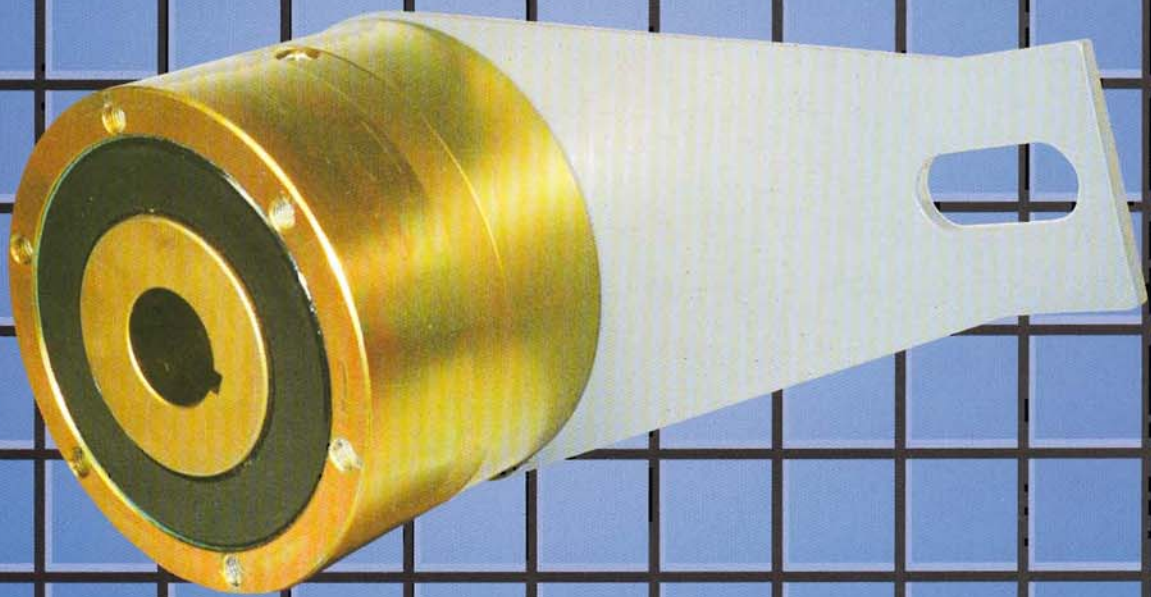


**MORE TORQUE,
MORE SPEED,
IN LESS SPACE
FOR LESS MONEY**



**Magna Torque
(MT) Overrunning
Clutches and
Backstops**



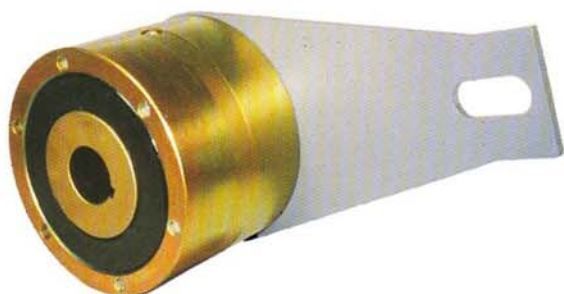
Hilliard

Higher overrunning speed in a smaller package

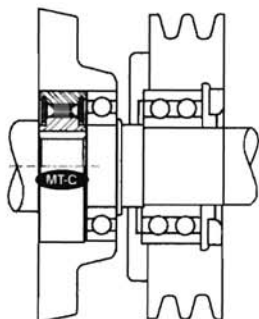
Hilliard MT Overrunning Clutches combine high torque, high speed capabilities, easy field repair and low cost -- all in a compact size. With most overrunning clutches, shaft size is a major consideration.

Hilliard's new roller ramp design allows for greater shaft sizes than comparable size clutches offered by other clutch manufacturers.

Typical applications include general backstopping and overrunning, such as suspended conveyors, indexing or ratcheting, and gear boxes. For dual-drive/catch on the fly applications, see back page. For your specific application, special custom designs are available; please contact Hilliard engineering.

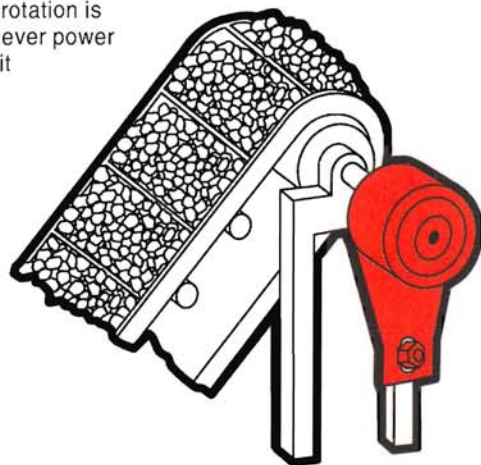


Examples



MT-C clutch backstop.
Requires bearing support of the outer-race to the inner-race.

