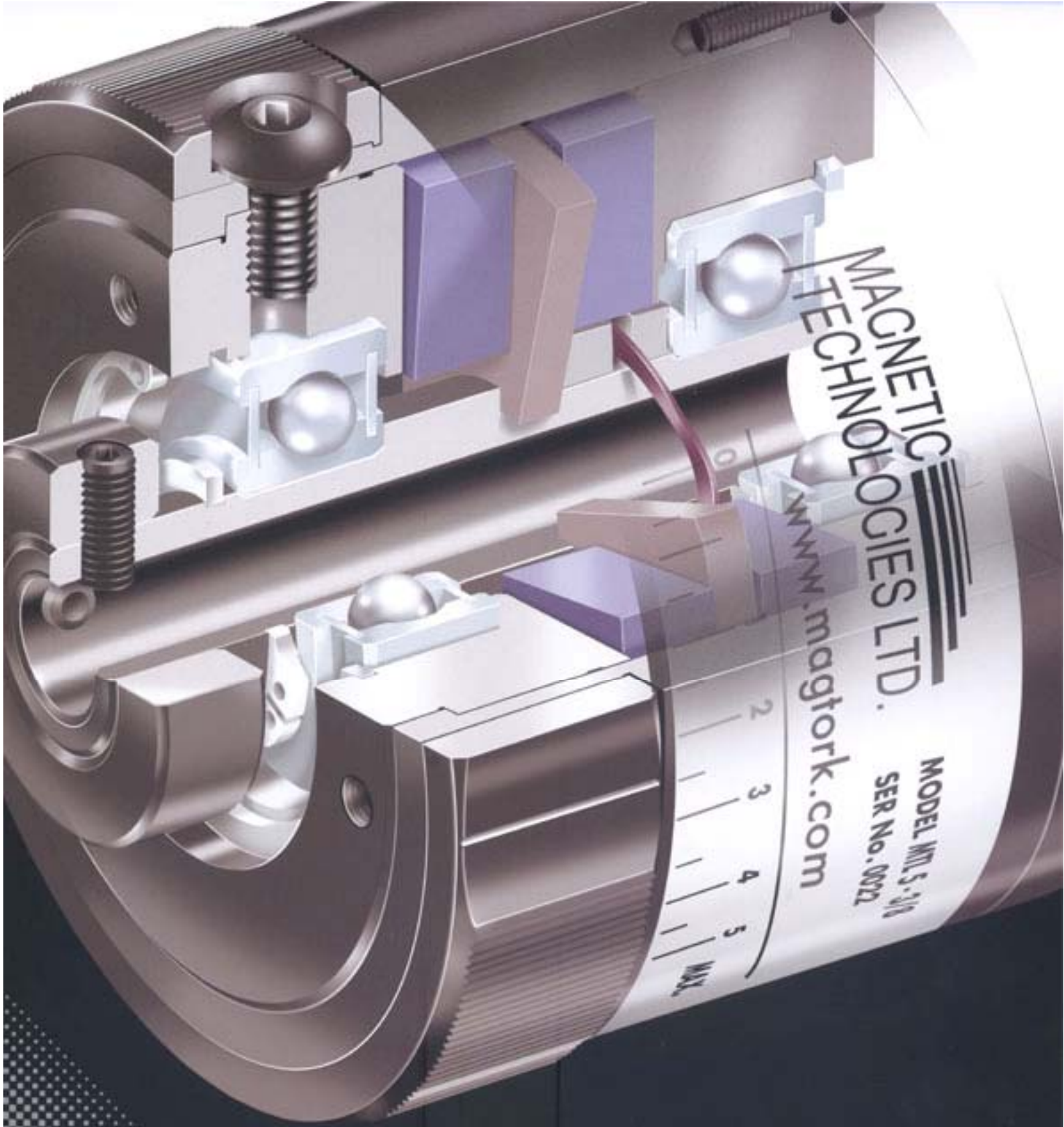


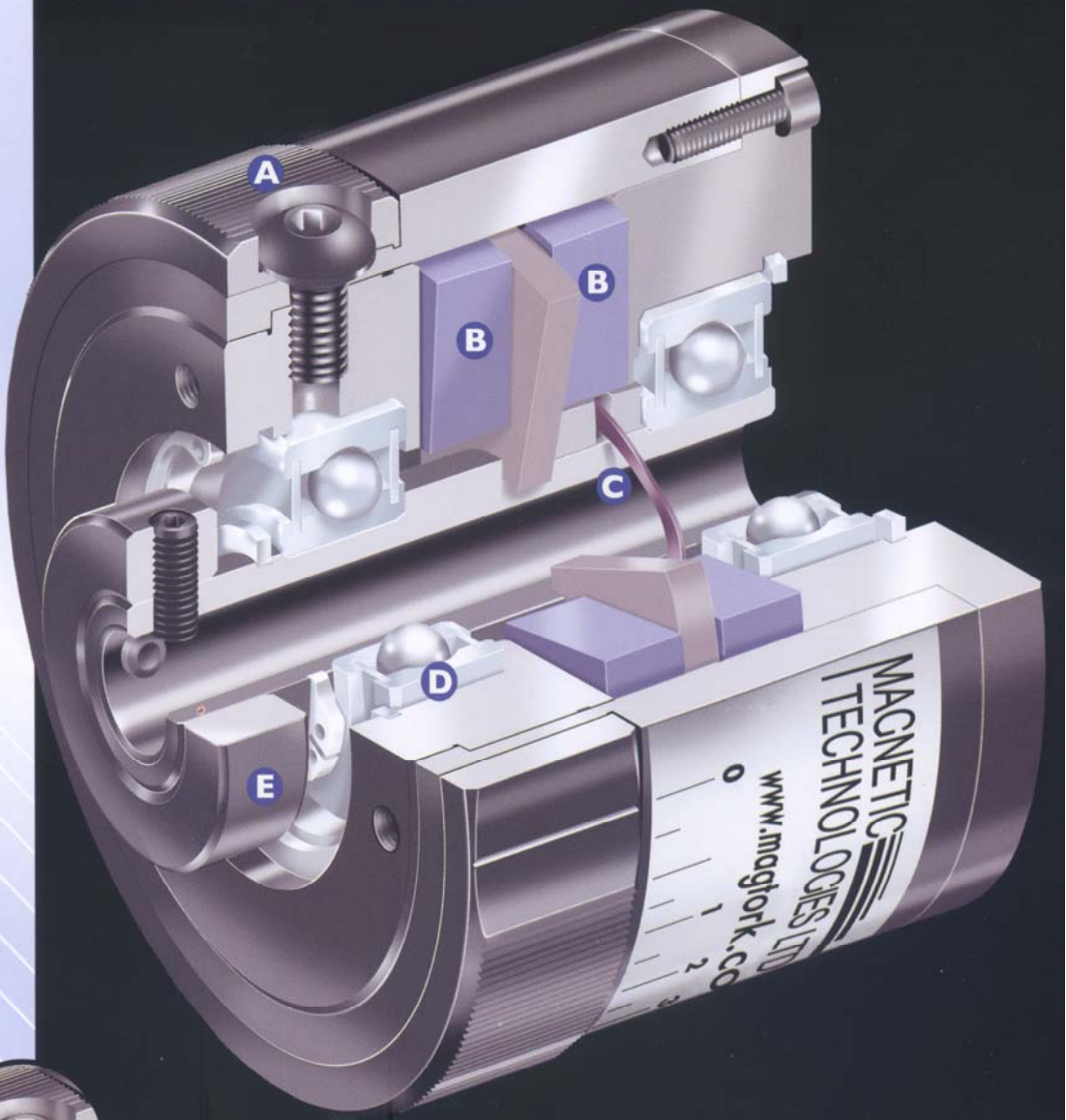
Transmitting Torque Through Air

We're passionate about magnetic brakes and clutches.

Since 1984, we have been designing, manufacturing and assembling magnetic brakes and clutches here in Oxford, Massachusetts. Every unit is serialized which helps us track who built them, when they shipped, and where they went. This is how we learn about product applications that work, which parts wear and which ones hold up. We test 100% of our units before they ship out the door. Knowing how our units perform in the field helps us fine tune them to make them even better.

Magnetic brakes and clutches is all we do.

Why Are MTL Brakes and Clutches Better?



A: Large, easy to grip, knurled adjustment ring with socket cap screw to lock adjustment. Adjustment has positive stops at "0" and "100%".

B: Matched magnetic assemblies: Because we do all our own magnetizing in house, we are better able to control the flux density in the magnetic assemblies assuring better adjustability and consistency unit to unit.

C: Wave Spring: To eliminate any tolerance build up, we add a special wave spring to take out any accumulated tolerance and to pre-load the bearings with just the right amount of pressure to allow easy adjustment and virtually zero end play in the rotor.

D: Ball Bearing: Because the bearing is the only wearing part, we go to special lengths to buy the best sealed ball bearings available. We use a special high temperature lubricant to add years of long life.

E: Set Screw Collar: Most manufacturers simply tap the rotor to allow shaft connection. We have learned small rotors need an extra set screw collar, so we added one, which makes mounting easier for you. More importantly we can now use an oversized set screw to give plenty of thread engagement and guarantee a positive shaft connection.

