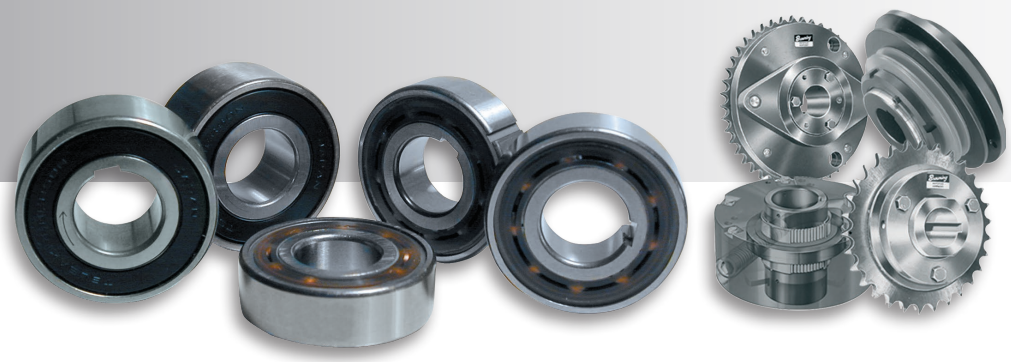
Browning®

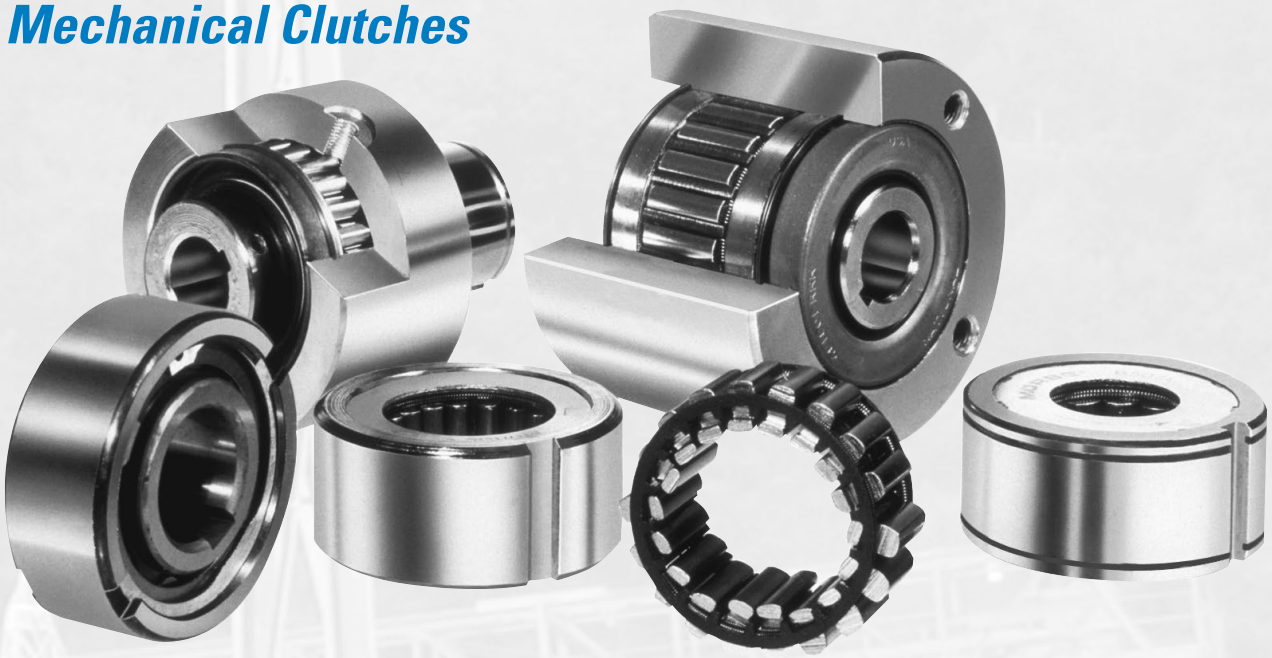
Morse®



MECHANICAL CLUTCHES AND TORQUE OVERLOAD DEVICES CATALOG

REGAL

Mechanical Clutches



The industry's broadest line of conveyor backstop, overrunning and indexing clutches.

Morse® mechanical clutches offer the most complete and versatile selection in the industry. Eleven series of clutches perform three basic modes of operation:

- Overrunning
- Indexing
- Backstopping

These units have set standards of performance, offering:

- Higher overrunning speeds
- Greater torque capacities
- Longer service life

Cam clutches are precision devices that lock the inner and outer races through the wedging action of cams to transmit torque in one direction of rotation while overrunning in the opposite direction of rotation. These units are often referred to as freewheels, sprag, overrunning, backstop or one-way clutches, depending upon their application.

Protect your equipment with Morse and Browning® Torque Overload Devices.

Browning and Morse torque overload devices are designed to protect machinery when an overload or jam occurs. Utilizing a torque overload device can help increase production, reduce downtime and prevent costly repairs. Regal Power Transmission Solutions offers eight different types of torque overload devices available in shear pin, ball detent and friction facing designs. These units are available with up to 1800 rpm, 21,500 ft/lbs of torque and at best, can maintain trip torque within ±3% accuracy to meet the needs of the most demanding applications.

Custom Design

The Morse line of clutches covers a wide range of sizes and capacities, which handle the majority of industrial applications. However, there are applications that require special designs to meet specific application needs. Regal Power Transmission Solutions offers engineering assistance in both design and application to help meet these specialized requirements. For selection assistance, call Application Engineering at 1-800-626-2093 or fax the completed form on page 76 to: Regal Power Transmission Solutions Application Engineering.

Morse mechanical cam clutches are precision devices that lock the inner and outer races through the wedging action of cams to transmit torque in one direction of rotation while overrunning in the opposite direction of rotation. These type units are often referred to as freewheels, sprag, overrunning, backstop or one-way clutches, depending upon their application. Clutches are available with a bore range up through 17.7" and a torque range up through 500,000 lb. ft. and are the most complete and versatile cam clutches available for a variety of applications – from small business machines to giant steel slitters.

10 series of clutches perform three basic modes of operation:

- Overrunning
- Indexing
- Backstopping

These units have set standards of performance, offering:

- Higher overrunning speeds
- Greater torque capacities
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Table of Contents

Custom Design

The Morse line of clutches covers a wide range of sizes and capacities, which can handle the majority of industrial applications. However, there are applications that require special designs to meet specific application needs.

Regal Power Transmission Solutions offers engineering assistance in both design and application to help meet these specialized requirements.

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Visit www.RegalPTS.com to use the Mechanical Clutch Product Selection Tool

Morse mechanical cam clutches are precision devices that lock the inner and outer races through the wedging action of cams to transmit torque in one direction of rotation while overrunning in the opposite direction of rotation. These type units are often referred to as freewheels, sprag, overrunning, backstop or one-way clutches, depending upon their application.

Clutches are available with a bore range up through 17.7" and a torque range up through 720,000 lb. ft. and are the most complete and versatile cam clutches available for a variety of applications – from small business machines to giant steel slitters.

Ten series of clutches perform three basic modes of operation:

- Overrunning
- Indexing
- Backstopping

These units have set standards of performance, offering:

- Higher overrunning speeds
- Greater torque capacities
- Longer service life

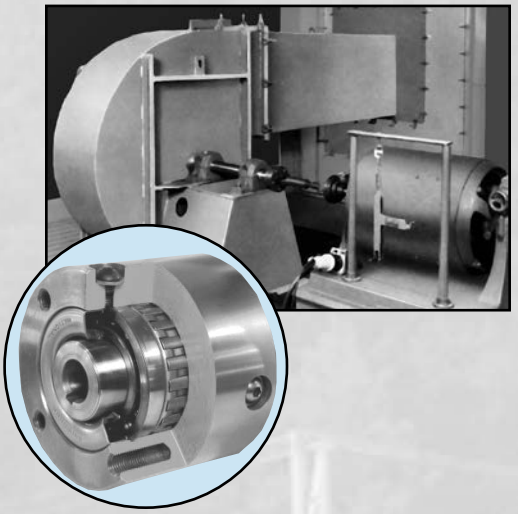
For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

M SERIES CLUTCH

(Page 14)

FEATURES

- Self-contained clutch designed for a wide variety of applications
- Cam cage assembly engineered for optimum performance and increased capacity
- Two ball bearings included to support radial load and concentricity between races
- Close tolerance outer diameter to mount sheave, gears, sprockets and torque arms
- Positive contact lip or felt seals provided for grease or oil lubrication
- Tapped holes machined on ends of outer race for mounting auxiliary components
- Metric bore and keyway available
- Mounting accessories available



Bore range 0.5" – 6.437"
Torque range 275 – 25,000 lb-ft.

MZEU SERIES

(Page 28)

FEATURES

- Full complement of cams
- Two bearings incorporated for concentricity control
- Building block components
- Close tolerance outer diameter to mount sheave, gears, sprockets and torque arms
- Tapped holes at both ends of races to mount accessories
- Flange, torque arms and covers available

Bore range 0.472" – 5.9"
Torque range 44 – 25,000 lb-ft.

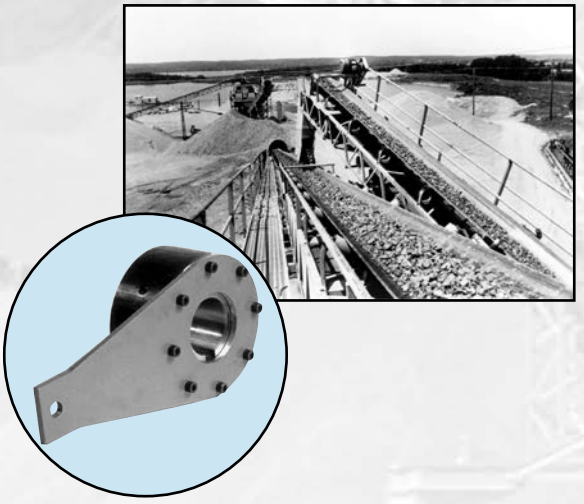
CONVEYOR BACKSTOP CLUTCHES

(Page 33)

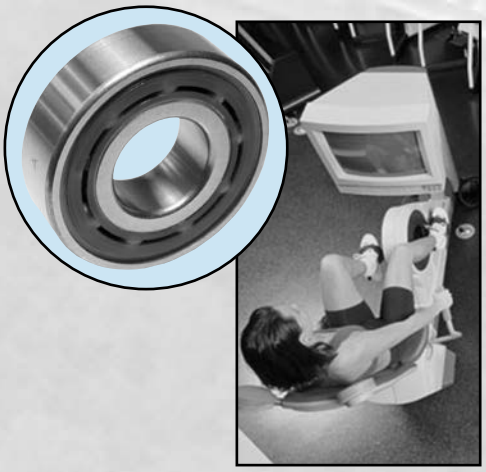
FEATURES

- Self-contained clutches created for high torque applications where reverse rotation of a head-shaft must be prevented
- Retaining plate option available to secure backstop to shaft

Bore range 2.25" – 17.7"
Torque range 7,000 - 720,000 lb–ft.



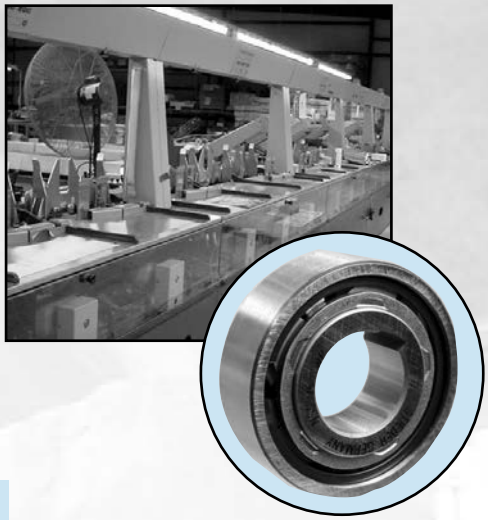
KK15 - KK40 SERIES
(Page 49)



FEATURES
- Self-contained ball bearing and cam clutch
- Designed with same dimensions as standard metric light series ball bearing
- Press fit option for shaft and housing
- Available with keyed inner and outer races
- Furnished filled with grease to increase wear life
- Seal options available for contaminated environments

Bore range 0.59" – 1.57" (15mm - 40mm)
Torque range 21.4 – 190 lb-ft.

NSS SERIES
(Page 65)



FEATURES
- Designed with the same overall dimensions of a metric 6200 light series ball bearing
- Created with an inner race containing a keyseat and an outer race that press fits in housing
- Excellent for applications where space is a consideration

Bore range 0.32" – 2.36" (8mm - 60mm)
Torque range 4.94 – 480 lb-ft.

Value-Added Capabilities
- Special bores (splined, dual keyways, extended with setscrews)
- Special width
- Custom seal designs (viton, all rubber, etc)
- Special greases (low-temp, food grade, etc.)
- Dual cages for higher capacity in a wider but small OD package
- Gear or sprocket tooth cut into OD of clutch
- Special label needs such as inclusion of OEM part numbers
- Ability to kit products for final assembly
- Assembled to sprocket, coupling, etc.
- Custom engineering designs for OEMs

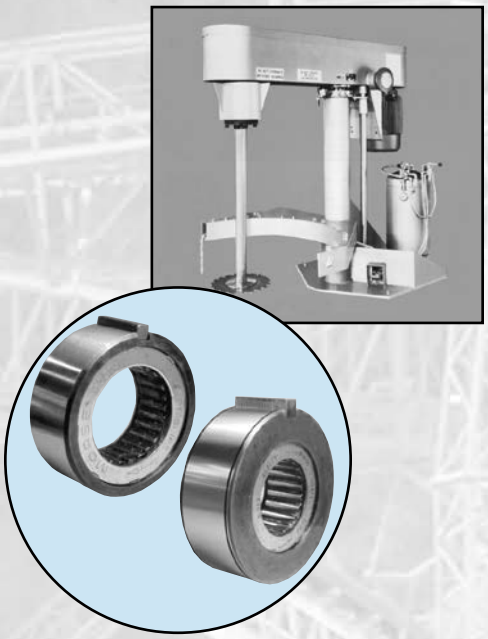
For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

NFS SERIES
(Page 56)

FEATURES
- Designed with the same overall dimensions as medium 300 series metric ball bearing
- Manufactured with an inner race containing a key-seat and an outer race containing key slots
- Furnished with protective oil

Bore range 0.47" – 3.15" (12mm - 80mm)
Torque range 13.27 – 2,900 lb-ft.

B SERIES CLUTCHES



FEATURES
- Rugged cam clutch designed for applications where space and weight are factors in clutch selection
- Full complement of cams held in the outer race
- Input shaft used as the inner race must be hardened and ground to size
- Interchangeable with competitors' products
- Bearing support and lubrication required
- Primarily used for backstop applications

B-200A SERIES
(Page 58)

Bore range 0.650" - 2.209"
Torque range 39 - 575 lb–ft.

B-500A SERIES
(Page 71)

Bore range 0.650" - 2.04"
Torque range 60 - 1,250 lb–ft.

PB3A - PB16A SERIES
(Page 62)

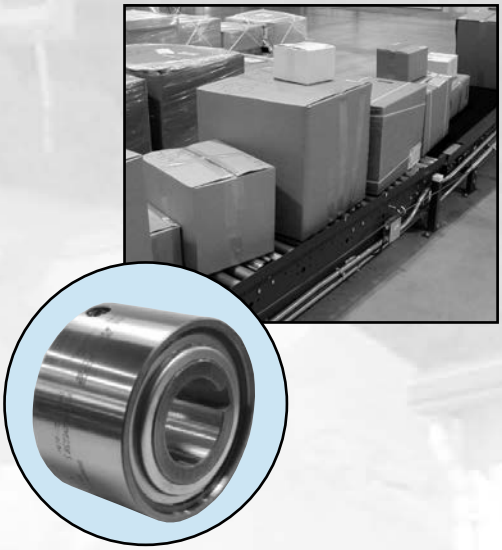
FEATURES
- Self-contained clutch designed with a bronze bushing for bearing support
- Hub diameter used for mounting auxiliary components such as gears, pulleys and sprockets

Bore range 0.375" – 2.00"
Torque range 40 – 1,800 lb-ft.

HT SERIES
(Page 64)

FEATURES
- Designed for use on the end of a shaft
- Created for applications with space restrictions
- Integral bearing to help maintain concentricity
- Factory drilled and tapped holes for mounting accessories

Bore range 0.425" – 2"
Torque range 42 – 440 lb–ft.

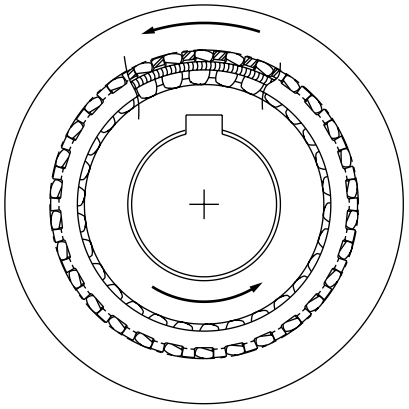


BR SERIES
(Page 66)

FEATURES
- Lift- off cam design provides contact free operation between the cams and races for increased wear life
- Symmetrical design allows operation in either direction
- External bearing support must be provided for concentricity between housing and shaft

Bore range 0.8" – 9.4"
Torque range 225 – 45,750 lb-ft.

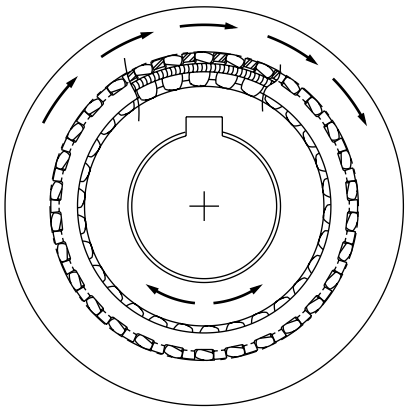
Morse cam clutches are precision devices that positively lock to transmit torque in one direction of rotation but overrun (freewheel) in the opposite direction of rotation. Ten series of clutches are available, all using the same principles of operation. Since clutch applications encompass a variety of load and speed characteristics, Morse clutches are manufactured in a range of capacities and styles that are designed to provide the best functional characteristics in performing the three basic modes of operation.



I. GENERAL OVERRUNNING

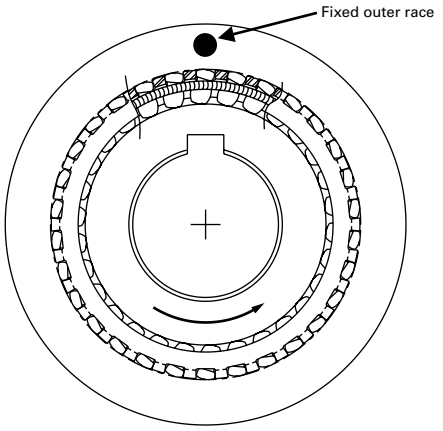
Clutches used in this type of application overrun at either the inner or outer race and are occasionally called upon to lock up and drive.

A typical application is a standby drive where an electric motor and a standby diesel engine are connected to a single driven fan shaft through one-way clutches. The fan can be driven by the motor or diesel engine. The diesel drive clutch overruns when the motor drives the fan. The motor clutch automatically overruns when the load is transferred to the diesel engine.



II. INDEXING

In this mode of operation, reciprocating motion applied to the driving race of the clutch is transformed into unidirectional, intermittent motion at the driven race. For example, on a printing press application, the clutch is mounted to an inking roll and a pinion is mounted to the driving race of the clutch. A rack meshing with the pinion provides reciprocating motion to the driving race. The clutch drives in the forward stroke (index) and overruns on the return stroke accomplishing intermittent unidirectional motion of the inking roll.



III. BACKSTOPPING

In backstop (holdback) applications, clutches are used to prevent reverse rotation of drive shafts, which could damage machinery and other expensive equipment. With the outer race of the clutch anchored to a stationary member, the inner race can overrun freely in one direction of rotation; reverse rotation is prevented by the automatic engagement of the clutch. Typical backstop applications occur in conveyor systems and gear reducers.

B-200A, B-500, PB-A, HT, CB-HS, M, NSS, NFS, MZEU SERIES

Morse clutches utilize a full complement of cams, which are placed between concentric inner and outer races. A light spring helps keep the cams in contact with the races. Torque is transmitted from one race to the other by wedging action of the cams between the races.

Morse mechanical clutches provide engagement or disengagement with minimal backlash.

Figure 1 shows the cams in a position to allow the inner race to overrun counter-clockwise or the outer race to overrun in a clockwise direction.

Figure 2 shows the cams are fully loaded and loads can be transmitted through the cams from a clockwise rotation of the inner race or a counter-clockwise rotation of the outer race.

Figure 1 (Overrunning)

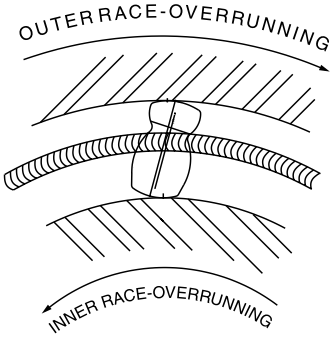
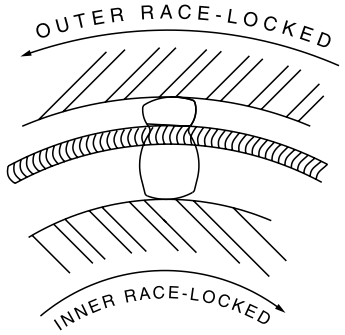


Figure 2 (Driving)



KK SERIES

The KK clutch consists of a standard metric ball bearing combined with cams. The clutch design is unique, incorporating an independent cam-cage assembly installed alongside the offset ball cage. The clutch has the same overall dimensions of the metric bearing. The clutches are entirely self-contained, and do not require additional bearing support.

The cam-cage assembly uses an energizing spring to help keep the entire complement of cams in light contact with the races to provide rapid engagement when torque transmission occurs. The wedging action of the full set of cams produces significant torque capability in a compact, economical package.

Figure 3 shows the cam-cage assembly in the KK clutch in a position to allow the inner race to overrun clockwise or the outer race to overrun in a counterclockwise direction.

Figure 4 shows the cam-cage assembly provides a full complement of cams to wedge against inner and outer races allowing torque transmission through the clutch.

Figure 3

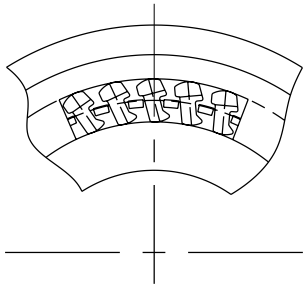
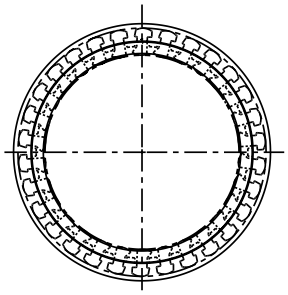
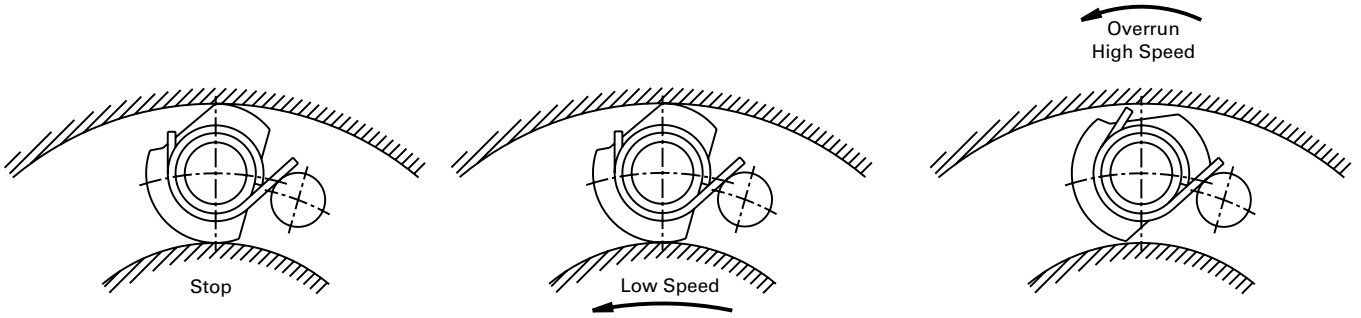


Figure 4



BR SERIES

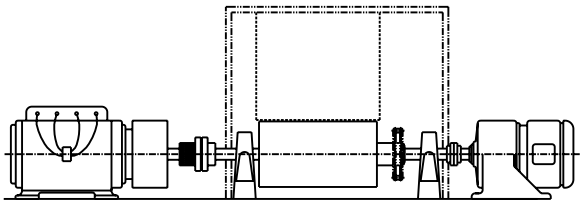
The cams of the BR Series clutch are designed to lift off and have no contact with the inner and outer race while overrunning. This is due to centrifugal force and is the reason this type of cam clutch is known as a lift off type. These cam clutches are suitable for "overrunning - high speed inner race/low speed engaged outer race" or "backstopping-high speed inner race overrunning". There are two types available, an open type installed directly onto a motor or inside a reducer, or a package type that is installed on the outside of the application.



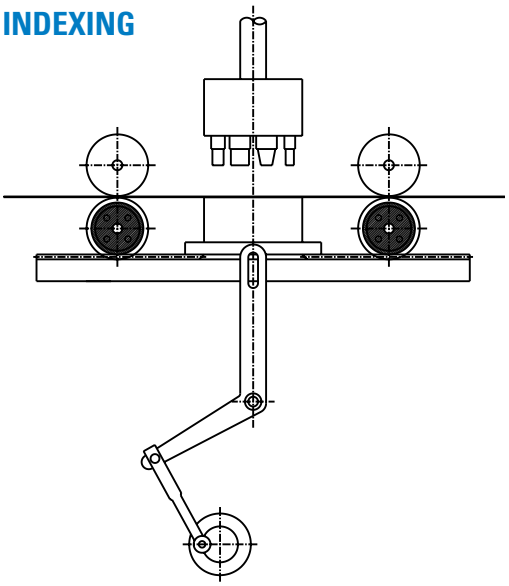
MORSE MECHANICAL CLUTCHES ARE UTILIZED IN MANY APPLICATIONS SUCH AS:

Aircraft arresting gear equipment
Compressors
Conveyors
Cranes and hoists
Dry cleaning machinery
Duplicator equipment
Food processing machinery
Heat-treat furnaces
Induction draft fans
Multi-state conveyors
Packaging machinery
Printing machinery
Pumps
Punch presses and feeds
Inclined Conveyors
Over land Conveyors
Bucket Elevators
Shoe machinery
Speed reducers
Standby power units
Textile looms
Two-speed grinders
Two-speed shiftovers
Washing machines
Wire winding machinery
Dual Drives

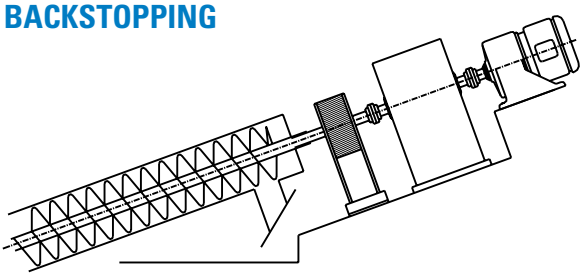
GENERAL OVERRUNNING



INDEXING



BACKSTOPPING



FULL COMPLEMENT OF CAMS

A full complement of cams provides the maximum number of load transmitting members per given diameter, resulting in greater torque capacity size-for-size than roller ramp clutches.

CAM DESIGN

Precision formed cams made of high carbon steel provide extra long wear and fatigue life. M Series models utilize formed cams providing uniform distribution of load between mating surfaces, resulting in low contact pressure levels.

CAGE CONSTRUCTION

M Series models 300A - 700A contain a heavy duty, machined or stamped cage assembly providing equal placement and accurate positioning of each cam. The MI Series offers a patented, low inertial indexing cage design for engagement and disengagement of the cams. A contracting, energizing spring helps keep the cams in constant contact with both races for quick cam reaction.

HIGH QUALITY COMPONENTS

The clutch races are made of high quality alloy steel with high surface hardness and core toughness. Precision ground races provide excellent concentricities and surface finish for accurate cam action.

M series models are equipped with precision ball bearings and polyacrylic lip type seals for long life and low maintenance.

OVERRUNNING PERFORMANCE

Oil lubricated M Series clutches contain an exclusive patented venting method to reduce oil pressure buildup and permit higher overrunning speeds.

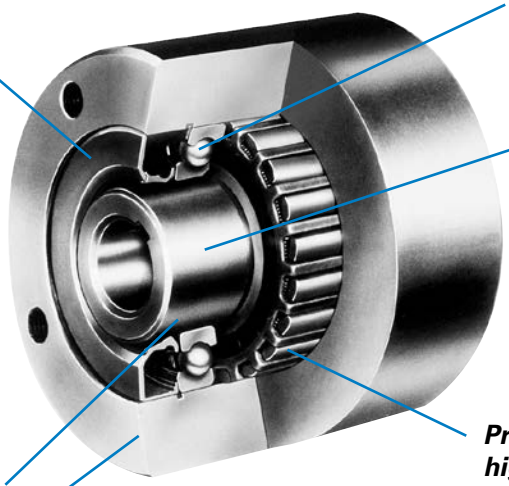
MORSE MECHANICAL CAM CLUTCHES ARE AN IDEAL SOLUTION FOR OVERRUNNING, INDEXING OR BACKSTOPPING APPLICATIONS.

High temperature polyacrylic lip seals for long life and low maintenance

Precision ball bearings provide smooth running, dependable operation

Patented venting design through inner race reduces drag resistance and permits higher overrunning speeds

U. S. Patent Numbers 3,320,006, 3,542,442 and 4,130,191.



Clutch races are high-quality alloy steel, precision ground to provide accurate cam action

M Series Clutch

Precision finished cams of high carbon steel provide extra long wear and fatigue life.

FUNCTION			SELF-CONTAINED	MODEL NO.	TORQUE RANGE	
OVERRUNNING	INDEXING	BACKSTOPPING			LB - FT	N - M
X	X	X	-	B203A - B210A	39 - 575	53 - 780
-	-	X	-	B501A - B513	60 - 2,125	81 - 2,881
-	-	X	X	CB7CHS - CB720CHS	7,000 - 720,000	9,490 - 978,887
X	X	-	X	MZEU12 E1 - E2 - MZEU150 E1 -E2	44 - 25,000	60 - 33,800
-	-	X	X	MZEU12 E2 - E3 - MZEU150 E2 -E3	44 - 25,000	60 - 33,800
-	-	X	X	MZEU12 E3 - E4 - MZEU150 E3 -E4	44 - 25,000	60 - 33,800
-	X	-	X	HT10 - HT30	42 - 440	57 - 597
X	-	-	X	KK15 - KK40	20 - 190	29 - 260
X	-	-	X	KK15-2GD - KK40-2GD	20 - 190	29 - 260
X	-	-	X	KK15-2GD 1K - KK40-2GD 1k	20 - 190	29 - 260
X	-	-	X	KK15-1K - KK40-1K	20 - 190	29 - 260
X	-	-	X	KK15-2K - KK40-2K	20 - 190	29 - 260
X	X	X	X	M300A - M700A	275 - 5,000	373 - 6,779
X	X	X	X	M750A - M1000	7,000 - 25,000	9,491 - 33,896
X	-	-	-	NFS12- NFS80	13 - 2,900	18 - 3,924
X	-	-	-	NSS 8 - NSS 60	5 - 480	6.7 - 649
X	X	X	X	PB3A - PB16A	40 - 1,800	54 - 2,441
-	-	X	-	BR20 - BR240	240 - 45,750	328 - 62,034
-	-	X	X	BR-P	240 - 45,750	328 - 62,034

X = Available.

Clutch Ordering Procedure
Specify the Information Checked (x) in the Table Below

CLUTCH SERIES	KK	NSS	NFS	200A	B-500	PB-A	HT	M	MZEU	BR
Catalog Model No.	x	x	x	x	x	x	x	x	x	x
Bore	-	-	-	-	-	x	x	x	-	-
Rotation (RH or LH)	-	-	-	-	-	x	x	-	-	-

Note: Clutches requiring non-stock bores, tolerances, keyways, lubricants, or other special requirements must be clearly specified on the order.

PART NUMBER EXPLANATION

CONVEYOR BACKSTOP SERIES

CB - 45 C HS G FB

- FB — Specify finished bore diameter
- G — Add G if grease lubrication required
- HS — High Speed
- C — Clutch only*
- 45 — Torque capacity (ft-lbs. 1000's)
- CB — Clutch series (conveyor backstop)

Conveyor backstop clutch built with standard keyway unless requested otherwise.

*Torque arm, to be used with conveyor backstop clutch, should be ordered separately ex. CB-45TA.

KK SERIES

KK 30-2GD 1K

- 1K — Keyed inner race
- 2GD — Sealed both sides
- 30 — Bore size in millimeters
- KK — Clutch series

KK 25 2K

- 2K — Keyed inner and outer race
- 25 — Bore size in millimeters
- KK — Clutch series

M SERIES

M G 500A - G FB

- FB — Specify finished bore diameter
- G — Add - G if grease lubrication required
- 500A — Model number
- G — General duty lip seal clutch
- M — Clutch series

M I 500A - G FB

- FB — Specify finished bore diameter
- G — Add - G if grease lubrication required
- 500A — Model number
- I — Performance indexing
- M — Clutch series

Examples for M series derivatives: MG (for general duty) ex: MG900 FB, MI (for indexing) ex: MI800 FB, MO (for overrunning) ex: MO600A-G FB and MR (for high-speed outer race overrunning) ex: MR600A FB.

NFS SERIES

NFS - 35

- 35 — Bore size in millimeters
- NFS — Clutch series

BORE RANGE		OVERRUNNING SPEED (RPM)		LUBRICATION		
IN	MM	INNER RACE	OUTER RACE	OIL	GREASE	METRIC
0.649 - 2.209	17 - 56	1,800 - 2,500	-	X	X	-
0.650 - 2.046	17 - 52	1,800 - 2,500	-	X	X	-
2.250 - 17.7	57 - 450	50 - 150	-	-	X	-
0.472 - 5.906	12 - 150	240 - 2,000	80 - 1,000	-	X	X
0.472 - 5.906	12 - 150	240 - 2,000	-	-	X	X
0.472 - 5.906	12 - 150	240 - 2,000	-	-	X	X
0.425 - 2.000	11 - 51	1,800	-	X	-	-
0.591 - 1.575	15 - 40	1,800 - 3,600	900 - 2,000	X	X	X
0.591 - 1.575	15 - 40	1,800 - 3,600	900 - 2,000	X	X	X
0.591 - 1.575	15 - 40	1,800 - 3,600	900 - 2,000	X	X	X
0.591 - 1.575	15 - 40	1,800 - 3,600	900 - 2,000	X	X	X
0.591 - 1.575	15 - 40	1,800 - 3,600	900 - 2,000	X	X	X
0.500 - 2.937	13 - 75	400 - 2,900	400 - 2,900	X	X	-
2.437 - 6.437	62 - 164	325 - 1,800	325 - 2,600	X	X	-
0.472 - 3.150	12 - 80	670 - 4,500	340 - 2,300	X	-	X
0.315 - 2.362	8 - 60	910 - 6,000	460 - 3,000	X	-	X
0.375 - 2.000	10 - 51	950 - 1,800	300 - 900	-	X	-
0.787 - 9.449	20 - 240	310 - 3000	-	X	-	X
0.787 - 9.449	20 - 240	310 - 3000	-	X	-	X

X = Available.

Part Number Explanation

MZEU SERIES

MZEU 60 E1 + E2

- E2 — End cover (ordered separately*)
- E1 — End cover (ordered separately*)
- 60 — Bore sizes in millimeters
- MZEU — Clutch series

*Covers ordered separately. Example: MZEU60-E1 cover or MZEU60-E2 cover.

TORQ/GARD

TGC 60

- 60 — Size (1/10 of the maximum torque capacity, in.-lbs.)
- TGC — Series

If required shaft bushing is ordered separately ex.

60 BU 012

- 012 — Shaft size (16th of an inch)
- BU — Bushing kit
- 60 — Torq/Gard size

Bushing kit includes key and set screws. Torq/Gards can be made into couplings by ordering separate components. Single strand TG sprocket kits to bolt on are stocked.

TG 40 A 45 K

- K — Kit
- 45 — Number of teeth
- A — A-plate sprocket
- 40 — #40 roller chain
- TG — Torq/Gard

Includes mounting bolts.

BROWNING TORQUE LIMITER

T45L x FB

- FB — Specify bore size in inches
- T45L — Browning torque limiter with 4.5" OD

Bushing is supplied with Browning torque limiter.
Sprocket for torque limiter is ordered separately 50T45L26.

