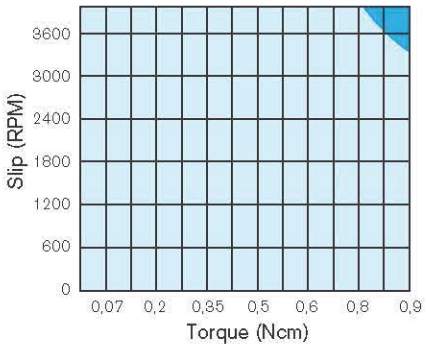
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Heat Dissipation Charts

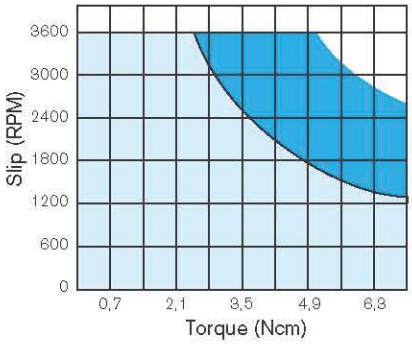
Intermittent operation (50 & duty cycle)

Continuous operation

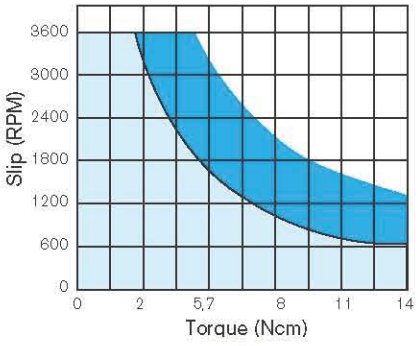
MB1



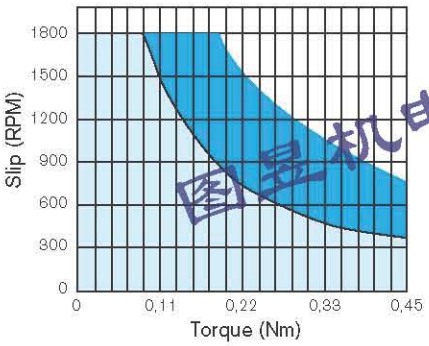
MC1.5/MB1.5



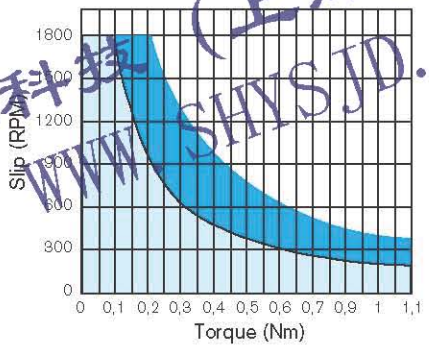
MC2/MB2



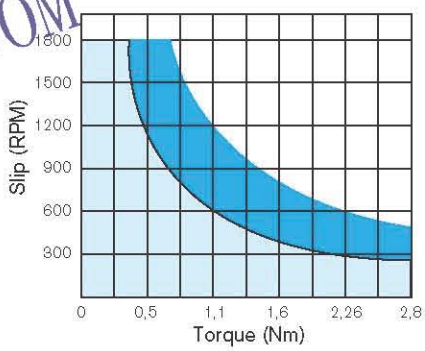