magtork.com
508-987-3303

Model 1035

Torque range : 0.001 – 0.014 Nm

Weight : 0.07 kg

Intertia : 2.5 x 10^{-7} kgm sec^2

Heat Disspation : 2.2 Watts

Model MTL 0.5

Torque range : 0.003 – 0.05 Nm

Weight : 0.16 kg

Intertia : 1.7 x 10^{-6} kgm sec^2

Heat Disspation : 5.5 Watts

Model MTL 1.25

Torque range : 0.007 – 0.14 Nm

Weight : 0.33 kg

Intertia : 6.3 x 10^{-6} kgm sec^2

Heat Disspation : 13 Watts

Model MTL 2.25

Torque range : 0.03 – 0.25 Nm

Weight : 0.33 kg

Intertia : 6.3 x 10^{-6} kgm sec^2

Heat Disspation : 13 Watts

Model MTL 5

Torque range : 0.02 – 0.56

Weight : 1.05 kg

Intertia : 2.55 x 10^{-5} kgm s

Heat Disspation : 18 Watts

Model MTL 10

Torque range : 0.06 – 1.2 Nm

Weight : 1.6 kg

Intertia : 10.94 x 10^{-5} kgm sec

Heat Disspation : 28 Watts

Model MTL 17

Torque range : 0.6 – 1.92 Nm

Weight : 1.68 kg

Intertia : 10.94 x 10^{-5} kgm sec^2

Heat Disspation : 28 Watts

Model MTL 25

Torque range : 0.11 – 2.83 Nm

Weight : 4.04 kg

Intertia : 50.7 x 10^{-5} kgm sec^2

Heat Disspation : 75 Watts

Model MTL 50

Torque range : 0.2 – 5.6 Nm

Weight : 5.7 kg

Intertia : 46.8 x 10^{-5} kgm sec^2

Heat Disspation : 120 Watts

Model MTL 70

Torque range : 0.33 – 7.9 Nm

Weight : 6.51 kg

Intertia : 158.4 x 10^{-5} kgm sec

Heat Disspation : 150 Watts

Model MTL 140

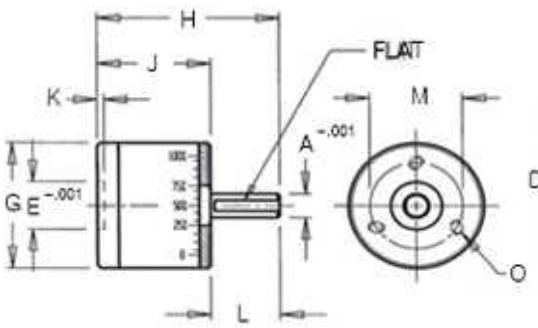
Torque range : 0.68 – 15.8 Nm

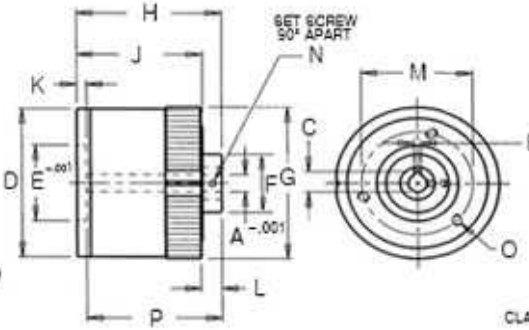
Weight : 10.84 kg

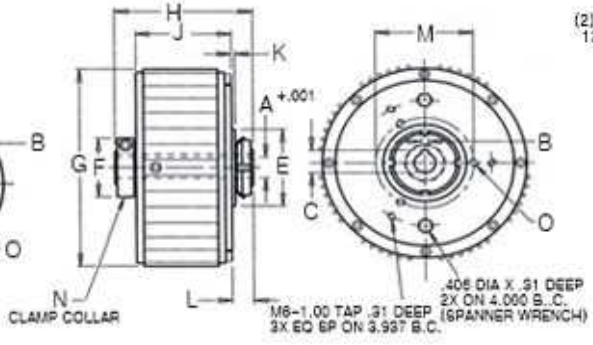
Intertia : 2.5 x 10^{-3} kgm sec^2

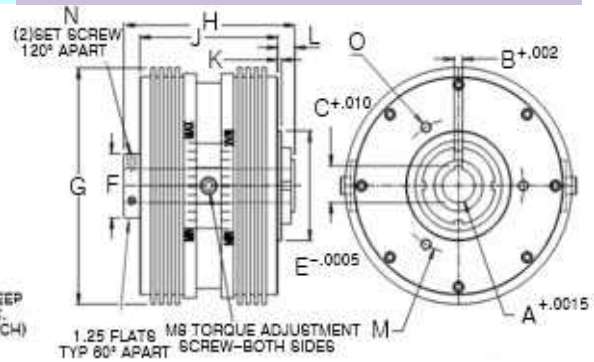
Heat Disspation : 300 Watts

MTL 1035, 0.5 (Shaft Design)	MTL 1.25, 2.25, 5, 10 , 17, 25 and 50 (Hollow Thru)	MTL 70 (Hollow Thru)	MTL 140 (Hollow Thru)