50 T45L 26

- 26 — Number of teeth
- T45L — Browning torque limiter with 4.5" OD
- 50 — #50 roller chain

MORSE TORQUE LIMITER

350A -2 TL x FB

- FB — Specify bore size
- TL — Series
- -2 — Number of disc springs (max. 2)
- 350A — Overall diameter (3.5 inches)

Required bushing is ordered separately; bushing length determined by sprocket selection.

350 AG 5 26

- 26 — Number of teeth in sprocket
- 5 — #50 pitch roller chain
- AG — A plate, ground (63 micro-inch)
- 350 — Fits Morse TL model 350

BROWNING TORQ/PRO

TP 30 H FB or MPB

- FB or MPB — Specify finished bore or min. plain bore
- H — Springs (light, medium or heavy)
- 30 — Model number
- TP — Series

When ordering a Torq/Pro coupling specify Torq/Pro unit, Torq/Pro sprocket, coupling chain and adjoining sprocket.

M Series ball bearing clutches contain precision formed cams made from high quality steel that are hardened then precision finished. Our most versatile and custom configurable clutch, this unit is the workhorse of the industry. The unique finishing process provides a smooth cam surface resulting in uniform contact with the races, providing even load distribution and prolonged wear life. These clutch models are designed to mount on through shafts and are secured to the shaft by a matching key provided with each stock bore clutch. Grease lubrication for each series can be provided at no additional cost.

MG300A - 700A SERIES

Primarily used for general duty applications. Overrunning, backstopping and light duty indexing. The MG model offers precise spring energizing to provide long overrunning wear life.

MO300A - 700A SERIES

Made with felt grease seals to minimize seal drag for high speed inner race overrunning applications. The MO model is delivered with standard grease lubrication.

MI300A - 700A SERIES

Recommended for high performance indexing, used on applications greater than 150 strokes per minute or applications requiring high indexing accuracy. Incorporating a patented, low inertia cage and heavy duty energizing spring for quick cam reaction.

MR300A - 700A SERIES

Intended for high-speed outer race overrunning, incorporating a unique cam cage construction that uses centrifugal force to minimize cam drag. The driving speed of the clutch cannot exceed the rpm shown in the table for the inner race.

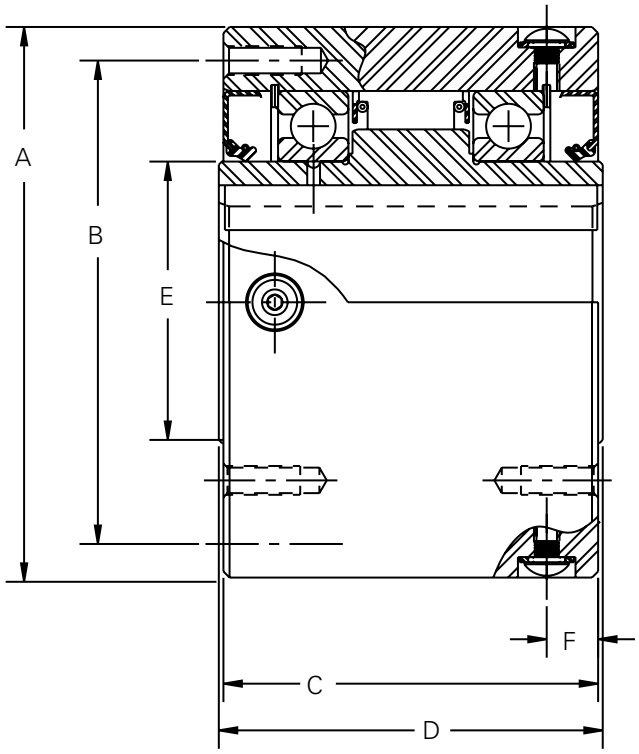
MODEL NUMBER	TORQUE CAPACITY		MAXIMUM OVERRUNNING RPM		NOMINAL OVERRUNNING DRAG		STOCK INCH BORES		KEYWAYS		STOCK METRIC BORES	METRIC KEYWAYS	DIMENSIONS			
													A		B	
	LB - FT	N-M	INNER RACE	OUTER RACE	LB - FT	N-M	INCH	MM	INCH	MM	MM	MM	INCH	MM	INCH	MM
MG-300A	275	373	2900	800	0.17	0.2	0.500	12.70	0.12500 x 0.16700	3.1750 x 4.2418	15 19	5 x 2.3 6 x 2.8	2.998 / 3.000	76.15 / 76.20	2.625	66.68
MI-300A			-	-			0.625	15.88	0.18750 x 0.09375	4.7625 x 2.3813						
MO-300A			3600	800			0.750	19.05	0.18750 x 0.09375	4.7625 x 2.3813						
MR-300A			800	2900												
MG-400A	400	542	2700	800	0.21	0.3	0.625	15.88	0.18750 x 0.09375	4.7625 x 2.3813	18 20	6 x 2.8 6 x 2.8	3.498 / 3.500	88.85 / 88.90	2.875	73.03
MI-400A			-	-			0.750	19.05								
MO-400A			3600	800			0.875	22.23								
MR-400A			800	2700												
MG-500A	1175	1593	2400	750	0.38	0.5	0.875	22.23	0.18750 x 0.09375	4.7625 x 2.3813	30	8 x 3.3	4.248 / 4.250	107.90 / 107.95	3.625	92.08
MI-500A			-	-			1.000	25.40	0.25000 x 0.12500	6.3500 x 3.1750						
MO-500A			3000	750			1.125	28.58	0.25000 x 0.12500	6.3500 x 3.1750						
MR-500A			750	2400			1.250	31.75	0.25000 x 0.12500	6.3500 x 3.1750						
MG-600A	2250	3051	1800	700	0.63	0.9	1.250	31.75	0.25000 x 0.12500	6.3500 x 3.1750	40 45 50	12 x 3.3 14 x 3.8 14 x 3.8	5.373 / 5.375	136.47 / 136.53	4.750	120.65
							1.375	34.93	0.31250 x 0.15625	7.9375 x 3.9688						
MI-600A			-	-			1.500	38.10	0.37500 x 0.18750	9.5250 x 4.7625						
							1.625	41.28	0.37500 x 0.18750	9.5250 x 4.7625						
MO-600A			2400	700			1.750	44.45	0.37500 x 0.18750	9.5250 x 4.7625						
							1.937	49.20	0.50000 x 0.18750	12.7000 x 4.7625						
MR-600A			700	2100			2.000	50.80	0.50000 x 0.18750	12.7000 x 4.7625						
MG-700A	5000	6779	1200	400	1.3	1.8	2.000	50.80	0.50000 x 0.25000	12.7000 x 6.3500	55 60 65 70	16 x 4.3 18 x 4.4 18 x 4.4 20 x 4.9	7.123 / 7.125	180.92 / 180.98	6.250	158.75
MI-700A			-	-			2.250	57.15	0.50000 x 0.25000	12.7000 x 6.3500						
							2.437	61.90	0.50000 x 0.25000	12.7000 x 6.3500						
MO-700A			2000	400			2.500	63.50	0.62500 x 0.31250	15.8750 x 7.9375						
							2.750	69.85	0.62500 x 0.31250	15.8750 x 7.9375						
MR-700A			400	1750			2.937	74.60	0.62500 x 0.12500	15.8750 x 3.175						

[1]Stock bore sizes have hardened inner races and cannot be reworked. Non-stock bores can be furnished at an additional charge. To minimize critical stresses in keyway area of inner race, clutch keyways have radius in corners; a matching key is furnished with each stock bore clutch, except metric.

[2]Mounting holes are equally spaced on all models except model 700 which has six equally spaced mounting holes plus two additional positioned 30° from the equally spaced holes and 180° apart.

FEATURES

- Self-contained clutch designed for high-speed applications
- Cam cage assembly engineered for optimum performance and increased capacity
- Two ball bearings included to support radial load and concentricity between races
- Positive contact lip or felt seals provided for grease or oil lubrication
- Tapped holes are machined on ends of outer race for mounting auxiliary components
- Metric bore and keyway available
- Mounting accessories available
-



INDUSTRIES SERVED

- Corrugated
- Food and beverage
- Glass manufacturing
- Packaging
- Paper converting
- Printing
- Aggregate

FIELD APPLICATIONS

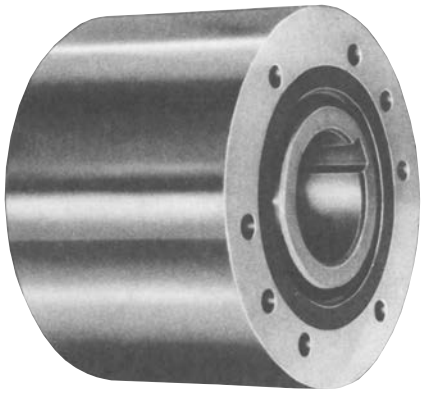
- Amusement rides
- Auxiliary drives
- Conveyors
- Food processing
- Heat treat furnaces
- HVAC systems
- Packaging machinery
- Punch press machinery
- Start-up drives

MODEL NUMBER	DIMENSIONS								NO. OF TAP HOLES	THREAD SIZE		USABLE THREAD DEPTH		LUBE	LUBE CAP. OZ.	WEIGHT	
	C		D		E		F										
	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM			LBS	KG
MG-300A	2.375	60.33	2.50	63.5	1.125	28.58	0.35	8.9	4	0.2500 - 28	6.350 - 711	0.500	12.70	Oil	0.85	4	2
MI-300A														Oil	1.25		
MO-300A														Grease	0.50		
MR-300A														Oil	0.85		
MG-400A	2.625	66.68	2.75	69.9	1.250	31.75	0.45	11.4	4	0.3125 - 24	7.938 - 610	0.625	15.88	Oil	1.10	6	3
MI-400A														Oil	1.40		
MO-400A														Grease	0.50		
MR-400A														Oil	1.10		
MG-500A	3.375	85.73	3.50	88.9	1.750	44.45	0.48	12.2	4	0.3125 - 24	7.938 - 610	0.625	15.88	Oil	1.80	11	5
MI-500A														Oil	3.00		
MO-500A														Grease	1.00		
MR-500A														Oil	1.80		
MG-600A	3.625	92.08	3.75	95.3	2.750	69.85	0.50	12.7	6	0.3125 - 24	7.938 - 610	0.625	15.88	Oil	2.80	19	9
MI-600A														Oil			
														Oil	4.50		
MO-600A														Oil			
														Grease	1.50		
MR-600A														Grease			
MG-700A	4.875	123.83	5.00	127.0	4.000	101.60	0.68	17.3	8	0.3750 - 24	9.525 - 610	0.750	19.05	Oil	2.80	43	20
MI-700A														Oil	4.60		
														Oil			
MO-700A														Oil	10.90		
														Grease			
MR-700A														Grease	2.90		
														Oil	4.60		

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Models M750 - M1000

Models M750 – M1000 are ball bearing clutches. All models contain precision-formed cams and all clutch models are designed to mount on through shafts and are secured to the shaft.



MODELS MG750 - MG1000

Are designed with a cam cage specifically for inner race overrunning.

MODELS MR750 – MR1000

Are designed with a cam cage specifically for outer race overrunning.

MODELS MI750 – MI1000

MI models have stronger energizing springs for greatest response in indexing.

MODEL NUMBER	TORQUE CAPACITY		MAXIMUM OVERRUNNING RPM		NORMAL OVERRUNNING DRAG		STOCK INCH BORES		KEYWAYS		STOCK METRIC BORES	METRIC KEYWAYS	DIMENSIONS			
													A		B	
	LB - FT	N-M	INNER RACE	OUTER RACE	LB - FT	N-M	INCH	MM	INCH	MM	MM	MM	INCH	MM	INCH	MM
MG - 750	7,000	9,491	1,800	600	2.5	3	2.437	61.90	0.6250 x 0.3125	15.875 x 7.938	65	18 x 4.	8.748 / 8.750	222.20 / 222.25	7.000	177.800
							2.500	63.50	0.6250 x 0.3125	15.875 x 7.938	70	20 x 4.9				
							2.750	69.85	0.6250 x 0.3125	15.875 x 7.938	75	22 x 5.4				
MR - 750			525	2,600			2.937	74.60	0.7500 x 0.3750	19.050 x 9.525	80	22 x 5.4				
							3.000	76.20	0.7500 x 0.3750	19.050 x 9.525						
MI - 750							3.250	82.55	0.7500 x 0.2500	19.050 x 6.350	85					
			-	-			3.437	87.30	0.7500 x 0.1875	19.050 x 4.763						
MG - 800	13,000	17,626	1,300	475	4.0	5	3.000	76.20	0.7500 x 0.3750	19.050 x 9.525	80	22 x 5.4	9.998 / 10.000	253.95 / 254.00	8.938	227.013
							3.250	82.55	0.7500 x 0.3750	19.050 x 9.525	90	25 x 5.4				
							3.437	87.30	0.8750 x 0.4375	22.225 x 11.113	100	28 x 6.4				
							3.500	88.90	0.8750 x 0.4375	22.225 x 11.113	110	28 x 6.4				
MR - 800			475	2,100			3.750	95.25	0.8750 x 0.4375	22.225 x 11.113						
							3.937	100.00	1.0000 x 0.5000	25.400 x 12.700						
							4.000	101.60	1.0000 x 0.5000	25.400 x 12.700						
MI - 800			-	-			4.250	107.95	1.0000 x 0.3750	25.400 x 9.525						
							4.437	112.70	1.0000 x 0.2500	25.400 x 6.350						
MG - 900	18,000	24,405	1,200	400	5.0	7	4.000	101.60	1.0000 x 0.5000	25.400 x 12.700	100	28 x 6.4	11.997 / 12.000	304.72 / 304.80	9.750	247.650
							4.250	107.95	1.0000 x 0.5000	25.400 x 12.700	110	28 x 6.4				
							4.437	112.70	1.0000 x 0.5000	25.400 x 12.700	120	32 x 7.4				
							4.500	114.30	1.0000 x 0.5000	25.400 x 12.700	130	32 x 7.4				
MR - 900			400	1,850			4.750	120.65	1.0000 x 0.5000	25.400 x 12.700						
							4.937	125.40	1.0000 x 0.3750	25.400 x 9.525						
							5.000	127.00	1.0000 x 0.3750	25.400 x 9.525						
MI - 900			-	-			5.250	133.35	1.0000 x 0.2500	25.400 x 6.350						
							5.437	138.10	1.0000 x 0.2500	25.400 x 6.350						
MG - 1000	25,000	33,896	1,200	325	6.0	8	5.000	138.10	1.2500 x 0.6250	31.750 x 15.875	130	32 x 7.4	14.997 / 15.000	380.92 / 381.00	11.750	298.450
							5.250	133.35	1.2500 x 0.6250	31.750 x 15.875	150	36 x 8.4				
							5.437	138.10	1.2500 x 0.6250	31.750 x 15.875						
							5.500	139.70	1.2500 x 0.6250	31.750 x 15.875						
MR - 1000			325	1,600			5.750	146.05	1.2500 x 0.4375	31.750 x 11.113						
							5.937	150.80	1.2500 x 0.4375	31.750 x 11.113						
							6.000	152.40	1.2500 x 0.4375	31.750 x 11.113						
MI - 1000			-	-			6.250	158.75	1.2500 x 0.3750	31.750 x 9.525						
							6.437	163.50	1.2500 x 0.3750	31.750 x 9.525						

[1]Stock bore sizes have hardened inner races and cannot be reworked. Non-stock bores can be furnished at an additional charge. To minimize critical stresses in keyway area of inner race, clutch keyways have radius in corners; a matching key is furnished with each stock bore clutch, except metric.

[2]Mounting holes are equally spaced on all models except model 750 which has six equally spaced mounting holes plus two additional positioned 30° from the equally spaced holes and 180° apart.

Part Number Explanation

M G 500A - G FB

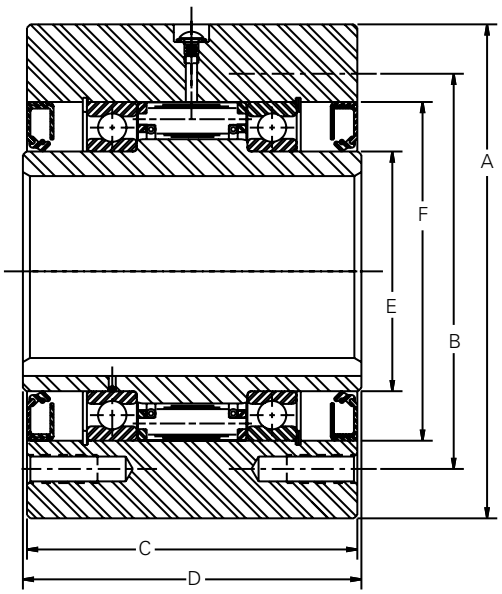
- Specify finished bore diameter
- Add - G if grease lubrication required
- Model number
- General duty lip seal clutch
- Clutch series

M I 500A - G FB

- Specify finished bore diameter
- Add - G if grease lubrication required
- Model number
- Performance indexing
- Clutch series

Examples for M series derivatives: MG (for general duty) ex: MG900 FB, MI (for indexing) ex: MI800 FB, MO (for overrunning) ex: MO600A-G FB and MR (for high-speed outer race overrunning) ex: MR600A FB.

Models M750 - M1000



MODEL NUMBER	MODE OF OPERATION	STD. LUBRICATION
MG750-1 000	General Backstopping and Overrunning	Oil
MR750-1 000	Overrunning Outer Race	Oil
MI 750-1000	Indexing	Oil
MO 750-1000	General Backstopping and Overrunning	Grease

MODEL NUMBER	DIMENSIONS										NO. OF TAPPED (MOUNT'G) HOLES	THREAD SIZE	USABLE THREAD DEPTH	OIL HOLE SIZE	LUBE	APPROXIMATE WEIGHT (LB)	
	C		D		E		F		G								
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM						LB	KG
MG - 750																	
MR - 750	5.875	149.23	6	152	4.25	108.0	6.000 / 6.001	152.40 / 152.43	0.250	6.350	8	.50 - 20	1	.250 - 28	Oil	84	38
MI - 750																	
MG - 800																	
MR - 800	5.875	149.23	6	152	5.50	139.7	7.500 / 7.501	190.50 / 190.53	0.188	4.763	8	.50 - 20	1	.250 - 28	Oil	105	48
MI - 800																	
MG - 900																	
MR - 900	6.250	158.75	6.375	162	6.50	165.1	8.750 / 8.751	222.25 / 222.28	0.188	4.763	10	0.625 - 18	1.25	.250 - 28	Oil	158	72
MI - 900																	
MG - 1000																	
MR - 1000	6.750	171.45	7	178	7.75	196.9	10.500 / 10.501	266.70 / 266.73	0.188	4.763	12	0.625 - 18	1.25	.250 - 28	Oil	253	115
MI - 1000																	

[1]Stock bore sizes have hardened inner races and cannot be reworked. Non-stock bores can be furnished at an additional charge. To minimize critical stresses in keyway area of inner race, clutch keyways have radius in corners; a matching key is furnished with each stock bore clutch, except metric.

[2]Mounting holes are equally spaced on all models except model 700 which has six equally spaced mounting holes plus two additional positioned 30° from the equally spaced holes and 180° apart.

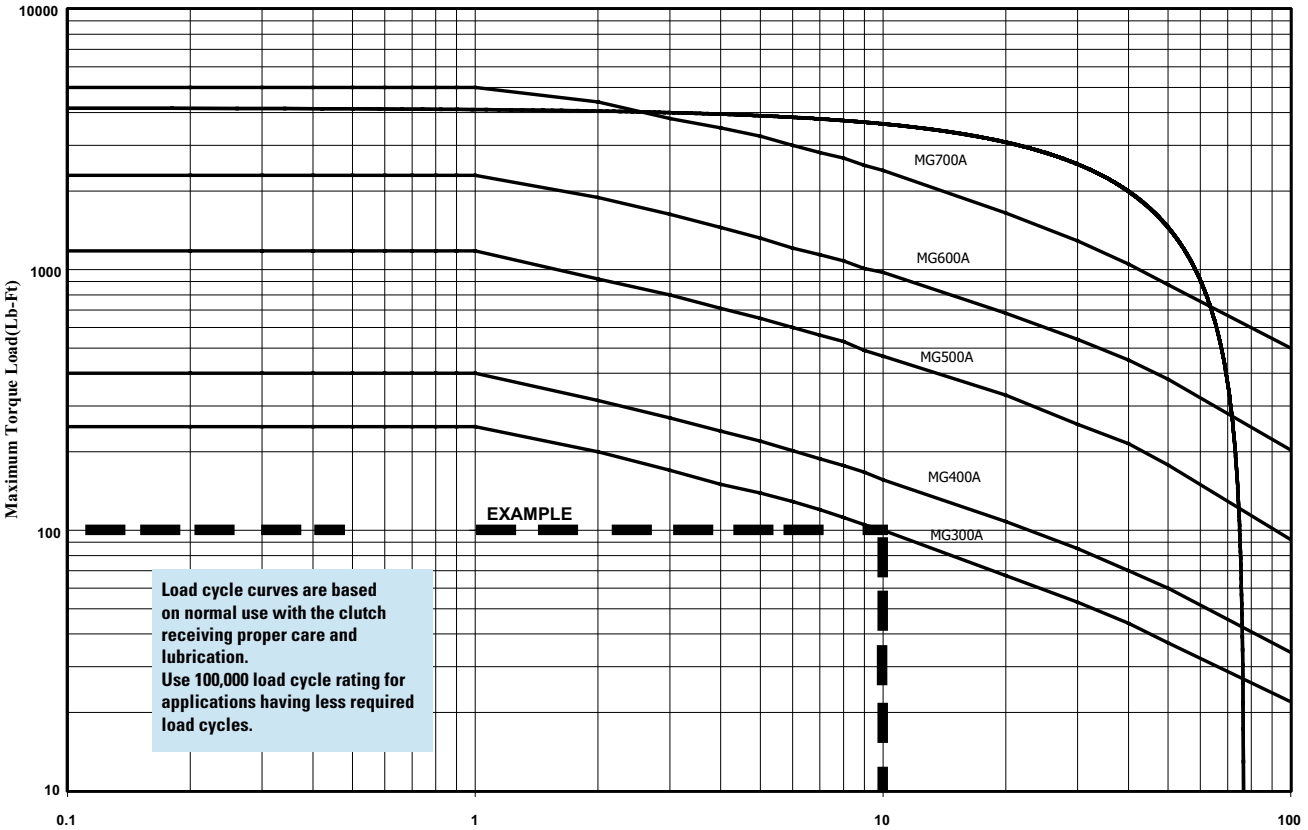
LOAD-CYCLE PERFORMANCE CURVES, MODELS MG & MI (300 - 700A)

The load life cycle curves in Figure 1 apply to clutches used in indexing applications. Using actual torque calculated from Step 4 on page 75, clutch selection can be made from Figure 1. Locate the point at which the horizontal torque line intersects clutch curve(s). At intersections, draw a line vertically downward to read life cycle expectancy in millions of load cycles. If the torque line intersects more than one clutch curve, select a clutch on the basis of desired life. Check to see that the selected clutch meets bore requirements.

Example:A clutch is required for indexing application on a low speed press. The actual torque = 100 lb. - ft. and bore requirement is 3/4 inches, the cyclic rate = 130 strokes/minute. From Figure 1, 100 lb. - ft. torque line intersects clutch curves MG300A and MG400A.

Models MG300A and MG400A meet the torque and bore requirements of the application. Clutch selection to be based on desired cyclic life (MG300A, 10 million cycles; MG400A, 23 million cycles).

Figure 1. Load Life-Cycle for Morse MG Clutch Models

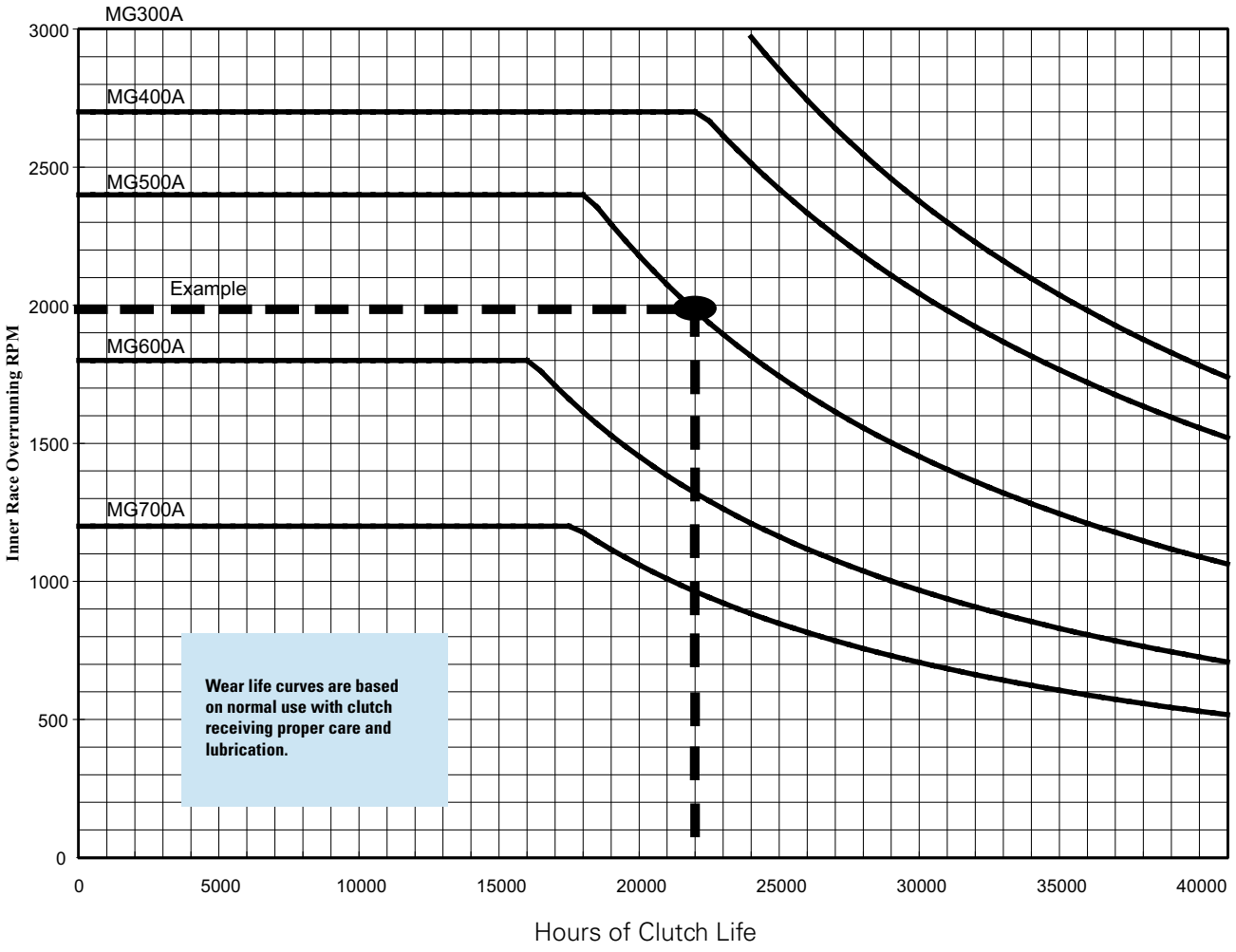


CLUTCH WEAR LIFE CURVES, MODELS MG 300 - 700A

The wear life curves shown in Figure 2 apply to clutches used in overrunning or backstopping applications. Use inner race overrunning rpm and clutch size selected in steps 6 and 7 on page 75 to determine expected wear life.

Example: Assume clutch selected is Model MG500A, which operates at an inner race overrunning speed of 2000 rpm. From Figure 2, the 2000 rpm line is drawn horizontally to point of intersection with the MG500A curve. From the point of intersection, draw a line vertically downward to read hours of clutch life (23,000).

Figure 2. Clutch Wear Life Model MG 300A - 700A



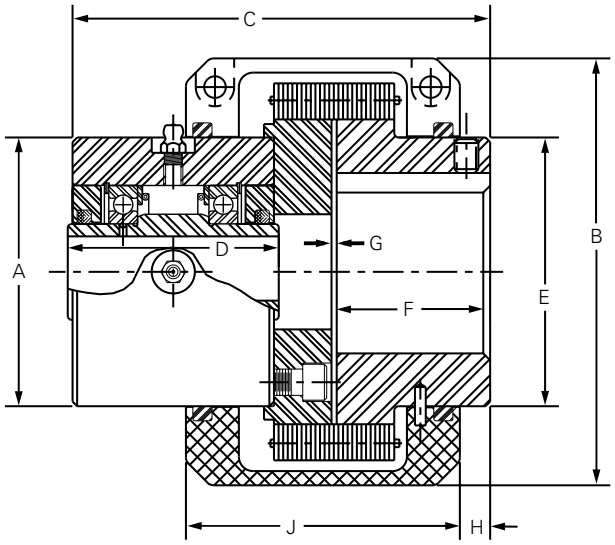
For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Coupling Package C3 Through C7

- Morse clutch couplings are used in applications that require the coupling of two in-line shafts, such as a motor shaft and a generator shaft.
- Coupling numbers C-3 through C-7 consist of Morse silent chain flexible couplings and are used with clutch models MG300A-700A.
- Coupling bore tolerances are the same as M Series bore tolerances.
- Order clutch couplings and clutch separately. The clutch coupling is normally stocked minimum plain bore. For finished bore, standard rework charges apply.
- Hardware included.

MODEL	TORQUE CAPACITY		CLUTCH MODEL NO.	MAXIMUM OVERRUNNING RPM		COUPLING BORE				CLUTCH STOCK BORE SIZE AND KEYWAY				A		B	
				INNER RACE	OUTER RACE	MIN. (STOCK)		MAX.									
	LB-FT	N-M				INCHES	MM	INCHES	MM	INCHES		MM		INCHES	MM	INCHES	MM
C-3	275	373	MG-300A	2,900	800	.488 / .490	12.40/12.45	2.000	50.800	0.500	0.125 x 0.063	12.70	3.18 x 1.59	2.988 / 3.000	75.90 / 76.20	4.875	123.63
			MO-300A	3,500						0.625	0.188 x 0.094	15.66	4.76 x 2.36				
			MR-300A	2,900						0.750		19.05					
C-4	400	542	MG-400A	2,700	800	.613/615	15.57/15.62	2,375	60.325	0.625	0.188 x 0.094	15.66	4.76 x 2.38	3.498 / 3.500	88.85 / 88.90	5.563	141.29
			MO-400A	3,300						0.750		19.05					
			MR-400A	2,700						0.875		22.23					
C-5	1175	1593	MG-500A	2,400	750	.613 / .615	15.57 / 15.62	2.500	63.500	0.875	0.188 x 0.094	22.23	4.76 x 2.38	4.248 / 4.250	107.90 / 107.95	6.625	168.28
			MO-500A	2,900						1.000	0.250 x 0.125	25.40	6.35 x 3.18				
			MR-500A	2,400						1.125		28.58					
										1.250		31.75					
C-6	2250	3051	MG-600A	1,800	700	.738 / .740	18.75 / 18.80	3.500	88.900	1.250	0.250 x 0.125	31.75	6.35 x 3.18	5.373 / 5.375	136.47 / 136.53	8.438	214.31
										1.375	0.313 x 0.156	34.93	7.94 x 3.97				
			MO-600A	2,200						1.500	0.375 x 0.188	38.10	9.53 x 4.76				
										1.625		41.28					
			MR-600A	2,100						1.750		44.45					
										1.9375	0.50 x 0.188	50.80	12.70 x 4.76				
										2.000	0.50 x 0.188	50.80					
C-7	5000	6779	MG-700A	1,200	400	1.488 / 1.490	37.80 / 37.85	4.000	101.600	2.000	0.50 x 0.250	50.80	12.70 x 6.35	7.123 / 7.125	180.92 / 180.98	9.750	247.65
										2.250		57.15					
			M0700A	1,800						2.437	0.625 x 0.313	61.90	15.88 x 7.94				
										2.500		63.50					
			MR-700A	1,750						2.750		69.85					
										2.937	0.625 x 0.125	74.60	15.88 x 3.18				

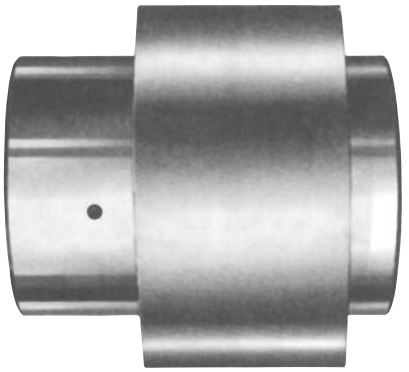
Coupling Package C3 Through C7



MODEL NO	C		D		E		F		G		H		I		J		MAX. END FLOAT		MAX. ANGULAR MISALIGN-MENT	MAX. PARALLEL MISALIGN-MENT		APPROXIMATE WEIGHT CLUTCH COUPLING ASSEMBLY	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	DEGREE	INCH	MM	LB	KG
C-3	4.938	125.41	2.50	63.5	3.000	76.20	1.613	46.04	125	3.16	469	11.91	2.936	74.61	2.94	74.7	+0.094 -0	+2.38 -0	1/2	0.010	0.25	8	4
C-4	5.563	141.29	2.75	69.9	3.500	66.90	2.000	50.60	125	3.16	406	10.32	3.563	90.49	3.56	90.4	+0.188 -0	+4.76 -0	1/2	0.010	0.25	12	5
C-5	6.313	160.34	3.50	88.9	4.250	107.95	2.000	50.80	125	3.18	375	9.53	3.563	90.49	3.56	90.4	+0.188 -0	+4.76 -0	1/2	0.010	0.25	19	9
C-6	7.813	198.44	3.75	95.3	5.375	136.53	3.000	76.20	125	3.18	938	23.81	4.563	115.89	4.56	115.8	+0.250 -0	+6.35 -0	1/2	0.015	0.38	34	15
C-7	9.313	236.54	5.00	127.0	7.125	180.98	3.250	82.55	125	3.18	938	23.81	4.563	115.89	4.56	115.8	+0.250 -0	+6.35 -0	1/2	0.015	0.38	52	24

Coupling Package C7.5 Through C10

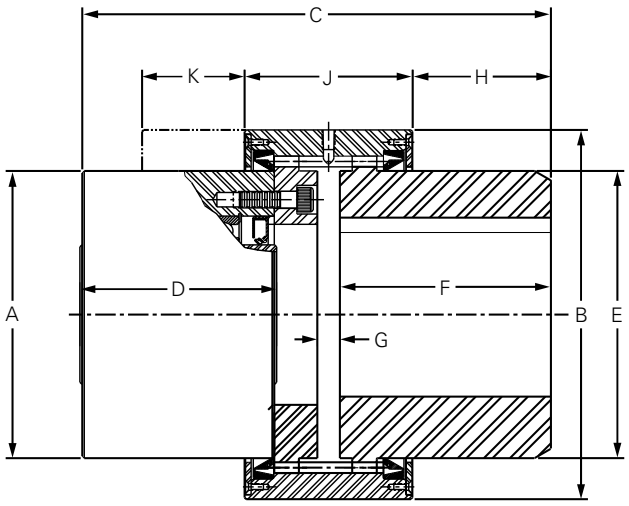
- Morse clutch couplings are used in applications that require the coupling of two in-line shafts, such as a motor shaft and generator shaft.
- Coupling numbers C-7.5 through C-10 are used with MG750 - 1000 clutches for inner race overrunning applications and with MR750 - 1000 clutches for outer race overrunning applications.
- Order clutch couplings and clutch separately. The clutch coupling is normally stocked minimum plain bore. For finished bore, standard rework charges apply.