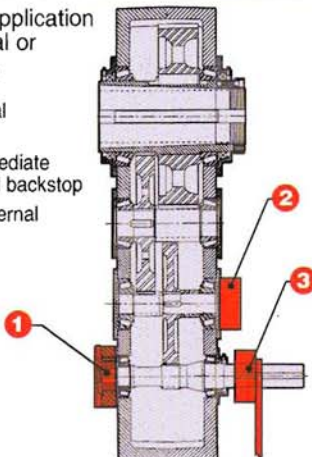
Conveyor systems and speed reducers are typical backstop applications. Instant protection from reversed rotation is provided whenever power to the drive unit is interrupted.



Gear Box Mounting Options

Typical gear box application allowing for internal or external mounting.

1. Mounted as internal backstop
2. Mounted on intermediate shaft as an internal backstop
3. Mounted as an external backstop



The Hilliard Corporation, manufacturer of quality motion control products since 1905, has developed a new line of high-speed overrunning clutches. With Hilliard's revolutionary design, these new economically priced MT Clutches provide **more torque in less space**.

The new Hilliard MT Clutches provide the following:

- Flexible packaging as a clutch or clutch coupling
- Increased torque
- Compact design
- Increased shaft sizes in same physical-size units
- Custom mechanisms available
- Failure in overrunning mode; does not lock up

MT Clutches are available in various models from 82 to 43,600 lb.ft. at 1,000,000 cycles. Custom designs and rapid prototyping are available.

Service Factors

| Type of Load | Factor |
|---|--------|
| 1. Ideal conditions are steady loads with no shock. | 1.0 |
| 2. Gradually applied loads with no shock, such as fan drives, light-duty conveyors, line shafts and inching drives. | 1.2 |
| 3. Suddenly applied loads with minor shocks, such as cyclic loads, heavy-duty conveyers and indexing. Multi-cylinder engines used as drivers. | 2.4 |
| 4. Suddenly applied loads with minor shock such as crushers, mixers and punch presses. Single cylinder engines used as drivers. | 3.0 |
| 5. High torque and severe shock, such as in ratcheting or jogging. | 5.0 |
| 6. For more information call factory at 607-733-7121 | |

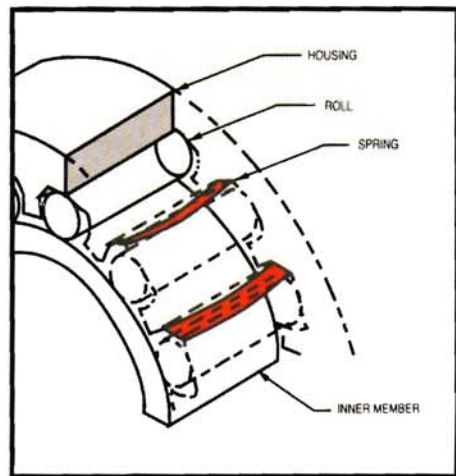
Backstopping: 1.0 to 2.4 service factors, contingent on repetition of loading and amount of overload of system.

Roller-ramp design for increased reliability and longer life

The Hilliard Magna Torque Clutch (MT Clutch) represents an advancement over current roller-ramp designs. This assembly features the cam surface precision machined within the housing instead of the inner member. This results in the ability to reach much higher overrunning speeds and to attain greater torque in a much smaller space.

The rollers transmit torque between the housing and the inner member. When the clutch is not engaged (freewheeling), the roller rotates because it is held in light contact between the two members. When the clutch is engaged, the contact points on the roller are always presented at random, resulting in less wear and longer life.

Operation



Magna Torque Series Torque Rating

(Clutch life is affected by torque cycles listed below. Consult Hilliard for your application.)