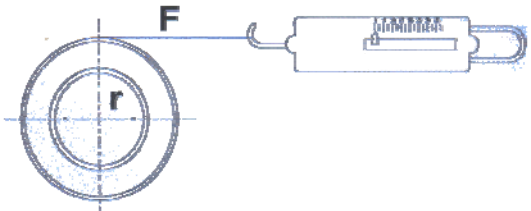




Model	TORQUE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
1035-001	0.01 ~ 0.13 lb-in 0.001 ~ 0.014 Nm	5.000	–	–	–	10.0	–	25.9	34.6	21.1	1.0	13.5	15.5	–	M3 X 4.5 DP	–
MTL 0.5-8	0.026 ~ 0.44 lb-in 0.003 ~ 0.05 Nm	8.000	–	–	–	14.0	–	36.0	45.0	25.5	2.0	19.5	24.0	–	M3 X 5.5 DP	–
MTL 1.25-6	0.06 ~ 1.25 lb-in 0.007 ~ 0.14 Nm	6.000	–	–	47.5	22.0	19.1	49.5	41.9	36.1	2.0	5.8	32.0	M4	M4 X 7.874 DP	39.1
MTL 2.25-6	0.25 ~ 2.25 lb-in 0.03 ~ 0.25 Nm	6.000														
MTL 5-8	0.18 ~ 5.0 lb-in 0.02 ~ 0.56 Nm	8.000	3.00	9.40	68.8	35.0	26.9	70.1	62.0	53.8	2.0	8.1	48.0	M4	M4 X 9.906 DP	57.9
MTL 10-16	0.5 ~ 10.6 lb-in 0.06 ~ 1.20 Nm	16.000	5.00	18.31	82.0	47.0	37.1	84.1	64.0	55.9	2.0	8.1	60.3	M5	M5 X 9.906 DP	59.9
MTL 17-16	5 ~ 17 lb-in 0.6 ~ 1.92 Nm	16.000	5.00	18.31	82.0	47.0	37.1	84.1	64.0	55.9	2.0	8.1	60.3	M5	M5 X 9.906 DP	59.9
MTL 25-1.0	1 ~ 25 lb-in 0.11 ~ 2.83 Nm	25.400	6.35	27.18	116.1	62.0	35.1	118.9	79.0	67.8	2.0	11.2	76.2	M5	M5 X 11.938 DP	73.9
MTL 25-16		16.000	5.00	18.31												
MTL 50-1.0	2 ~ 50 lb-in 0.2 ~ 5.6 Nm	25.400	6.35	27.18	131.8	62.0	35.1	134.1	79.0	67.8	2.0	8.9	76.2	M5	M5 X 11.938 DP	73.9
MTL 50-16		16.000	5.00	18.31			50.3									
MTL 70-16	3 ~ 70 lb-in 0.33 ~ 7.90 Nm	16.000	5.00	18.31	–	62.0	41.1	160.0	104.6	71.4	3.8	17.8	73.0	Clamp Collar	1/4-20 X 7.874 DP	–
MTL 70-16		16.000	5.00	18.31			41.9									
MTL 70-19		19.000	5.99	21.79			45.0									
MTL 140-1.0	6 ~ 140 lb-in 0.68 ~ 15.8 Nm	25.400	6.35	27.18	–	82.6	48.3	177.8	134.1	108.0	3.0	13.5	101.6	#10-32	M8-1.25 x 13mm DP	–
MTL 140-19		19.000	6.00	21.79										M6		
MTL 140-24		24.000	8.00	27.31										M8		

Selection Criteria and Calculations

FOR EVERY APPLICATION YOU MUST DETERMINE THE REQUIRED TORQUE, AND SAFE OPERATION RPM.

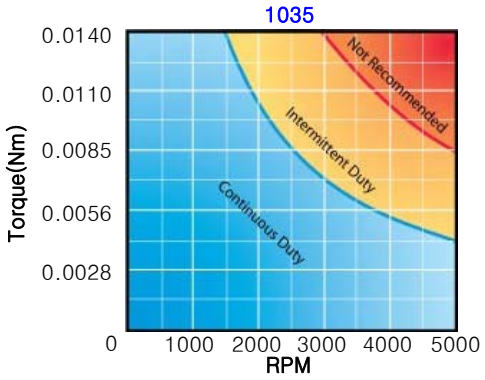


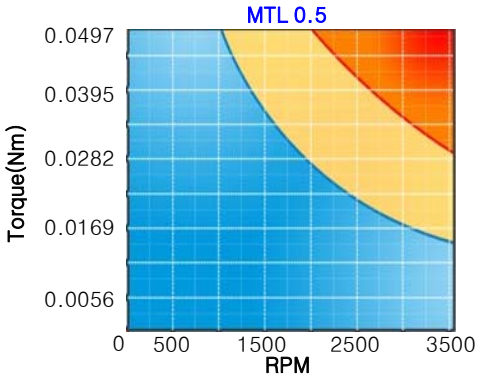
Torque (T) Nm. = Force (F) kg. X Radius (r) m.
Note : Force often is the tension

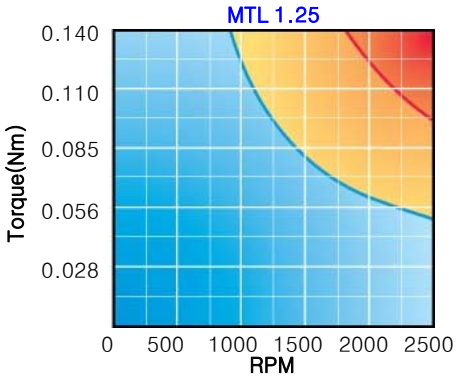
Operating Curves : When you turn the rotor of a magnetic clutch, you convert mechanical energy into thermal energy(watts). The amount of thermal energy(watts) is a function of the RPM and the TORQUE SETTING.

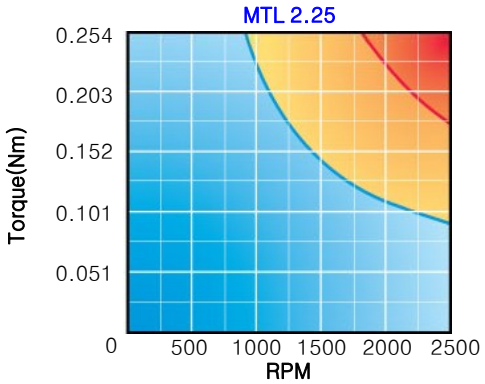
How to use the charts : Find the slip rpm on the X axis and torque on the Y axis. The Blue area represents safe continuous duty. The area between the two curves Yellow represents incermittent duty. Example is five minutes on, five minutes off. Operating in the red zone for any period of time will cause overheating and could damahe unit.