MODEL NO	TORQUE CAPACITY		CLUTCH MODEL NO.	MAXIMUM OVERRUNNING RPM		COUPLING BORE				CLUTCH STOCK BORE SIZE AND KEYWAY				A		B	
				INNER RACE	OUTER RACE	MIN. (STOCK)		MAX.									
	LB-FT	N-M				INCHES	MM	INCHES	MM	INCHES		MM		INCHES	MM	INCHES	MM
C-7.5	7,000	9,491	MG-750	1,800	600	1.5	38	6.0	152	2.437 2.500 2.750	0.625 x 0.313	61.90 63.50 69.85	15.88 x 7.94	8.748 / 8.750	222.20 / 222.25	11.250	285.75
										2.937 3.000	0.750 x 0.375	74.60 76.20	19.05 x 9.53				
			MR-750	525	2,600					3.250	0.750 x 0.250	88.90	19.05 x 6.35				
										3.437	0.750 x 0.188	87.30	19.05 x 4.76				
C-8	13,000	17,626	MG-800	1,300	475	1.5	38	6.5	165	3.000 3.250	0.750 x 0.375	76.20 88.90	19.05 x 9.53	9.998 / 10.000	253.95 / 254.00	12.500	317.50
										3.437 3.500	0.875 x 0.438	87.30 88.90	22.23 x 11.11				
			MR-800	475	2,100					3.750		95.25					
										3.937 4.000	1 x 0.50	100.00 101.60	25.40 x 12.70				
										4.250	1 x 0.375	107.95	25.40 x 9.53				
										4.437	1 x 0.250	112.70	25.40 x 6.35				
C-9	18,000	24,405	MG-900	1,200	400	2.5	64	8.0	203	4.000 4.250 4.437 4.500	1 x 0.50	101.60 107.95 112.70 114.30	25.40 x 12.70	11.997/ 12.000	304.72 / 304.80	14.875	377.83
			MR-900	400	1,850					4.750		120.65					
										4.937 5.000	1 x 0.375	125.40 127.00	25.40 x 9.53				
										5.250 5.437	1 x 0.250	133.35 138.10	25.40 x 6.35				
C-10	25,000	33,896	MG-1000	1,200	325	2.5	64	8.0	203	5.000 5.250 5.437 5.500	1 .250 x 0.625	127.00 133.35 138.10 139.70	31 .75 x 15.88	14.997/ 15.000	380.92 / 381.00	17.625	447.68
			MR-1000	325	1,600					5.750 5.937 6.000	1.250 x 0.438	146.05 150.80 152.40	31.75 x 11.11				
										6.250 6.437	1 .250 x 0.375	158.75 163.50	31.75 x 9.53				

M Series Clutch Couplings are engineered to order

Coupling Package C7.5 Through C10

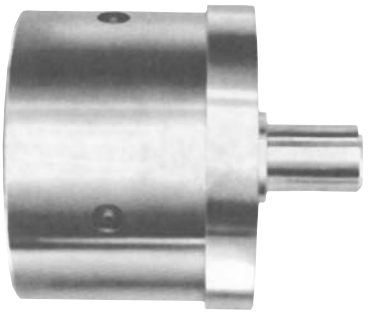


MODEL NO	C		D		E		F		G		H		J		K		MAX. END FLOAT		MAX. ANGULAR MISALIGN-MENT	MAX. PARALLEL MISALIGN-MENT		APPROXIMATE WEIGHT CLUTCH COUPLING ASSEMBLY	
	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	DEGREE	INCHES	MM	LB	KG
C-7.5	14,375	365.13	6.000	152.40	8.75	222.3	6.438	163.51	688	17.46	4.188	106.36	5.125	130.18	3.125	79.38	+ 0.250 -0.625	+6.35 -15.88	0.50	10	0.25	150	68
C-8	14,375	365.13	6.000	152.40	10.00	254.0	6.438	163.51	688	17.46	4.188	106.36	5.125	130.18	3.125	79.38	+ 0.250 -0.625	+6.35 -15.88	0.50	10	0.25	170	77
C-9	14,938	379.41	6.375	161.93	12.00	304.8	6.625	168.28	688	17.46	4.250	107.95	5.375	136.53	3.125	79.38	+ 0.250 -0.625	+6.35 -15.88	0.50	10	0.25	250	113
C-10	16,125	409.58	7.000	177.80	12.00	304.8	7.250	184.15	688	17.46	4.938	125.41	5.250	133.35	3.125	79.38	+ 0.250 -0.625	+6.35 -15.88	0.50	10	0.25	300	136

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

FLANGED STUB-SHAFT ADAPTERS

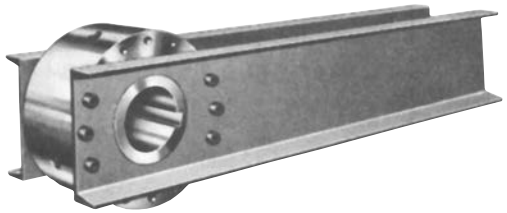
The Morse flanged stub-shaft adapter is used when it is impractical to mount a sprocket, gear, sheave or other mechanical device directly to the mounting holes of the M Series clutch models M300A - M1000. The stub shaft diameter is designed to take full advantage of the clutch torque capacity, but may be turned to smaller diameters for an extra charge.



DIMENSIONAL INFORMATION											
ADAPTER NUMBER	CLUTCH MODEL NUMBER	A (CLUTCH DIAMETER)		B (FLANGE DIAMETER)		C (OVERALL LENGTH)		D (GROOVE WIDTH)		E (STUB SHAFT DIAMETER)	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
A - 3	300A	2.998 / 3.000	76.15 / 76.20	3.250	82.55	4.844	123.031	.033 / .043	0.84 / 1.09	.750 / .751	19.05 / 19.08
A - 4	400A	3.498 / 3.500	88.85 / 88.90	3.750	95.25	5.094	129.381	.033 / .043	0.84 / 1.09	.750 / .751	19.05 / 19.08
A - 5	500A	4.248 / 4.250	107.90 / 107.95	4.500	114.30	6.188	157.163	.045 / .055	1.14 / 1.40	1.250 / 1.251	31.75 / 31.78
A - 6	600A	5.373 / 5.375	136.47 / 136.53	5.625	142.88	6.750	171.450	.055 / .065	1.40 / 1.65	1.750 / 1.751	44.45 / 44.48
A - 7	700A	7.123 / 7.125	180.92 / 180.98	7.375	187.33	8.438	214.313	.103 / .113	2.62 / 2.87	2.750 / 2.752	69.85 / 69.90
A - 7.5	750	8.748 / 8.750	222.20 / 222.25	8.313	211.14	10.500	266.700	.103 / .113	2.62 / 2.87	3.250 / 3.252	82.55 / 82.60
A - 8	800	9.998 / 10.000	253.95 / 254.00	10.250	260.35	11.125	282.575	.120 / .130	3.05 / 3.30	4.250 / 4.252	107.95 / 108.00
A - 9	900	11.997 / 12.000	304.72 / 304.80	11.500	292.10	12.250	311.150	.139 / .149	3.53 / 3.78	5.250 / 5.252	133.35 / 133.40
A -10	1000	14.997 / 15.000	380.92 / 381.00	14.000	355.60	13.875	352.425	.094 / .104	2.39 / 2.64	6.250 / 6.252	158.75 / 158.80

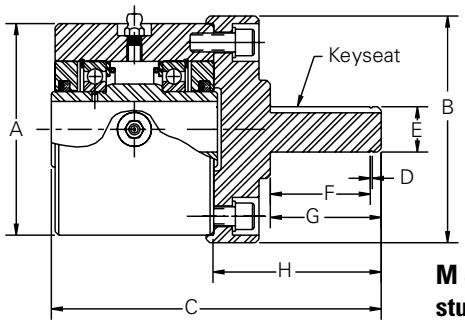
TORQUE ARMS

MG and MO series clutch models can be provided with torque arms. The torque arms are fastened to the outer race by the tapped holes in the ends of the clutch. The outer ends of the torque arms should be restrained to prevent rotation of the clutch, but the torque arms must never be rigidly secured. The torque arms must be free to float to prevent any tendency toward bearing preload.



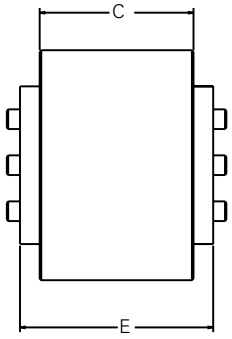
TORQUE ARM NUMBER		CLUTCH MODEL NUMBER	DIMENSIONAL INFORMATION					
			A OVERALL LENGTH		B CENTER TO END OF ARM		C (CLUTCH WIDTH)	
CHANNEL	PLATE		INCHES	MM	INCHES	MM	INCHES	MM
TC - 7.5	TP - 7.5	750	36.375	923.93	32	813	5.875	149.23
TC - 8	TP - 8	800	37.000	939.80	32	813	5.875	149.23
TC - 9	TP - 9	900	50.000	1270.00	44	1118	6.250	158.75
TC - 10	TP - 10	1000	54.000	1371.60	47	1194	6.750	171.45

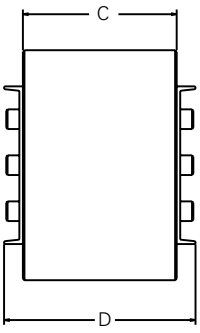
M Series torque arms are engineered to order

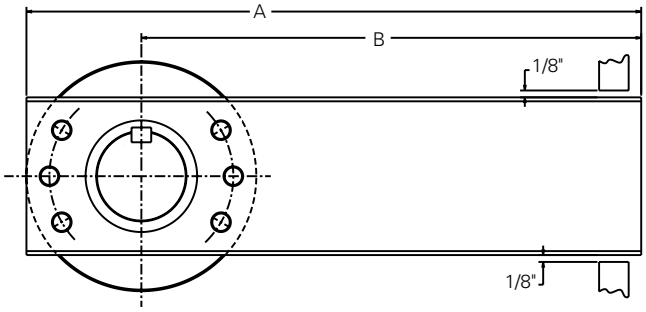


M Series clutch with stub-shaft adapter to attach to coupling.

ADAPTER NUMBER	F (FACE TO SNAP RING)		G (FACE TO SHAFT END)		H (CLUTCH END TO SHAFT END)		KEYSEAT		WEIGHT	
	INCHES	MM	INCHES	MM	INCHES	MM	INCH	MM	LB	KG
A - 3	1.347 / 1.351	34.21 / 34.32	1.50	38.1	2.406	61.119	.25000 x .12500	6.3500 x 3.1750	1.4	1
A - 4	1.347 / 1.351	34.21 / 34.32	1.50	38.1	2.406	61.119	.25000 x .12500	6.3500 x 3.1750	1.6	1
A - 5	1.579 / 1.584	40.11 / 40.23	1.75	44.5	2.750	69.850	.31250 x .15625	7.9375 x 3.9688	3.2	1
A - 6	1.835 / 1.840	46.61 / 46.74	2.00	50.8	3.063	77.788	.37500 x .18750	9.5250 x 4.7625	5.8	3
A - 7	2.335 / 2.340	59.31 / 59.44	2.50	63.5	3.500	88.900	.62500 x .31250	15.8750 x 7.9375	12.6	6
A - 7.5	2.804 / 2.809	71.22 / 71.35	3.00	76.2	4.563	115.888	.75000 x .37500	19.0500 x 9.5250	23.8	11
A - 8	3.566 / 3.571	90.58 / 90.70	3.75	95.3	5.188	131.763	1 .00000 x .50000	25.4000 x 12.7000	40.5	18
A - 9	4.316 / 4.321	109.63 / 109.75	4.50	114.3	5.938	150.813	1 .25000 x .62500	31.7500 x 15.8750	62.8	28
A - 10	5.140 / 5.145	130.56 / 130.68	5.50	139.7	7.000	177.800	1 .25000 x .62500	31.7500 x 15.8750	103.4	47







TORQUE ARM NUMBER		CLUTCH MODEL NUMBER	DIMENSIONS							
CHANNEL	PLATE		D WIDTH (TWO CHANNELS)		E WIDTH (TWO PLATES)		CHANNEL SIZE WIDTH X LB./ FT.	PLATE SIZE	WEIGHT (EACH ARM)	
			IN	MM	IN	MM			LB	KG
TC - 7.5	TP - 7.5	750	9.625	244.48	7.375	187.33	6 x 8.2	0.750 x 6	52	24
TC - 8	TC - 8	800	10.375	263.53	7.625	193.68	8 x 11.5	0.875 x 8	73	33
TC - 9	TC - 9	900	11.500	292.10	8.000	203.20	10 x 15.3	0.875 x 12	129	59
TC - 10	TC - 10	1000	12.000	304.80	8.500	215.90	10 x 15.3	0.875 x 12	138	63

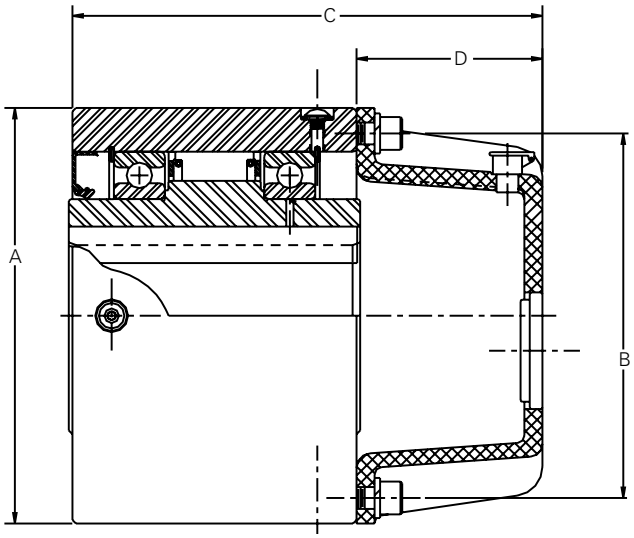
For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

OIL RESERVOIRS

An oil reservoir attachment is available for applications such as backstops on the high speed shaft of a reducer, backstops on the head shaft of conveyors and applications where clutches are relatively inaccessible or where minimum maintenance is required. The reservoir is designed for direct mounting on any stock MG clutch. Reservoirs can only be used where the clutch is in backstop service (inner race overrunning).

Since the direction of rotation cannot always be specified, clutches are shipped with oil seals in both ends of the clutch. When attaching the reservoir to the clutch, the user should remove the oil seal on the reservoir side after determining the proper direction of rotation of the clutch. This seal should not be reused because it is damaged by the removal process. The reservoir is an aluminum casting with cooling fins and has an oil sight gauge.

DIMENSIONAL INFORMATION				
RESERVOIR NUMBER	FITS CLUTCH MODEL NUMBER	MAXIMUM I.R. OVERRUNNING RPM	A (CLUTCH DIAMETER)	
			INCHES	MM
R-3	300A	2900	2.998 / 3.000	76.15 / 76.20
R-4	400A	2700	3.498 / 3.500	88.85 / 88.90
R-5	500A	2400	4.248 / 4.250	107.90 / 107.95
R-6	600A	2100	5.373 / 5.375	136.47 / 136.53
R-7	700A	1500	7.123 / 7.125	180.92 / 180.98
R-7.5	750	1800	8.748 / 8.750	222.20 / 222.25
R-8	800	1300	9.998 / 10.000	253.95 / 254.00
R-9	900	1200	11.997 / 12.000	304.72 / 304.80
R-10	1000	1200	14.997 / 15.000	380.92 / 381.00



RESERVOIR NUMBER	DIMENSIONS							
	B (BOLT CIRCLE)		C (OVERALL LENGTH)		D (RESERVOIR LENGTH)		WEIGHT	
	INCHES	MM	INCHES	MM	INCHES	MM	LB	KG
R-3	2.625	66.675	4.563	115.888	2.125	53.975	0.50	0.2
R-4	2.875	73.025	4.813	122.238	2.125	53.975	0.60	0.3
R-5	3.625	92.075	6.063	153.988	2.625	66.675	0.90	0.4
R-6	4.750	120.650	6.500	165.100	2.813	71.438	1.50	0.7
R-7	6.250	158.750	8.125	206.375	3.188	80.963	2.70	1.2
R-7.5	7.000	177.800	11.000	279.400	5.063	128.588	5.00	2.3
R-8	8.938	227.013	11.500	292.100	5.563	141.288	10.00	4.5
R-9	9.750	247.650	12.250	311.150	5.938	150.813	14.00	6.4
R-10	11.750	298.450	13.000	330.200	6.125	155.575	25.00	11.3

The sprag type MZEU Series cam clutch is a leader in its class. This one-way clutch began as a ratchet ramp clutch, transitioned to a roller ramp clutch and was later refined into the cam style clutch it is today. The MZEU Series clutch delivers longer life to the clutch mechanism than other types of one way clutches. The MZEU Series cam clutch is suitable for overrunning and middle speed backstopping.

MODEL	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		BORE SIZE H7				KEYWAY		A		B		C	
	LB - FT	N-M	INNER RACE R/MIN	OUTER RACE R/MIN	LB - FT	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
MZEU 12	44.3	60	2,000	1000	0.148	0.2	0.5	+0.0007 0.0000	12	+0.018 0.000	0.16 x 0.07	4 X 1.8	1.7	42	2.4	62	0.8	20
MZEU 15	73.8	100	1,800	900	0.148	0.2	0.6	+0.0007 0.0000	15	+0.018 0.000	0.20 x 0.09	5 X 2.3	2.0	52	2.7	68	1.1	28
MZEU 20	180.7	245	1,600	700	0.214	0.29	0.8	+0.0008 0.0000	20	+0.021 0.000	0.24 x 0.11	6 X 2.8	2.2	57	3.0	75	1.3	34
MZEU 25	313.5	425	1,600	600	0.243	0.33	1.0	+0.0008 0.0000	25	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.4	60	3.5	90	1.4	35
MZEU 30	542.1	735	1,500	500	0.288	0.39	1.2	+0.0008 0.0000	30	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.7	68	3.9	100	1.7	43
MZEU 35	748.6	1,015	1,400	300	0.361	0.49	1.4	+0.0010 0.0000	35	+0.025 0.000	0.39 x 0.13	10 X 3.3	2.9	74	4.3	110	1.8	45
MZEU 40	995.7	1,350	1,400	300	0.435	0.59	1.6	+0.0010 0.0000	40	+0.025 0.000	0.47 x 0.13	12 X 3.3	3.4	86	4.9	125	2.1	53
MZEU 45	1,194.8	1,620	1,400	300	0.509	0.69	1.8	+0.0010 0.0000	45	+0.025 0.000	0.55 x 0.15	14 X 3.8	3.4	86	5.1	130	2.1	53
MZEU 50	1,526.8	2,070	1,300	250	0.583	0.79	2.0	+0.0010 0.0000	50	+0.025 0.000	0.55 x 0.15	14 X 3.8	3.7	94	5.9	150	2.5	64
MZEU 55	1,770.1	2,400	1,300	250	0.649	0.88	2.2	+0.0010 0.0000	55	+0.030 0.000	0.63 x 0.17	16 X 4.3	4.1	104	6.3	160	2.6	66
MZEU 60	2,175.8	2,950	1,200	250	0.723	0.98	2.4	+0.0010 0.0000	60	+0.030 0.000	0.71 x 0.17	18 X 4.4	4.5	114	6.7	170	3.1	78
MZEU 70	3,105.1	4,210	1,100	250	0.937	1.27	2.8	+0.0010 0.0000	70	+0.030 0.000	0.79 x 0.19	20 X 4.9	5.3	134	7.5	190	3.7	95
MZEU 80	3,813.2	5,170	800	200	1.018	1.38	3.1	+0.0010 0.0000	80	+0.030 0.000	0.87 x 0.21	22 X 5.4	5.7	144	8.3	210	3.9	100
MZEU 90	8,850.7	12,000	450	150	3.467	4.7	3.5	+0.0014 0.0000	90	+0.035 0.000	0.98 x 0.21	25 X 5.4	6.2	158	9.1	230	4.5	115
MZEU 100	12,981.1	17,600	400	130	3.975	5.39	3.9	+0.0014 0.0000	100	+0.035 0.000	1.10 x 0.25	28 X 6.4	7.2	182	10.6	270	4.7	120
MZEU 130	18,070.3	24,500	320	110	4.986	6.76	5.1	+0.0016 0.0000	130	+0.040 0.000	1.26 x 0.29	32 X 7.4	8.3	212	12.2	310	6.0	152
MZEU 150	24,929.6	33,800	240	80	5.996	8.13	5.9	+0.0016 0.0000	150	+0.040 0.000	1.42 x 0.33	36 X 8.4	9.7	246	15.7	400	7.1	180

E1 End Cover

E2 End Cover

E3 Torque Arm

E4 End Cover

FEATURES

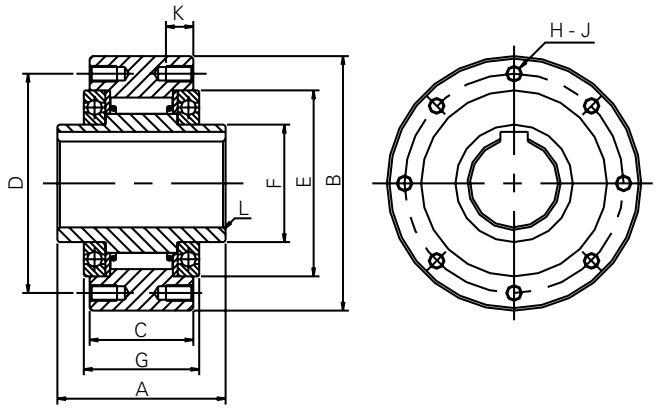
- Sprag type one way clutch
- High torque and longer life than roller ramp clutches
- A variety of options, such as torque arm, flanges, and cover are available according to your installation requirements

INDUSTRIES SERVED

- Food and beverage
- Gearing
- Manufacturing
- Textiles

FIELD APPLICATIONS

- Conveyors
- External gearbox backstop
- General equipment backstop for drive shaft



MODEL	D		E		F		G		H - J	K		L		WEIGHT	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM		INCH	MM	INCH	MM	LB	KG
MZEU 12	2.0	51	1.7	42	0.8	20	1.1	27	3 - 5.5	-	-	0.02	0.5	1.10	0.5
MZEU 15	2.2	56	1.9	47	1.0	25	1.3	32	3 - M5	0.3	8	0.03	0.8	1.76	0.8
MZEU 20	2.5	64	2.2	55	1.2	30	1.5	39	4 - M5	0.3	8	0.03	0.8	2.65	1.2
MZEU 25	3.1	78	2.7	68	1.6	40	1.6	40	4 - M6	0.4	10	0.04	1.0	3.97	1.8
MZEU 30	3.4	87	3.0	75	1.8	45	1.9	48	6 - M6	0.4	10	0.04	1.0	5.73	2.6
MZEU 35	3.8	96	3.1	80	2.0	50	2.0	51	6 - M6	0.5	12	0.04	1.0	7.05	3.2
MZEU 40	4.3	108	3.5	90	2.2	55	2.3	59	6 - M8	0.6	14	0.06	1.5	10.58	4.8
MZEU 45	4.4	112	3.7	95	2.4	60	2.3	59	8 - M8	0.6	14	0.06	1.5	13.67	6.2
MZEU 50	5.2	132	4.3	110	2.8	70	2.8	72	8 - M8	0.6	14	0.06	1.5	18.08	8.2
MZEU 55	5.4	138	4.5	115	3.0	75	2.8	72	8 - M10	0.6	16	0.08	2.0	20.94	9.5
MZEU 60	5.9	150	4.9	125	3.1	80	3.5	89	10 - M10	0.6	16	0.08	2.0	27.12	12.3
MZEU 70	6.5	165	5.5	140	3.5	90	4.3	108	10 - M10	0.6	16	0.10	2.5	39.90	18.1
MZEU 80	7.3	185	6.3	160	4.1	105	4.3	108	10 - M10	0.6	16	0.10	2.5	50.93	23.1
MZEU 90	8.1	206	7.1	180	4.7	120	4.9	125	10 - M12	0.8	20	0.12	3.0	61.95	28.1
MZEU 100	9.4	240	8.3	210	5.5	140	5.2	131	10 - M16	0.9	24	0.12	3.0	102.07	46.3
MZEU 130	10.9	278	9.4	240	6.3	160	6.6	168	12 - M16	0.9	24	0.12	3.0	154.76	70.2
MZEU 150	14.2	360	12.2	310	7.9	200	7.6	194	12 - M20	1.3	32	0.16	4.0	322.54	146.3

BUILDING BLOCK PRINCIPLE OF STANDARDIZATION

The MZEU series clutches offer various combinations of covers, which can be assembled to meet a full range of applications. These units incorporate two metric ball bearings between the inner and outer races giving excellent concentricity control.

The outer diameter of the outer race is produced to a close tolerance and can be used for mounting gears, v-belt sheaves, indexing arms, etc. Tapped holes are provided at the face of the outer race and are used to secure the various covers. These tapped holes can also be used for attaching specially designed covers or adapter plates to suit special design considerations. The range of application for these clutches is very extensive and by using the various combinations of covers, it is possible to build units for overrunning applications (MZEU with E1-E2), to prevent reverse rotation (backstopping) MZEU E2-E3 or E3-E4 or to convert linear motion to rotary motion (indexing) MZEU E1-E2 with indexing arm bolted to cover E1.

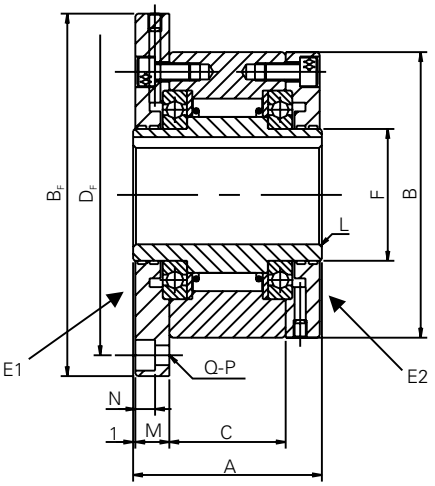
PART NUMBER EXPLANATION

MZEU 60 E1 + E2

- E2 — End cover (ordered separately*)
- E1 — End cover (ordered separately*)
- 60 — Bore sizes in millimeters
- MZEU — Clutch series

*Covers ordered separately. Example: MZEU60-E1 cover or MZEU60-E2 cover.

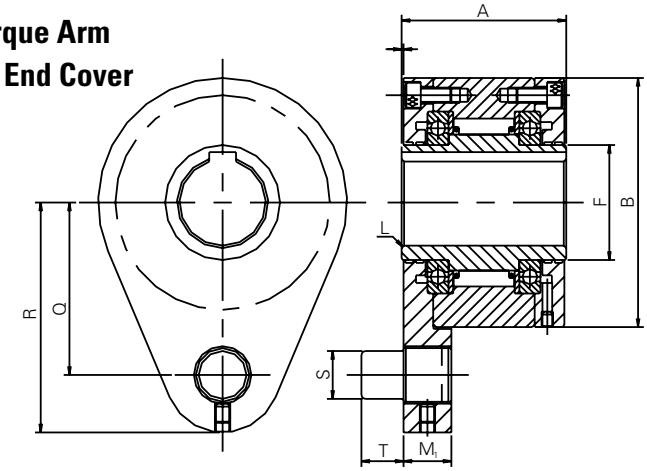
E1 + E2
End Covers
Order
Separately



MODEL NO. E1+E2	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		BORE SIZE H7				KEYWAY		A		B H7				B_F	
	LB - FT	N-M	INNER RACE RPM	OUTER RACE RPM	LB - FT	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM	INCH	MM
MZEU 12 E1+E2	44.3	60	2,000	1,000	0.148	0.20	0.5	+0.0007 +0.0000	12	+.018 +0.000	0.16 x 0.07	4 X 1.8	1.7	42	2.4	0.000 -0.001	62	0.000 -0.013	3.3	85
MZEU 15 E1+E2	73.8	100	1,800	900	0.148	0.20	0.6	+0.0007 +0.0000	15	+.018 +0.000	0.20 x 0.09	5 x 2.3	2.0	52	2.7	0.000 -0.001	68	0.000 -0.013	3.6	92
MZEU 20 E1+E2	180.7	245	1,600	700	0.214	0.29	0.8	+0.0008 +0.0000	20	+.021 +0.000	0.24 x 0.11	6 X 2.8	2.2	57	3.0	0.000 -0.001	75	0.000 -0.013	3.9	98
MZEU 25 E1+E2	313.5	425	1,600	600	0.243	0.33	1.0	+0.0008 +0.0000	25	+.021 +0.000	0.32 x 0.13	8 X 3.3	2.4	60	3.5	0.000 -0.001	90	0.000 -0.015	4.6	118
MZEU 30 E1+E2	542.1	735	1,500	500	0.288	0.39	1.2	+0.0008 +0.0000	30	+.021 +0.000	0.32 x 0.13	8 X 3.3	2.7	68	3.9	0.000 -0.001	100	0.000 -0.015	5.0	128
MZEU 35 E1+E2	748.6	1,015	1,400	300	0.361	0.49	1.4	+0.0010 +0.0000	35	+.025 +0.000	0.39 x 0.13	10 X 3.3	2.9	74	4.3	0.000 -0.001	110	0.000 -0.015	5.5	140
MZEU 40 E1+E2	995.7	1,350	1,400	300	0.435	0.59	1.6	+0.0010 +0.0000	40	+.025 +0.000	0.47 x 0.13	12 X 3.3	3.4	86	4.9	0.000 -0.001	125	0.000 -0.018	6.3	160
MZEU 45 E1+E2	1,194.9	1,620	1,400	300	0.509	0.69	1.8	+0.0010 +0.0000	45	+.025 +0.000	0.55 x 0.15	14 X 3.8	3.4	86	5.1	0.000 -0.001	130	0.000 -0.018	6.5	165
MZEU 50 E1+E2	1,526.8	2,070	1,300	250	0.583	0.79	2.0	+0.0010 +0.0000	50	+.025 +0.000	0.55 x 0.15	14 X 3.8	3.7	94	5.9	0.000 -0.001	150	0.000 -0.018	7.3	185
MZEU 55 E1+E2	1,770.2	2,400	1,300	250	0.649	0.88	2.2	+0.0012 +0.0000	55	+.030 +0.000	0.63 x 0.17	16 X 4.3	4.1	104	6.3	0.000 -0.001	160	0.000 -0.018	8.0	204
MZEU 60 E1+E2	2,175.8	2,950	1,200	250	0.723	0.98	2.4	+0.0012 +0.0000	60	+.030 +0.000	0.71 x 0.17	18 X 4.4	4.5	114	6.7	0.000 -0.001	170	0.000 -0.018	8.4	214
MZEU 70 E1+E2	3,105.2	4,210	1,100	250	0.937	1.27	2.8	+0.0012 +0.0000	70	+.030 +0.000	0.79 x 0.19	20 X 4.9	5.3	134	7.5	0.000 -0.001	190	0.000 -0.020	9.2	234
MZEU 80 E1+E2	3,813.2	5,170	800	200	1.018	1.38	3.1	+0.0012 +0.0000	80	+.030 +0.000	0.87 x 0.21	22 X 5.4	5.7	144	8.3	0.000 -0.001	210	0.000 -0.020	10.0	254
MZEU 90 E1+E2	8,850.9	12,000	450	150	3.467	4.70	3.5	+0.0014 +0.0000	90	+.035 +0.000	0.98 x 0.21	25 X 5.4	6.2	158	9.1	0.000 -0.001	230	0.000 -0.020	10.9	278
MZEU 100 E1+E2	12,981.3	17,600	400	130	3.975	5.39	3.9	+0.0014 +0.0000	100	+.035 +0.000	1.10 x 0.25	28 X 6.4	7.2	182	10.6	0.000 -0.001	270	0.000 -0.023	13.2	335
MZEU 130 E1+E2	18,070.5	24,500	320	110	4.986	6.76	5.1	+0.0016 +0.0000	130	+.040 +0.000	1.26 x 0.29	32 X 7.4	8.3	212	12.2	0.000 -0.001	310	0.000 -0.023	15.0	380
MZEU 150 E1+E2	24,929.9	33,800	240	80	5.996	8.13	5.9	+0.0016	150	+0.040	1.42 x 0.33	36 X 8.4	9.7	246	15.7	0.000	400	0.000	19.1	485

MODEL NO. E1+E2	C		D_F		F		L		M		N		Q.P		WEIGHT	
	INCH	MM	INCH	MM	INCH	MM	C INCH	C MM	INCH	MM	INCH	MM	INCH	MM	LB	KG
MZEU 12 E1+E2	0.8	20	2.8	72	0.8	20	0.02	0.5	0.39	10.0	0.22	5.7	0.12 x 0.22	3 x 5.5	2.43	1.1
MZEU 15 E1+E2	1.1	28	3.1	78	1.0	25	0.03	0.8	0.43	11.0	0.22	5.7	0.12 x 0.22	3 x 5.5	3.31	1.5
MZEU 20 E1+E2	1.3	34	3.3	85	1.2	30	0.03	0.8	0.41	10.5	0.22	5.7	0.16 x 0.22	4 x 5.5	4.19	1.9
MZEU 25 E1+E2	1.4	35	4.1	104	1.6	40	0.04	1.0	0.45	11.5	0.27	6.8	0.16 x 0.26	4 x 6.6	6.39	2.9
MZEU 30 E1+E2	1.7	43	4.5	114	1.8	45	0.04	1.0	0.45	11.5	0.27	6.8	0.24 x 0.26	6 x 6.6	8.82	4.0
MZEU 35 E1+E2	1.8	45	4.9	124	2.0	50	0.04	1.0	0.53	13.5	0.27	6.8	0.24 x 0.26	6 x 6.6	11.46	5.2
MZEU 40 E1+E2	2.1	53	5.6	142	2.2	55	0.06	1.5	0.61	15.5	0.35	9.0	0.24 x 0.35	6 x 9.0	17.42	7.9
MZEU 45 E1+E2	2.1	53	5.7	146	2.4	60	0.06	1.5	0.61	15.5	0.35	9.0	0.32 x 0.35	8 x 9.0	20.50	9.3
MZEU 50 E1+E2	2.5	64	6.5	166	2.8	70	0.06	1.5	0.55	14.0	0.35	9.0	0.32 x 0.35	8 x 9.0	25.79	11.7
MZEU 55 E1+E2	2.6	66	7.2	182	3.0	75	0.08	2.0	0.71	18.0	0.43	11.0	0.32 x 0.43	8 x 11.0	33.73	15.3
MZEU 60 E1+E2	3.1	78	7.6	192	3.1	80	0.08	2.0	0.67	17.0	0.43	11.0	0.39 x 0.43	10 x 11.0	39.02	17.7
MZEU 70 E1+E2	3.7	95	8.3	212	3.5	90	0.10	2.5	0.73	18.5	0.43	11.0	0.39 x 0.43	10 x 11.0	56.22	25.5
MZEU 80 E1+E2	3.9	100	9.1	232	4.1	105	0.10	2.5	0.83	21.0	0.43	11.0	0.39 x 0.43	10 x 11.0	73.19	33.2
MZEU 90 E1+E2	4.5	115	10.0	254	4.7	120	0.12	3.0	0.81	20.5	0.51	13.0	0.39 x 0.55	10 x 14.0	84.44	38.3
MZEU100E1+E2	4.7	120	12.0	305	5.5	140	0.12	3.0	1.18	30.0	0.71	18.0	0.39 x 0.71	10 x 18.0	151.68	68.8
MZEU130E1+E2	6.0	152	13.6	345	6.3	160	0.12	3.0	1.14	29.0	0.71	18.0	0.47 x 0.71	12 x 18.0	216.49	98.2
MZEU150E1+E2	7.1	180	17.5	445	7.9	200	0.16	4.0	1.26	32.0	0.87	22.0	0.47 x 0.87	12 x 22.0	436.96	198.2