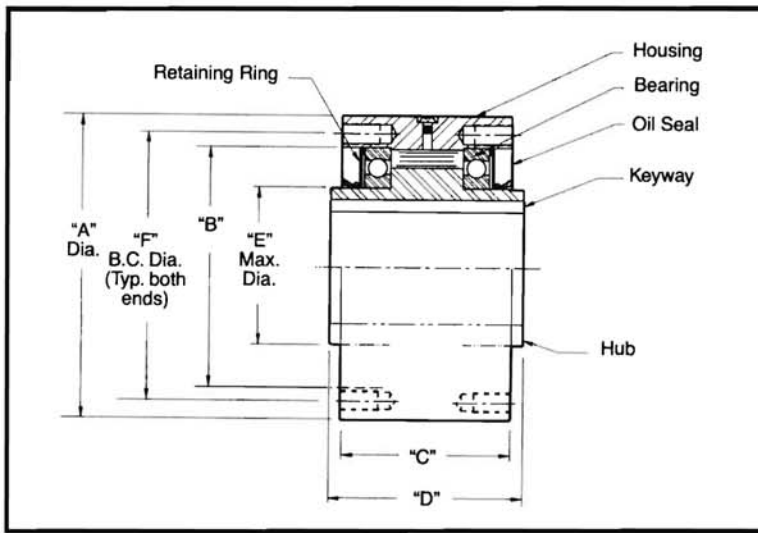
| No. of Cycles | Torque Rating Per No. of Cycles (Lb-Ft) | | | | | | | | | | | |
|---------------------|---|---------|---------|---------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| | MT-60A | MT-130A | MT-250A | MT-600A | MT-1100A | MT-1700A | MT-3600A | MT-4000A | MT-6000A | MT-12000A | MT-21000A | MT-32000A |
| 1 x 10 ⁵ | 109 | 236 | 527 | 1180 | 2180 | 3090 | 6545 | 7300 | 10900 | 25447 | 38171 | 58165 |
| 1 x 10 ⁶ | 82 | 177 | 400 | 880 | 1600 | 2320 | 4910 | 5455 | 8200 | 19106 | 28660 | 43671 |
| 1 x 10 ⁷ | 68 | 148 | 330 | 740 | 1360 | 1930 | 4090 | 4545 | 6820 | 15894 | 23841 | 36329 |
| 4 x 10 ⁷ | 60 | 130 | 290 | 650 | 1200 | 1700 | 3600 | 4000 | 6000 | 14000 | 21000 | 32000 |

Selection Guide

(For applications with high radial and/or axial loads, please consult with Hilliard engineering.)

| Model Numbers MT - oiled unit MTG - greased unit | Torque Capacity (Lb-Ft) 1,000,000 cycles | Maximum Overrunning RPM | | Nominal Drag (Lb-Ft) | Bore Sizes Bore Tolerances: Dia. 1/2-2" +.000/- .001 Dia. over 2" +.000/- .0015 |
|--|--|--------------------------|--------------------------|-------------------------|--|
| | | Inner Race Oil/Grease | Outer Race Oil/Grease | | |
| MT-60A MTG-60A | 82 | *3600/3600 | 2600 | 0.05 | 0.5, .625 0.75 |
| MT-130A MTG-130A | 177 | *3000/3600 | 1500 | 0.125 | 0.5 .625, .875 1 1.0625 1.125 |
| MT-250A MTG-250A | 400 | *2400/3000 | 2400 | 0.17 | .625, .75, .875 1, 1.0625, 1.125 1.25 |
| MT-600A MTG-600A | 880 | *2000/2500 | 560 | 0.36 | .875 1 1.125, 1.25 1.3125, 1.375 1.5 1.625 |
| MT-1100A MTG-1100A | 1600 | *1800/1800 | 400 | 0.84 | 1.25 1.375 1.4375, 1.5, 1.625, 1.75 1.875, 1.9375, 2 2.25 |
| MT-1700A MTG-1700A | 2320 | *1400/1800 | 375 | 0.93 | 1.75 1.9375, 2, 2.125, 2.1875, 2.25 2.4375, 2.5 |
| MT-3600A MTG-3600A | 4910 | *1100/1800 | 262 | 1.5 | 1.75 1.9375, 2, 2.25 2.4375, 2.5, 2.6250, 2.75 2.875, 2.9375, 3 3.25 |
| MT-4000A MTG-4000A | 5455 | *1100/1800 | 262 | 1.7 | 2.25 2.5, 2.75 2.875, 3 3.25 3.375 3.5 |
| MT-6000A MTG-6000A | 8200 | *1000/1800 | 262 | 2 | 2.5, 2.75 2.875, 2.9375, 3, 3.25 3.4375, 3.5, 3.75 3.9375, 4 |
| MT-12000A MTG-12000A | 19,100 | *900/1200 | 200 | 2.5 | 3.9375, 4, 4.4375, 4.5 4.9375, 5 5.4375, 5.5 |
| MT-21000A MTG-21000A | 28,660 | *600/900 | 200 | 5 | 4.4375, 4.5 4.75, 4.937, 5, 5.25, 5.4375, 5.5 |
| MT-32000A MTG-32000A | 43,600 | *400/775 | 200 | 6 | 5.5 5.75, 5.937, 6, 6.25, 6.4375 |

* Supplied with single lip seals. Double lip seals may reduce maximum overrunning RPM.