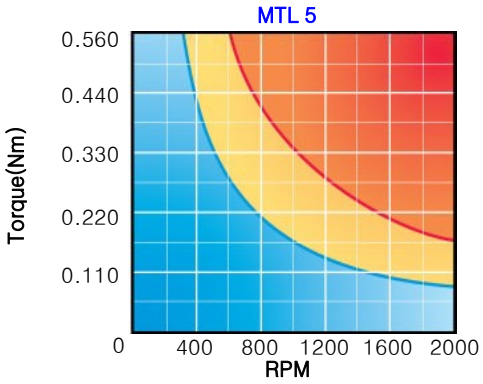
OPERATION CURVES

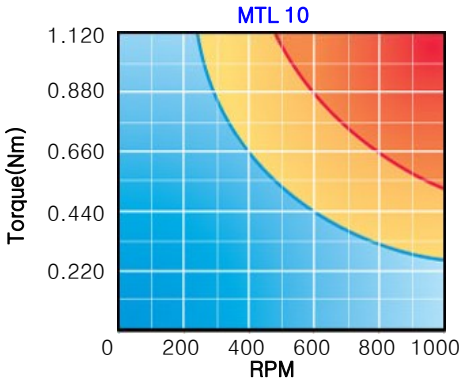


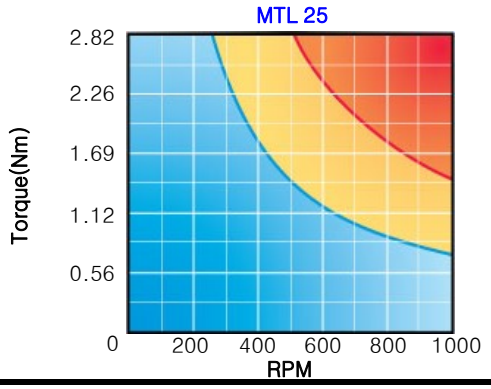


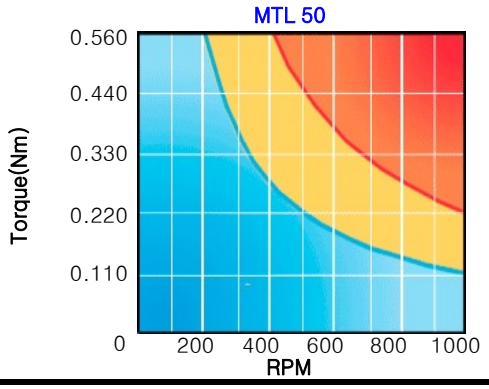


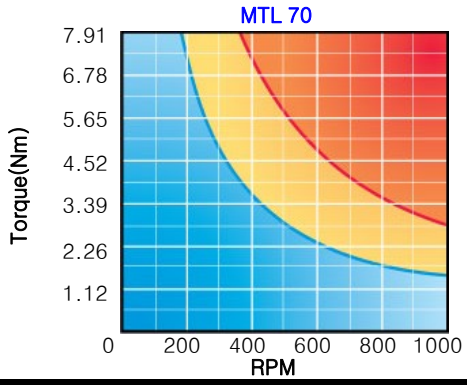




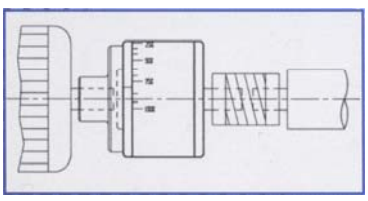






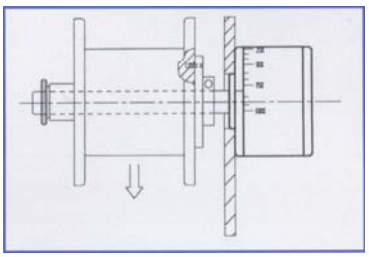


As a Coupling :



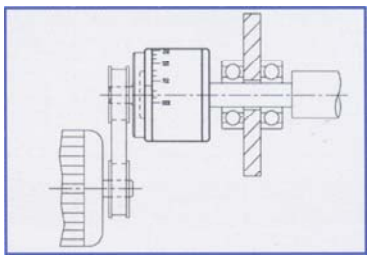
For load protection or torque limiting, the clutch fitted onto the motor shaft and connected via a flexible coupling to the load

As a Clutch :



The clutch housing is driven by a belt or chain and the rotor connected to the load. Shown here is a small cutom adapter mounted on the housing.

As a Pay-Off Brake :



For relatively light loads, a shaft can be fitted to the rotor and a small spool of material directly payed off.