E3 Torque Arm with E2 End Cover

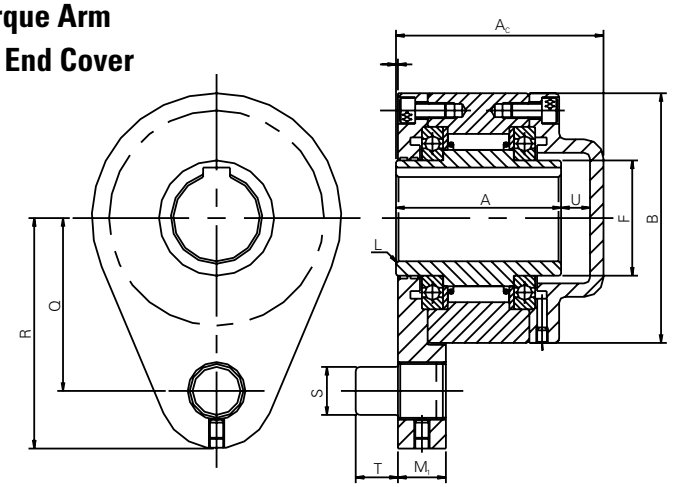


MODEL	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		BORE SIZE H7				KEYWAY		A		B H7				F	
	LB	N-M	INNER RACE RPM	OUTER RACE RPM	LB	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM	INCH	MM
MZEU 12 E2+E3	44.3	60	2000	1000	0.148	0.20	0.5	+0.0007 0.0000	12	+0.018 0.000	0.16 x 0.07	4 X 1.8	1.7	42	2.4	0.000 -0.001	62	0.000 -0.013	0.8	20
MZEU 15 E2+E3	73.8	100	1800	900	0.148	0.20	0.6	+0.0007 0.0000	15	+0.018 0.000	0.20 x 0.09	5 X 2.3	2.0	52	2.7	0.000 -0.001	68	0.000 -0.013	1.0	25
MZEU 20 E2+E3	180.7	245	1600	700	0.214	0.29	0.8	+0.0008 0.0000	20	+0.021 0.000	0.24 x 0.11	6 X 2.8	2.2	57	3.0	0.000 -0.001	75	0.000 -0.013	1.2	30
MZEU 25 E2+E3	313.5	425	1600	600	0.243	0.33	1.0	+0.0008 0.0000	25	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.4	60	3.5	0.000 -0.001	90	0.000 -0.015	1.6	40
MZEU 30 E2+E3	542.1	735	1500	500	0.288	0.39	1.2	+0.0008 0.0000	30	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.7	68	3.9	0.000 -0.001	100	0.000 -0.015	1.8	45
MZEU 35 E2+E3	748.6	1,015	1400	300	0.361	0.49	1.4	+0.0010 0.0000	35	+0.025 0.000	0.39 x 0.13	10 X 3.3	2.9	74	4.3	0.000 -0.001	110	0.000 -0.015	2.0	50
MZEU 40 E2+E3	995.7	1,350	1400	300	0.435	0.59	1.6	+0.0010 0.0000	40	+0.025 0.000	0.47 x 0.13	12 X 3.3	3.4	86	4.9	0.000 -0.001	125	0.000 -0.018	2.2	55
MZEU 45 E2+E3	1,194.9	1,620	1400	300	0.509	0.69	1.8	+0.0010 0.0000	45	+0.025 0.000	0.55 x 0.15	14 X 3.8	3.4	86	5.1	0.000 -0.001	130	0.000 -0.018	2.4	60
MZEU 50 E2+E3	1,526.8	2,070	1300	250	0.583	0.79	2.0	+0.0010 0.0000	50	+0.025 0.000	0.55 x 0.15	14 X 3.8	3.7	94	5.9	0.000 -0.001	150	0.000 -0.018	2.8	70
MZEU 55 E2+E3	1,770.2	2,400	1300	250	0.649	0.88	2.2	+0.0012 0.0000	55	+0.030 0.000	0.63 x 0.17	16 X 4.3	4.1	104	6.3	0.000 -0.001	160	0.000 -0.018	3.0	75
MZEU 60 E2+E3	2,175.9	2,950	1200	250	0.723	0.98	2.4	+0.0012 0.0000	60	+0.030 0.000	0.71 x 0.17	18 X 4.4	4.5	114	6.7	0.000 -0.001	170	0.000 -0.018	3.1	80
MZEU 70 E2+E3	3,105.3	4,210	1100	250	0.937	1.27	2.8	+0.0012 0.0000	70	+0.030 0.000	0.79 x 0.19	20 X 4.9	5.3	134	7.5	0.000 -0.001	190	0.000 -0.020	3.5	90
MZEU 80 E2+E3	3,813.2	5,170	800	200	1.018	1.38	3.1	+0.0012 0.0000	80	+0.030 0.000	0.87 x 0.21	22 x 5.4	5.7	144	8.3	0.000 -0.001	210	0.000 -0.020	4.1	105
MZEU 90 E3+E3	8,850.9	12,000	450	150	3.467	4.70	3.5	+0.0014 0.0000	90	+0.035 0.000	0.98 x 0.21	25 X 5.4	6.2	158	9.1	0.000 -0.001	230	0.000 -0.020	4.7	120
MZEU100 E2+E3	12,981.3	17,600	400	130	3.975	5.39	3.9	+0.0014 0.0000	100	+0.035 0.000	1.10 x 0.25	28 X 6.4	7.2	182	10.6	0.000 -0.001	270	0.000 -0.023	5.5	140
MZEU130 E2+E3	18,070.5	24,500	320	110	4.986	6.76	5.1	+0.0016 0.0000	130	+0.040 0.000	1.26 x 0.29	32 X 7.4	8.3	212	12.2	0.000 -0.001	310	0.000 -0.023	6.3	160
MZEU150 E2+E3	24,929.9	33,800	240	80	5.996	8.13	5.9	+0.0016 0.0000	150	+0.040 0.000	1.42 x 0.33	36 X 8.4	9.7	246	15.7	0.000 -0.001	400	0.000 -0.027	7.9	200

MODEL	L		M_1		Q		R		S		T		WEIGHT	
	C INCH	C MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	LB	KG
MZEU 12 E2+E3	0.02	0.5	0.5	13	1.7	44	2.3	59	0.4	10	0.4	10	2.20	1.0
MZEU 15 E2+E3	0.03	0.8	0.5	13	1.9	47	2.4	62	0.4	10	0.4	10	3.09	1.4
MZEU 20 E2+E3	0.03	0.8	0.6	15	2.1	54	2.8	72	0.5	12	0.4	11	3.97	1.8
MZEU 25 E2+E3	0.04	1.0	1.2	18	2.4	62	3.3	84	0.6	16	0.6	14	5.95	2.7
MZEU 30 E2+E3	0.04	1.0	0.7	18	2.7	68	3.6	92	0.6	16	0.6	14	9.04	4.1
MZEU 35 E2+E3	0.04	1.0	0.9	22	3.0	76	4.0	102	0.8	20	0.7	18	11.24	5.1
MZEU 40 E2+E3	0.06	1.5	0.9	22	3.3	85	4.4	112	0.8	20	0.7	18	16.31	7.4
MZEU 45 E2+E3	0.06	1.5	1.0	26	3.5	90	4.7	120	1.0	25	0.9	22	20.06	9.1
MZEU 50 E2+E3	0.06	1.5	1.0	26	4.0	102	5.3	135	1.0	25	0.9	22	25.57	11.6
MZEU 55 E2+E3	0.08	2.0	1.2	30	4.3	108	5.6	142	1.3	32	1.0	25	32.19	14.6
MZEU 60 E2+E3	0.08	2.0	1.2	30	4.4	112	5.7	145	1.3	32	1.0	25	37.48	17.0
MZEU 70 E2+E3	0.10	2.5	1.4	35	5.3	135	6.9	175	1.5	38	1.2	30	56.00	25.4
MZEU 80 E2+E3	0.10	2.5	1.4	35	5.7	145	7.3	185	1.5	38	1.2	30	71.87	32.6
MZEU 90 E3+E3	0.12	3.0	1.8	45	6.1	155	8.1	205	2.0	50	1.6	40	85.76	38.9
MZEU100 E2+E3	0.12	3.0	1.8	45	7.1	180	9.1	230	2.0	50	1.6	40	143.74	65.2
MZEU130 E2+E3	0.12	3.0	2.4	60	8.1	205	10.6	268	2.7	68	2.2	55	214.51	97.3
MZEU150 E2+E3	0.16	4.0	2.4	60	10.0	255	12.8	325	2.7	68	2.2	55	421.96	191.4

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

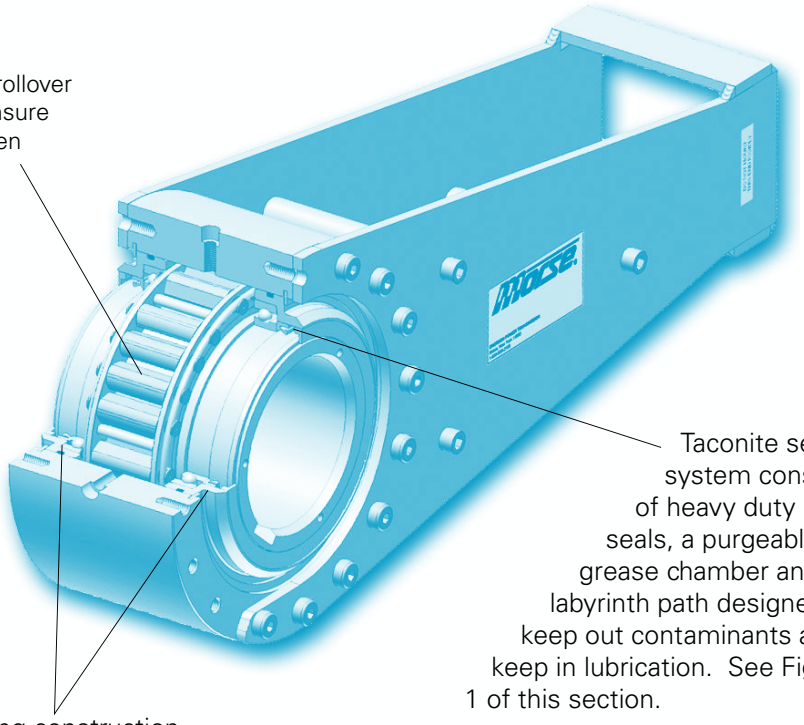
E3 Torque Arm with E4 End Cover



MODEL	TORQUE CAPACITY		MAX. OVERRUNNING SPEED	DRAG TORQUE		BORE SIZE H7				KEYWAY		A		AC		B H7				F	
	LB - FT	N-M	INNER RACE R/MIN	LB - FT	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM	INCH	MM
MZEU 12 E3+E4	44.3	60	2,000	0.148	0.20	0.5	+0.0007 0.0000	12	+0.018 0.000	0.16 x 0.071	4 X 1.8	1.7	42	2.1	53	-2.4	0.000 -0.001	62	0.000 -0.013	0.8	20
MZEU 15 E3+E4	73.8	100	1,800	0.148	0.20	0.6	+0.0007 0.0000	15	+0.018 0.000	0.20 x 0.091	5 X 2.3	2.0	52	2.7	68	2.7	0.000 -0.001	68	0.000 -0.013	1.0	25
MZEU 20 E3+E4	180.7	245	1,600	0.214	0.29	0.8	+0.0008 0.0000	20	+0.021 0.000	0.24 x 0.11	6 X 2.8	2.2	57	2.9	73	3.0	0.000 -0.001	75	0.000 -0.013	1.2	30
MZEU 25 E3+E4	313.5	425	1,600	0.243	0.33	1.0	+0.0008 0.0000	25	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.4	60	3.0	76	3.5	0.000 -0.001	90	0.000 -0.015	1.6	40
MZEU 30 E3+E4	542.1	735	1,500	0.288	0.39	1.2	+0.0008 0.0000	30	+0.021 0.000	0.32 x 0.13	8 X 3.3	2.7	68	3.3	84	3.9	0.000 -0.001	100	0.000 -0.015	1.8	45
MZEU 35 E3+E4	748.6	1,015	1,400	0.361	0.49	1.4	+0.0010 0.0000	35	+0.025 0.000	0.39 x 0.13	10 X 3.3	2.9	74	3.6	92	4.3	0.000 -0.001	110	0.000 -0.015	2.0	50
MZEU 40 E3+E4	995.7	1,350	1,400	0.435	0.59	1.6	+0.0010 0.0000	40	+0.025 0.000	0.47 x 0.13	12 X 3.3	3.4	86	4.1	105	4.9	0.000 -0.001	125	0.000 -0.018	2.2	55
MZEU 45 E3+E4	1,194.9	1,620	1,400	0.509	0.69	1.8	+0.0010 0.0000	45	+0.025 0.000	0.55 x 0.15	14 X 3.8	3.4	86	4.1	105	5.1	0.000 0.001	130	0.000 -0.018	2.4	60
MZEU 50 E3+E4	1,526.8	2,070	1,300	0.583	0.79	2.0	+0.0012 0.0000	50	+0.030 0.000	0.55 x 0.15	14 X 3.8	3.7	94	4.4	113	5.9	0.000 0.001	150	0.000 -0.018	2.8	70
MZEU 55 E3+E4	1,770.2	2,400	1,300	0.649	0.88	2.2	+0.0012 0.0000	55	+0.030 0.000	0.63 x 0.17	16 X 4.3	4.1	104	5.0	126	6.3	0.000 0.001	160	0.000 -0.018	3.0	75
MZEU 60 E3+E4	2,175.8	2,950	1,200	0.723	0.98	2.4	+0.0012 0.0000	60	+0.030 0.000	0.71 x 0.17	18 X 4.4	4.5	114	5.4	137	6.7	0.000 0.001	170	0.000 -0.018	3.1	80
MZEU 70 E3+E4	3,105.2	4,210	1,100	0.937	1.27	2.8	+0.0012 0.0000	70	+0.030 0.000	0.79 x 0.19	20 X 4.9	5.3	134	6.2	158	7.5	0.000 -0.001	190	0.000 -0.020	3.5	90
MZEU 80 E3+E4	3,813.2	5,170	800	1.018	1.38	3.1	+0.0012 0.0000	80	+0.030 0.000	0.87 x 0.21	22 X 5.4	5.7	144	6.6	168	8.3	0.000 0.001	210	0.000 -0.020	4.1	105
MZEU 90 E3+E4	8,850.9	12,000	450	3.467	4.70	3.5	+0.0014 0.0000	90	+0.035 0.000	0.98 x 0.21	25 X 5.4	6.2	158	7.6	192	9.1	0.000 0.001	230	0.000 -0.020	4.7	120
MZEU100 E3+E4	12,981.3	17,600	400	3.975	5.39	3.9	+0.0014 0.0000	100	+0.035 0.000	1.10 x 0.25	28 X 6.4	7.2	182	8.5	217	10.6	0.000 -0.001	270	0.000 -0.023	5.5	140
MZEU130 E3+E4	18,070.5	24,500	320	4.986	6.76	5.1	+0.0016 0.0000	130	+0.040 0.000	1.26 x 0.29	32 X 7.4	8.3	212	9.8	250	12.2	0.000 -0.001	310	0.000 -0.023	6.3	160
MZEU150 E3+E4	24,929.9	33,800	240	5.996	8.13	5.9	+0.0016 0.0000	150	+0.040 0.000	1.42 x 0.33	36 X 8.4	9.7	246	11.3	286	15.7	0.000 -0.001	400	0.000 -0.027	7.9	200

MODEL	L		M_1		Q		R		S		T		U		WEIGHT	
	C INCH	C MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	LB	KG
MZEU 12 E3+E4	0.02	0.5	0.53	13.5	1.7	44	2.3	59	0.4	10	0.4	10	0.2	6	2.20	1.0
MZEU 15 E3+E4	0.03	0.8	0.53	13.5	1.9	47	2.4	62	0.4	10	0.4	10	0.4	10	3.31	1.5
MZEU 20 E3+E4	0.03	0.8	0.59	15.0	2.1	54	2.8	72	0.5	12	0.4	11	0.4	10	4.41	2.0
MZEU 25 E3+E4	0.04	1.0	0.75	19.0	2.4	62	3.3	84	0.6	16	0.6	14	0.4	10	6.39	2.9
MZEU 30 E3+E4	0.04	1.0	0.75	19.0	2.7	68	3.6	92	0.6	16	0.6	14	0.4	10	9.48	4.3
MZEU 35 E3+E4	0.04	1.0	0.87	22.0	3.0	76	4.0	102	0.8	20	0.7	18	0.5	12	11.68	5.3
MZEU 40 E3+E4	0.06	1.5	0.87	22.0	3.3	85	4.4	112	0.8	20	0.7	18	0.5	12	17.20	7.8
MZEU 45 E3+E4	0.06	1.5	0.98	25.0	3.5	90	4.7	120	1.0	25	0.9	22	0.6	15	21.16	9.6
MZEU 50 E3+E4	0.06	1.5	0.98	25.0	4.0	102	5.3	135	1.0	25	0.9	22	0.5	12	26.68	12.1
MZEU 55 E3+E4	0.08	2.0	1.18	30.0	4.3	108	5.6	142	1.3	32	1.0	25	0.6	15	33.51	15.2
MZEU 60 E3+E4	0.08	2.0	1.18	30.0	4.4	112	5.7	145	1.3	32	1.0	25	0.6	15	39.02	17.7
MZEU 70 E3+E4	0.10	2.5	1.38	35.0	5.3	135	6.9	175	1.5	38	1.2	30	0.9	22.5	58.42	26.5
MZEU 80 E3+E4	0.10	2.5	1.38	35.0	5.7	145	7.3	185	1.5	38	1.2	30	0.6	16	74.08	33.6
MZEU 90 E3+E4	0.12	3.0	1.77	45.0	6.1	155	8.1	205	2.0	50	1.6	40	1.1	27	85.98	39.0
MZEU100 E3+E4	0.12	3.0	1.77	45.0	7.1	180	9.1	230	2.0	50	1.6	40	1.1	28	148.59	67.4
MZEU130 E3+E4	0.12	3.0	2.36	60.0	8.1	205	10.6	268	2.7	68	2.2	55	1.2	30	220.90	100.2
MZEU150 E3+E4	0.16	4.0	2.36	60.0	10.0	255	12.8	325	2.7	68	2.2	55	1.3	32	429.46	194.8

CONVEYOR BACKSTOP CLUTCHES



HIGH SPEED CONVEYOR BACKSTOP CLUTCHES

The Morse® High Speed Conveyor Backstop Clutch is an external backstop designed to help prevent reverse rotation of the driven unit and is suited for belt conveyors, overland conveyors and bucket elevators. The Morse High Speed Conveyor Backstop clutch (CB-C HS) provides increased line speed and packs higher torque into a more compact envelope compared to the standard Morse Conveyor Backstop clutch (CB clutch). Built to stand up to the rigors of the jobsite, the Morse backstop will reliably hold loads when the conveyor stops. Regal engineers fatigue-tested the new Morse backstop design for 100,000 cycles at full rating – the equivalent of backstopping the clutch at full torque 10 times a day for more than 25 years.

- Totally self-contained compact unit
- Packed compliment of cams offers maximum load-bearing elements for achieving greater power density
- Spring and cam cage design creates a small contact force between cams and inner race during overrunning resulting in a longer wear life compared to roller ramp clutches
- Synthetic grease or oil lubricants* allow operation in ambient temperatures from -40°F to 150°F

*** NOTICE:** Do not use lubricants with EP additives. It is recommended to re-lubricate clutch every three months using Exxon Beacon 325* grease for grease clutches or Mobil 1 synthetic ATF* for oil clutches.

QUICK-FIND REFERENCE	PAGE
Product Overview	34
Installation and Maintenance	42 - 45
Troubleshooting	46

TABLE 1: CB TO CB-HS BACKSTOP - INTERCHANGEABILITY

MODEL	TORQUE CAPACITY FT-LBS	MAX RPM (INNER RACE OVERRUNNING)	BORE RANGE (INCHES)	OD (INCHES)	WIDTH (INCHES)
CB-7C	7,000	150	2.25 - 4	10.63	5.14
CB-7C HS	7,000	450	2.25 - 4	10.00	6.25
CB-12C	12,000	100	3.25 - 5.25	12.56	5.69
CB-12C HS	12,000	350	3.25 - 5.4375	12.00	6.45
CB-19C	19,000	100	3.75 - 6.25	14.19	5.69
CB-19C HS	19,000	260	3.75 - 6.00	13.50	8.25
CB-30C	30,000	100	3.75 - 7.75	17.00	6.30
CB-30C HS	30,000	260	3.75 - 6.25	15.00	8.25
CB-38C HS	38,000	250	3.93 - 7.87	16.929	8.071
CB-45C	45,000	80	5.50 - 8.50	19.63	9.55
CB-45C HS	45,000	240	5.00 - 7.75	18.00	8.63
CB-65C	65,000	50	7.00 - 9.50	23.75	11.33
CB-65C HS	65,000	220	6.75 - 8.50	19.63	10.70
CB-75C HS	75,232	200	5.97 - 8.66	19.69	12.99
CB-90C	90,721	50	7.87 - 10.63	25.59	11.60
CB-90C HS	90,000	250	7.94 - 10.00	23.75	11.08
CB-110C HS	108,423	170	6.89 - 9.84	23.62	14.57
CB-150C	150,000	50	8 - 11.5	30.75	11.33
CB-150C HC	150,000	150	8 - 11.5	27.50	11.70
CB-200C	195,456	50	9.84 - 13.19	33.47	12.01
CB-217C HS	216,846	150	9.055 - 11.811	30.71	16.73
CB-250C	250,000	50	9 - 13.5	36.50	13.83
CB-290C HS	289,128	110	9.843 - 13.780	36.61	17.32
CB-500C	505,974	50	13.78 - 17.72	42.91	17.72
CB-550 HS	542,115	85	12.795 - 16.732	40.55	22.44
CB-720C HS	722,820	80	13.780 - 17.717	42.91	22.44

NEW SIZE

NEW MORSE CB-CHS BACKSTOP SEAL TECHNOLOGY

- Taconite seal system consists of a purge-able grease chamber and a labyrinth path designed to help keep contaminants out and lubricant in.
- Taconite seal comes standard for most popular sizes for both grease and oil lubrication. Protective dust cover available for larger sizes.
- Custom seal options available: fluoroelastomer, all rubber, etc.

Figure 1: CB-HS Backstop Clutch Seal

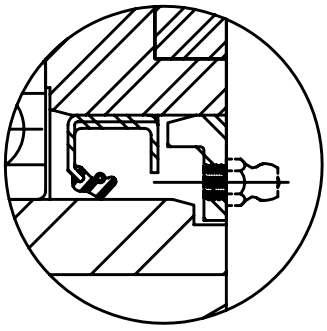
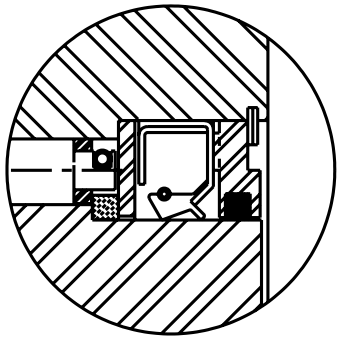


Figure 2: Standard CB Backstop Clutch Seal



Models CB7HS-CB 720HS

- Totally self-contained compact unit
- Dual ball bearing construction maintains race concentricity, creates a smoother running clutch (less wobble) and lowers the overrunning drag torque and temperature, which lengthens clutch life and helps improve energy efficiency
- Rugged anti-rollover cams help insured sudden loss of power
- Cam design offers more load-bearing elements allowing greater power density and a longer running clutch compared to roller ramp clutches
- Taconite seal system, for both grease and oil clutches, consists of a purge-able grease chamber and a labyrinth path to keep contaminants out and grease in (clutch sizes CB-75 HS, CB-110 HS and CB-217 HS – CB-720 HS come with protective dust and safety covers to keep out contaminants)
- Robust cam cage has 28% larger spacers equating to a 64% stronger clutch compared to the standard CB clutch
- Available in 14 sizes ranging from 7,000 - 722,000 ft-lbs

HIGH SPEED CONVEYOR BACKSTOP CLUTCH NOMENCLATURE

CB-45 C HS FB

- SPECIFY FINISHED BORE DIAMETER*
- HIGH SPEED
- CLUTCH ONLY**
- TORQUE CAPACITY (INCREMENTS OF 1,000'S OF FT-LBS)
- CONVEYOR BACKSTOP

CONVEYOR BACKSTOP CLUTCH PROVIDED WITH STANDARD KEYWAY UNLESS OTHERWISE SPECIFIED*

ORDER TORQUE ARM SEPARATELY, EXAMPLE: CB7HSTA**

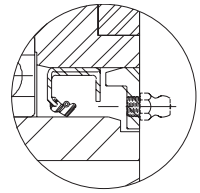
MODEL NUMBER	TORQUE CAPACITY		RPM (MAX.)	DRAG		BORE RANGE		A (OVERALL DIAMETER)		B (WIDTH)		C (INNER RACE LENGTH)	
	LB - FT	N-M		LB-FT	N-M	INCH	MM	INCH	MM	INCH	MM	INCH	MM
CB-7 HS	7,000	9,490	450	6	8	2.25 - 4.00	57.15 - 101.60	10.000	254.0	6.250	158.8	6.250	158.8
CB-12 HS	12,000	16,270	350	9	12	3.25 - 5.4375	82.55 - 138.11	12.000	304.8	6.450	163.8	6.460	164.1
CB-19 HS	19,000	25,761	260	17	23	3.75 - 6.00	95.25 - 152.4	13.500	342.9	8.250	209.6	8.250	209.6
CB-30 HS	30,000	40,675	260	21	28	3.75 - 6.25	95.25 - 158.75	15.000	381.0	8.250	209.6	8.250	209.6
CB-45 HS	45,000	61,012	240	26	35	5.00 - 7.75	127 - 196.85	18.000	457.2	8.625	219.1	8.625	219.1
CB-65 HS	65,000	88,128	220	33	45	6.75 - 8.50	171.45 - 215.9	19.625	498.5	9.550	242.6	10.700	271.8
CB-75 HS	75,232	102,000	200	2.89	73.5	5.97 to 8.66	150 to 220	19.69	500	12.99	330	12.8	325
CB-90 HS	90,000	122,023	250	41	55.589	7.9375 - 10.00	201.61 - 254	23.750	603.3	11.075	281.3	11.075	281.3
CB-110 HS	108,423	147,000	170	3.67	93.1	6.89 to 0.039	175 to 250	23.62	600	14.57	370	14.37	365
CB-150 HS	150,000	203,373	150	65	88	8.00 - 11.50	203.2 - 292.1	27.500	698.5	11.750	298.5	11.700	297.2
CB-217 HS	216,846	294,000	150	79.66	108.0	9.055 to 11.811	230 to 300	30.71	780	16.73	425	16.54	420
CB-290 HS	289,128	392,000	110	115.80	157.0	9.843 to 13.780	250 to 350	36.61	930	17.32	440	18.90	480
CB-550 HS	542,115	735,000	85	159.32	216.0	12.795 to 16.732	325 to 425	40.55	1,030	22.44	570	22.83	580
CB-720 HS	722,820	980,000	80	180.71	245.0	13.780 to 17.717	350 to 450	42.91	1,090	22.44	570	23.62	600

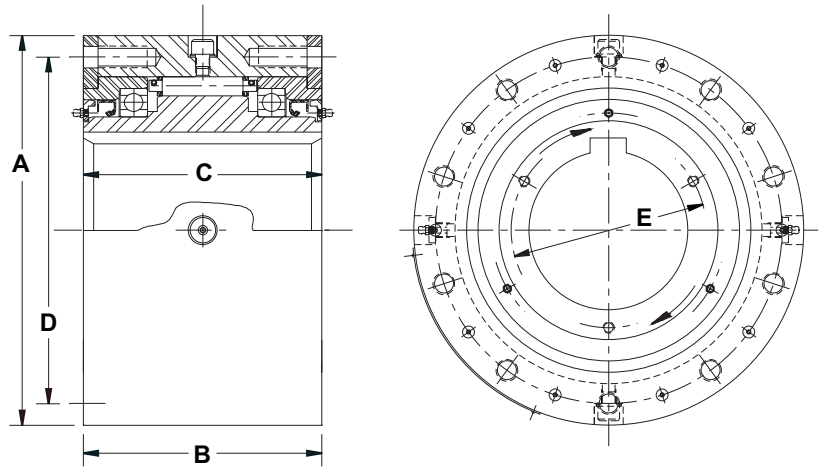
INDUSTRIES SERVED

- Aggregate processing
- Agriculture
- Conveyor manufacturing

FIELD APPLICATIONS

- Belt conveyor
- Bucket elevator
- Conveyors
- Low rpm head-shafts
- Inclined conveyor



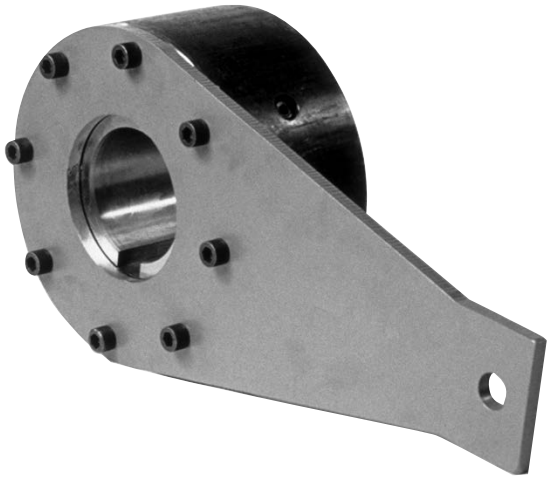


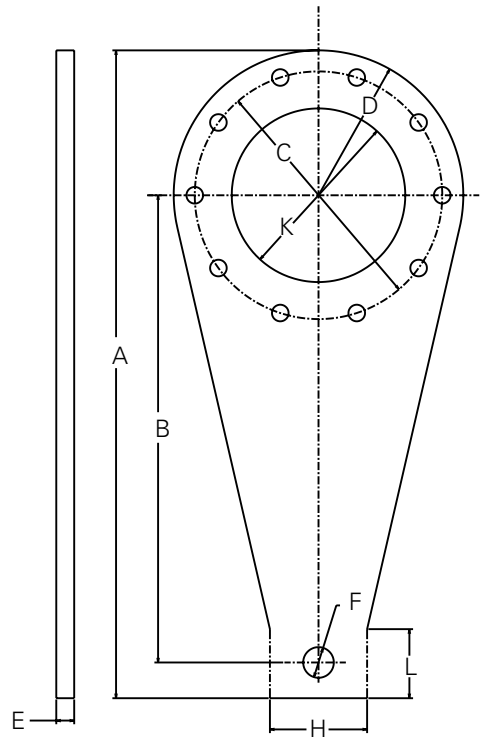
MODEL NUMBER	D (MOUNTING BOLT CIRCLE)		MOUNTING HOLES				INNER RACE HOLES							
			BOLT	THREAD SIZE	DEPTH		E (BOLT CIRCLE FOR RETAINING PLATE)		NO. OF BOLTS	THREAD SIZE	DEPTH		WEIGHT	
	INCH	MM			INCH	MM	INCH	MM			INCH	MM	LB	KG
CB-7 HS	9.000	229	6	.625 - 18 UNF	1	25.40	4.65	118.1	3	.375 - 24 UNF	0.620	15.75	125	56.7
CB-12 HS	10.375	264	10	.625 - 18 UNF	1.25	31.75	6.16	156.5	3	.375 - 24 UNF	0.620	15.75	178	80.7
CB-19 HS	12.000	305	10	.75 - 10 UNC	2	50.80	6.75	171.5	3	.375 - 24 UNF	0.750	19.05	286	129.7
CB-30 HS	13.250	337	12	.75 - 10 UNC	2	50.80	7.50	190.5	3	.375 - 24 UNF	0.750	19.05	356	161.5
CB-45 HS	15.500	394	10	.875 - 9 UNC	2.5	63.50	8.94	227.0	3	.375 - 16 UNC	0.750	19.05	555	251.7
CB-65 HS	17.500	445	16	.75 - 10 UNC	1.38	35.05	9.50	241.3	3	.500 - 20 UNF	0.750	19.05	672	304.8
CB-75 HS	16.54	420	16	M20 X P2.5	1.57	40	10.04	255	3	M12	0.787	20	860	390
CB-90 HS	21.500	546	16	1 - 8 UNC	2.5	63.50	12.00	304.8	3	.500 - 20 UNF	1.000	25.40	1,148	520.7
CB-110 HS	20.87	530	16	M24 X P3.0	1.97	50	11.42	290	3	M24	1.969	50	1,675	760
CB-150 HS	24.000	610	12	1.25 - 7 UNC	4	101.60	13.75	349.3	3	.625 - 11 UNC	1.000	25.40	1,638	743.0
CB-217 HS	27.17	690	16	M30 X P3.5	2.36	60	15.16	385	3	M16	1.063	27	3,086	1400
CB-290 HS	32.09	815	16	M36 X P4.0	2.76	70	17.40	442	3	M20	1.575	40	5,071	2300
CB-550 HS	37.01	940	1818	M36 X P4.0	2.76	70	20.87	530	3	M36	2.756	70	7,275	3300
CB-720 HS	38.98	990		M42 X P4.5	3.15	80	21.65	550	3	M42	3.150	80	8,157	3700

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

FOR ASSEMBLY WITH CB-7C TO CB-30C CLUTCHES

SINGLE TORQUE ARM





MODEL NUMBER	DIMENSIONS											
	A (OVERAIL LENGTH)		B (SHAFT CENTER TO END OF ARM)		C		D (END RADIUS)		E (THICKNESS)		F (END HOLE)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
CB-7TA	22.3	567	15.3	387	9.0	229	5.3	135	0.5	13	1.25	31
CB-12TA	26.4	671	18.6	473	11.0	279	6.3	159	0.5	13	1.25	31
CB-19TA	31.7	806	22.9	581	12.5	318	7.1	180	0.9	22	1.50	38
CB-3OTA	33.5	851	23.0	584	15.0	381	8.5	215	0.9	22	1.75	44

MODEL NUMBER	DIMENSIONS						NUMBER OF BOLTS	MOUNTING HOLES			WEIGHT	
	H (ARM END WIDTH)		K DIAMETER		L (STRAIGHT SIDE LENGTH)			THREAD SIZE	LENGTH			
	INCH	MM	INCH	MM	INCH	MM			INCH	MM	LB	KG
CB-7TA	4,375	111	5.625	143	2.906	74	6	5/8-18 UNF	1.50	38.1	20	9
CB-12TA	4,750	120	6.750	171	3.563	91	8	5/8-18 UNF	1.50	38.1	30	14
CB-19TA	4,750	120	8.500	216	3.375	86	10	3/4-10 UNC	1.75	44.5	60	27
CB-3OTA	5,250	133	10.500	267	3.375	86	10	7/8-9 UNC	2.00	50.8	75	34

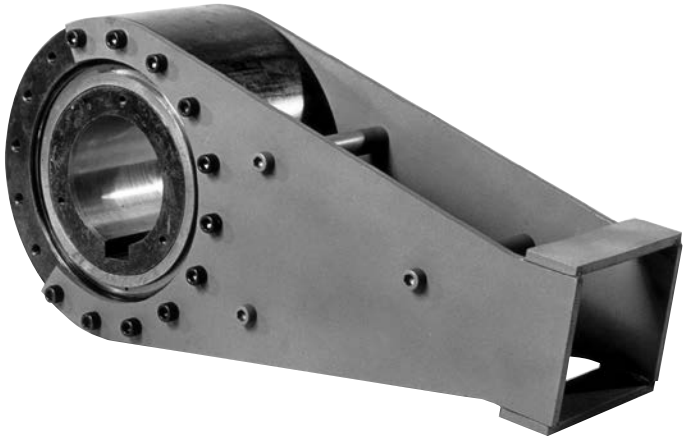
MADE-TO-ORDER TORQUE ARMS

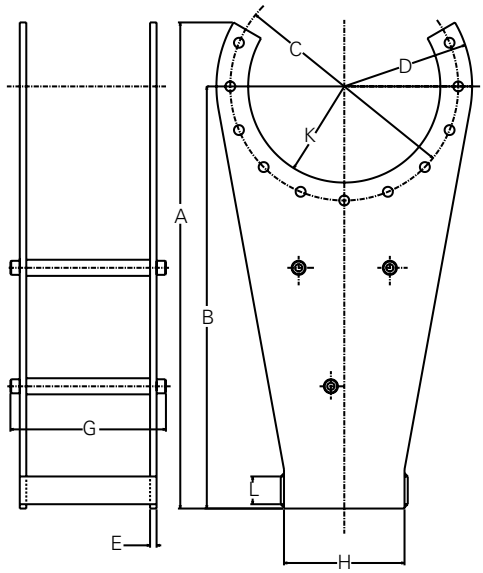
Custom torque arms are available on a made-to-order basis for your unique requirements.