NOTE:

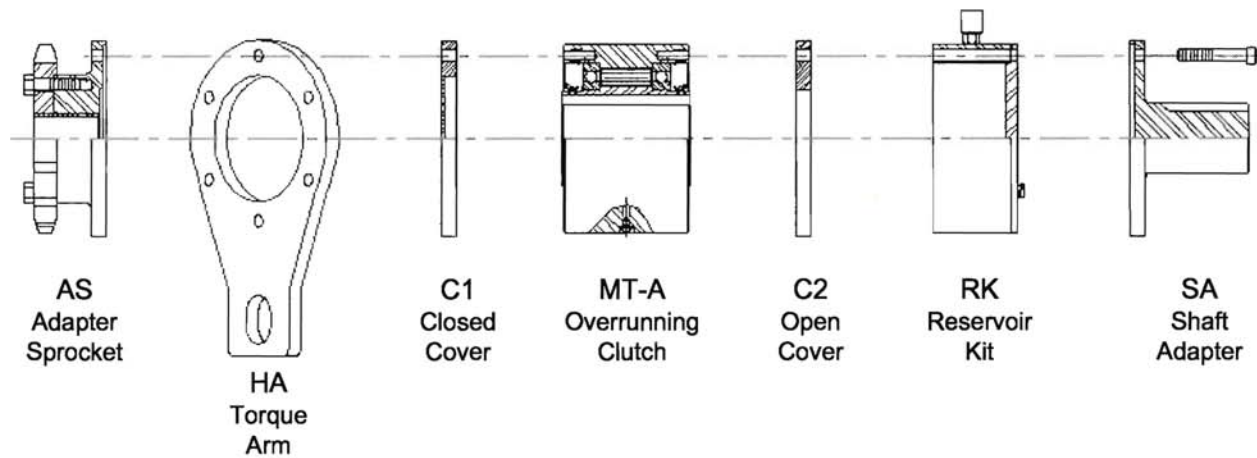
Lubricate with a good grade of R & O machine oil (not an additive type) with a viscosity of ISO 32, 46, 68. The quantity required is dependent on the size and service. Grease is recommended for some models, but you should consult factory for proper uses.

Lube Oil Recommendations

| Operating Ambient Temperature | ISO Grade Spec/AGMA |
|-------------------------------|---------------------|
| -40 to 80° F/-40 to 26° C | 32/0 |
| 80 to 120° F/26 to 49° C | 46/1 |
| 120 to 160° F/49 to 71° C | 68/2 |