Applications Examples

Example 1 OVERLOAD PROTECTION / TORQUE LIMITING / SOFT START

Information Required :
Motor HP = 1/10 HP
Motor RPM = 900 RPM
How to size :

$$\text{Torque(N.m)} = \frac{\text{HP} \times 7162}{\text{RPM}} = \frac{1/10 \times 7162}{900} = 0.79 \text{ Nm}$$

Select MTL 25 based on 0.79 Nm. At 900 RPM. until it will operate at maximum limit of continuous duty range.

Material Handling (conveyor)

Example 2 NIP ROLL OR PULLEY TENSION CONTROL

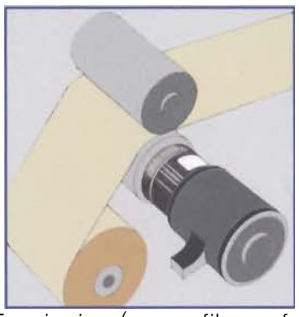
Information Required :
Nip roll or pulley diameter (m.) = 0.07 m
Tension (N.) = 10 N
Velocity (m/min.) = 150 m/min
How to size :

$$\text{Torque(N.m)} = \text{Tension(N)} \times \frac{\text{Pulley/Roll Dia}}{2} = 10 \times \frac{0.07}{2} = 0.35 \text{ Nm}$$

$$\text{Check Oeratubg RPM} = \frac{\text{Velocity(m/min)}}{\pi \times \text{Roll Dia(m)}} = \frac{150}{3.14 \times 0.07} = 682 \text{ RPM}$$

$$\text{Slip watts} = \frac{\text{Tension(N)} \times \text{Velocity(m/min)}}{60} = \frac{10 \times 150}{60} = 25 \text{ watts}$$

Select MTL 10 based on 0.35 Nm. At 682 RPM. until will operate within continuous duty range.



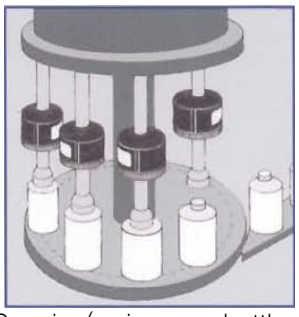
Film Tensioning (paper.film or foil)

Example 3 CYCLING

Information Required :
Slip RPM = 350 RPM
Torque (Nm) = 0.9 Nm
Duty cycle = 25%(slip time of total cycle time)
How to size :

$$\text{watts} = 0.1049 \times \text{torque(Nm)} \times \text{slip RPM} \times \text{duty cycle} = 0.1049 \times 0.9 \times 350 \times 0.25 = 8.26 \text{ watts}$$

Select MTL 10 based on 0.9 Nm. In.at 350 RPM. until will operate within intermittent duty range (25% duty cycle).



Capping(syringes or bottles)

Example 4 UNWIND TENSION CONTROL

Information Required :
Full roll diameter (m.) = 0.15 m
Empty (core) diameter (m.) = 0.076 m
Average tension (N.) = 4.5 N
Velocity (m/min.) = 45.7 m/min
How to size :

$$\text{Avg. Diameter(m)} = \frac{\text{Full Roll Dia(m)} + \text{Empty Dia(m)}}{2} = \frac{0.15 + 0.076}{2} = \frac{0.226}{2} = 0.113 \text{ m}$$

$$\text{Avg. Radius(m)} = \frac{\text{Avg. Dia(m)}}{2} = \frac{0.113}{2} = 0.057 \text{ m}$$

$$\text{Avg. Torque(Nm)} = \text{Avg. Tension(N)} \times \text{Avg. Radius(m)} = 4.5(\text{N}) \times 0.057(\text{m}) = 0.25 \text{ Nm}$$

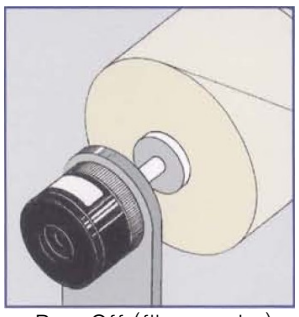
$$\text{Check Operating RPM} = \frac{\text{Velocity(m/min)}}{\pi \times \text{Core Dia(m)}} = \frac{45.7}{3.14 \times 0.076} = 191 \text{ RPM}$$

$$\text{Max. Tension(Nm)} = \text{Torque(Nm)} \times \frac{2}{\text{Empty Dia(m)}} = 0.25 \times \frac{2}{0.076} = 6.58 \text{ N}$$

$$\text{Min. Tension(Nm)} = \text{Torque(Nm)} \times \frac{2}{\text{Full roll Dia(m)}} = 0.25 \times \frac{2}{0.15} = 3.33 \text{ N}$$

$$\text{Slip watts} = \frac{\text{Max tension(N)} \times \text{Velocity(m/min)}}{\text{Full roll Dia(m)}} = \frac{6.58 \times 45.7}{60} = 5.0 \text{ watts}$$

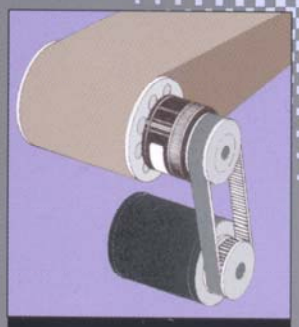
Select MTL 5 based on torque 0.25 Nm. In.at 191 RPM. until will operate within continuous duty range.