For selection assistance, call Application Engineering at 1-800-626-2093 or fax the information to:

Regal Power Transmission Solutions
Application Engineering
Fax: (606) 564-2079

DOUBLE TORQUE ARM





MODEL NUMBER	TORQUE ARM DIMENSIONS											
	A (OVERALL LENGTH)		B (SHAFT CENTER TO END OF ARM)		C (BOLT CIRCLE)		D (END RADIUS)		E (THICKNESS)		G (OVERALL WIDTH)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
CB-45 HS TA	38.66	982	32.38	822.45	15.51	394	9.000	228.6	0.625	15.9	11.76	299
CB-65 HS TA	44.09	1120	39.38	1000.25	17.52	445	9.811	249.2	0.625	15.9	12.41	315
CB-75 HS TA	37.40	950	32.28	820	16.54	420	9.25	235	0.75	19	16.54	420
CB-90 HS TA	49.13	1248	43.30	1099.82	21.50	546	11.875	301.6	0.625	15.9	14.46	367
CB-110 HS TA	46.06	1,170	39.37	1,000	20.87	530	11.81	300	0.75	19	18.27	464
CB-150 HS TA	60.00	1524	51.25	1301.75	24.02	610	13.750	349.3	0.875	22.2	16.00	406
CB-217 HS TA	58.27	1,480	51.18	1,300	27.17	690	15.35	390	1.10	28	21.38	543
CB-290 HS TA	72.83	1,850	62.99	1,600	32.09	815	18.31	465	1.10	28	22.36	568
CB-550 HS TA	83.07	2,110	70.87	1,800	37.01	940	20.28	515	1.26	32	28.35	720
CB-720 HS TA	78.74	2,000	78.74	2,000	38.98	990	21.46	545	1.26	32	28.35	720

MODEL NUMBER	TORQUE ARM DIMENSIONS						NUMBER OF BOLTS	MOUNTING HOLES			WEIGHT	
	H (ARM END WIDTH)		K (RADIUS)		L (STRAIGHT SIDE LENGTH)			THREAD SIZE	LENGTH			
	INCH	MM	INCH	MM	INCH	MM			INCH	MM	LB	KG
CB-45 HS TA	9.15	232	5.875	149	3.0	76	16	7/8 - 9 UNC	3.00	76	145	66
CB-65 HS TA	9.12	232	7.400	188	3.0	76	22	3/4 - 10 UNC	1.75	44	175	79
CB-75 HS TA	7.87	200	6.93	176	2.76	70	11	M20	2.17	55	3.15	80
CB-90 HS TA	11.25	286	8.000	203	4.0	102	22	1 - 8 UNC	3.00	76	278	126
CB-110 HS TA	9.84	250	8.23	214	3.54	90	11	M24	2.56	65	5.12	130
CB-150 HS TA	13.75	349	10.235	260	4.5	114	18	1 1/4 - 7 UNC	4.75	121	503	228
CB-217 HS TA	11.81	300	11.22	285	4.72	120	11	M30	3.15	80	617.29	280
CB-290 HS TA	13.78	350	12.91	328	4.72	120	11	M36	3.94	100	925.93	420
CB-550 HS TA	16.14	410	14.96	380	5.91	150	13	M36	3.94	100	1366.85	620
CB-720 HS TA	17.72	450	15.75	400	5.91	150	13	M42	3.94	100	1631.40	740

MADE-TO-ORDER TORQUE ARMS

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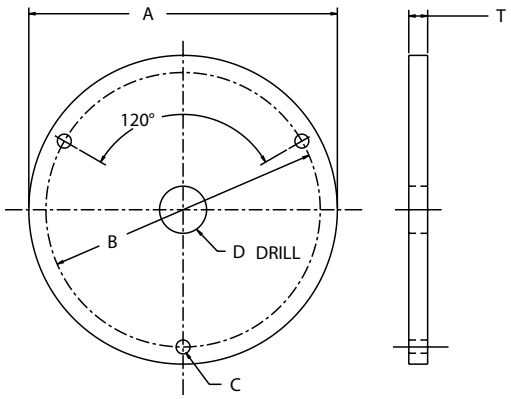
Regal Power Transmission Solutions
Application Engineering
Fax: (606) 564-2079

TABLE 5: RETAINING PLATES

RETAINING PLATE NUMBER	A (OVERALL DIAMETER)		B (BOLT CIRCLE)		C (BOLT HOLE)		D (CENTER HOLE)		T (THICKNESS)		WEIGHT	
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	LB	KG
CB-7 HS RP	6.00	152.4	4.650	118.1	0.406	10.31	0.687	17.45	.555/.490	14.097/12.446	5.05	2.3
CB-12 HS RP	7.00	177.8	6.161	156.5	0.406	10.31	0.687	17.45			6.70	3.0
CB-19 HS RP	7.50	190.5	6.750	171.5	0.406	10.31	0.687	17.45			7.50	3.4
CB-30 HS RP	8.12	206.2	7.500	190.5	0.406	10.31	0.781	19.84	0.680/.615	17.272/15.621	9.77	4.4
CB-45 HS RP	9.75	247.7	8.937	227.0	0.406	10.31	0.781	19.84			14.24	6.5
CB-65 HS RP	10.50	266.7	9.500	241.3	0.531	13.49	0.781	19.84			16.46	7.5
CB-90HS RP	13.75	349.3	12.000	304.8	0.531	13.49	0.781	19.84			27.73	12.6
CB-150 HS RP	16.00	406.4	13.750	349.3	0.687	17.45	1.031	26.19	.935/.865	23.749/21.971	52.24	23.7

Figure 6: Retaining Plate



RETAINING PLATES

Retaining plates offer a means of positively securing the conveyor backstop clutch to a mating shaft and to prevent the key from walking. The retaining plate bolts to three drilled and tapped holes machined in the inner race. An additional hole provided in the plate is intended to align with a drilled and tapped hole machined in the end of the shaft.

FIGURE 7: CUSTOMER SUPPLIED RETAINING PLATE

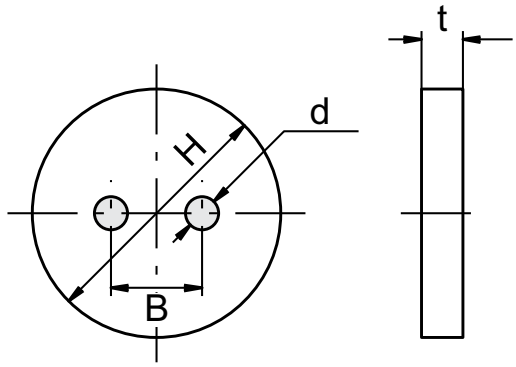


TABLE 6: CUSTOMER SUPPLIED RETAINING PLATE

RETAINING PLATE NUMBER	H (DIAMETER)		T (THICKNESS)		D		B		MOUNTING BOLT SIZE
	IN	MM	IN	MM	IN	MM	IN	MM	
CB-38 HS RP	9.45	240	0.39	10	0.57	14.5	2.36	60	M12
CB-75HS RP	11.02	280	0.55	14	0.57	14.5	2.36	60	M12
CB-110HS RP	12.20	310	0.55	14	0.73	18.5	3.94	100	M16
CB-217HS RP	14.17	360	0.55	14	0.73	18.5	3.94	100	M16
CB-290HS RP	16.14	410	0.55	14	0.73	18.5	3.94	100	M16
CB-550HS RP	18.11	460	0.71	18	0.89	22.5	5.91	150	M20
CB-720HS RP	20.08	510	0.71	18	0.89	22.5	5.91	150	M20

Selection Procedure

Backstop torque can be calculated using different methods based on conveyor configuration. The methods shown below are for basic selections and are based on CEMA (Conveyor Equipment Manufacturing Association) standards.

BACKSTOP TORQUE CALCULATION

$$HP = \frac{T \times N}{5250}$$

$$N = \text{RPM @ headpulley shaft} = \frac{V}{D\pi}$$

T = Ft. Lbs Torque

V = Belt Speed, Feet per minute

D = Headpulley Dia. (feet)

π = 3.14

SF = Service Factor

1.5 - Backstopping up to 10 times/day

2.0 - Backstopping more than 10 times/day

$$\text{Torque CB} = \frac{\text{SF} \times \text{HP Total} \times 5250}{N}$$

BUCKET ELEVATOR BACKSTOP SELECTION

Friction resistance is ignored in the selection due to its small magnitude relative to the elevator capacity.

$$\text{HP Total} = \frac{QH}{990}$$

Q = Maximum load, tons per hour

H = Vertical height of conveyor (feet)

Same nomenclature as conveyor method.

$$\text{Torque CB} = \frac{\text{SF} \times \text{HP - Motor Nameplate} \times 5250}{N}$$

MOTOR BREAKDOWN/LOCKED ROTOR TORQUE METHOD

Selection is based on the following formula:

Depending on motor breakdown torque, apply the following service factors:

1.0 Breakdown torque up to 175%.

1.2 Breakdown torque up to 250%.

1.5 Breakdown torque up to 300%.

CAUTION: A backstop is a critical part of the conveyor design. Selection methods shown above should cover most basic conveyor applications. When designing a conveyor, it is necessary that the backstop is selected to handle the maximum load that the conveyor system is designed to handle. Consult Application Engineering at 1-800-626-2093 for backstop selection where conveyor design deviates from the methods shown.

Figure 7: Belt Conveyor

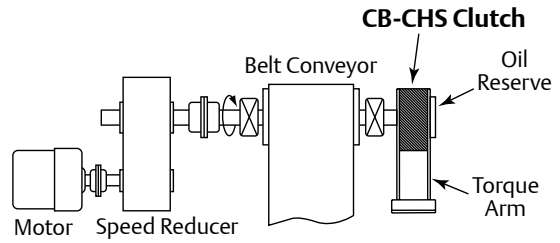


Figure 9: Screw Pump

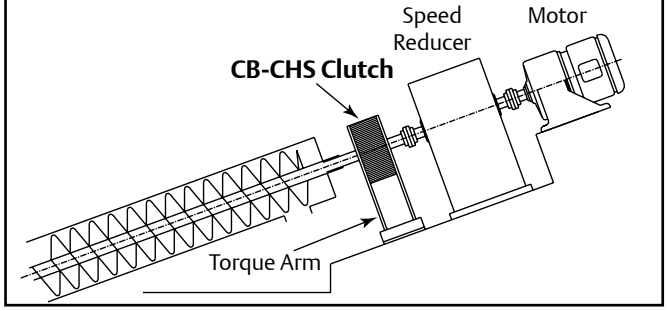
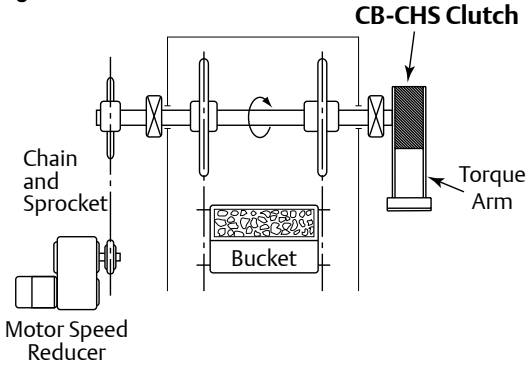


Figure 8: Bucket Elevator



CONVEYOR BACKSTOP

- **WARNING!**
- **Read and follow all instructions carefully.**
- **Disconnect and lock-out power before installation and maintenance. Working on or near energized equipment can result in severe injury or death.**
- **Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.**
- **Do not disassemble the clutch. Incorrect re-assembly can result in malfunction leading to severe injury or death.**
- **Do not operate the clutch above its rated torque or speed, as listed on product. This operation could result in a malfunction leading to severe injury or death.**
- **Remove the torque load prior to removing the clutch or clutch torque arm. Removing the clutch while under load could result in severe injury or death.**
- **CAUTION:**
- **Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.**

A. GENERAL

1) The clutch is intended to be installed on the main drive shaft having the greatest torque potential with the least amount of backlash.

2) Correct sizing is important because loads imposed beyond its capacity can cause permanent damage to the internal components. Refer to the selection procedure for clutches in the Morse Clutch catalog or online at www.RegalPTS.com. Login to Edge Online to use the clutch product selection tool.

3) Do not attempt to take this clutch apart. Morse CB-CHS clutches are precision mechanisms made by experienced machinists and assemblers under careful supervision and high quality control standards.

4) Do not attempt to remove either the clutch or torque arm before removing load.

5) Do not use this clutch above its rated torque or speed.

B. PREINSTALLATION

1) Before installation, check the direction of shaft rotation during its operation, often referred to as "free shaft" rotation. The backstop clutch overruns in this direction which is indicated by stamped arrows on both ends of the clutch inner race.

2) It is very important that the clutch fit the shaft properly. This clutch is intended to be installed with a slip fit; interference or shrink fits are not recommended. Bore tolerances and standard keyway dimensions are shown in the following chart.

3) Only parallel keys are to be used, do not use tapered keys. The key should be tight along both sides in contact with the keyseat. Clearance has been allowed along the top. The key should not extend beyond the length of the clutch.

Table 1: Bore Tolerances and Standard Keyway Dimensions

NOMINAL SHAFT BORE AND BORE DIAMETER		BORE TOLERANCE	STANDARD KEY WIDTH* AND DEPTH
OVER	THRU	NOMINAL -.000	
3 1/4	3 3/4	+.0020	7/8 x 7/16
3 3/4	4 1/2	+.0020	1 x 1/2
4 1/2	5 1/2	+.0030	1 1/4 x 5/8
5 1/2	6 1/2	+.0030	1 1/2 x 3/4
6 1/2	7 1/2	+.0030	1 3/4 x 3/4
7 1/2	9	+.0030	2 x 3/4
9	11	+.0040	2 1/2 x 7/8
11	13	+.0040	3 x 1

* Width tolerances are plus .002 minus .000; keyway depth is nominal plus .010 tolerance

C. INSTALLATION

The shaft must be clean and free of burrs. Coat both shaft and key with oil, grease or similar substance to ease installation.

Double check shaft rotation and arrow marks on the end of the clutch inner race to ensure correct rotational direction.

Push the backstop clutch on the shaft by applying pressure only to the end of the inner race. If hammering is required, use only a lead or rubber headed hammer to avoid damage to the inner race end.

NOTICE: Do not hit the clutch outer race or seal support as internal damage may result. Install carefully to prevent damage to the seals.

Secure the clutch in position on the shaft. Snap rings, locking collars, end plates, etc. may be used. Optional end plates are available.

To ease periodic flushing and lubrication, mount the clutch with one of the lubrication ports directed downwards. To avoid loss of lubricant in clutches, mount with the breather directed straight up as shown in Table 9 of this section. Torque Arm Mounting See Figures 1, 2 and 3 on page E-17.

a) End of the torque arm must be restrained to prevent rotation either by use of a pin or angle irons.

NOTICE: Do not rigidly fasten the torque arm end.

b) Make sure the torque arm is free to move axially to prevent any preloading of the clutch bearings due to shaft movement, misalignment or distortion of both conveyor frame and shafting. A 1/4 inch clearance on each side is recommended.

c) Make sure that foreign material or ice cannot accumulate on the torque arm end to restrict its movement.

d) When using a pin, its diameter must be 1/16 inch smaller than the hole in torque arm.

CONVEYOR BACKSTOP CONTINUED

e) Torque arm may be mounted at any desired angle.

f) Make sure that the mounting surfaces of the clutch outer race and torque arms are clean and free of foreign particles, rust, or oil to ensure proper mounting.

g) Remove grease fittings from sides of clutch before installing the torque arm to prevent damage to the clutch. While installing the torque arm, take measures to prevent dirt or other debris from entering the fitting holes. Be sure to re-install these fittings before running the clutch and lubricate the taconite seals as described in Item D of this section.

h) Tighten torque arm mounting bolts to the following torque values. Use only ANSI grade 8 bolts minimum as supplied.

TABLE 2: TIGHTENING GUIDE FOR TORQUE ARM MOUNTING BOLTS

BOLT SIZE	TORQUE
5/8 -18 UNC	220 lb-ft
3/4 -10 UNC	375 lb-ft
7/8 - 9 UNC	580 lb-ft
1 - 8 UNC	865 lb-ft
1 1/4 - 7 UNC	1750 lb-ft

For plated bolt, reduce bolt torque by 25%

Figure 1: Torque Arm Mounting

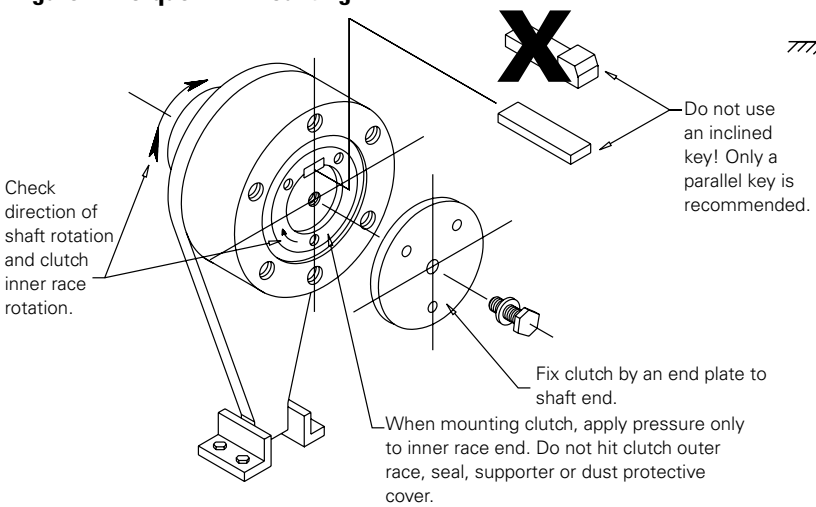


FIGURE 2: DOUBLE TORQUE ARM MOUNTING

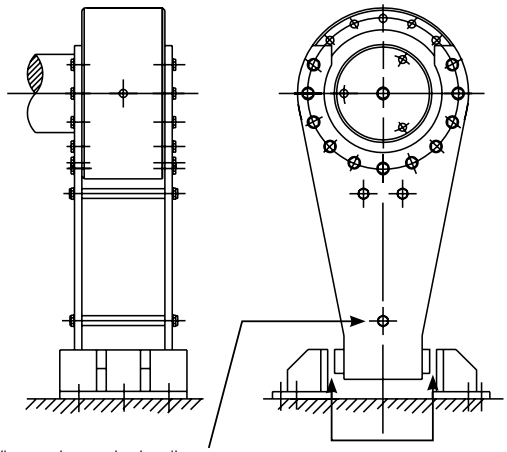
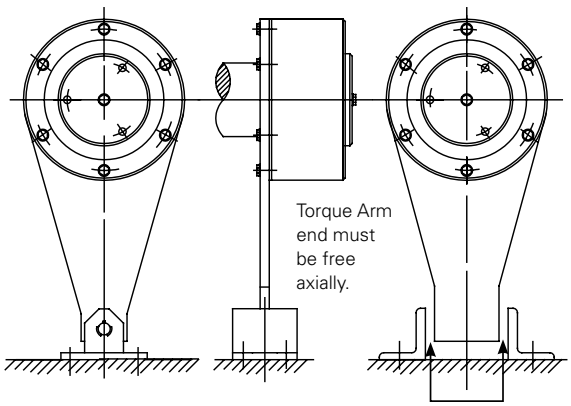


FIGURE 3: SINGLE TORQUE ARM MOUNTING

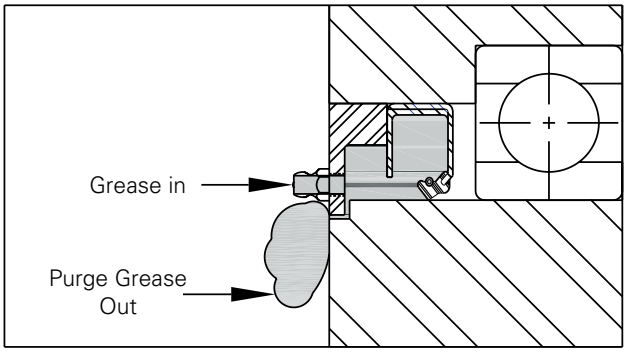


CONVEYOR BACKSTOP CONTINUED

D. TACONITE LUBRICATION (CB-CHS) OIL & GREASE

1. Lubricate auxiliary seals every two months of normal operation. If extremely dusty conditions prevail, increase the frequency of seal lubrication. The auxiliary seals act as a protective barrier for the lip seals.
2. Do not use lubricants which contain EP additives, as these are detrimental to the operation of the backstop clutch.
3. With a low pressure grease gun, pump seals full through all fittings on both sides of the backstop until the old grease is purged and fresh grease flows out around the entire outer circumference of the inner race of the backstop as shown in Figure 4.

FIGURE 4: TACONITE SEAL LUBRICATION - CB-CHS ONLY



E. GREASE LUBRICATION INSTRUCTIONS (CB-C HS GREASE MODEL BACKSTOP ONLY)

1. Morse CB-HS grease model clutches are pre-lubricated with Mobil Beacon® #325 grease. This grease is acceptable in environments with temperature ranges from -40° F to 150° F (-40° C to 65° C). When possible, relubrication should be performed with the same grease. Brand of grease may vary, but lubricant must be free of EP additives
2. Contact Application Engineering at 1-800-626-2093 for environments beyond this temperature range. Lubrication maintenance is recommended every three months under normal conditions. However, severely dusty conditions and/or extreme temperatures require shorter lubrication intervals and your experience will be the best determination of the required lubrication cycle in your specific application. See Table 3.
3. To re-lubricate, locate the two grease fittings found in the outer race of the clutch. Pump grease into each fitting until all of the old grease is purged from the clutch and fresh grease begins to flow from the entire outer circumference of the inner race. It may be necessary to use a drain pan to catch the purged grease.
4. Do not use lubricants which contain EP additives, as these are detrimental to the operation of the backstop.
5. Use of non-compatible grease could cause clutch failure; contact Application Engineering at 1-800-626-2093 when using grease other than specified.

TABLE 3: CB-C HS BACKSTOP GREASE CAPACITY ESTIMATES

MODEL NUMBER	VOLUME (FLUID OUNCES)	VOLUME (QUARTS)
CB-7C HS	30	1.3
CB-12C HS	40	1.3
CB-19C HS	40	1.3
CB-30C HS	40.3	1.3
CB-38C HS	15.4	0.5
CB-45C HS	58.5	1.8
CB-65C HS	131.3	4.1
CB-75C HS	42	1.3
CB-90C HS	170.1	5.3
CB-110C HS	103.6	3.2
CB-150C HS	178	5.6
CB-217C HS	187.6	5.9
CB-290C HS	215.6	6.7
CB-550C HS	280	8.8
CB-720C HS	308	9.6

F. OIL LUBRICATION INSTRUCTIONS (CB-C HS OIL MODEL BACKSTOP ONLY)

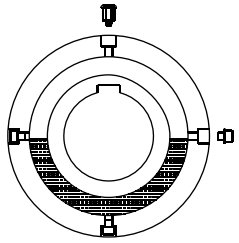
1. Morse CB-HS Oil Model clutches are shipped without oil. Care must be taken to fill the backstop with oil before it is placed into operation.
2. With the exception of the first time the clutch is filled with oil, the clutch should be flushed with mineral spirits as follows:
3. a. Drain the clutch of all ATF.
   b. Re-install drain plug and fill with mineral spirits.
   c. Run the clutch for 1 minute to clean the internal parts.
   d. Drain mineral spirits from the clutch.
   e. Re-fill with ATF as described in step 5.
4. The use of synthetic ATF is encouraged. However, most Type A automatic transmission fluids are acceptable. Do not use transmission fluid that contains friction reducing agents or is "Highly Friction Modified" (HFM).
5. Lubrication maintenance is recommended every three months under normal conditions. However, severely dusty conditions and/or extreme temperatures require shorter lubrication intervals and your experience will be the best determination of the required lubrication cycle in your specific application. See Table 4 of this section.
6. Fill the clutch with oil by removing the breather and one lubrication plug 90° from the breather. Pour ATF into the breather port until ATF flows out of the other open port See Figure 5. Re-install plug and breather before returning clutch to operation.

   Note: CB-7CHS & CB-12CHS do not have an oil breather so remove plug instead.

TABLE 4: CB-HS BACKSTOP OIL CAPACITY ESTIMATES

SIZE CLUTCH	VOLUME (FLUID OUNCES)	VOLUME (QUARTS)
CB-7 C HS	15	0.625
CB-12 C HS	20	0.625
CB-19 C HS	20	0.625
CB-30 C HS	20.15	0.63
CB-45 C HS	29.25	0.915
CB-65 C HS	65.65	2.05
CB-90 C HS	85.05	2.66
CB-150 C HS	89	2.78

FIGURE 5: OIL FILL LEVEL



G. LONG TERM STORAGE

1. Necessary only for backstop oil model clutches due to the fact that they are shipped without oil.
2. If the backstop clutch is to be stored for more than one month, remove the breather and completely fill the clutch with ATF. It will be necessary to either store the clutch with the breather pointed straight up, or replace the breather with a pipe plug.
3. Before placing the clutch in operation, drain all storage lubrication and refill as described in Item F of this section with the proper quantity of ATF fluid as described in Table 4.

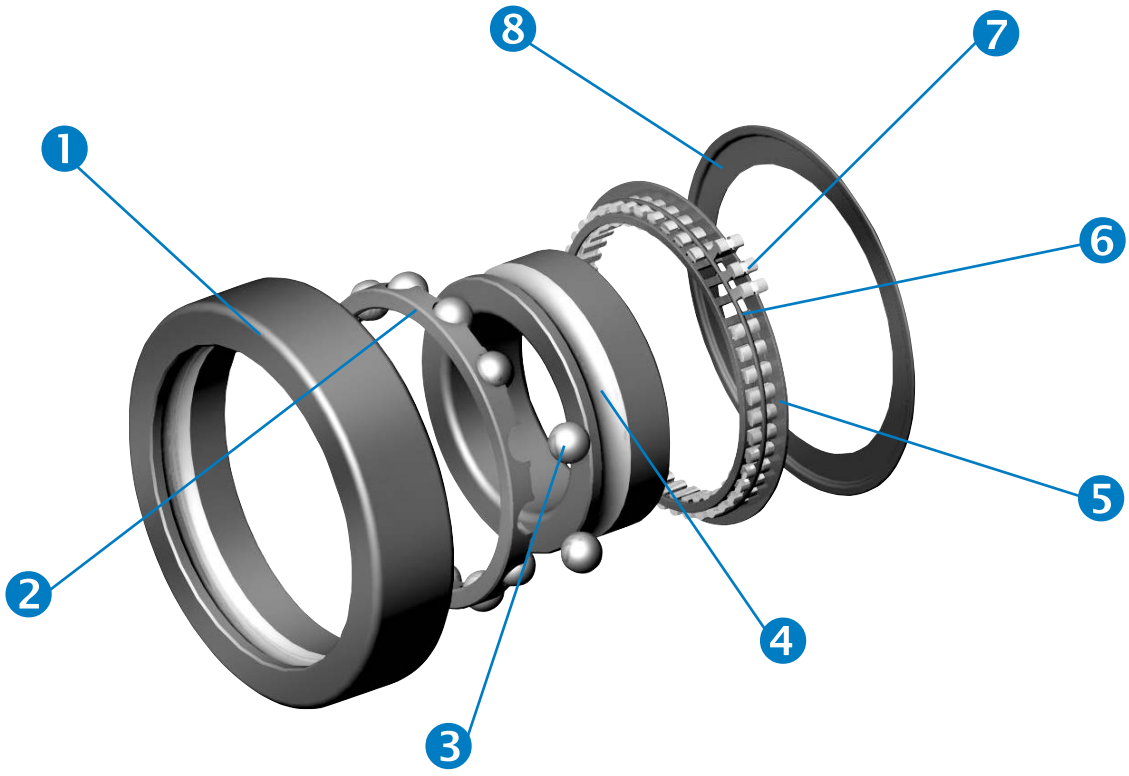
CB AND CB-HS BACKSTOP CLUTCH

	Oil leaking from clutch	Momentary slipping	Loose bolts	Clutch will not go forward	Torque arm rattles	Dirt in expelled grease	Metal particulates found	Clutch wobbles, moves	Key is walking out	Vibration	Clutch has noise	Clutch running hot to touch	Possible Cures - Where to find possible corrective maintenance:
Clutch running above speed rating	O									X	X	X	Consult application Engineering, check speed rating on tag on the clutch
Clutch running above torque rating		O	O								X	X	Consult application Engineering, check torque rating on tag on the clutch
Check torque arm Installation					X		X	O				O	Refer to Morse® CB Series Clutches Installation & Maintenance Instructions paragraph C.5. (Form 4646-001) or paragraph C.6. (Form 9108) for Morse CB-HS Clutches
Check fit on shaft				X				X		X	O		Refer to Morse CB Series Clutches Installation & Maintenance Instructions paragraph B.2. (Form 4646-001) or paragraph B2 (Form 9108) for Morse CB - HS Clutches
Check fit of key		O							X		O		Refer to Morse CB Series Clutches Installation & Maintenance Instructions paragraph B.2. (Form 4646-001) or paragraph B.2 (Form 9108) for Morse CB - HS Clutches
Check bolt tightness		X	X		X			O	O	O			Refer to Morse CB Series Clutches Installation & Maintenance Instructions paragraph C.5.g. (Form 4646-001) or paragraph C.6.h. (Form 9108) for Morse CB - HS Clutches
Review lubrication frequency	X					X	X				X	X	Refer to Morse CB Series Clutches Installation & Maintenance Instructions paragraph D, all. (Form 4646-001) or paragraph D,E,F (Form 9108) for Morse CB - HS Clutches
Check sealing system	X					X							Grease should purge seal, and felt retainer should not rotate. Paragraph D (Form 9108)
Check grease type		X				O						O	Refer to Morse CB Series Clutches Installation & Maintenance Instructions paragraph D. Exxon Beacon 325 grease recommended (Form 4646-001) or (Form 9108) for Morse CB - HS Clutches
Clutch worn out	O	O		O							O		Order a new Morse Clutch

X - **Indicates common causes**
0 - **Indicates other possible causes**

For additional assistance contact Application Engineering at 1-800-626-2093. Morse CB - CHS Clutch Installation & Maintenance Instructions (Form 4646-001 and Form 9108) can be found at www.RegalPTS.com

Continuous Enhancements, Reliable Clutches



❶ **- High-Strength Outer Race -** Made from high carbon alloy steel, our precision-ground outer race provides fatigue life reliability.

❷ **- Rotating Bearing Retainer -** Located flush with the outer race, this retainer contains evenly spaced, hardened steel balls to provide equal distribution of load for optimized concentricity between the inner and outer races.

❸ **- Hardened Steel Ball Bearings -** Individually formed from hardened chrome alloy steel, the balls are secured within the retainer to provide concentricity and equal distribution of radial load within the clutch.

❹ **- Precision-Ground Inner Race -** Similar to a 6000 Series metric bearing, the ball pathway and cam wear surface are hardened and ground to enable rapid cam engagement and low drag operation.

❺ **- Durable Cam-Cage -** Made from molded nylon, the cam-cage provides equal spacing between each cam. When cams articulate within the cage, cam engagement is uniform providing equal distribution of load and more uniform stress on the cams and inner race.

❻ **- Heavy-Duty Garter Spring -** Located within the cam cage, the energizing garter spring creates the drag torque needed for accuracy of cam engagement.

❼ **- Profiled Cams -** Manufactured from high carbon steel, the cams carry high compressive loads when the clutch is locked and transmitting torque.

❽ **- Lightweight Retaining Endplate/Dust Shield -** Attached to the outer race, the end plate helps retain lubrication and protect components within the clutch assembly. Felt and contact lip seal designs are available.

Morse brand KK clutches incorporate a compact cam clutch with built-in bearing support. This unique construction is a combination ball bearing and cam clutch. This provides radial anti-friction support for the shaft and fits into same space as standard 6200 series ball bearing for use in applications ranging from exercise equipment to industrial machinery. This general purpose clutch is intended for back-stopping, indexing and overrunning applications and can be utilized with either oil or grease lubrication. Comes lightly greased.

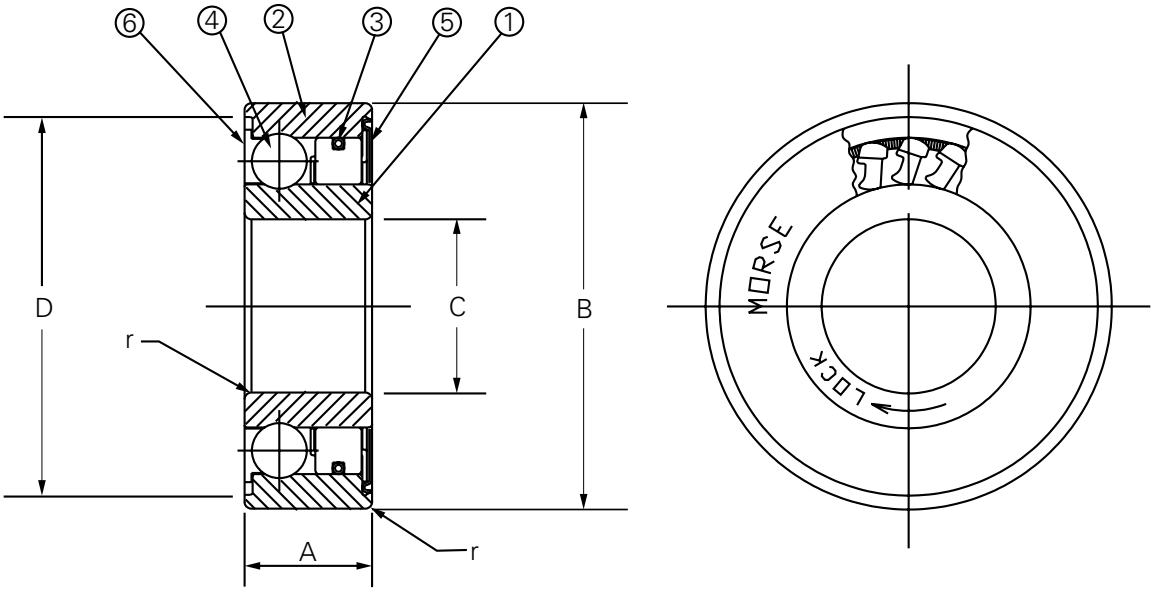
DIMENSIONS AND CAPACITIES

SIZE	A		B		C		D		R		WEIGHT	
	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	G	IB
15	11	0.433	35	1.378	15	0.591	32.6	1.283	0.6	0.024	50	0.1
17	12	0.472	40	1.575	17	0.669	36.1	1.421	0.6	0.024	80	0.2
20	14	0.551	47	1.850	20	0.787	41.7	1.642	1.0	0.039	120	0.3
25	15	0.591	52	2.047	25	0.984	47.1	1.854	1.0	0.039	150	0.3
30	16	0.630	62	2.441	30	1.181	56.6	2.228	1.0	0.039	230	0.5
35	17	0.669	72	2.835	35	1.378	64.0	2.520	1.1	0.043	320	0.7
40	22	0.866	80	3.150	40	1.575	71.0	2.795	1.1	0.043	400	0.9

SIZE	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		RADIAL LOAD CAPACITY			
	N-M	FT-LB	INNER RACE RPM	OUTER RACE RPM	N-M	FT-LB	DYNAMIC		STATIC	
							N	LB	N	LB
15	29	21.4	3,600	2,000	0.010	0.0074	5,950	1337.6	3,230	726.1
17	43	31.7	3,500	1,900	0.010	0.0074	7,000	1573.7	3,700	831.8
20	61	45.0	3,000	1,600	0.014	0.0103	8,500	1910.9	4,900	1101.6
25	78	57.5	2,500	1,400	0.017	0.0125	10,700	2405.5	6,300	1416.3
30	140	103.3	2,000	1,100	0.030	0.0221	11,900	2675.2	7,900	1776.0
35	173	127.6	1,800	1,000	0.034	0.0251	13,500	3034.9	9,700	2180.6
40	260	191.8	1,800	900	0.040	0.0295	14,500	3259.7	11,700	2630.3

CLUTCH / BEARING SIZE COMPARISON TABLE*			
	(MM) O.D.	(MM) I.D.	(MM) WIDTH
NSS25	52	25	15
6205	52	25	15
KK25	52	25	15
NFS25	62	25	24
6305	62	25	17

*Clutch sizes NSS25, NFS25 and KK25 used as an example



SHAFT TOLERANCE

SIZE	SHAFT DIAMETER			
	INCHES		MM	
15	0.5906	+0.0009 +0.0005	15	+0.023 +0.012
17	0.6693	+0.0009 +0.0005	17	+0.023 +0.012
20	0.7874	+0.0011 +0.0006	20	+0.028 +0.015
25	0.9843	+0.0011 +0.0006	25	+0.028 +0.015
30	1.1811	+0.0011 +0.0006	30	+0.033 +0.017
35	1.3780	+0.0013 +0.0007	35	+0.033 +0.017
40	1.5748	+0.0013 +0.0007	40	+0.033 +0.017

HOUSING TOLERANCE

SIZE	HOUSING DIAMETER			
	INCHES		MM	
15	1.3779	-0.0005 -0.0011		-0.012 -0.028
17	1.5748	-0.0005 -0.0011	40	-0.012 -0.028
20	1.8504	-0.0005 -0.0011		-0.012 -0.028
25	2.0472	-0.0006 -0.0013	52	-0.014 -0.033
30	2.4409	-0.0006 -0.0013	62	-0.014 -0.033
35	2.8346	-0.0006 -0.0013	72	-0.014 -0.033
40	3.1496	-0.0006 -0.0013	80	-0.014 -0.033

① Inner race
② Outer race
③ Cam cage
④ Ball
⑤ Shield
⑥ Retainer

Part Number Explanation

KK 25 2GD 1K

- 1K — Keyed inner
- 2GD — Incorporates 2 seals
- 25 — Bore size
- KK — Series

KK 25 2K

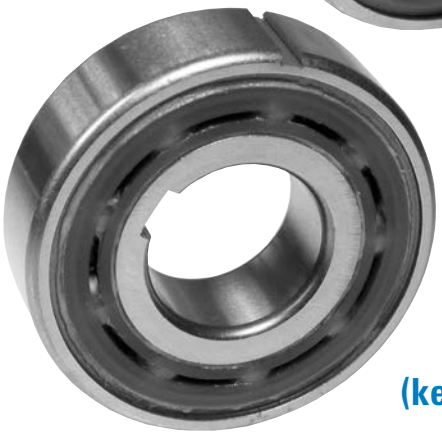
- 2K — Keyed inner and outer
- 25 — Bore size
- KK — Series

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Model KK-1K and KK-2K

Morse brand KK clutches incorporate a compact cam clutch with built-in bearing support. This unique construction is a combination ball bearing and cam clutch. This provides radial anti-friction support for the shaft and fits into same space as standard 6200 series ball bearing for use in applications ranging from exercise equipment to industrial machinery. This general purpose clutch is intended for backstopping, indexing and overrunning applications and can be filled with either oil or grease lubrication. Comes lightly greased.