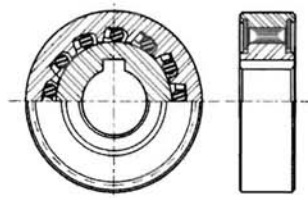
| Model Numbers MT - oiled unit MTG - greased unit | Keyway | Dimension in Inches | | | | | | No. of Tapped (Mount's) Holes | Thread Size and Depth | Approx. Weight (Lb) |
|--|---|---------------------|--------------------|-------|-------|--------|--------|---|-----------------------|---------------------|
| | | A | B | C | D | E | F | | | |
| MT-60A MTG-60A | 1/8x1/16 3/16x1/16 | 2.500 2.498 | 1.8510 1.8504 | 2.000 | 2.125 | 0.979 | 2.188 | 4 holes eq. sp. on a 2-3/16" dia. B.C. | 10-32x5/8" | 2.2 |
| MT-130A MTG-130A | 1/8x1/16 3/16x3/32 1/4x1/8 1/4x3/32 1/4x1/16 | 3.000 2.998 | 2.1661 2.1654 | 2.375 | 2.500 | 1.372 | 2.625 | 4 holes eq. sp. on a 2-5/8" dia. B.C. | 1/4"-28x1/2" | 3.6 |
| MT-250A MTG-250A | 3/16x3/32 1/4x1/8 1/4x3/32 | 3.500 3.498 | 2.4416 2.4409 | 2.688 | 2.813 | 1.569 | 2.875 | 4 holes eq. sp. on a 2-7/8" dia. B.C. | 5/16"-24x5/8" | 5.9 |
| MT-600A MTG-600A | 3/16x3/32 3/8x3/16 1/4x1/8 5/16x5/32 3/8x3/16 3/8x5/32 | 4.250 4.248 | 3.1503 3.1496 | 3.375 | 3.500 | 2.153 | 3.625 | 4 holes eq. sp. on a 3-5/8" dia. B.C. | 5/16"-24x5/8" | 9.8 |
| MT-1100A MTG-1100A | 1/4x1/8 5/16x5/32 3/8x3/16 1/2x1/4 1/2x1/8 | 5.375 5.373 | 4.3300 4.3291 | 3.625 | 3.750 | 2.743 | 4.750 | 6 holes eq. sp. on a 4-3/4" dia. B.C. | 5/16"-24x5/8" | 17.3 |
| MT-1700A MTG-1700A | 3/8x3/16 1/2x1/4 5/8x5/16 | 6.625 6.623 | 5.1172 5.1162 | 3.625 | 3.750 | 3.333 | 5.625 | 6 holes eq. sp. on a 5-5/8" dia. B.C. | 3/8"-16x7/8" | 24.6 |
| MT-3600A MTG-3600A | 3/8x3/16 1/2x1/4 5/8x5/16 3/4x3/8 3/4x1/4 | 7.125 7.123 | 5.6248 5.6240 | 4.875 | 5.000 | 3.982 | 6.250 | 6 holes eq. sp. on a 6-1/4" dia. B.C. | 3/8"-24x7/8" | 40.8 |
| MT-4000A MTG-4000A | 1/2x1/4 5/8x5/16 3/4x3/8 3/4x1/4 7/8x3/16 3/4x3/16 | 8.000 7.998 | 6.3002 6.2992 | 4.500 | 4.625 | 4.131 | 7.000 | 6 holes eq. sp. on a 7" dia. B.C. | 1/2"-20x1" | 42.6 |
| MT-6000A MTG-6000A | 5/8x5/16 3/4x3/8 7/8x7/16 1x5/16 | 8.750 8.748 | 7.0010 7.0000 | 5.188 | 5.312 | 4.981 | 7.750 | 8 holes eq. sp. on a 7-3/4" dia. B.C. | 1/2"-20x1-1/16" | 70 |
| MT-12000A MTG-12000A | 1x1/2 1-1/4x5/8 1-1/4x7/16 | 10.500 10.498 | 8.5012 8.5000 | 6.063 | 6.188 | 6.980 | 9.250 | 8 holes eq. sp. on a 9-1/4" dia. B.C. | 1/2"-20x1-1/8" | 110.2 |
| MT-21000A MTG-21000A | 1x1/2 1-1/4x5/8 | 12.000 11.997 | 8.7520 8.7480 | 6.250 | 6.375 | 7.937 | 9.750 | 10 holes eq. sp. on a 9-3/4" dia. B.C. | 5/8"-18x1-1/8" | 160 |
| MT-32000A MTG-32000A | 1-1/4x5/8 1-1/2x3/4 | 15.000 14.997 | 10.6270 10.6230 | 6.750 | 7.000 | 10.005 | 11.750 | 12 holes eq. sp. on a 11-3/4" dia. B.C. | 5/8"-18x1-1/8" | 310 |

MT-A: Standard Component Options



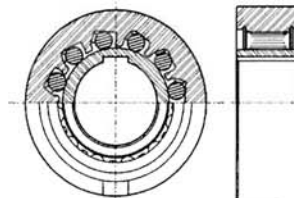
**Other Hilliard MT Clutches and Components.
Consult Hilliard for details.**

MT Ball Bearing - Size Series



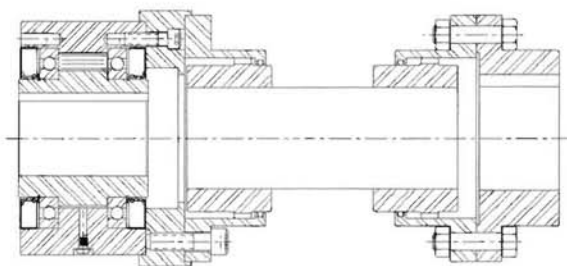
MT-C

MT Mechanism Series



200 Series
500 Series
Heavy Duty Series

MTR (Reversed) High Speed Outer Member Overrunning Series



MTR-AC Clutch Adapter Coupling
(Dual-Drive/Catch on the Fly Application)

Ordering Information

To help us facilitate your order, please have the following information available:

- * Torque requirement
- * Overrunning RPM
- * Bore size
- * Keyway
- * Is precise registration required?
(indexing or ratcheting)
- * Is housing or shaft always stationary?

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