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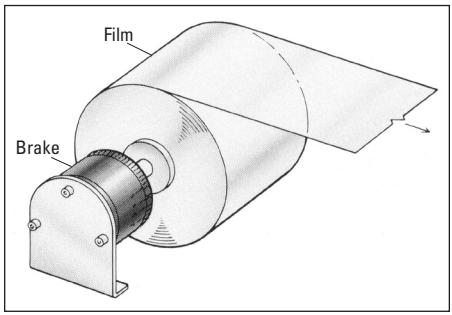
UNWIND TENSION CONTROL

Brake mounted on shaft of unwind spool or bobbin.



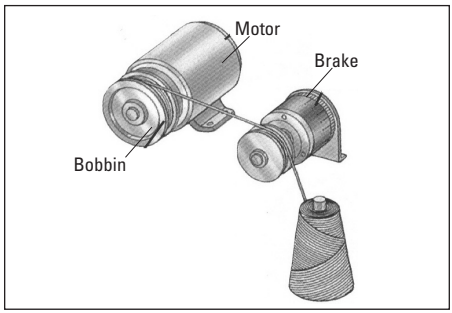
Film Unwind - Tension provided by hysteresis units.

Information required: (Example)
Full diameter = 6 in.
Empty core diameter = 3 in.
Average tension = 1 lbf
Velocity = 150 ft./min.

How to size:
Avg. radius = [Full roll dia. + Empty dia.] / 4
= (6 +3) / 4 = 2.25 in.
Avg. torque (lbf in.) = avg. tension (lbf) x avg. radius (in.) = 1 x 2.25 = 2.25 lbf in.

1. Select Catalog Number **S90MCC-MTL37505** based on 2.25 lbf in.
2. Check Operating Curve
   The Max. rpm occurs at the min. radius
   Max. rpm = Velocity / (Empty dia. x π)
   = (150 ft./min.) / [(0.25 feet) x π]
   = 191 rpm
   2.25 lbf in. at 191 rpm is okay.

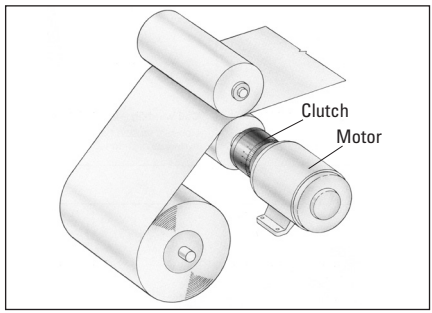
NIP ROLL OR PULLEY TENSION CONTROL



Coil Winding - Constant tension provided by hysteresis unit.

Information required: (Example)
Pulley diameter or nip roll = 3 in.
Tension = 2.5 lbf
Velocity = 300 ft./min.

How to size:
Torque (lbf in.) = Tension x Radius
= 2.5 lbf x [(3 in.) / 2] = 3.75 lbf in.



Film Tensioning - Constant tensioning supplied by hysteresis unit.

1. Select Catalog Number **S90MCC-MTL37505** based on 3.75 lbf in.
2. Check Operating Curve
   Max. rpm = (300 ft./min.) / (0.25 ft. x π) = 382 rpm
   382 rpm is too high for continuous duty on the **S90MCC-MTL37505** unit.
3. Select Catalog Number **S90MCC-MTL62510**

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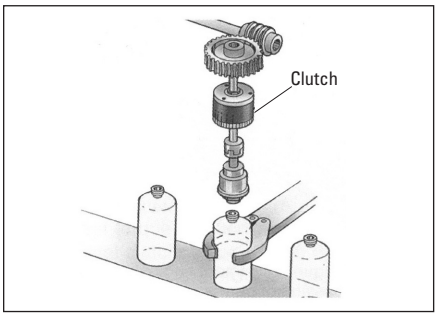
CYCLING

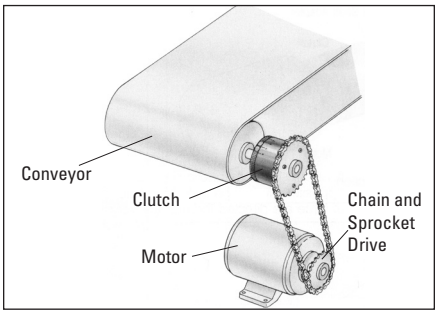


Bottle Capping - Constant torque provided by a hysteresis clutch.