KK-1K (keyed inner)



KK-2K (keyed inner and outer)

INDUSTRIES SERVED

- Fitness
- Manufacturing
- Printing
- Textile

FIELD APPLICATIONS

- Electric motor backstops
- Exercise equipment
- Household appliances
- Pump backstops

ENHANCEMENTS

- New sizes added
- New sealing and shielding options
- Both inner and outer race keyway options

DIMENSIONS AND CAPACITIES

SIZE	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		RADIAL LOAD CAPACITY			
							DYNAMIC		STATIC	
	N-M	FT-LB	INNER RACE .R/MIN	OUTER RACE .R/MIN	N-M	FT-LB	N	LB	N	LB
15	29	21.4	3,600	2,000	0.010	0.0074	5,950	1337.6	3,230	726.1
17	43	31.7	3,500	1,900	0.010	0.0074	7,000	1573.7	3,700	831.8
20	61	45.0	3,000	1,600	0.014	0.0103	8,500	1910.9	4,900	1101.6
25	78	57.5	2,500	1,400	0.017	0.0125	10,700	2405.5	6,300	1416.3
30	140	103.3	2,000	1,100	0.030	0.0221	11,900	2675.2	7,900	1776.0
35	173	127.6	1,800	1,000	0.034	0.0251	13,500	3034.9	9,700	2180.6
40	260	191.8	1,800	900	0.040	0.0295	14,500	3259.7	11,700	2630.3

Note: Model No. marked on the inner race is only K for both 1K and 2K. (I. R. the marked KK17-K for both KK-17-1K and KK-17-2K).

Part Number Explanation

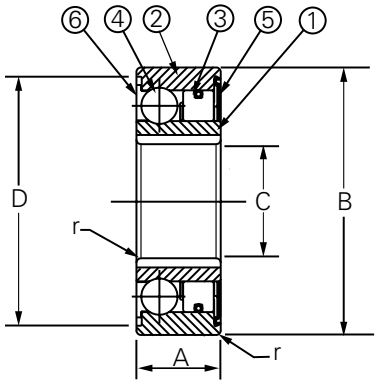
KK 25 2GD 1K

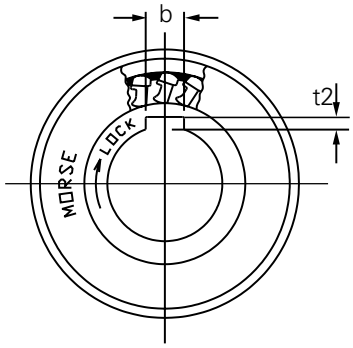
- 1K — Keyed inner
- 2GD — Incorporates 2 seals
- 25 — Bore size
- KK — Series

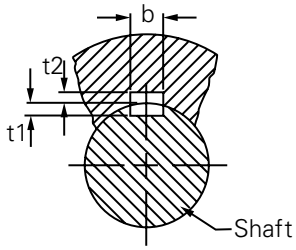
KK 25 2K

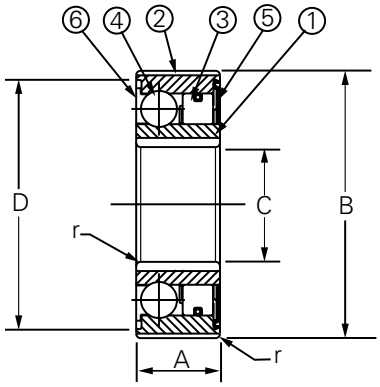
- 2K — Keyed inner and outer
- 25 — Bore size
- KK — Series

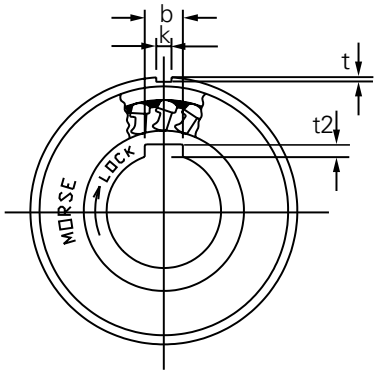
Model KK-1K and KK-2K

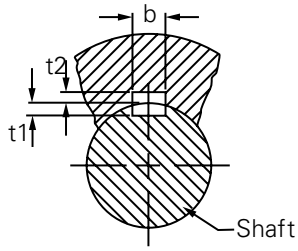












① Inner race
② Outer race
③ Cam cage
④ Ball
⑤ Shield
⑥ Retainer

DIMENSIONS AND CAPACITIES

SIZE	A		B		C		D		R		WEIGHT	
	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	IB	G
15	0.433	11	1.378	35	0.591	15	1,283	32.6	24	0.6	0.1	50
17	0.472	12	1.575	40	0.669	17	1,421	36.1	24	0.6	0.2	80
20	0.551	14	1.850	47	0.787	20	1,642	41.7	39	1.0	0.3	120
25	0.591	15	2.047	52	0.984	25	1,854	47.1	39	1.0	0.3	150
30	0.630	16	2.441	62	1.181	30	2,228	56.6	39	1.0	0.5	230
35	0.669	17	2.835	72	1.378	35	2,520	64.0	43	1.1	0.7	320
40	0.866	22	3.150	80	1.575	40	2,795	71.0	43	1.1	0.9	400

Note: Model No. marked on the inner race is only K for both 1K and 2K. (I. R. the marked KK17-K for both KK-17-1K and KK-17-2K).

KEYWAY DIMENSIONS

MODEL	B JS 10		T1	T2*	KJS9		T
KK15-1K	5.0	+0.024	1.9	1.2	-	-	-
KK15-2K					2.0	+0.0125	6
KK17-1K	5.0	+0.024	1.9	1.2	-	-	-
KK17-2K					20	+0.0125	10
KK20-1K	6.0	+0.024	2.5	1.6	-	-	
KK20-2K					3.0	+0.0150	15
KK25-1K	8.0	+0.029	3.6	1.5	-	-	-
KK25-2K					60	+0.0150	20
KK30-1K	8.0	+0.029	3.1	2.0	-	-	-
KK30-2K					60	+0.0150	20
KK35-1K	10.0	+0.029	3.7	24	-	-	-
KK35-2K					8.0	+0.0180	2.5
KK40-1K	12.0	+0.035	3.3	5.0	-	-	-
KK40-2K					10.0	+0.0180	3.0

SHAFT TOLERANCE

SIZE	SHAFT DIAMETER			
	MM		INCHES	
15	15	-0.008 -0.028	0.5906	-0.0003 -0.0011
17	17	-0.008 -0.028	0.6693	-0.0003 -0.0011
20	20	-0.010 -0.031	0.7874	-0.0004 -0.0012
25	25	-0.010 -0.031	0.9843	-0.0004 -0.0012
30	30	-0.010 -0.031	1.1811	-0.0004 -0.0012
35	35	-0.012 -0.037	1.3780	-0.0005 -0.0015
40	40	-0.012 -0.037	1.5748	-0.0005 -0.0015

HOUSING TOLERANCE

MODEL	HOUSING DIAMETER			MODEL	HOUSING DIAMETER		
	MM		INCHES		MM		INCHES
KK15-1K	35	-0.012 -0.028	1.3779	-0.0005 -0.0011	KK15-2K	35	-0.002 -0.018	1.3779	-0.0001 -0.0007
KK17-1K	40	-0.012 -0.028	1.5748	-0.0005 -0.0011	KK17-2K	40	-0.002 -0.018	1.5748	-0.0001 -0.0007
KK20-1K	47	-0.012 -0.028	1.8504	-0.0005 -0.0011	KK20-2K	47	-0.003 -0.022	1.8504	-0.0001 -0.0009
KK25-1K	52	-0.014 -0.033	2.0472	-0.0006 -0.0013	KK25-2K	52	-0.003 -0.022	2.0472	-0.0001 -0.0009
KK30-1K	62	-0.014 -0.033	2.4409	-0.0006 -0.0013	KK30-2K	62	-0.003 -0.022	2.4409	-0.0001 -0.0009
KK35-1K	72	-0.014 -0.033	2.8346	-0.0006 -0.0013	KK35-2K	72	-0.006 -0.025	2.8346	-0.0002 -0.0010
KK40-1K	80	-0.014 -0.033	3.196	-0.0006 -0.0013	KK40-2K	80	-0.006 -0.025	3.1496	-0.0002 -0.0010

Dimensions in mm

* The dimension of t2 for KK25-1K and KK25-2K is 0.5 mm shallow compared to DIN 6885. 3. Process the keyway on the shaft 0.5 mm deeper to use DIN.

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Model KK- 2GD and KK-2GD 1K

KK-2GD
(sealed both sides)
Comes greased

KK-2GD 1K
(sealed both sides, keyed inner)
Comes greased

DIMENSIONS AND CAPACITIES

Size	Torque Capacity		Max. Overrunning Speed		Drag Torque		Radial Load Capacity			
	N-m	Ft-lb	Inner Race r/min	Outer Race r/min	N-m	Ft-lb	Dynamic		Static	
							N	lb	N	lb
15	29	21.4	3,600	2,000	0.040	0.0295	5,950	1,337.6	3,230	726.1
17	43	31.7	3,500	1,900	0.050	0.0369	7,000	1,573.7	3,700	831.8
20	61	45.0	3,000	1,600	0.055	0.0406	8,500	1,910.9	4,900	1,101.6
25	78	57.5	2,500	1,400	0.055	0.0406	10,700	2,405.5	6,300	1,416.3
30	140	103.3	2,000	1,100	0.058	0.0428	11,900	2,675.2	7,900	1,776.0
35	173	127.6	1,800	1,000	0.060	0.0443	13,500	3,034.9	9,700	2,180.6
40	260	191.8	1,800	900	0.080	0.0590	14,500	3,259.7	11,700	2,630.3

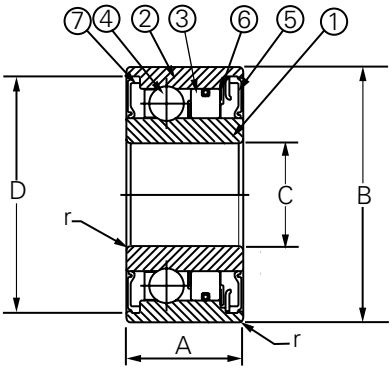
HOUSING TOLERANCE

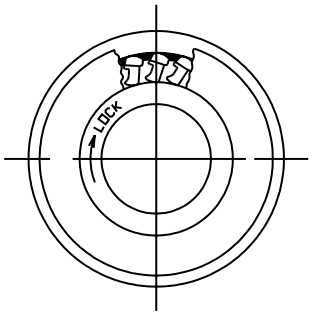
Size	Housing Diameter			
	inch		mm	
15	1.3779	-0.0005 -0.0011	35	-0.012 -0.028
17	1.5748	-0.0005 -0.0011	40	-0.012 -0.028
20	1.8504	-0.0005 -0.0011	47	-0.012 -0.028
25	2.0472	-0.0006 -0.0013	52	-0.014 -0.033
30	2.4409	-0.0006 -0.0013	62	-0.014 -0.033
35	2.8346	-0.0006 -0.0013	72	-0.014 -0.033
40	3.1496	-0.0006 -0.0013	80	-0.014 -0.033

SHAFT TOLERANCE

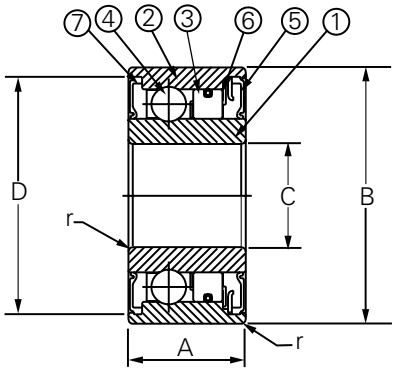
Model	Shaft Diameter				Model	Shaft Diameter			
	inches		mm			inches		mm	
KK15-2GD	0.5906	+0.0009 +0 0005	15	+0.023 +0.012	KK15-2GD 1k	0.5906	-0.0003 -0.0011	15	-0.008 -0.028
KK17-2GD	0.6693	+0.0009 +0 0005	17	+0.023 +0.012	KK17-2GD 1K	0.6693	-0.0003 -0.0011	17	-0.008 -0.028
KK20-GD	0.7874	+0.0011 +0 0006	20	+0.028 +0.015	KK20-2GD 1K	0.7874	-0.0004 -0.0012	20	-0.010 -0.031
KK25-2GD	0.9843	+0.0011 +0 0006	25	+0.028 +0.015	KK25-2GD 1K	0.9843	-0.0004 -0.0012	25	-0.010 -0.031
KK30-2GD	1.1811	+0.0011 +0 0006	30	+0.033 +0.017	KK30-2GD 1K	1.1811	-0.0004 -0.0012	30	-0.010 -0.031
KK35-2GD	1.3780	+0.0013 +0.0007	35	+0.033 +0.017	KK35-2GD 1K	1.3780	-0.0005 -0.0015	35	-0.012 -0.037
KK40-2GD	1.5748	+0.0013 +0.0007	40	+0.033 +0.017	KK40-2GD 1K	1.5748	-0.0005 -0.0015	40	-0.012 -0.037

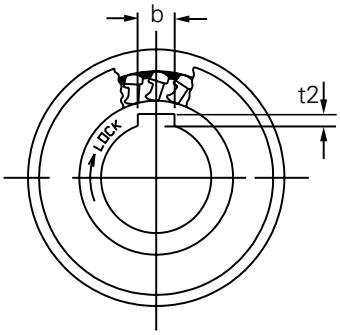
Model KK- 2GD and KK-2GD 1K

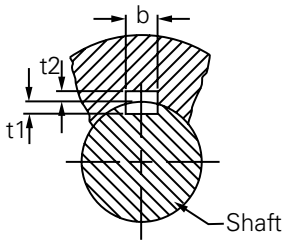




① Inner race
② Outer race
③ Cam cage
④ Ball
⑤ Seal
⑥ Side plate
⑦ Retainer







DIMENSIONS AND CAPACITIES

Size	A		B		C		D		r		Weight	
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	lb	g
15	0.630	16	1.378	35	0.591	15	1.278	32.45	0.024	0.6	0.2	70
17	0.669	17	1.575	40	0.669	17	1.435	36.45	0.024	0.6	0.2	100
20	0.748	19	1.850	47	0.787	20	1.667	42.35	0.039	1.0	0.3	150
25	0.787	20	2.047	52	0.984	25	1.852	47.05	0.039	1.0	0.4	200
30	0.827	21	2.441	62	1.181	30	2.189	55.60	0.039	1.0	0.6	280
35	0.866	22	2.835	72	1.378	35	2.543	64.60	0.043	1.1	0.9	410
40	1.063	27	3.150	80	1.575	40	2.819	71.60	0.043	1.1	1.3	600

KEYWAY DIMENSIONS

Model	b2 js 10		t1	t2
KK15-2GD 1K	5.0	+0.024	1.9	1.2
KK17-2GD 1K	5.0	+0.024	1.9	1.2
KK20-2GD 1k	6.0	+0.024	2.5	1.6
KK25-2GD 1k	8.0	+0.029	3.6	1.5
KK30-2GD 1k	8.0	+0.029	3.1	2.0
KK35-2GD 1k	10.0	+0.029	3.7	2.4
KK40-2GD 1K	12.0	+0.035	3.3	5.0

Dimensions in mm

* The dimension of t2 for KK25-2GD 1K is 0.5 mm shallow compared to DIN 6885. 3. Process the keyway on the shaft 0.5 mm deeper to use DIN.

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Models NSS-8 - NSS-60

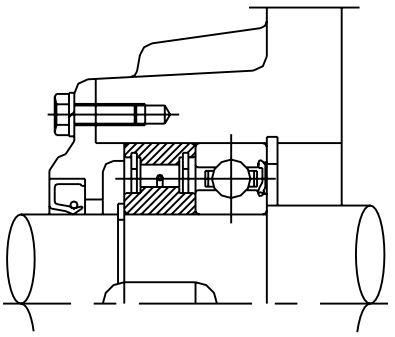
The NSS Series clutch is available in 12 sizes and is designed with the same overall dimensions as a standard light metric series ball bearing(6200 Series). The inner race offers a key seat and the outer race press fits into the housing. The clutch is furnished with protective oil and must be lubricated before operating. These clutches do not have bearings to support radial force, so additional bearing support is required. The NSS Series clutch is excellent for applications where space is restricted, and is suitable for overrunning.

LUBRICATION

1. Oil lubrication is recommended.
2. Do not use greases or lubricants with EP additives.

MODEL	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		BORE SIZE H7 I.D.				KEYWAY		A WIDTH	
	LB - FT	N-M	INNER RACE R/MIN	OUTER RACE R/MIN	LB - FT	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM
NSS 8	4.94	6.7	6,000	3,000	0.004	0.005	0.3	+0.0006 0.0000	8	+0.015 0.000	0.08 x 0.04	2 X 1.0	0.3	8
NSS10	8.85	12.0	4,500	2,300	0.005	0.007	0.4	+0.0006 0.0000	10	+0.015 0.000	0.12 x 0.06	3 X 1.4	0.4	9
NSS12	12.54	17.0	4,000	2,000	0.007	0.009	0.4	+0.0007 0.0000	12	+0.018 0.000	0.16 x 0.07	4 X 1.8	0.4	10
NSS15	16.23	22.0	3,500	1,800	0.007	0.010	0.6	+0.0007 0.0000	15	+0.018 0.000	0.20 x 0.05	5 X 1.2	0.4	11
NSS20	30.24	41.0	2,600	1,300	0.007	0.010	0.8	+0.0008 0.0000	20	+0.021 0.000	0.24 x 0.06	6 X 1.6	0.6	14
NSS25	41.30	56.0	2,200	1,100	0.015	0.020	1.0	+0.0008 0.0000	25	+0.021 0.000	0.32 x 0.08	8 X 2.0	0.6	15
NSS30	77.44	105.0	1,800	900	0.022	0.030	1.2	+0.0008 0.0000	30	+0.021 0.000	0.35 x 0.08	8 X 2.0	0.6	16
NSS35	100.31	136.0	1,600	800	0.022	0.030	1.4	+0.0010 0.0000	35	+0.025 0.000	0.39 x 0.10	10 X 2.4	0.7	17
NSS40	218.32	296.0	1,400	700	0.133	0.180	1.6	+0.0010 0.0000	40	+0.025 0.000	0.47 x 0.09	12 X 2.2	0.7	18
NSS45	255.93	347.0	1,300	650	0.155	0.210	1.8	+0.0010 0.0000	45	+0.025 0.000	0.55 x 0.08	14 X 2.1	0.7	19
NSS50	297.24	403.0	1,200	600	0.162	0.220	1.8	+0.0010 0.0000	50	+0.025 0.000	0.55 x 0.08	14 X 2.1	0.8	20
NSS60	478.68	649.0	910	460	0.243	0.330	2.4	+0.0012 0.0000	60	+0.030 0.000	0.71 x 0.09	18 X 2.3	0.9	22

A typical application is NSS unit as an overruning clutch on a roller conveyor to allow the rollers to continue to rotate after the drive has been stopped or is in excess of the driving speed. NSS series clutches must be provided with additional bearing to take up axial and radial loads.



INSTALLATION AND USAGE

1. The NSS series cam clutch is designed for press fit installation. Correct interference dimensions must be maintained to obtain maximum clutch performance.

FEATURES

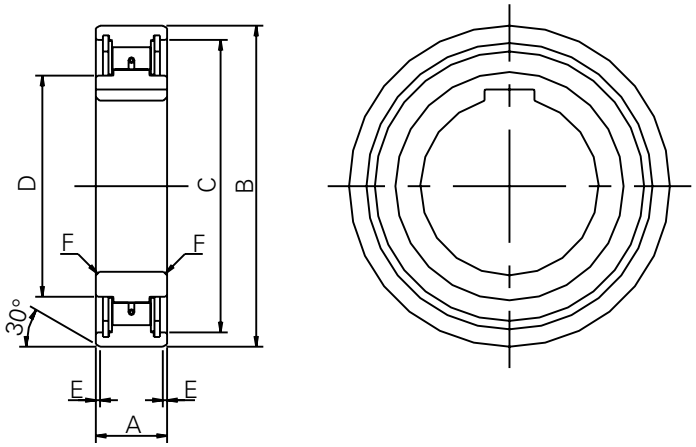
- Sprag type one way clutch
- High torque and longer life than roller ramp clutches
- Full metric design
- Overrunning speed is higher than roller ramp clutches

INDUSTRIES SERVED

- Food and beverage
- Gearing
- Printing
- Textile

FIELD APPLICATIONS

- Exercise equipment
- Food processing equipment
- Printing presses
- Roll conveyors



MODEL	B (O.D)		C		D OUTER DIMENSION OF INNER RACE		E		F		WEIGHT	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	LB	G
NSS 8	0.9	24	0.87	22.2	0.45	11.4	0.02	0.6	0.02	0.6	0.0	14
NSS10	1.2	30	1.06	27.0	0.61	15.6	0.02	0.6	0.02	0.6	0.1	27
NSS12	1.3	32	1.16	29.5	0.71	18.0	0.02	0.6	0.02	0.6	0.1	31
NSS15	1.4	35	1.26	32.0	0.81	20.6	0.02	0.6	0.02	0.6	0.1	39
NSS20	1.9	47	1.57	40.0	1.05	26.7	0.03	0.8	0.03	0.8	0.3	115
NSS25	2.0	52	1.77	45.0	1.26	32.0	0.03	0.8	0.03	0.8	0.3	140
NSS30	2.4	62	2.17	55.0	1.57	40.0	0.03	0.8	0.04	1.0	0.5	215
NSS35	2.8	72	2.48	63.0	1.77	45.0	0.03	0.8	0.04	1.0	0.7	300
NSS40	3.1	80	2.83	72.0	1.97	50.0	0.03	0.8	0.04	1.0	0.9	425
NSS45	3.3	85	2.97	75.5	2.24	57.0	0.05	1.2	0.04	1.0	1.1	495
NSS50	3.5	90	3.23	82.0	2.44	62.0	0.05	1.2	0.04	1.0	1.2	545
NSS60	4.3	110	3.94	100.0	3.15	80.0	0.05	1.2	0.06	1.5	2.1	950

INSTALLATION AND USAGE (CONTINUED)

2. Make sure the housing has enough strength to withstand the pressure required for the press fitting installation of the clutch.
3. The internal diameter of the housing should meet the H7 tolerance.
4. When installing the clutch, mount it with a type 62 bearing to avoid radical force, since this clutch does not have any bearings inside.
5. Confirm the direction of rotation before installation.
6. The recommended shaft tolerance is H7, and the key profile should be in accordance with the following standard.
7. NSS-8 – 12……DIN 6885. 1
8. NSS-15 - 60 …..DIN 6885. 3
9. Suitable surface pressure of the key should be selected according to your company design standards.

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Models NFS-12 - NFS-80

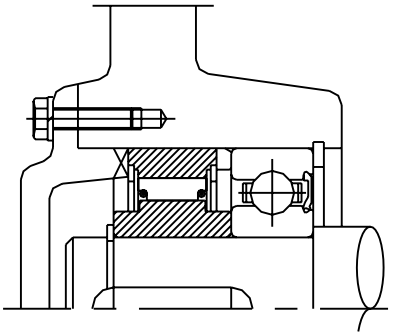
The NFS Series clutch is available in 13 sizes and is designed with the same overall dimensions as a Standard medium metric series ball bearing (6300 series). The NFS Series clutch offers approximately twice the torque capacity of the NSS Series clutch. The inner race contains a key seat and the outer race is designed with European key slots. The clutch is furnished with protective oil and must be lubricated before installation. In addition, bearing support is required.

LUBRICATION

1. Oil lubrication is recommended.
2. Do not use greases or lubricants with EP additives.

MODEL	TORQUE CAPACITY		MAX. OVERRUNNING SPEED		DRAG TORQUE		BORE SIZE H7				KEYWAY		A	
	LB - FT	N-M	INNER RACE R/MIN	OUTER RACE R/MIN	LB - FT	N-M	INCH	INCH	MM	MM	INCH	MM	INCH	MM
NFS12	13.3	18	4,500	2,300	0.030	0.04	0.5	+0.0007 0.0000	12	+0.018 0.000	0.16 x 0.07	4 X 1.8	0.5	13
NFS15	20.7	28	3,500	1,800	0.044	0.06	0.6	+0.0007 0.0000	15	+0.018 0.000	0.20 x 0.05	5 X 1.2	0.7	18
NFS17	36.9	50	3,200	1,600	0.081	0.11	0.7	+0.0007 0.0000	17	+0.018 0.000	0.20 x 0.05	5 X 1.2	0.7	19
NFS20	62.0	84	2,500	1,300	0.133	0.18	0.8	+0.0008 0.0000	20	+0.021 0.000	0.24 x 0.06	6 X 1.6	0.8	21
NFS25	94.4	128	2,000	1,000	0.140	0.19	1.0	+0.0008 0.0000	25	+0.021 0.000	0.32 x 0.08	8 X 2.0	0.9	24
NFS30	147.5	200	1,600	800	0.155	0.21	1.2	+0.0008 0.0000	30	+0.021 0.000	0.32 x 0.08	8 X 2.0	1.1	27
NFS35	350.3	475	1,400	700	0.310	0.42	1.4	+0.0010 0.0000	35	+0.025 0.000	0.39 x 0.10	10 X 2.4	1.2	31
NFS40	447.7	607	1,300	650	0.339	0.46	1.6	+0.0010 0.0000	40	+0.025 0.000	0.47 x 0.09	12 X 2.2	1.3	33
NFS45	557.6	756	1,100	550	0.413	0.56	1.8	+0.0010 0.0000	45	+0.025 0.000	0.55 x 0.08	14 X 2.1	1.4	36
NFS50	829.0	1,124	1,000	500	0.443	0.60	2.0	+0.0010 0.0000	50	+0.025 0.000	0.55 x 0.08	14 X 2.1	1.6	40
NFS60	1,456.7	1,975	840	420	0.642	0.87	2.4	+0.0012 0.0000	60	+0.030 0.000	0.71 x 0.09	18 X 2.3	1.8	46
NFS70	1,854.2	2,514	750	380	0.671	0.91	2.8	+0.0012 0.0000	70	+0.030 0.000	0.79 x 0.11	20 X 2.7	2.0	51
NFS80	2,894.2	3,924	670	340	0.900	1.22	3.1	+0.0012 0.0000	80	+0.030 0.000	0.87 x 0.12	22 X 3.1	2.3	58

NFS clutch is commonly used in an application where reverse rotation must be prevented. The shaft on which the clutch is mounted is supported by bearings to provide proper concentricity between housing and shaft and to take up radial axial loads.



PART NUMBER EXPLANATION

NFS - 35

- 35 — Bore size in millimeters
- NFS — Clutch series

FEATURES

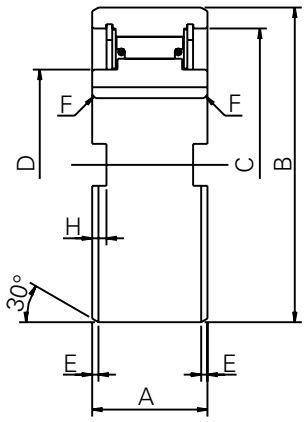
- Sprag type one way clutch
- High torque and longer life than roller ramp
- clutches
- Full metric design
- Overrunning speed is higher than roller
- ramp clutches

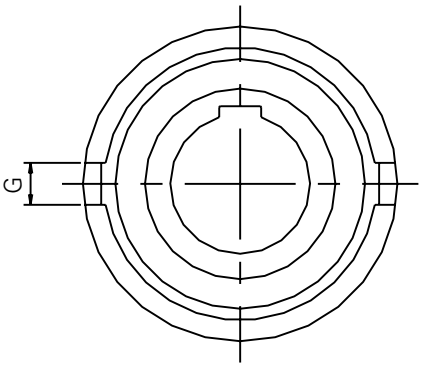
INDUSTRIES SERVED

- Food and beverageGearing
- PrintingTextile
- European machinery

FIELD APPLICATIONS

- Exercise equipmentPrinting presses
- Roll conveyorsFood processing equipment





DIMENSIONS AND CAPACITIES																
MODEL	B		C		D		E		F		G		H		WEIGHT	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	LB	G
NFS12	1.4	35	1.2	30	0.7	18	0.02	0.6	0.01	0.3	0.2	4	0.06	1.4	0.1	68
NFS15	1.7	42	1.4	36	0.9	22	0.03	0.8	0.01	0.3	0.2	5	0.07	1.8	0.3	120
NFS17	1.9	47	1.5	38	0.9	22	0.05	1.2	0.03	0.8	0.2	5	0.09	2.3	0.3	150
NFS20	2.0	52	1.8	45	1.1	27	0.05	1.2	0.03	0.8	0.2	6	0.09	2.3	0.5	220
NFS25	2.4	62	2.0	52	1.4	35	0.05	1.2	0.03	0.8	0.3	8	0.11	2.8	0.8	360
NFS30	2.8	72	2.4	62	1.6	40	0.07	1.8	0.04	1.0	0.4	10	0.10	2.5	1.2	530
NFS35	3.1	80	2.8	70	1.9	48	0.07	1.8	0.04	1.0	0.5	12	0.14	3.5	1.7	790
NFS40	3.5	90	3.1	78	2.1	54.4	0.07	1.8	0.04	1.0	0.5	12	0.16	4.1	2.3	1050
NFS45	3.9	100	3.4	85.3	2.3	59	0.07	1.8	0.04	1.0	0.6	14	0.18	4.6	3.0	1370
NFS50	4.3	110	3.6	92	2.6	65	0.07	1.8	0.04	1.0	0.6	14	0.22	5.6	4.2	1900
NFS60	5.1	130	4.3	110	3.3	84	0.10	2.6	0.06	1.5	0.7	18	0.22	5.5	6.9	3110
NFS70	5.9	150	4.9	125	3.6	91	0.10	2.6	0.06	1.5	0.8	20	0.27	6.9	9.7	4390
NFS80	6.7	170	5.5	140	3.9	100	0.10	2.6	0.06	1.5	0.8	20	0.30	7.5	14.2	6440

INSTALLATION AND USAGE

1. The outer race of the NFS Series cam clutch is designed for press fit installation to the housing. Correct interference dimensions of the outer race must be maintained to obtain maximum clutch performance. The internal diameter of the housing should meet the H7 tolerance. Keyways should be made in the end faces of the clutch for proper installation.

2. Make sure the housing has enough strength to withstand the pressure required for the press fitting installation of the clutch.

3. When installing the clutch, mount it with a type 63 bearing to avoid radial force, since this clutch does not have any bearings inside.

4. Mount the clutch on the shaft by rotating it in the direction marked by the arrow shown on the clutch plate.

5. The recommended shaft tolerance is H7, and the key profile should be in accordance with the following standard.

NFS-12DIN 6885. 1

NFS-15 – 80DIN6885. 3

Suitable surface pressure of the key should be selected according to your company design standards.

Models B203A - B210A

The B200 Series clutch is designed with a full complement of cams retained in the outer race and requires bearing support, lubrication and sealing. The B200A clutch is primarily used for backstopping applications, such as a pump back-stop application, but can be used for indexing or overrunning applications as well. The outer race diameter is the same as the metric 6200 series ball bearing to facilitate assembly adjacent to the ball bearing.

* Same O. D. as 6200 series ball bearing.

MODEL NUMBER	TORQUE CAPACITY		SHAFT OVERRUN RPM (MAX)	A (OVERALL DIAMETER)		B (WIDTH) INCH	
	LB-FT	N-M		INCHES	MM	INCHES	MM
B203A	39	53	2500	1.5728 / 1.5743	39.949 / 39.987	1.000	25.40
B204A	50	68	2500	1.8483 / 1.8498	46.947 / 46.985	1.000	25.40
B205A	80	108	2500	2.0448 / 2.0463	51.938 / 51.976	1.000	25.40
B206A	175	237	2000	2.4388 / 2.4403	61.946 / 61.984	1.125	28.58
B207A	275	373	2000	2.8326 / 2.8341	71.948 / 71.986	1.125	28.58
B208A	405	549	1800	3.1476 / 3.1491	79.949 / 79.987	1.250	31.75
B210A	575	780	1800	3.5413 / 3.5428	89.949 / 89.987	1.250	31.75

Key furnished with each clutch.

LUBRICATION

Series B200A series clutches are furnished prelubricated with a special light grease. In service they may be either oil or grease lubricated. Lubrications with EP additives should be avoided.

FEATURES

Shaft mounted

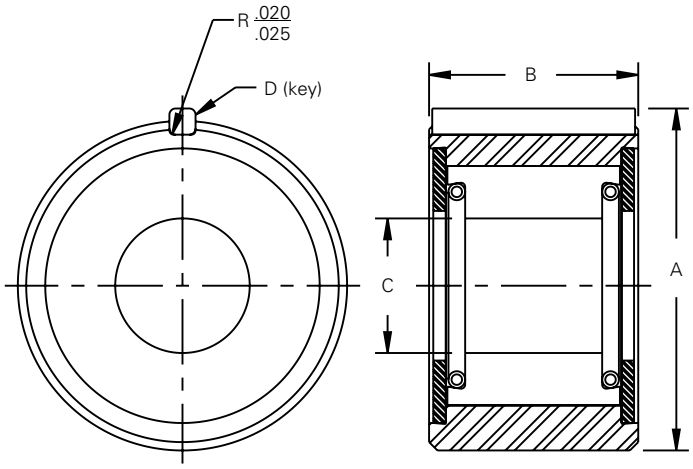
- Primarily backstop applications, may also be used in indexing and overrunning applications
- For freewheeling applications, the shaft that the clutch is mounted on should be the overrunning member
- Clutches require bearing support to ensure concentricity between inner and outer races. Taper on this shaft should not exceed .0002 inches per inch.
- No inner race (shaft is used as inner race)

INDUSTRIES SERVED

- Fitness
- Food processing
- Textile

FIELD APPLICATIONS

- Gearbox manufacturing
- Winches, hoists
- Industrial transmissions
- Pumps
- Shaft mount reducers
- Textile drives

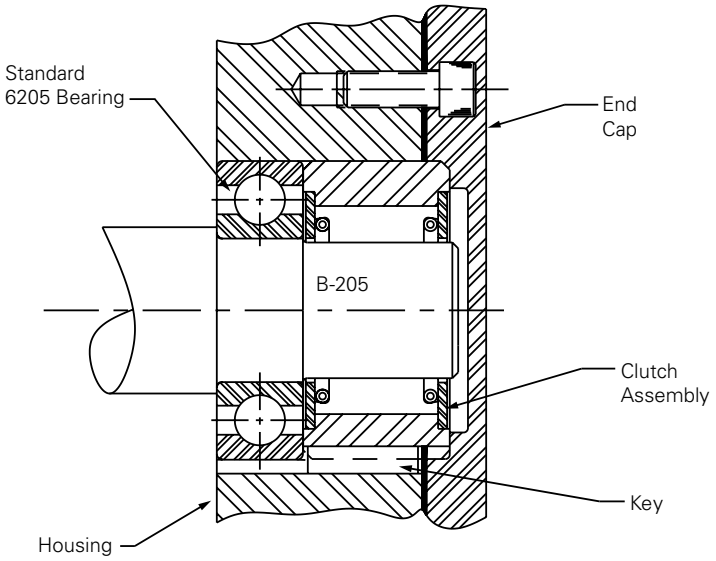


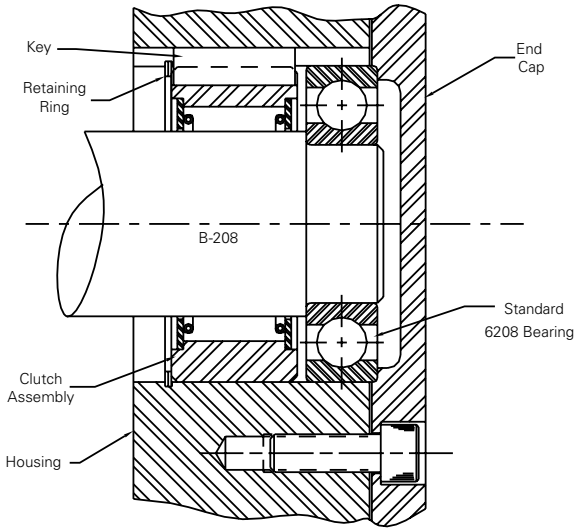
Mounting Data

*Shaft (not included) - harden to obtain RC 58-62 and .050 - .060 case depth after grinding. Concentricity between shaft and housing bore should not exceed .002" T.I.R.