MC3/MB3



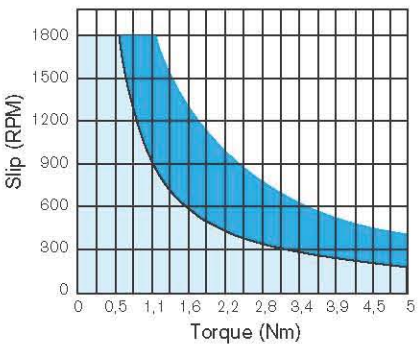
MC4/MB4



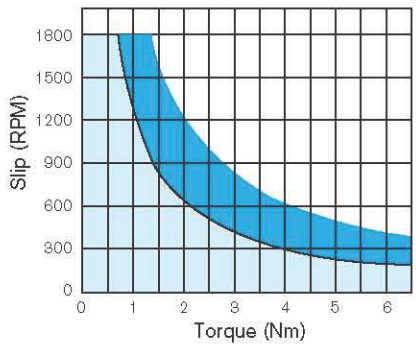
MC5/MB5



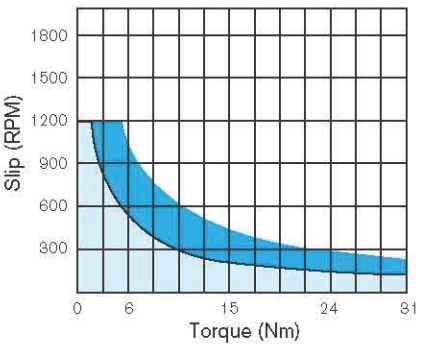
MC5.5/MB5.5



MC6/MB6



MC9/MB9

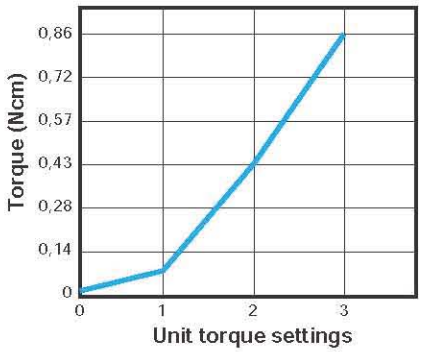


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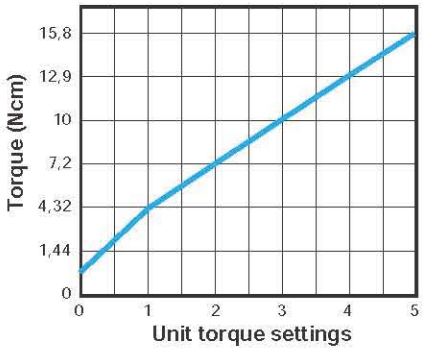
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Torque Setting Charts