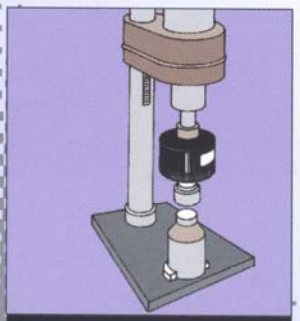
Pay-Off (film or wire)

Transmitting torque through air is our business.

APPLICATIONS

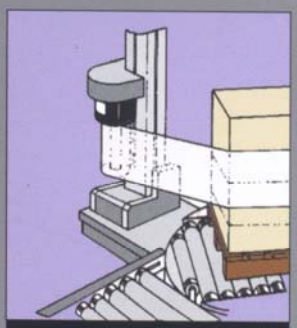


Industrial conveyor

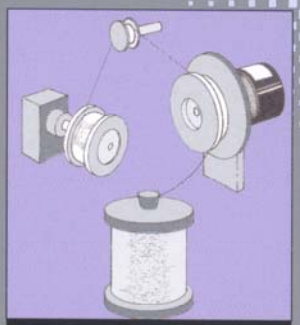


Syringe or bottle capping

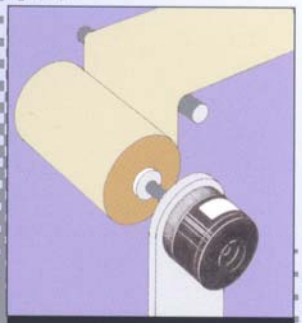
- Non-electrical
- No wearing parts
- Incredibly accurate
- Repeatable torque control
- Easy to adjust
- Easy to apply
- Set'em and forget'em!
- Perfect for continuous slip
- Zero "stick slip"
- Smooth, no friction



Shrink wrapping



Constant tension for wire



Labeling or film unwind

Engineering Excellence

Smart design work and the best materials for the job is what we give you. Our operators have years of programming experience on the latest, state-of-the-art CNC lathes and machining centers. Our Quality Control and Assembly personnel have over a quarter of a century of experience building, testing and working with magnetic brakes and clutches. This is why our parts fit better, and our assemblies run truer. The result is smoother, longer lasting applications. Feel the difference of our uncompromising designs.

MAGNETIC TECHNOLOGIES LTD.

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P.O. Box 257
Oxford, Massachusetts 01540-0257
Phone: 508.987.3303 • Fax: 508.987.2875

www.magtork.com

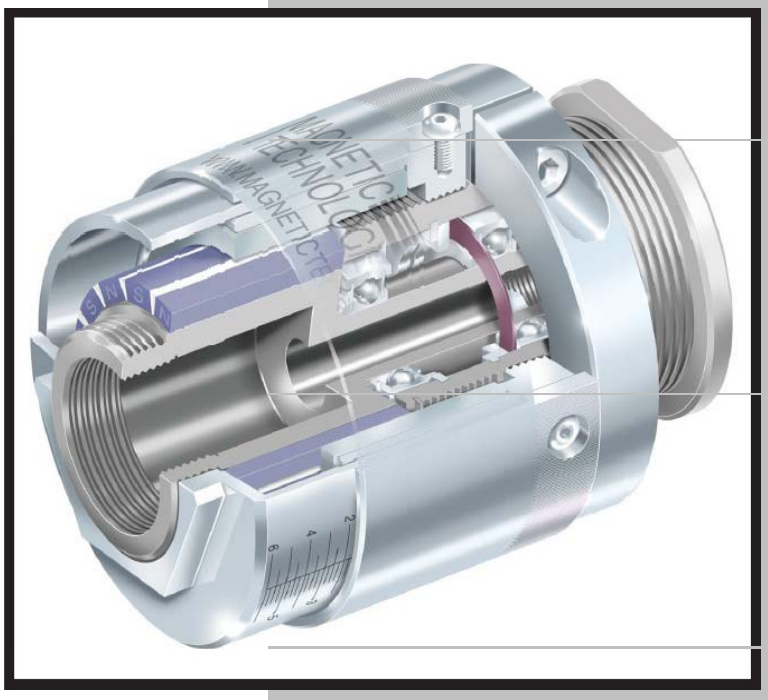
Magnetic Capping Clutches

Magnetic Capping Clutches

Our Hysteresis Design is built better and lasts longer.

Most bottle capping clutches today are magnetic, but of the synchronous design. The synchronous design uses two sets of opposed magnets to achieve the desired torque. The result is a noisy, ratcheting effect.

These clutches tighten the cap much like an impact wrench tightens the lugs on an automobile tire. With today's thinner materials, higher speeds and need for more precise torque, synchronous clutches are quickly becoming obsolete in the workplace.



Our specialty . . .
is the hysteresis design.

In the hysteresis design, the magnets drive the torque through a special material called the hysteresis disc. The hysteresis disc generates a completely smooth, highly repeatable, torque to the bottle cap. The result is better torque to the cap and longer life for the clutch.

We use the highest quality magnets, design techniques, and materials to bring you the best clutch for your money. We can custom build OEM designs, and offer standard stainless steel bottle capping clutches to replace most competitive brands. We offer rebuild and clutch exchange programs.