MODEL NUMBER	C (SHAFT DIAMETER)		D (KEY SIZE) WITH KEY	USE WITH BEARING NUMBER	WEIGHT	
	INCHES	MM			LB	KG
B203A	.649 / .650	16.48 / 16.51	0.125 x 0.06	203	0.50	22.7
B204A	.739 / .740	18.77 / 18.80	0.19 x 0.09	204	0.75	34.0
B205A	.929 / .930	23.60 / 23.62	0.19 x 0.09	205	0.75	34.0
B206A	1.289 / 1.290	32.74 / 32.77	0.25 x 0.13	206	1.00	0.5
B207A	1.656 / 1.657	42.06 / 42.09	0.25 x 0.13	207	1.25	0.6
B208A	1.840 / 1.841	46.74 / 46.76	0.38 x 0.19	208	1.75	0.8
B210A	2.208 / 2.209	56.08 / 56.11	0.38 x 0.19	210	2.00	0.9

Key furnished with each clutch.





Models B501A - B513

FEATURES

- Dimensionally interchangeable with competitor's series
- Precision formed and honed cams provide extended wear life
- Versatile, compact design adaptable to numerous industrial applications

INDUSTRIES SERVED

- Fitness
- Food processing
- Textile

FIELD APPLICATIONS

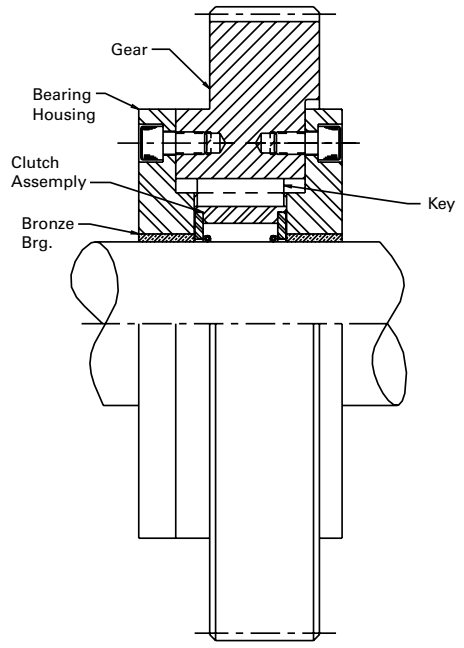
- Gearbox manufacturing
- Winches and hoists
- Industrial transmissions
- Pumps
- Shaft mount reducers
- Textile drives

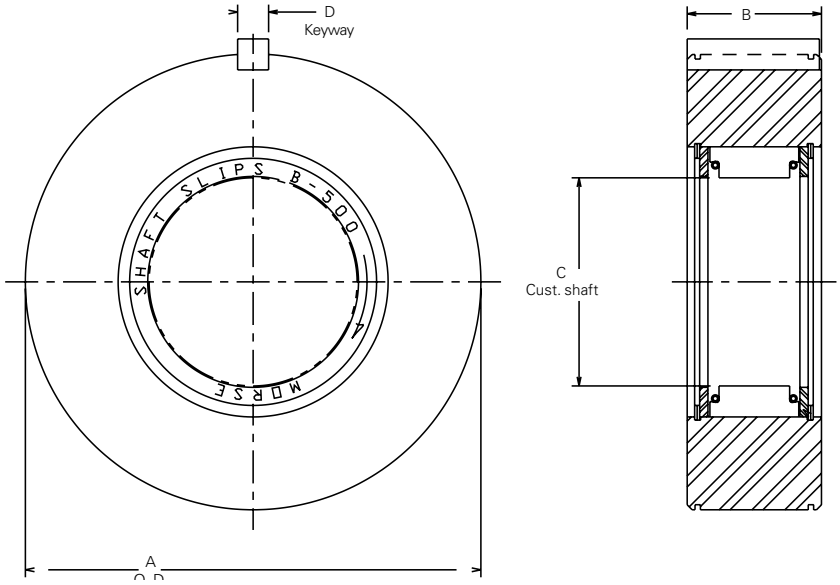
MODEL NUMBER	TORQUE RATING		MAX. TORQUE CAPACITY		SHAFT OVERRUN RPM (MAX)	DIMENSIONS A (OVERALL DIAMETER)	
	LB -FT	N-M	LB - FT	N-M		IN	MM
B501A	60	81	102	138	2500	1.5735 / 1.5745	39.967 / 39.992
B502	60	81	102	138	2500	1.8480 / 1.8490	46.939 / 46.965
B506	160	217	272	369	2000	2.4385 / 2.4395	61.938 / 61.963
B507A	160	217	272	369	2000	2.4385 / 2.4395	61.938 / 61.963
B509A	250	339	425	576	2000	2.8322 / 2.8332	71.938 / 71.963
B510A	250	339	425	576	2000	3.1470 / 3.1485	79.934 / 79.972
B511A	525	712	892	1209	2000	3.1480 / 3.1490	79.959 / 79.985
B512A	650	881	1,105	1498	2000	3.5410 / 3.5420	89.941 / 89.967
B513	1,250	1,695	2,125	2881	1800	4.7490 / 4.7500	120.625 / 120.650

* Torque rating is based on 10^6 load cycles fatigue life. Maximum capacity is based on 10^5 load cycles fatigue life.

Lubrication

B500 series clutches are furnished prelubricated with a light grease. In service they may be either oil or grease lubricated. Lubrications containing EP additives should be avoided.





MODEL NUMBER	DIMENSIONS						WEIGHT	
	B (WIDTH)		C (SHAFT DIAMETER)		D (KEY SIZE)			
	IN	MM	IN	MM	INCH	MM	LB	KG
B501A	1.000	25.40	.6495 / .6500	16.497 / 16.510	0.13 x 0.06	3.3 x 1.5	0.50	22.7
B502	0.875	22.23	.7378 / .7383	18.740 / 18.753	0.25 x 0.13	6.4 x 3.3	0.75	0.3
B506	1.000	25.40	1.1325 / 1.1335	28.766 / 28.791	0.25 x 0.13	6.4 x 3.3	0.75	0.3
B507A	1.125	28.58	.9696 / .9706	24.628 / 24.653	0.25 x 0.13	6.4 x 3.3	1.00	0.5
B509A	1.250	31.75	1.1325 / 1.1335	28.766 / 28.791	0.25 x 0.13	6.4 x 3.3	1.50	0.7
B510A	1.375	34.93	1.2955 / 1.2965	32.906 / 32.931	0.38 x 0.19	9.7 x 4.8	1.75	0.8
B511A	1.625	41.28	1.3770 / 1.3776	34.976 / 34.991	0.38 x 0.19	9.7 x 4.8	2.00	0.9
B512A	1.625	41.28	1.5400 / 1.5410	39.116 / 39.141	0.38 x 0.19	9.7 x 4.8	2.00	0.9
B513	1.750	44.45	2.0447 / 2.0457	51.935 / 51.961	0.50 x 0.25	12.7 x 6.4	2.50	1.1

MOUNTING DATA

*Required shaft diameter - harden to obtain Rc58-62 and .050 - .060 case depth after grinding. Grind to 16 microinch finish. Concentricity between shaft and housing bore should not exceed .003" T.I.R. Adequate bearing support must be provided between the shaft and clutch housing to maintain proper concentricity and support radial loads.

Models PB-3A - PB-16A

FEATURES

- PB series clutches feature precision formed cams, which provide highest torque capacities size-for-size combined with excellent wear life.
- These models are suitable for general purpose applications - overrunning, indexing and backstopping.
- Models PB-5A through PB-16A contain sealed construction and snap ring groove provided on hub of each clutch for attachment of gear, sheave, etc.
- Clutch is not to be used as a coupling. Specify direction of rotation when ordering.

MODEL NUMBER	TORQUE CAPACITY		MAXIMUM OVERRUNNING RPM		BORE SIZE			
					STOCK W/ KWY & SETSCREW			
	LB - FT	N-M	INNER RACE	OUTER RACE	BORE (INCH)	KEY (INCH)	BORE (MM)	KEY (MM)
PB-3A	40	54	1800	900	.375	1/8 x 1/16	9.52500	3.18 x 1.59
					.500	Roll Pin	12.7	Roll Pin
PB-5A	110	149	1800	900	.500	1/8 x 1/16	12.70000	3.18 x 1.59
					.625	3/16 x 3/32	15.87500	4.76 x 2.38
PB-6A	300	406	1800	800	.750	3/16 x 3/32	19.05000	4.76 x 2.38
PB-8A	450	610	1600	650	.875	3/16 x 3/32	22.22500	4.76 x 2.38
					1.000	1/4 x 1/8	25.40000	6.35 x 3.18
PB-10A	675	915	1200	400	1.125	1/4 x 1/8	28.57500 31.75000	6.35 x 3.18
					1.250	1/4 x 1/8	31.75000	6.35 x 3.18
PB-12A	1350	1830	1200	300	1.375	5/16 x 5/32	34.92500	7.94 x 3.97
					1.500	3/8 x 3/16	38.10000	9.53 x 4.76
PB-14A	1600	2170	950	300	1.625	3/8 x 3/16	41.27500	9.53 x 4.76
					1.750	3/8 x 3/16	44.45000	9.53 x 4.76
PB-16A	1800	2440	950	300	1.875	1/2 x 1/4	47.62500	12.7 x 6.35
					2.000	1/2 x 1/4	50.80000	12.7 x 6.35

MODEL NUMBER	DIMENSIONS							
	A (OVERALL LENGTH)		B (OVERALL DIAMETER)		C HUB DIAMETER		D	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM
PB-3A	1.880	47.600	2.000	50.800	0.874 / 0.875	22.20 / 22.23	0.781	19.800
PB-5A	2.750	69.800	2.000	50.800	1.249 / 1.250	31.73 / 31.75	1.250	31.700
PB-6A	3.188	81.000	2.875	73.000	1.374 / 1.375	34.90 / 34.93	1.563	39.700
PB-8A	3.563	90.500	3.250	82.600	1.749 / 1.750	44.42 / 44.45	1.688	42.900
PB-10A	3.625	92.100	3.750	95.200	2.249 / 2.250	57.13 / 57.15	1.719	43.700
PB-12A	3.875	98.400	4.438	112.700	2.499 / 2.500	63.48 / 63.50	1.875	47.600
PB-14A	4.375	111.100	5.500	139.700	2.874 / 2.875	73.00 / 73.03	2.125	54.000
PB-16A	4.375	111.100	5.500	139.700	3.249 / 3.250	82.53 / 82.55	2.125	54.000

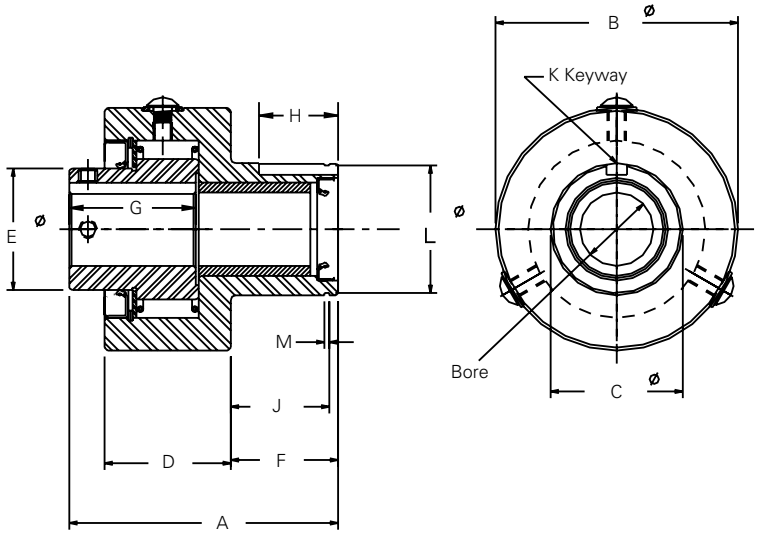
INDUSTRIES SERVED

- Packaging
- Printing

FIELD APPLICATIONS

- Indexing drives
- Print processing equipment

SPECIFY RIGHT (CW) OR LEFT HAND (CCW) DRIVE VIEWED FROM THIS END; INNER RACE DRIVING



MODEL NUMBER	DIMENSIONS									
	E		F (HUB LENGTH)		G (INNER RACE LENGTH)		H (HUB KEYWAY LENGTH)		J (FACE TO SNAP RING)	
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
PB-3A	0.781	21.400	0.813	20.600	0.938	23.800	0.500	12.700	0.715 / 0.720	18.16 / 18.29
PB-5A	1.000	25.400	1.000	25.400	1.563	39.700	0.688	17.500	0.900 / 0.905	22.86 / 22.99
PB-6A	1.375	34.900	1.313	33.300	1.625	41.300	1.000	25.400	1.215 / 1.220	30.86 / 30.99
PB-8A	1.625	41.300	1.438	36.500	1.750	44.500	1.063	27.000	1.315 / 1.320	33.40 / 33.53
PB-10A	2.000	50.800	1.438	36.500	1.688	42.900	1.063	27.000	1.340 / 1.345	34.04 / 34.16
PB-12A	2.375	60.300	1.438	36.500	2.063	52.400	1.125	28.600	1.311 / 1.321	33.30 / 33.55
PB-14A	3.000	76.200	1.750	44.500	2.000	50.800	1.375	34.900	1.625 / 1.630	41.28 / 41.40
PB-16A	3.250	82.600	1.750	44.500	2.125	54.000	1.438	36.500	1.650 / 1.655	41.91 / 42.04

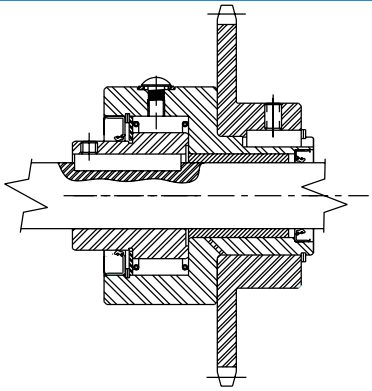
MODEL NUMBER	DIMENSIONS								
	K (KEY SIZE)		L (SNAP RING GROOVE DIAMETER)**		M (SNAP RING GROOVE WIDTH)**		S (RECOMMENDED SNAP RING)**	WEIGHT	
	INCH	MM	INCH	MM	INCH	MM		LB	KG
PB-3A	0.12500 x 0.06250	3.1750 x 1.5875	0.835 / 0.841	21.21 / 21.36	.036 / .056	0.91 / 1.42	RS87	0.75	3,402
PB-5A	0.18750 x 0.09375	4.7625 x 2.3813	1.198 / 1.206	30.43 / 30.63	.048 / .068	1.22 / 1.73	RS125	1.75	7,938
PB-6A	0.18750 x 0.09375	4.7625 x 2.3813	1.319 / 1.327	33.51 / 33.71	.048 / .068	1.22 / 1.73	RS137	3.50	15,876
PB-8A	0.25000 x 0.12500	6.3500 x 3.1750	1.686 / 1.696	42.82 / 43.08	.056 / .076	1.42 / 1.93	RS175	3.75	17,010
PB-10A	0.31250 x 0.15625	7.9375 x 3.9688	2.170 / 2.182	55.12 / 55.42	.056 / .076	1.42 / 1.93	RS225	6.00	27,216
PB-12A	0.37500 x 0.18750	9.5250 x 4.7625	2.379 / 2.391	60.43 / 60.73	.120 / .130	3.05 / 3.30	RST250	8.50	38,556
PB-14A	0.43750 x 0.21875	11.1125 x 5.5563	2.775 / 2.787	70.49 / 70.79	.056 / .076	1.42 / 1.93	RS287	14.75	66,906
PB-16A	0.50000 x 0.25000	12.7000 x 6.3500	3.144 / 3.156	79.86 / 80.16	.068 / .088	1.73 / 2.24	RS325	15.00	68,040

** Furnished by customer.

LUBRICATION

PB series clutches are prelubricated with grease and are ready for installation. These units can be operated in ambient temperatures of +20° F to +125° F.

All filler plugs are 1/4-28. All models have three filler holes at 120° except PB-3A, which has only one. Clutch models PB-5A through PB-16A can be oil lubricated by specifying on order.



For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Models HT 10 - HT 30

FEATURES

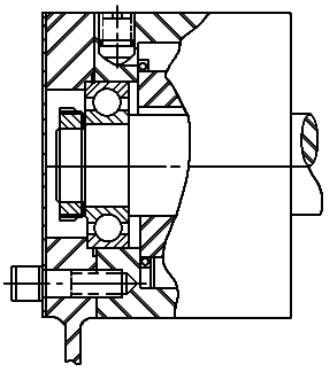
- Best used in indexing applications
- One end of clutch tapped for attaching sprockets, gear or ratchet arms
- May be used on overrunning and backstopping applications
- Intended for use on end of a shaft
- For freewheeling applications, the inner race should be overrunning

MODEL NUMBER	DIMENSIONAL INFORMATION							
	TORQUE CAPACITY		NOMINAL DRAG		BORE SIZE			
					MIN.		MAX.	
	LB - FT	N-M	LB - FT	N-M	INCH	MM	INCH	MM
HT 10	42	57	2.4	3.2	.4250 /.4275	10.795 / 10.859	0.625	15.875
HT 20	154	209	3.4	5	.4875 /.4900	12.383 / 12.446	1.313	33.338
HT30	440	597	4.0	5.4	.6125 /.6150	15.558 / 15.621	2.000	50.800

MODEL NUMBER	STOCK WITH STD KEYWAY		DIMENSIONS			
			A (CLUTCH LENGTH)		B (CLUTCH DIAMETER)	
	INCH	MM	IN	MM	IN	MM
HT 10	.62500 (.18750 x .09375)	15.8750 (4.7625 x 2.3813)	2.125	53.975	2.375	60.325
HT 20	1.00 1.125, 1.25000 (.25000 x .12500)	25.40, 28.5750, 31.7500 (6.3500 x 3.1750)	2.281	57.944	3.563	90.488
	1.31250 (.31250 x .15625)	33.3375 (7.9375 x 3.9688)				
HT 30	1.50000, 1.75000 (.37500 x .18750)	38.1000, 44.4500 (9.5250 x 4.7625)	2.750	69.850	4.500	114.300
	1.93750, 2.00000 (.50000 x .25000)	49.2125, 50.8000 (12.7000 x 6.3500)				

INSTALLATION AND LUBRICATION

- Before installation a snap-ring ball bearing must be inserted in the counterbored end, complete with a gasket or seal to retain the lubricant.
- Always apply pressure on the inner race, never on the outer race when installing. It is important that the clutch fit snugly on the shaft and have proper fitting keys.
- HT series clutches are furnished with a light lubrication prior to shipment only as an anticorrosive measure and must be fully lubricated after the snap-ring ball bearing has been incorporated by the customer.
- Use Type A automatic transmission fluid and fill until oil runs out between hub and end cap.

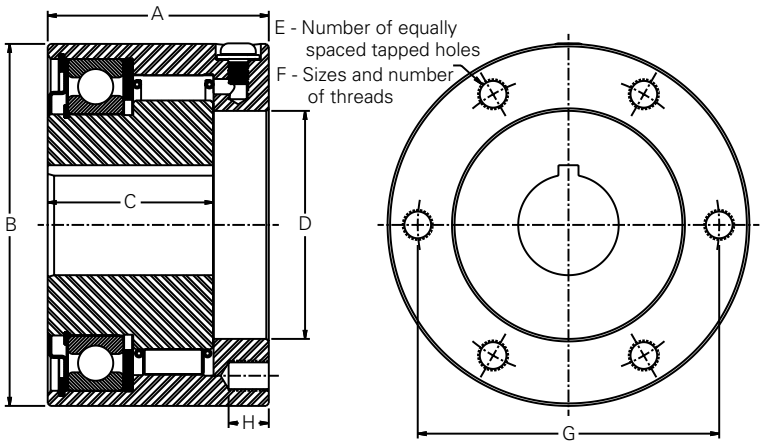


INDUSTRIES SERVED

- Equipment rebuild

FIELD APPLICATIONS

- Indexing
- Printing press
- Conveyor
- Poly bag machinery
- Plastic bag machinery



MODEL NUMBER	DIMENSIONS									
	C (INNER RACE LENGTH)		D (BEARING HOUSING DIAMETER)		E (NUMBER OF TAPPED HOLES)	F (TAPPED HOLE THREAD)		G (BOLT CIRCLE)		H (THREAD DEPTH)	
	IN	MM	IN	MM		IN	MM	IN	MM	IN	MM
HT 10	1.563	39.688	1.1811 / 1.1816	30.000 / 30.013	4	.2500 - 28	6.350 - 711	1 .875	47.63	0.375	9.525
HT 20	1.688	42.863	2.0470 / 2.0475	51.994 / 52.007	4	.3125 - 24	7.938 - 610	2.750	69.85	0.375	9.525
HT 30	2.063	52.388	2.8345 / 2.8350	71.996 / 72.009	6	.3750 - 24	9.525 - 610	3.750	95.25	0.469	11.906

MODEL NUMBER	** SNAP RING BALL BRG. TO FIT D COUNTER BORE			APPROX. WT.	
	BEARING NO.	INCH	MM	LB	KG
HT 10	6200NR 2RS	0.394	10.0	2.6	1
HT 20	6304 NR 2RS / 6205 NR 2RS	.7874 / .9843	20.000 / 25.001	5.0	2
HT 30	6306 NR 2RS / 6207 NR 2RS	1.1811 / 1.3780	30.000 / 35.001	11.0	5

** Furnished by customer.

Models BR-20 - BR-70

The cam of the BR Series clutch is designed to lift off and has no contact with the inner and outer race when it overruns. This is due to centrifugal force and is known as a lift off type. These cam clutches are suitable for overrunning: high speed inner race/low speed engaged outer race or backstopping-high speed inner race overrunning. Please Specify direction of inner race overrunning, either Left / counterclockwise or right / clockwise if viewing end of shaft.

MODEL	RATED TORQUE LOAD		RPM AT CAM LIFT-OFF	INNER RACE SPEED OF ROTATION		STANDARD BORE SIZES			
	LB - FT	N-M		MIN. (R/MIN)	MAX. (R/MIN)	INCH	INCH	MM	MM
BR-20	281.7	382	350	880	3,600	0.8	+0.0008 0.000	20	+0.021 0.000
BR-25	354.0	480	350	880	3,600	1.0	+0.0008 0.000	25	+0.021 0.000
BR-30	447.7	607	350	880	3,600	1.2	+0.0008 0.000	30	+0.021 0.000
BR-35	506.0	686	300	740	3,600	1.4	+0.0010 0.000	35	+0.025 0.000
BR-40	722.8	980	300	720	3,600	1.6	+0.0010 0.000	40	+0.025 0.000
BR-45	795.1	1,078	280	670	3,600	1.8	+0.0010 0.000	45	+0.025 0.000
BR-50	1,264.9	1,715	240	610	3,600	2.0	+0.0010 0.000	50	+0.025 0.000
BR-60	2,566.0	3,479	200	490	3,600	2.4	+0.0012 0.000	60	+0.030 0.000
BR-70	3,492.4	4,735	200	480	3,600	2.8	+0.0012 0.000	71	+0.030 0.000

MODEL	OUTER RACE INNER DIAMETER D (H7)				E		F (OPEN TYPE ONLY)		MOUNTING HOLES				PULL OFF HOLES	H MIN	
	INCH	INCH	MM	MM	INCH	MM	INCH	MM	BOLT CIRCLE DIAMETER		DIAMETER OF HOLES		S -T	INCH	MM
									INCH	MM	INCH	MM			
BR - 20	2.6	0.000 -0.001	66	0.000 -0.030	1.60	40.7	1.60	40.7	3.1	78	0.24 - 0.26	6 - 6.6	2-M 6	2.1	53
BR - 25	2.8	0.000 -0.001	70	0.000 -0.030	1.76	44.7	1.76	44.7	3.2	82	0.24 - 0.26	6 - 6.6	2-M 6	2.3	58
BR - 30	3.0	0.000 -0.001	75	0.000 -0.030	1.96	49.7	1.96	49.7	3.4	87	0.24 - 0.26	6 - 6.6	2-M 6	2.5	64
BR - 35	3.1	0.000 -0.001	80	0.000 -0.030	2.15	54.7	2.15	54.7	3.8	96	0.32 - 0.26	8 - 6.6	2-M 6	2.8	70
BR - 40	3.5	0.000 -0.001	90	0.000 -0.035	2.55	64.7	2.55	64.7	4.3	108	0.32 - 0.35	8 -9.0	2-M 8	3.2	81
BR - 45	3.7	0.000 -0.001	95	0.000 -0.035	2.74	69.7	2.74	69.7	4.4	112	0.32 - 0.35	8 -9.0	2-M 8	3.4	86
BR - 50	4.3	0.000 -0.001	110	0.000 -0.035	3.33	84.7	3.33	84.7	5.2	132	0.32 - 0.35	8 -9.0	2-M 8	4.1	103
BR - 60	4.9	0.000 -0.002	125	0.000 -0.040	3.15	80.0	3.15	80.0	6.1	155	0.32 - 0.43	8 - 11.0	2-M10	4.3	110
BR - 70	5.5	0.000 -0.002	140	0.000 -0.040	3.74	95.0	3.74	95.0	6.5	165	0.47 - 0.43	12 - 11.0	2-M10	4.9	125

FEATURES

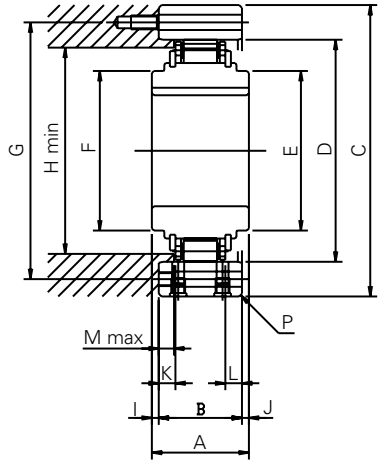
- Lift-off cam design provides contact free operation between the cams and the races for increased wear-life
- Symmetrical design allows operation in either direction
- External bearing support must be provided for concentricity between the housing and shaft
- Inform application Engineering if clutch is to be used in vertical application

INDUSTRIES SERVED

- Gearing
- Manufacturing
- Packaging
- Textile

FIELD APPLICATIONS

- Conveyors
- Shaft mount reducers
- Vertical shaft backstop



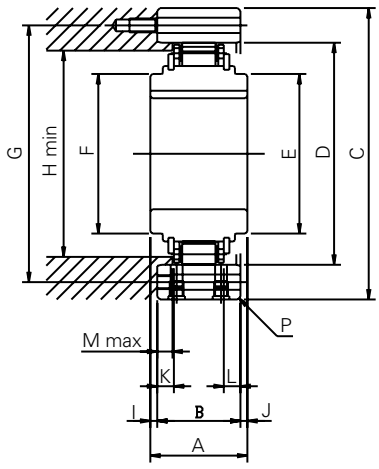
MODEL	SHAFT HOLE				INNER RACE A		OUTER RACE B		OUTER DIAMETER C (H7)			
	KEYWAY		CHAMFER O									
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM
BR-20	0.24 x 0.11	6 X 2.8	0.02	0.5	1.4	35	1.4	35	3.5	0.000 -0.001	90	0.000 -0.035
BR-25	0.32 x 0.13	8 X 3.3	0.02	0.5	1.4	35	1.4	35	3.7	0.000 -0.001	95	0.000 -0.035
BR-30	0.32 x 0.13	8 X 3.3	0.04	1.0	1.4	35	1.4	35	3.9	0.000 -0.001	100	0.000 -0.035
BR-35	0.39 x 0.13	10 X 3.3	0.04	1.0	1.4	35	1.4	35	4.3	0.000 -0.001	110	0.000 -0.035
BR-40	0.47x 0.13	12 X 3.3	0.04	1.0	1.4	35	1.4	35	4.9	0.000 -0.002	125	0.000 -0.040
BR-45	0.55 x 0.15	14 X 3.8	0.04	1.0	1.4	35	1.4	35	4.9	0.000 -0.002	130	0.000 -0.040
BR-50	0.55 x 0.15	14 X 3.8	0.04	1.0	1.6	40	1.6	40	5.9	0.000 -0.002	150	0.000 -0.040
BR-60	0.71 x 0.17	18 X 4.4	0.06	1.5	2.4	60	2.0	50	6.9	0.000 -0.002	175	0.000 -0.040
BR-70	0.79 x 0.19	20 X 4.9	0.06	1.5	2.4	60	2.0	50	7.5	0.000 -0.002	190	0.000 -0.046

MODEL	I		J		K (OPEN TYPE ONLY)		L (OPEN TYPE ONLY)		M MAX (OPEN TYPE ONLY)		P		NO. OF OIL PLUGS	WEIGHT		INERTIAL MOVEMENT GD2 KG-M2
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	MM	IN.		KG.	IB.	
BR-20	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	3XPT-1/8	1.3	2.8	2.25 X 10 -4
BR-25	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	3XPT-1/8	1.4	3.0	3.28 X 10 -4
BR-30	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	3XPT-1/8	1.5	3.3	4.44 X 10 -4
BR-35	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	4XPT-1/8	1.9	4.1	5.65 X 10 -4
BR-40	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	4XPT-1/8	2.4	5.2	1.01 X 10 -3
BR-45	0	0	0	0	0.20	5.0	0.20	5	0.16	4.0	1.5	0.06	4XPT-1/8	2.6	5.7	1.22 X 10 -3
BR-50	0	0	0	0	0.30	7.5	0.30	7.5	0.26	6.5	2.0	0.08	4XPT-1/8	4.1	9.0	2.64 X 10 -3
BR-60	0.2	5	0.2	5	0.28	7.0	0.28	7	0.24	6.0	2.0	0.08	4XPT-1/8	7.3	16.0	3.73 X 10 -3
BR-70	0.2	5	0.2	5	0.28	7.0	0.28	7	0.24	6.0	2.0	0.08	4XPT-1/8	8.1	17.8	6.65 X 10 -3

Models BR-80 - BR-240

MODEL	RATED TORQUE LOAD		RPM AT CAM LIFT-OFF	INNER RACE SPEED OF ROTATION		DIAMETER H7			
	LB - FT	N-M		MIN. (R/MIN)	MAX. (R/MIN)	INCH	INCH	MM	MM
BR-80	4,806.7	6,517	190	3,600	190	3.1	+0.0012 0.000	80	+0.030 0.000
BR-90	6,288.4	8,526	180	3,000	180	3.5	+0.0014 0.000	90	+0.035 0.000
BR-100	10,480.7	14,210	200	2,700	200	3.9	+0.0014 0.000	100	+0.035 0.000
BR-130	15,034.4	20,384	180	2,400	180	5.1	+0.0016 0.000	130	+0.040 0.000
BR-150	25,009.2	33,908	160	1,300	160	5.9	+0.0016 0.000	150	+0.040 0.000
BR-180	25,009.2	33,908	160	3,500	160	7.1	+0.0018 0.000	180	+0.046 0.000
BR-190	30,358.0	41,160	140	3,000	140	7.5	+0.0018 0.000	190	+0.046 0.000
BR-220	37,658.4	51,058	140	3,000	140	8.7	+0.0018 0.000	220	+0.046 0.000
BR-240	45,753.9	62,034	130	3,000	130	9.4	+0.0018 0.000	240	+0.046 0.000

MODEL	OUTER RACE INNER DIAMETER D (H7)				E		F (OPEN TYPE ONLY)		MOUNTING HOLES				PULL OFF HOLES	H MIN	
	INCH	INCH	MM	MM	INCH	MM	INCH	MM	BOLT CIRCLE DIAMETER		Q-R		S -T	INCH	MM
									INCH	MM	INCH	MM			
BR-80	6.3	0.000 -0.002	160	0.000 -0.040	4.53	115.0	4.53	115.0	7.3	185	0.47 - 0.43	12 - 11.0	2-M10	5.8	148
BR-90	7.1	0.000 -0.002	180	0.000 -0.046	5.31	135.0	5.31	135.0	8.1	206	0.47 - 0.53	12 - 13.5	2-M12	6.7	170
BR-100	8.3	0.000 -0.002	210	0.000 -0.046	5.63	143.0	5.63	143.0	9.4	240	0.47 - 0.69	12 - 17.5	2-M16	7.1	180
BR-130	9.4	0.000 -0.002	240	0.000 -0.046	6.81	173.0	6.81	173.0	10.9	278	0.47 - 0.69	12 - 17.5	2-M16	8.3	210
BR-150	12.2	0.000 -0.002	310	0.000 -0.052	9.57	243.0	14.17	360.0	14.2	360	0.47 - 0.69	12 - 17.5	2-M16	11.0	280
BR-180	12.2	0.000 -0.002	310	0.000 -0.052	11.42	290.0	10.63	270.0	14.2	360	0.47 - 0.69	12 - 17.5	2-M16	11.0	280
BR-190	13.0	0.000 -0.002	330	0.000 -0.057	12.20	310.0	11.02	280.0	15.0	380	0.63 - 0.69	16 - 17.5	2-M16	11.8	300
BR-220	14.2	0.000 -0.002	360	0.000 -0.057	13.39	340.0	12.60	320.0	16.1	410	0.71 - 0.69	18 - 17.5	2-M16	13.0	330
BR-240	15.4	0.000 -0.002	390	0.000 -0.057	14.57	370.0	13.78	350.0	17.3	440	0.71 - 0.69	18 - 17.5	2-M16	14.2	360



MODEL	SHAFT HOLE				INNER RACE		OUTER RACE		OUTER DIAMETER C (H7)			
	KEYWAY		CHAMFER O									
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM
BR-80	0.87 x 0.21	22 X 5.4	0.06	1.5	2.8	70	2.4	60	8.3	0.000 -0.002	210	0.000 -0.046
BR-90	0.98 x 0.21	25 X 5.4	0.06	1.5	3.1	80	2.8	70	9.1	0.000 -0.002	230	0.000 -0.046
BR-100	1.10 x 0.25	28 X 6.4	0.06	1.5	3.5	90	3.1	80	10.6	0.000 -0.002	270	0.000 -0.052
BR-130	1.26 x 0.29	32 X 7.4	0.08	2.0	3.5	90	3.1	80	12.2	0.000 -0.002	310	0.000 -0.052
BR-150	1.42 x 0.33	36 X 8.4	0.08	2.0	3.5	90	3.1	80	15.7	0.000 -0.002	400	0.000 -0.057
BR-180	1.77 x 0.41	45 X 10.4	0.08	2.0	4.1	105	3.1	80	15.7	0.000 -0.002	400	0.000 -0.057
BR-190	1.77x 0.41	45 X 10.4	0.08	2.0	4.1	105	3.1	80	16.5	0.000 -0.002	420	0.000 -0.063
BR-220	1.97 x 0.45	50 X 11.4	0.08	2.0	4.1	105	3.1	80	18.1	0.000 -0.002	460	0.000 -0.063
BR-240	2.20 x 0.49	56 X 12.4	0.08	2.0	4.1	105	3.1	80	19.3	0.000 -0.002	490	0.000 -0.063

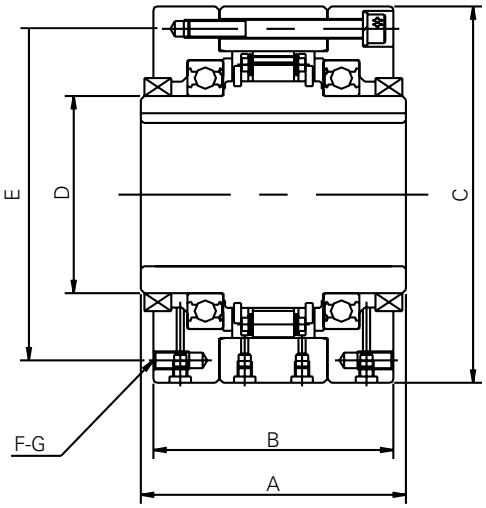
MODEL	I (OPEN TYPE ONLY)		J (OPEN TYPE ONLY)		K (OPEN TYPE ONLY)		L (OPEN TYPE ONLY)		M MAX		P		NO. OF OIL PLUGS	WEIGHT		INERTIAL MOVEMENT GD2 KG-M2
	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM		KG.	LB.	
BR-80	0.2	5	0.2	5	0.47	12.0	0.47	12	0.43	11.0	0.08	2.0	4XPT-1/8	12.0	26.4	1.77 X 10 -2
BR-90	0.2	5	0.2	5	0.67	17.0	0.67	17	0.63	16.0	0.08	2.0	4XPT-1/8	16.0	35.2	3.16 X 10 -2
BR-100	0.2	5	0.2	5	0.54	13.7	0.54	13.7	0.47	12.0	0.08	2.0	4XPT-1/4	23.0	50.7	6.31 X 10 -2
BR-130	0.2	5	0.2	5	0.54	13.7	0.54	13.7	0.47	12.0	0.08	2.0	4XPT-1/4	31.0	68.3	0.109
BR-150	0.2	5	0.2	5	0.54	13.7	0.54	13.7	0.47	12.0	0.12	3.0	4XPT-1/4	58.0	127.8	0.365
BR-180	0.2	5	0.8	20	0.45	11.5	0.63	15.9	0.55	14.0	0.12	3.0	4XPT-1/4	60.0	132.2	0.435
BR-190	0.2	5	0.8	20	0.49	12.5	0.35	8.9	0.30	7.5	0.12	3.0	4XPT-1/4	65.0	143.3	0.563
BR-220	0.2	5	0.8	20	0.49	12.5	0.43	10.9	0.35	9.0	0.12	3.0	4XPT-1/4	76.0	167.5	0.789
BR-240	0.2	5	0.8	20	0.49	12.5	0.43	10.9	0.35	9.0	0.12	3.0	4XPT-1/4	84.0	185.1	1.05

Models BR-20P - BR-70P

Similar to previous type, the package type Cam Clutch is designed into a ball bearing cassette that makes installation with a torque arm and/or coupling fast and easy. The package type Cam Clutch is grease lubricated.