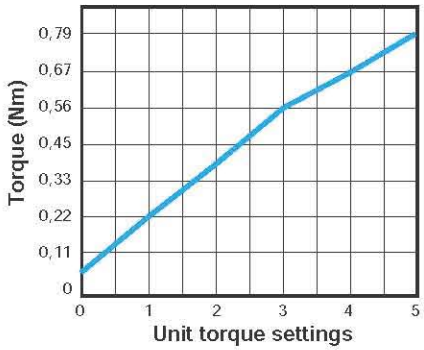
MB1



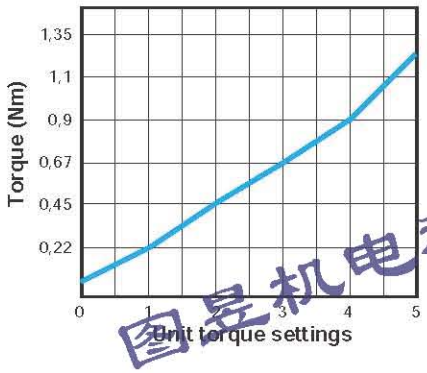
MC2/MB2



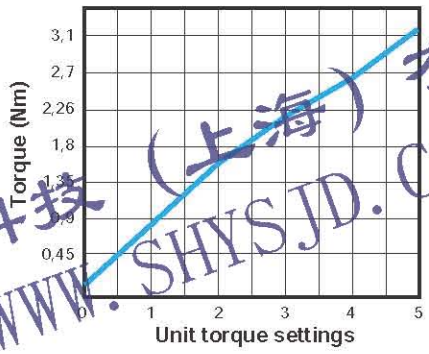
MC3/MB3



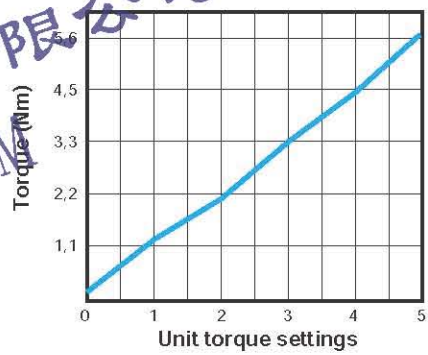
MC4/MB4



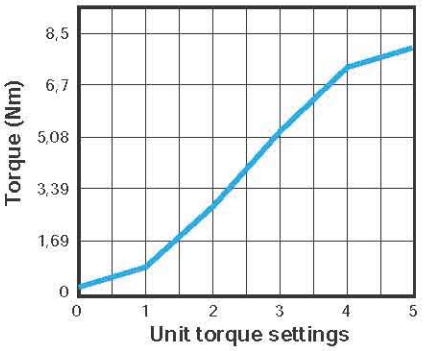
MC5/MB5



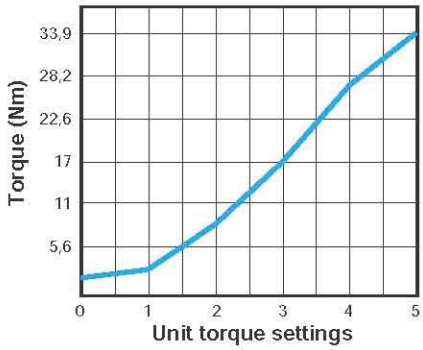
MC5.5/MB5.5



MC6/MB6



MC9/MB9



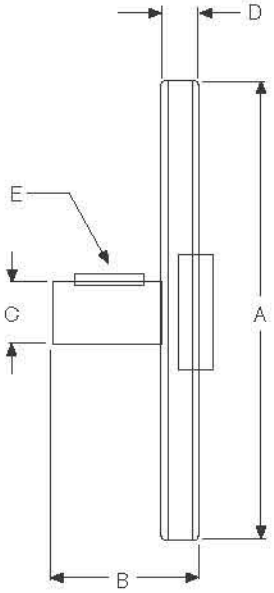
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Stub shaft adapters

- ☐ Utilized when "clutch coupling" configuration is desired
- ☐ Comes complete with attachment hardware and drive key
- ☐ Stub shaft adapters should be used in conjunction with a flexible coupling



Size	Models	A (mm)	B (mm)	C* (Inch)	D (mm)	E
A2-14	MC2	40,64	19,81	1/4	3,81	Flat
A3-38	MC3	59,94	30,23	3/8	4,83	Flat
A4-38	MC4	72,64	30,23	3/8	4,83	Flat
A4-58	MC4	72,64	30,23	5/8	4,83	Key 3/16 inch
A5-1	MC5/MC5.5	87,63	43,69	1	6,86	Key 1/4 inch
A5-12	MC5/MC5.5	87,63	37,34	1/2	6,86	Key 1/8 inch
A6-34	MC6	86,36	43,18	3/4	8,89	Key 3/16 inch

* On request units in metric size available, minimum : 15 pcs

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How to Order ?

1. Torque
Determine the maximum torque that your application requires. See the application example.

2. Energy dissipation
Determine the amount of energy or heat that will be generated during operation. Each clutch or brake is rated for a specific amount of energy, given in units of watts, that it can safely dissipate.

3. Model selection
Select the clutch or brake based on torque and energy requirements. See the specifications under "Heat Dissipation and Torque Setting Charts."

4. Select Bore Size
Select the proper bore size for the application.
On request units in metric size available, minimum : 15 pcs

5. Example

Torque Requirement = 1 Nm
Energy Requirement = 35 watts
Bore Requirement – 5/8 inch
Select Model : **MC5-58**

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