At Magnetic Technologies Ltd, we have been designing and building hysteresis clutches since 1984.

MAGNETIC TECHNOLOGIES LTD.

Smart solutions for bottle capping

Magnetic Capping Clutches

Our Hysteresis Design is built better and lasts longer

For Beverage/Water
(MCC 35 Type Clutch)

- Torque : 0.56~3.39 Nm
- Designed to fit & replace most popular brands.
- Independently adjustable top loading spring.
- Comfort grip adjusting rings
- Sealed for washdown service.
- 18mm (max) hole through the middle for air or push rod assembly
- Available in a variety of stainless steels

For Pharmaceuticals
(952 Type Clutch)

- Torque : 0.23~2.49 Nm
- Smaller diameter to fit older pharmaceutical machines.
- Vernier type torque adjustment for more precise setting.
- 12mm (max) hole through the middle for air or push rod assembly
- Stainless steel or light weight aluminum design.

For Chemicals/Large Caps
(MCC 50 Type Clutch)

- Torque : 0.9~6.21 Nm
- Different input and output designs available.
- Comfort grip adjusting ring
- Sealed for washdown service.
- Balanced magnetic design for effortless torque adjustment.
- 24mm (max) hole through the middle for air or push rod assembly
- Available in a variety of stainless steels

MAGNETIC TECHNOLOGIES LTD.

Smart solutions for bottle capping

43 Town Forest Road, P O Box 257, Oxford, MA 01540 Phone (508) 987-3303 Fax (508) 987-2875
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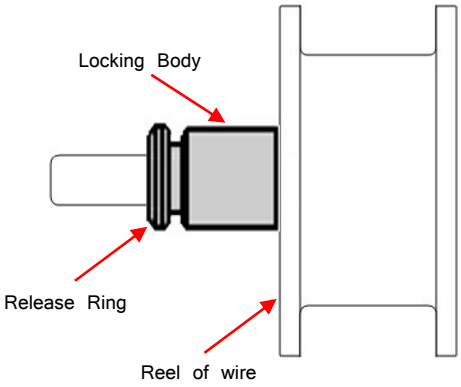
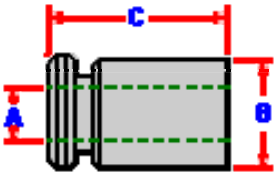
FastLock

Shaft Locking Collars





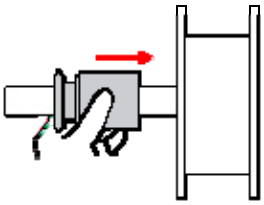
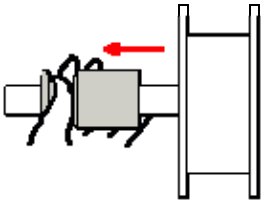
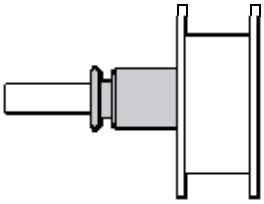
Metric(mm) Dimensions

Model	A	B	C	kg
FL-6mm	6	18.5	26	0.03
FL-8mm	8	18.5	26	0.03
FL-10mm	10	22	45	0.08
FL-15mm	15	28	45	0.13
FL-16mm	16	28	45	0.13
FL-18mm	18	31	45	0.14
FL-20mm	20	37	45	0.21
FL-22mm	22	37	45	0.22
FL-25mm	25	37	45	0.19
FL-30mm	30	50	45	0.39
FL-32mm	32	57	48	0.53
FL-35mm	35	57	48	0.47
FL-36mm	36	57	48	0.45
FL-40mm	40	60	48	0.56
FL-45mm	45	69	48	0.84
FL-50mm	50	69	48	0.70
FL-55mm	55	75	49	0.62
FL-56mm	56	75	49	0.60

English(in) Dimensions

Model	A	B	C	lb
FL-0.250	0.250	0.73	1.00	0.06
FL-0.312	0.312	0.73	1.00	0.06
FL-0.375	0.375	0.85	1.78	0.19
FL-0.437	0.437	0.85	1.78	0.18
FL-0.500	0.500	1.10	1.78	0.23
FL-0.562	0.562	1.10	1.78	0.26
FL-0.625	0.625	1.10	1.78	0.28
FL-0.750	0.750	1.23	1.78	0.31
FL-0.875	0.875	1.45	1.78	0.37
FL-1.000	1.000	1.45	1.78	0.39
FL-1.250	1.250	2.23	1.87	0.79
FL-1.370	1.370	2.23	1.87	0.93
FL-1.500	1.500	2.23	1.87	0.89
FL-1.625	1.625	2.35	1.87	0.91
FL-1.750	1.750	2.72	1.87	1.51
FL-1.875	1.875	2.72	1.87	1.37
FL-2.000	2.000	2.95	1.87	1.18
FL-2.500	2.500	3.47	1.87	1.00
FL-3.000	3.000	3.47	1.87	0.90

(위 size 외 기타 size도 공급 가능합니다.(별도 문의 바랍니다.)

1	2	3
		
Slide locking collar as shown.	Locking collar holds reel.	To release, hold body and pull release ring. This makes the "gap" between the body and ring larger allowing the **FastLock** to slide off easily.