Information required: (Example)
Slip rpm = 350 rpm
Torque = 8 lbf in.
Duty cycle (% slip time of total cycle time) = 25%

How to size:
1. Select Catalog Number **S90MCC-MTL62510** based on 8 lbf in.
2. Check Operating Curve
   350 rpm is high, but as the duty cycle is only 25%, the Catalog Number **S90MCC-MTL62510** is okay.

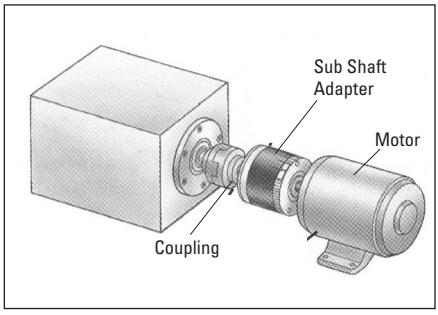
OVERLOAD PROTECTION TORQUE LIMITING SOFT START (Motor Horsepower Method)



Torque Limiting - Hysteresis clutch provides overload protection.

Information required: (Example)
Motor hp = 1/10 hp
Motor rpm = 900 rpm

How to size:
Torque (lbf in.) = (Motor hp x 63000) / Motor rpm
= [1/10 hp x 63000] / 900 = 7 lbf in.



Material Handling - Hysteresis clutch can provide overload protection and soft start.

1. Select Catalog Number **S90MCC-MTL62525** based on 7 lbf in.
2. Check Operating Curve
   7 lbf in. is at the upper limit of safe continuous operation, but is okay.

ADVANTAGES:

No electricity
No breakaway torque
Constant torque independent of shaft (rotor) speed
No contacting or wearing parts
No friction elements – same smooth torque year after year
No magnetic particles to leak or contaminate end product
Operable in some of the most difficult environments
Brake (with shaft) and clutch (with hollow shaft) available
Custom designs available

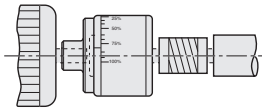


Fig. 1

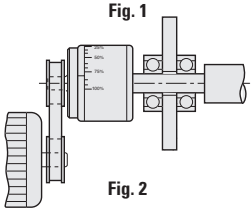


Fig. 2

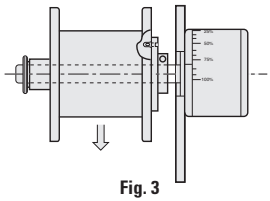


Fig. 3

APPLICATIONS:

Fig. 1 As a Coupling
This is for load protection or torque limiting. The coupling style unit is directly connected to a motor and turns at the same speed as the motor until the torque is reached. At this point it will slip and still generate the maximum torque.

Fig. 2 As a Clutch
The unit is connected to a motor by a timing belt or gear. The housing is driven and the shaft is the output end.

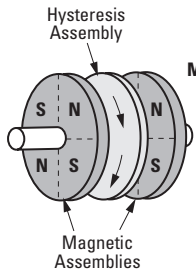
Fig. 3 As a Payout Brake
Brake is stationary and the reel or material is fitted to the output shaft. The tension on the material will vary with the diameter.

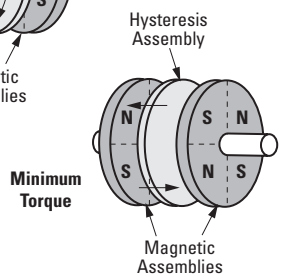
HOW THEY OPERATE:

For Maximum Torque
All important internal clearances are ground to tolerances of less than .001 in. (0.025 mm). Magnet assemblies surround hysteresis assembly. When like poles face each other, they produce maximum magnetic saturation of the hysteresis disc, forcing lines of flux to travel circumferentially through the hysteresis disc.

For Minimum Torque
When opposite poles face each other they produce minimum saturation of the hysteresis disc. The lines of flux travel through the hysteresis disc.

Combinations of adjustment angles between the two extremes give infinite adjustability. Because there are no contacting surfaces, the setting can be maintained indefinitely.

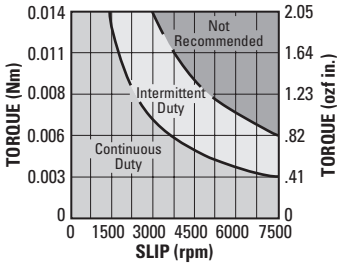




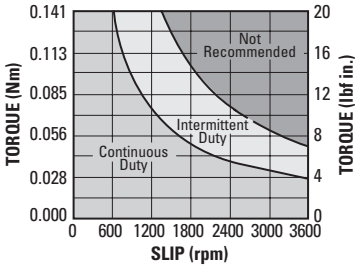
Inch
0 1

› HOW TO USE THE CURVES:

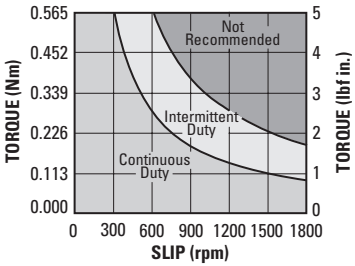
Find the slip rpm on the X-axis and the torque on the Y-axis. Notice the areas that represent safe, continuous duty; intermittent duty, such as five minutes on, five minutes off; and the area which is not recommended. Operating above that line for any period of time will cause overheating and possible damage to the unit.



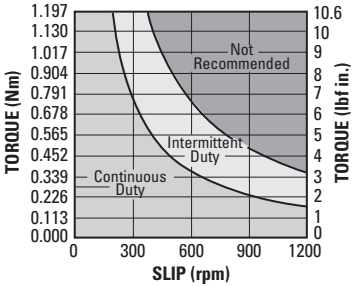
S90MCCM513...



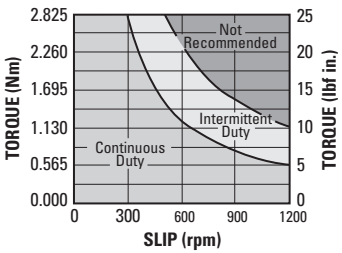
S90MCC-MTL25001
S90MCCMMTL0601



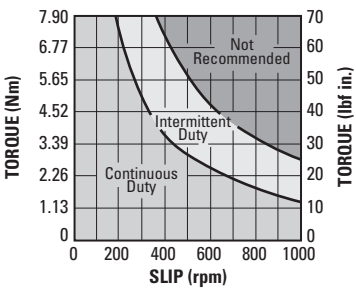
S90MCC-MTL37505
S90MCCMMTL0806



S90MCC-MTL37510
S90MCC-MTL50010
S90MCC-MTL62510
S90MCCMMTL1612



S90MCC-MTL50025
S90MCC-MTL62525
S90MCCMMTL1628



S90MCCMM806...

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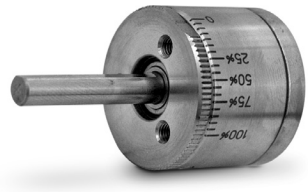
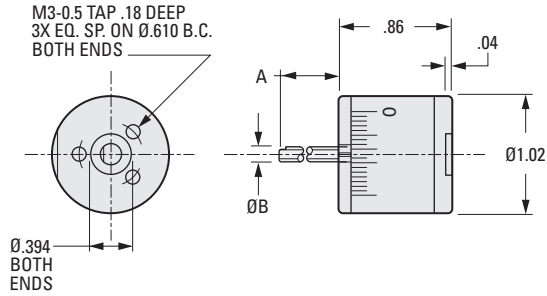
.130 lbf in. TORQUE
NONELECTRIC
NO WEARING PARTS
NO FRICTION

Inch
0 1

› **MATERIAL:**
Housing and Shaft - Stainless Steel





INCH COMPONENT

Catalog Number	B Shaft Dia. +.000 -.001	A Shaft Length	Torque Range lbf in.	Weight lb.
S90MCC-5130151	3/16	.51	.003 – .018	.16
S90MCC-5130198	3/16	.98	.003 – .018	.16
S90MCC-5130651	3/16	.51	.010 – .060	.16
S90MCC-5130698	3/16	.98	.010 – .060	.16
S90MCC-5131351	3/16	.51	.010 – .130	.16
S90MCC-5131398	3/16	.98	.010 – .130	.16

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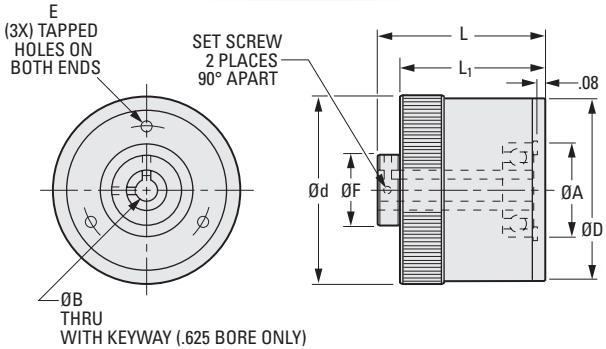
25 lbf in. TORQUE
NONELECTRIC
NO WEARING PARTS
NO FRICTION
HOLLOW BORE

› **MATERIAL:**
Housing - Aluminum, Black Anodized Finish
Dial - Steel, Black Oxide Finish



INCH COMPONENT

Catalog Number	B Bore +.001 -.000	L Length	L_1	D Dia.	d Dia.	A Dia.	Torque Range lbf in.
S90MCC-MTL25001	.250	1.65	1.42	1.87	1.95	.866	.06 – 1.25
S90MCC-MTL37505	.375	2.44	2.12	2.71	2.76	1.378	.18 – 5.00
S90MCC-MTL37510	.375	2.52	2.20	3.23	3.31	1.850	.50 – 10.60
S90MCC-MTL37525	.375	3.11	2.67	4.57	4.68	2.441	1.00 – 25.00
S90MCC-MTL50010	.500	2.52	2.20	3.23	3.31	1.850	.50 – 10.60
S90MCC-MTL50025	.500	3.11	2.67	4.57	4.68	2.441	1.00 – 25.00
S90MCC-MTL62510	.625	2.52	2.20	3.23	3.31	1.850	.50 – 10.60
S90MCC-MTL62525	.625	3.11	2.67	4.57	4.68	2.441	1.00 – 25.00

Catalog Number (Ref.)	F Hub Dia.	Set Screw	E			Keyway	Approx. Weight lb.
			Thread	Depth	Bolt Circle		
S90MCC-MTL25001	.75	M4	M4	.31	1.260	—	.73
S90MCC-MTL37505	1.06			.39	1.890		2.28
S90MCC-MTL37510	.99	M5	M5	.39	2.375	—	3.57
S90MCC-MTL37525	1.38			.47	3.000		8.95
S90MCC-MTL50010	.99	M5	M5	.39	2.375	1/8	3.57
S90MCC-MTL50025	1.38			.47	3.000		8.95
S90MCC-MTL62510	1.46	M5	M5	.39	2.375	3/16	3.57
S90MCC-MTL62525	1.38			.47	3.000		8.95