MODEL	RATED TORQUE LOAD		RPM AT CAM LIFT-OFF	INNER RACE SPEED OF ROTATION		SHAFT DIA. H7			
	LB - FT	N-M		MIN. (R/MIN)	MAX. (R/MIN)	INCH	INCH	MM	MM
BR 20P	281.7	382	350	880	3,600	0.8	+0.0008 0.0000	20	+0.021 0.000
BR 25P	354.0	480	350	880	3,600	1.0	+0.0008 0.0000	25	+0.021 0.000
BR 30P	447.7	607	350	880	3,600	1.2	+0.0008 0.0000	30	+0.021 0.000
BR 35P	506.0	686	300	740	3,600	1.4	+0.0010 0.0000	35	+0.025 0.000
BR 40P	722.8	980	300	720	3,600	1.6	+0.0010 0.0000	40	+0.025 0.000
BR 45P	795.1	1,078	280	670	3,600	1.8	+0.0010 0.0000	45	+0.025 0.000
BR 50P	1,264.9	1,715	240	610	3,600	2.0	+0.0010 0.0000	50	+0.025 0.000
BR 60P	2,566.0	3,479	200	490	3,600	2.4	+0.0012 0.0000	60	+0.030 0.000
BR 70P	3,492.4	4,735	200	480	3,600	2.8	+0.0012 0.0000	70	+0.030 0.000

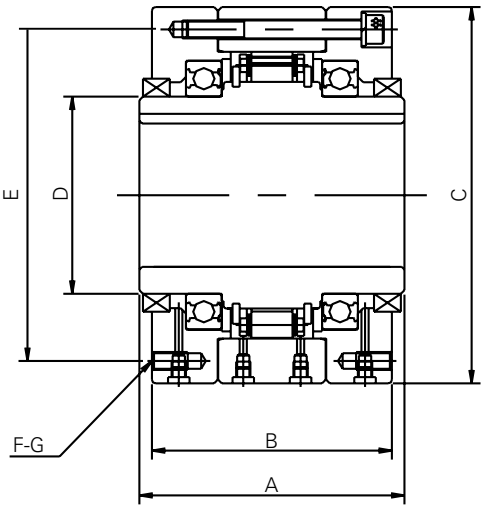
Models BR-20P - BR-70P



MODEL	SHAFT HOLE KEYWAY		INNER RACE A		OUTER RACE B		C (H7)				OUTER RACE INNER DIAMETER D (H7)		E		F - G
	INCH	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM	INCH	MM	INCH	MM	
BR-20P	0.24 x 0.11	6 X 2.8	3.4	87	3.1	79	3.7	0.0000 -0.0014	94	0.000 -0.035	1.2	30	3.1	78	6-M 6
BR-25P	0.32 x 0.13	8 X 3.3	3.5	89	3.2	81	3.9	0.0000 -0.0014	98	0.000 -0.035	1.4	35	3.2	82	6-M 6
BR-30P	0.32 x 0.13	8 X 3.3	3.7	94	3.3	85	4.1	0.0000 -0.0014	103	0.000 -0.035	1.8	45	3.4	87	6-M 6
BR-35P	0.39 x 0.13	10 X 3.3	3.7	94	3.3	85	4.4	0.0000 -0.0014	112	0.000 -0.035	2.0	50	3.8	96	8-M 6
BR-40P	0.47 x 0.13	12 X 3.3	3.9	100	3.6	91	5.1	0.0000 -0.0016	130	0.000 -0.040	2.2	55	4.3	108	8-M 8
BR-45P	0.55 x 0.15	14 X 3.8	3.9	100	3.6	91	5.3	0.0000 -0.0016	135	0.000 -0.040	2.4	60	4.4	112	8-M 8
BR-50P	0.55 x 0.15	14 X 3.8	4.2	107	3.9	98	6.0	0.0000 -0.0016	152	0.000 -0.040	2.8	70	5.2	132	8-M 8
BR-60P	0.71 x 0.17	18 X 4.4	4.8	122	4.4	112	7.1	0.0000 -0.0016	180	0.000 -0.040	3.1	80	6.1	155	8-M 10
BR-70P	0.79 x 0.19	20 X 4.9	5.0	128	4.7	120	7.5	0.0000 -0.0018	190	0.000 -0.046	3.5	90	6.5	165	12-M 10

MODEL	RATED TORQUE CAPACITY		RPM AT CAM	RECOMMENDED SPEED OF INNER RACE (RPM)		SHAFT DIA. H7			
	FT-LBS.	N-M	LIFT-OFF	MIN.	MAX.	INCH	INCH	MM	MM
BR-80P	4,807	6,517	190	450	3600	3.1	+0.0012 0.0000	80	+0.030 0.000
BR-90P	6,288	8,526	180	420	3000	3.5	+0.0014 0.0000	90	+0.035 0.000
BR-100P	10,481	14,210	180	460	2500	3.9	+0.0014 0.0000	100	+0.035 0.000
BR-130P	15,034	20,384	180	420	2200	5.1	+0.0016 0.0000	130	+0.040 0.000
BR-150P	25,009	33,908	160	370	1300	5.9	+0.0016 0.0000	150	+0.040 0.000
BR-180P	25,009	33,908	160	370	1800	7.1	+0.0016 0.0000	180	+0.040 0.000
BR-190P	30,358	41,160	140	340	1800	7.5	+0.0018 0.0000	190	+0.046 0.000
BR-220P	37,658	51,058	140	330	1800	8.7	+0.0018 0.0000	220	+0.046 0.000
BR-240P	45,754	62,034	130	310	1800	9.4	+0.0018 0.0000	240	+0.046 0.0000

Models BR-80P - BR-240P



MODEL	KEYWAY		A INNER RACE		B OUTER RACE		C (H7)				OUTER RACE INNER DIAMETER D (H7)		E		F - G
	INCH	MM	INCH	MM	INCH	MM	INCH	INCH	MM	MM	INCH	MM	INCH	MM	
BR-80P	0.87 x 0.21	22 X 5.4	5.8	148	5.3	134	8.3	0.0000 -0.0018	210	0.000 -0.046	4.3	110	7.3	185	12-M 10
BR-90P	0.98 x 0.21	25 X 5.4	6.0	152	5.4	138	9.3	0.0000 -0.0018	235	0.000 -0.046	4.7	120	8.1	206	12-M 12
BR-100P	1.10 x 0.25	28 X 6.4	7.3	186	6.8	172	10.8	0.0000 -0.0020	275	0.000 -0.052	5.1	130	9.4	240	12-M 16
BR-130P	1.26 x 0.29	32 X 7.4	8.2	208	7.4	188	12.4	0.0000 -0.0020	314	0.000 -0.052	6.3	160	10.9	278	12-M 16
BR-150P	1.42 x 0.33	36 X 8.4	8.9	226	8.0	204	15.7	0.0000 -0.0020	400	0.000 -0.063	7.9	200	14.2	360	12-M 16
BR-180P	1.77 x 0.41	45 X 10.4	9.4	240	9.2	233	15.7	0.0000 -0.0025	400	0.000 -0.063	8.7	220	10.2	260	12-M 16
BR-190P	1.77 x 0.41	45 X 10.4	9.8	250	9.5	242	16.5	0.0000 -0.0025	420	0.000 -0.063	9.4	240	15.0	380	16-M 16
BR-220P	1.97 x 0.45	50 X 11.4	9.8	250	9.5	242	18.1	0.0000 -0.0025	460	0.000 -0.063	10.2	260	16.1	410	18-M 16
BR-240P	2.21 x 0.49	56 X 12.4	10.2	260	9.9	252	19.3	0.0000 -0.0025	490	0.000 -0.063	11.0	280	17.3	440	18-M 16

GREASE LUBRICATION

- Morse recommends an NLGI, Grade 1 or 2 premium bearing grease, mineral oil based in a lithium soap thickener, non-EP type.
- Synthetic polyurea base fluid greases are also acceptable.
- EP greases (having extreme pressure characteristics) with slippery additives such as graphite or molybdenum disulfide must not be used. They can cause the clutch to malfunction.
- Clutches specified as grease are filled at the factory and are ready-to-use.
- Grease is not recommended for low temperatures or for performance indexing applications.
- Generally relubricate every two months and more often for dirty environments.
- For operation in ambient temperatures over +200°F or below +20°F, consult Application Engineering.

GENERAL USE: (+20°F TO +125°F, NLGI #2)

- Texaco Multifak® AFB 2, Texaco Polystar RB
- Mobilith® SHC 100
- Shell Alvania® #2

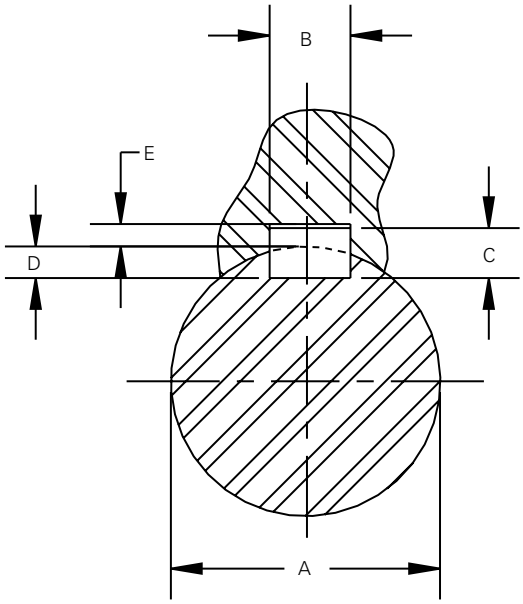
FOOD GRADE APPLICATIONS (USDA GRADE H-1, UP TO +300°F):

- Keystone Nevastane® HT/AW-1 or -2
- Mobil® FM 101,102
- Lubriplate® FML-1, FML-2

Note: Not all greases are compatible and clutch performance can be affected.

OIL LUBRICATION

- Morse standard oil is a multipurpose automatic transmission fluid, good from -20°F to +150°F. For temperatures outside this range, use synthetic ATF oil.
- Oils with EP additives must not be used. They can cause the clutch to malfunction.
- Clutches ordered with oil are partially filled and then drained after factory run-in. Therefore, the clutch must be filled half full with oil before being operated.
- The standard oil lip seal is made from a polyacrylic compound, which is good to +250°F.
- Oil is recommended for indexing applications.
- Check the oil level monthly. See the maintenance and installation sheet provided with each unit.



Metric Keyway Dimensions and Tolerances in Inches

BORE SHAFT SIZE				KEY WIDTH		MODELS MZEU & BR					
A				B		KEY HEIGHT					
OVER		TO				C		D		E	
INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
0.2	6	0.3	8	.0780 / .0795	2	0.0787	2	.047/.051	1.1938 / 1.2954	.039 / .051	0.9906/1.2954
0.3	8	0.4	10	.1173 / .1189	3	0.1181	3	.071 ¡.075	1.8034 / 1.905	.055 / .067	1.397/1.7018
0.4	10	0.5	12	.1565 / .1584	4	0.1575	4	.098/.102	2.4892 / 2.5908	.071 / .083	1.8034/2.1082
0.5	12	0.7	17	.1959 / .1979	5	0.1969	5	.118/.122	2.9972 / 3.0988	.091 / .102	2.3114/2.5908
0.7	17	0.9	22	.2353 / .2372	6	0.2362	6	.138/.142	3.5052 / 3.6068	.110 / .122	2.794/3.0988
0.9	22	1.2	30	.3138 / .3161	8	0.2756	7	.158/.165	4.0132 / 4.191	.130 / .146	3.302/3.7084
1.2	30	1.5	38	.3926 / .3948	10	0.3149	8	.197/.205	5.0038 / 5.207	.130 / .146	3.302/3.7084
1.5	38	1.7	44	.4709 / .4739	12	0.315	8	.197/205	5.0038 / 5.207	.130 / 146	3.302/3.7084
1.7	44	2.0	50	.5497 / .5527	14	0.3543	9	.217/.224	5.5118 / 5.6896	.150 / .165	3.81 /4.191
2.0	50	2.3	58	.6284 / .6314	16	0.3937	10	.236/.244	5.9944 / 6.1976	.169 / .185	4.2926/4.699
2.3	58	2.6	65	.7072 / .7102	18	0.4331	11	.276/.284	7.0104 / 7.2136	.173 / .189	4.3942/4.8006
2.6	65	3.0	75	.7857 / .7891	20	0.4724	12	.295/.303	7.493 / 7.6962	.193 / .209	4.9022/5.3086

BORE SHAFT SIZE				KEY WIDTH		MODELS NSS & NFS					
A				B		KEY HEIGHT					
OVER		TO				C		D		E	
INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
0.2	6	0.3	8	.0780 /. 0795	2	0.0787	2	.047 / 051	1.1938 / 1.2954	.039 / .051	0.9906 / 1.2954
0.3	8	0.4	10	.1173 / .1189	3	0.1181	3	.071 / .075	1.8034 / 1.8034	.055 / .067	1.397 / 1.7018
0.4	10	0.5	12	.1565 / .1584	4	0.1575	4	.098 / .102	2.4892 / 2.5908	.071 / .083	1.8034 / 2.1082
0.5	12	0.7	17	.1959 / .1979	5	0.1181	3	.075 / .079	1.90 / 2.0066	.047 / .051	1.1938 / 1.2954
0.7	17	0.9	22	.2353 / .2372	6	0.1575	4	.098 / .102	2.4892 / 2.5908	.063 / .075	1.6002 / 1.905
0.9	22	1.2	30	.3138 / .3161	8	0.1969	5	.122 / .126	3.0988 / 3.2004	.079 / .091	2.0066 / 2.3114
1.2	30	1.5	38	.3926 / .3948	10	0.2362	6	.146 / .154	3.7084 / 3.9116	.095 / .106	2.413 / 2.6924
1.5	38	1.7	44	.4709 / .4739	12	0.2362	6	.154 / .161	3.9116 / 4.0894	.087 / .098	2.2098 / 2.4892
1.7	44	2.0	50	.5497 / .5527	14	0.2362	6	.157 / .165	3.9878 / 4.191	.083 / .094	2.1082 / 2.3876
2.0	50	2.3	58	.6284 / .6314	16	0.2756	7	.185 / .193	4.699 / 4.9022	.095 / .106	2.413 / 2.6924
2.3	58	2.6	65	.7072 / .7102	18	0.2756	7	.189 / .197	4.8006 / 5.0038	.091 / .102	2.3114 / 2.5908
2.6	65	3.0	75	.7857 / .7891	20	0.3149	8	.213 / .220	5.4102 / 5.588	.106 / .118	2.6924 / 2.9972

Bore Sizes and Recommended Shaft Tolerances

MODELS	NOMINAL BORE		BORE DIAMETER		SHAFT DIAMETER	
	INCHES	MM	INCHES	MM	INCHES	MM
PB-3A through PB-16A and HT	0.3750	9.525	0.3750 / 0.3760	9.525 / 9.550	0.3745 / 0.3740	9.512 / 9.500
	0.5000	12.700	0.5000 / 0.501 0	12.700 / 12.725	0.4995 / 0.4990	12.687 / 12.675
	0.6250	15.875	0.6250 / 0.6260	15.875 / 15.900	0.6245 / 0.6240	15.862 / 15.850
	0.7500	19.050	0.7500 / 0.7510	19.050 / 19.075	0.7495 / 0.7490	19.037 / 19.025
	0.8750	22.225	0.8750 / 0.8760	22.225 / 22.250	0.8745 / 0.8740	22.21 2 / 22.200
	1.0000	25.400	1.0000 / 1.0010	25.400 / 25.425	0.9995 / 0.9990	25.387 / 25.375
	1.1250	28.575	1.1250 / 1.1260	28.575 / 28.600	1.1245 / 1.1235	28.562 / 28.537
	1.2500	31.750	1 .2500 / 1 .251 0	31.750 / 31.775	1.2495 / 1.2485	31.737 / 31.712
	1.3125	33.338	1 .31 25 / 1 .31 35	33.338 / 33.363	1.31 20 / 1.3110	33.325 / 33.299
	1.3750	34.925	1 .3750 / 1 .3760	34.925 / 34.950	1.3745 / 1.3735	34.912 / 34.887
	1.5000	38.100	1.5000 / 1.5010	38.100 / 38.125	1.4995 / 1.4985	38.087 / 38.062
	1.6250	41.275	1.6250 / 1.6260	41.275 / 41.300	1.6245 / 1.6235	41.262 / 41.237
	1.7500	44.450	1.7500 / 1.7510	44.450 / 44.475	1.7495 / 1.7485	44.437 / 44.412
	1.8750	47.625	1.8750 / 1.8760	47.625 / 47.650	1.8745 / 1.8735	47.612 / 47.587
	1.9375	49.213	1.9375 / 1.9385	49.213 / 49.238	1.9370 / 1.9360	49.200 / 49.174
	2.0000	50.800	2.0000 / 2.0010	50.800 / 50.825	1.9995 / 1.9985	50.787 / 50.762
All Models M300 through M1000	0.5000	12.700	0.4990 / 0.5000	12.675 / 12.700	0.4990 / 0.4980	12.675 / 12.649
	0.6250	15.875	0.6240 / 0.6250	15.850 / 15.875	0.6240 / 0.6230	15.850 / 15.824
	0.7500	19.050	0.7490 / 0.7500	19.025 / 19.050	0.7490 / 0.7480	19.025 / 18.999
	0.8750	22.225	0.8740 / 0.8750	22.200 / 22.225	0.8740 / 0.8730	22.200 / 22.174
	1.0000	25.400	0.9990 / 1.0000	25.375 / 25.400	0.9990 / 0.9980	25.375 / 25.349
	1.1250	28.575	1.1240 / 1.1250	28.550 / 28.575	1.1240 / 1.1230	28.550 / 28.524
	1.2500	31.750	1.2490 / 1.2500	31.725 / 31.750	1.2490 / 1.2480	31.725 / 31.699
	1.3750	34.925	1.3740 / 1.3750	34.900 / 34.925	1.3740 / 1.3730	34.900 / 34.874
	1.5000	38.100	1.4990 / 1.5000	38.075 / 38.100	1.4990 / 1.5000	38.075 / 38.100
	1.6250	41.275	1.6240 / 1.6250	41.250 / 41.275	1.6240 / 1.6230	41.250 / 41.224
	1.7500	44.450	1.7490 / 1.7500	44.425 / 44.450	1.7490 / 1.7480	44.425 / 44.399
	1.8750	47.625	1.8740 / 1.8750	47.600 / 47.625	1.8740 / 1.8730	47.600 / 47.574
	2.0000	50.800	1.9990 / 2.0000	50.775 / 50.800	1.9990/1.9980	50.775 / 50.749
	2.2500	57.150	2.2485 / 2.2500	57.112 / 57.150	2.2485 / 2.2475	57.112 / 57.087
	2.5000	63.500	2.4985 / 2.5000	63.462 / 63.500	2.4985 / 2.4975	63.462 / 63.437
	3.0000	76.200	2.9985 / 3.0000	76.162 / 76.200	2.9985/2.9975	76.162 / 76.137
	3.5000	88.900	3.4985 / 3.5000	88.862 / 88.900	3.4985 / 3.4975	88.862 / 88.837
	4.0000	101.600	3.9985 / 4.0000	101.562 / 101.600	3.9985 / 3.9975	101.562 / 101.537
	4.5000	114.300	4.4980 / 4.5000	114.249 / 114.300	4.4980 / 4.4970	114.249 / 114.224
	5.0000	127.000	4.9980 / 5.0000	126.949 / 127.000	4.9980 / 4.9970	126.949 / 126.924
	5.5000	139.700	5.4980 / 5.5000	139.649 / 139.700	5.4980 / 5.4970	139.649 / 139.624
	6.0000	152.400	5.9980 / 6.0000	152.349 / 152.400	5.9980 / 5.9970	152.349 / 152.324

On applications where a press fit is required, do not exceed .001 inch.

Backstop applications which permit or require looser fits than those listed can use the following fits shown below.

Bore sizes up to:	**Shaft to bore clearance**
2.375	.003
4.25	.004
6.00	.004
over 6.00	.006

CLUTCH REPAIR

Morse cam clutches are precision mechanisms made by experienced workmen under careful supervision and high quality control standards; clutch repair requires this same attention which can be provided only by the manufacturer. Clutch should not be disassembled in the field for repair. Please contact the factory for assistance in determining the best course of action.

INSTALLATION AND MAINTENANCE

Specific instruction sheets are packed with each clutch which cover the installation, lubrication and maintenance of each unit.

These instruction sheets can also be found on www.RegalPTS.com.

Clutch Selection Procedure

(For External Backstop Selection see page 41)

1. Calculate torque to be transmitted:
   $T\ (Lb\text{-}Ft) = \frac{HP \times 5252}{rpm}$
2. Determine mode of operation (overrunning, indexing, backstopping). Refer to Modes of Operation on page 8.
3. Select service factor from tables below.
4. Calculate design torque. (Multiply torque from step 1 by service factor).
5. Determine bore requirements of clutch.
6. Determine overrunning speed and overrunning member (inner or outer race).
7. Select clutch based upon:
   A. Design torque requirements
   B. Bore size
   C. Mode of operation
   D. Speed

Refer to pages 4 through 7 for condensed description and application guide. See also data pages on specific series. Consider M Series clutches for longer life. See page 20 for indexing life. On overrunning and backstopping applications, refer to page 21 for expected wear life data.

8. Specify catalog number and bore size as:

Model No.	Bore Size	Rotation
MG-600A	1.500/1.4999	See page 8-9

9. Direction of rotation must be specified for clutch series PB, HT and for clutch models used with couplings and reservoirs.

10. Refer vertical or other special applications to Application Engineering. Supply complete application information including sketch of drive system.

SERVICE FACTORS

OVERRUNNING

TYPE OF LOAD	SERVICE FACTOR (ALL MODELS)
1. Gradually applied	1.25
2. Suddenly applied - minor shock loads	1.75
3. Suddenly applied - heavy shock loads	2.50
4. Severe shock	5.00

Applications where linear or torsional vibration is present, such as reciprocating engines, or where impact loads occur due to sudden engagement and pickup of high inertia loads, greater service factors should be used. Consult Application Engineering for more information.

INDEXING

LOAD CYCLES/MINUTE	DEGREES/LOAD CYCLE	KK	NSS	NFS	B200A	B-500	PB-A	HT	M*	MZEU
Up through 150	Less than 90°	1.5	1.5	1.5	2	2	2	1.5	1.5	1.5
Greater than 150	Less than 90°	2	2	2	3	3	3	2	2	2
Up through 150	90° or greater	2	2	2	3	3	3	2	2	2
Greater than 150	90° or greater	3	3	3	4	4	4	3	2.5	3

*Use model MI for applications requiring more then 150 cycles/minute or greater than 90° stroke angle. Also, use MI model when greater accuracy of index is required up to a limit of 1200 load cycles/minute.

BACKSTOPPING

Service factors are generally 1.0 to 2.0 where occasional loading occurs and 1.5 to 2.5 where frequent loading is used. The maximum service factor selected is dependent upon overload conditions as specified by the purchaser.

SELECTION EXAMPLE

A fan drive requires a clutch to overrun from fan speed to zero speed when power is shut off. The drive consists of a 50 HP motor at 1750 rpm, a 1.7:1 reduction to fan and a fan shaft diameter of 1.500".

STEPS	SOLUTION
1. Torque to be transmitted	$T = \frac{HP \times 5252}{rpm} = \frac{50 \times 5252}{1030} = 255$ Lb-Ft
2. Determine mode of operation	Overrunning
3. Proper service factor	Use 1 .25 service factor for fan
4. Design torque	2SS x 1.25 = 319 Lb-Ft
5. Bore requirement	1.50 inches
6. Overrunning speed and member	Inner race overruns at 1030 RPM to zero
7. and 8. Clutch selection and specification	Clutch which satisfies shaft size, torque and speed is MG-600 A-1 with 1.5 / 1.4999 bore with standard keyway.

For selection assistance, call Application Engineering at 1-800-626-2093 or fax the information to:
Regal Power Transmission Solutions
P. O. Box 687
Maysville, KY 41056
Fax (606) 564-2079

1. Application: State purpose of clutch and equipment clutch will be used on:

2. Main operating mode: Overrunning _____ Backstopping _____ Indexing _____

3. Power driving clutch: Electric _____ Diesel _____ Gasoline _____ Other _____
Horsepower _____ Hp, at _____ rpm

4. Torque through clutch: _____ lb-feet, at a Driving rpm _____ on the clutch.

5. Load type/(service factor): Gradual (1.5) _____ Sudden load, minor shock (1.75) _____
Sudden load, heavy shock (2.5) _____ Severe shock (5.0) _____

6. Lubrication: Oil _____ Grease _____ Specific type _____ Serviced? _____

7. Environment: Ambient Temp. (F) _____ Exposed to: Dirt, dust? _____ Moisture? _____

8. Shaft diameter (inches) _____ Keyway size, if known _____
Clutch Mounting Position: Horizontal _____ Vertical _____

9. Indexing applications only: Max indexes per minute _____ Degrees per index _____
Hours per day in use _____ Days used per year _____

10. All other applications: Continuous duty, _____ hours per day
If intermittent duty cycle; Driving (%) _____ Overrunning (%) _____ Idle (%) _____
If overrunning; Inner race maximum rpm _____ Outer race max rpm _____

11. Quantity required: This application _____ Annually _____

12. Additional comments?

13. Please provide sketch if possible.

Thank you!

Morse®
Mechanical Clutches

The industry's broadest line of conveyor backstop, overrunning and indexing clutches.

Morse mechanical clutches offer the most complete and versatile selection in the industry. Eleven series of clutches perform three basic modes of operation:

- Overrunning
- Indexing
- Backstopping

These units have set standards of performance, offering:

- Higher overrunning speeds
- Greater torque capacities
- Longer service life

Cam clutches are precision devices that lock the inner and outer races through the wedging action of cams to transmit torque in one direction of rotation while overrunning in the opposite direction of rotation. These units are often referred to as freewheels, sprag, overrunning, backstop or one-way clutches, depending upon their application.

Protect your equipment with Morse and Browning Torque Overload Devices.

Browning and Morse torque overload devices are designed to protect machinery when an overload or jam occurs. Utilizing a torque overload device can help increase production, reduce downtime and prevent costly repairs. Regal Power Transmission Solutions offers eight different types of torque overload devices available in shear pin, ball detent and friction facing designs. These units are available with up to 1800 rpm, 21,500 ft/lbs of torque and at best, can maintain trip torque within ±3% accuracy to meet the needs of the most demanding applications.

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Torque Overload Devices

Regal Power Transmission Solutions offers one of the broadest lines of torque overload devices to help you cost-effectively manage torque in a wide range of applications.

Regal Power Transmission Solutions offers seven types of Torque overload devices to help you protect equipment and machinery so you can:

- Reduce the cost and hassle of overload related damages
- Increase production by reducing downtime
- Dial in trip torque precision to help reduce nuisance trips

Browning and Morse torque overload devices are suitable for many different applications. Browning shear pin hubs and Browning and Morse torque limiters are a cost-effective solution to help protect primary drives and conveyors. For higher-precision applications such as wrapping or cartoning equipment, Browning Torq/Pro delivers repeatability and accuracy. In applications requiring an ON/OFF switch, such as a press machine or for high-speed applications like packaging conveyors, the Torq/Pro TPZ is the best-suited device. For servo motor driven applications choose the Torq/Pro TPX and for wash-down applications, such as filling equipment, the Torq/Gard is the best solution. If you need application assistance, please contact Application Engineering at 1-800-626-2093.

TORQ/GARD

TGC 60

- 60 — Size (1/10 of the maximum torque capacity, in.-lbs.)
- TGC — Series

If required shaft bushing is ordered separately ex.

60 BU 012

- 012 — Shaft size (16th of an inch)
- BU — Bushing kit
- 60 — Torq/Gard Size

Bushing kit includes key and set screws. Torq/Gards can be made into couplings by ordering separate components. Single strand TG sprocket kits to bolt on are stocked.

TG 40 A 45 K

- K — Kit
- 45 — Number of teeth
- A — A-Plate
- 40 — #40 roller chain
- TG — Torq/Gard

Includes mounting bolts.

Browning Torque Limiter

T45L x FB

- FB — Specify bore size in inches
- T45L — Browning torque limiter with 4.5" OD

Bushing is supplied with Browning torque limiter.
Sprocket for torque limiter is ordered separately 50T45L26.

50 T45L 26

- 26 — Number of teeth
- T45L — Browning torque limiter with 4.5" OD
- 50 — #50 roller chain

Morse Torque Limiter

350A -2 TL x FB

- FB — Specify bore size
- TL — Series
- -2 — Number of disc springs (max. 2)
- 350A — Overall diameter (3.5 inches)

Required bushing is ordered separately; bushing length determined by sprocket selection.

350 AG 5 26

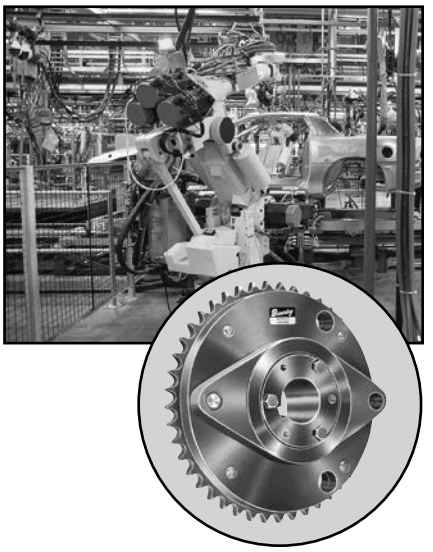
- 26 — Number of teeth in sprocket
- 5 — #50 pitch roller chain
- AG — A plate, ground (63 micro-inch)
- 350 — Fits Morse TL model 350

Browning Torq/Pro

TP 30 H FB or MPB

- FB or MPB — Specify finished bore or min. plain bore
- H — Springs (light, medium or heavy)
- 30 — Model number
- TP — Series

When ordering a Torq/Pro coupling specify Torq/Pro unit, Torq/Pro sprocket, coupling chain and adjoining sprocket.

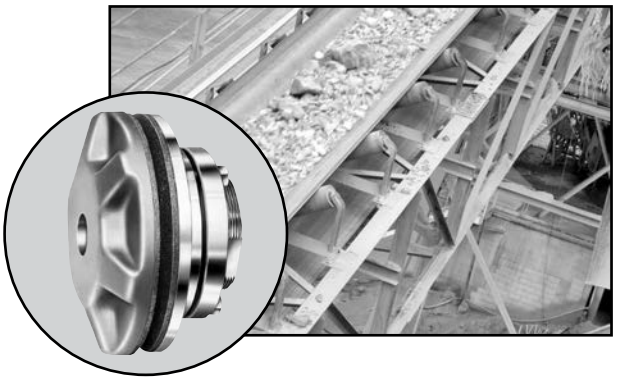


BROWNING SHEAR PIN HUBS AND SPROCKETS
(Page 97)

Features
•Helps prevent damage to machinery due to sudden overload by shearing a necked pin at a predetermined load, allowing the sprocket to rotate freely without the hub
•New shear pins must be installed to reengage drive
Bore range.....0.38" - 5"
Torque range.....0.88 - 21,572 lb-ft.
Precision tripping torque.....±20%

MORSE TORQUE LIMITERS
(Page 101)

FEATURES
•Overload protection for mechanical drive systems
•Adjustable spring pressure determines overload setting and reengages drive when overload condition subsides
•Also available as a torque-limiting coupling
Bore range.....0.38" - 4.87"
Torque range.....1 - 6,300 lb-ft.
Precision tripping torque±25%

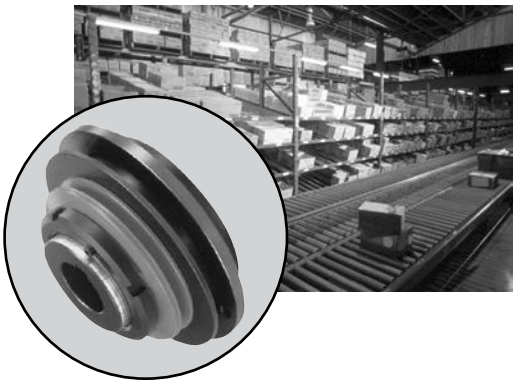


BROWNING TORQUE LIMITERS
(Page 107)

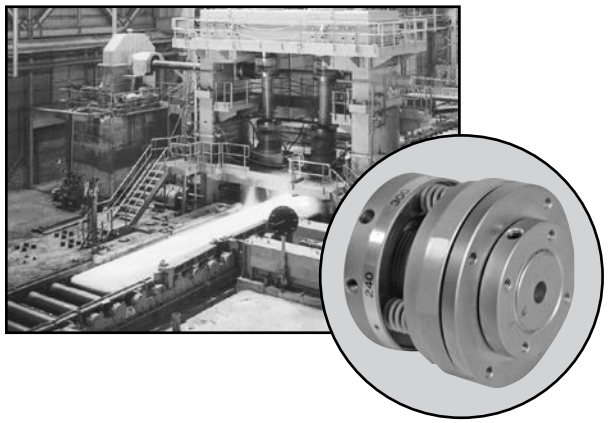
Features
•Torque control devices that slip under excessive load
•Adjustable spring pressure determines overload setting and reengages drive when overload condition subsides
•Effective overload protection for a wide variety of applications
Bore range.....0.5" - 2.5"
Torque range67 - 733 lb-ft.
Precision tripping torque±25%

BROWNING TORQ/PRO
(Page 110)

FEATURES
•Overload protection with increased accuracy
•Adjustable spring pressure transmits torque through a ball-in-detent arrangement
•Resets to the same initial position
Bore range .....0.19" - 5.12"
Torque range.....2.6 - 5,270 lb-ft.
Precision tripping torque.....±10%



BROWNING TORQ/PRO X (TPX)
(Page 104)

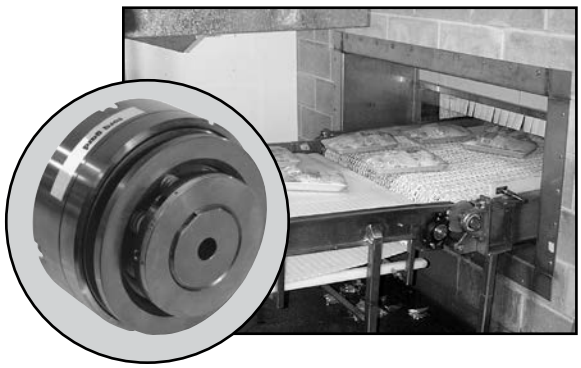


FEATURES

- Patent pending, innovative ball and wedge mechanism, helps prevent backlash
- Ball and pocket are uniquely designed to fit together in only one position
- Adjust trip torque by simply turning the adjustment nut
- Torque setting can be easily verified by checking the torque scale and indicator

Bore range.....0.28" - 2.75"
Torque range.....1.25" - 578 lb-ft.
Precision tripping torque.....±3%

BROWNING TORQ/PRO Z (TPZ)
(Page 108)



FEATURES

- TPZ is reset by applying a load in the direction of the shaft, either manually or by means of external force.
- Shaft revolution can be started or stopped at wil- it can be used as a mechanical ON-OFF clutch
- The ball and pocket act as the torque transmission element and are uniquely designed to fit together in only one position

Bore range.....0.31" - 1.96"
Torque range.....1.77 - 332 lb-ft.
Precision tripping torque.....±10%

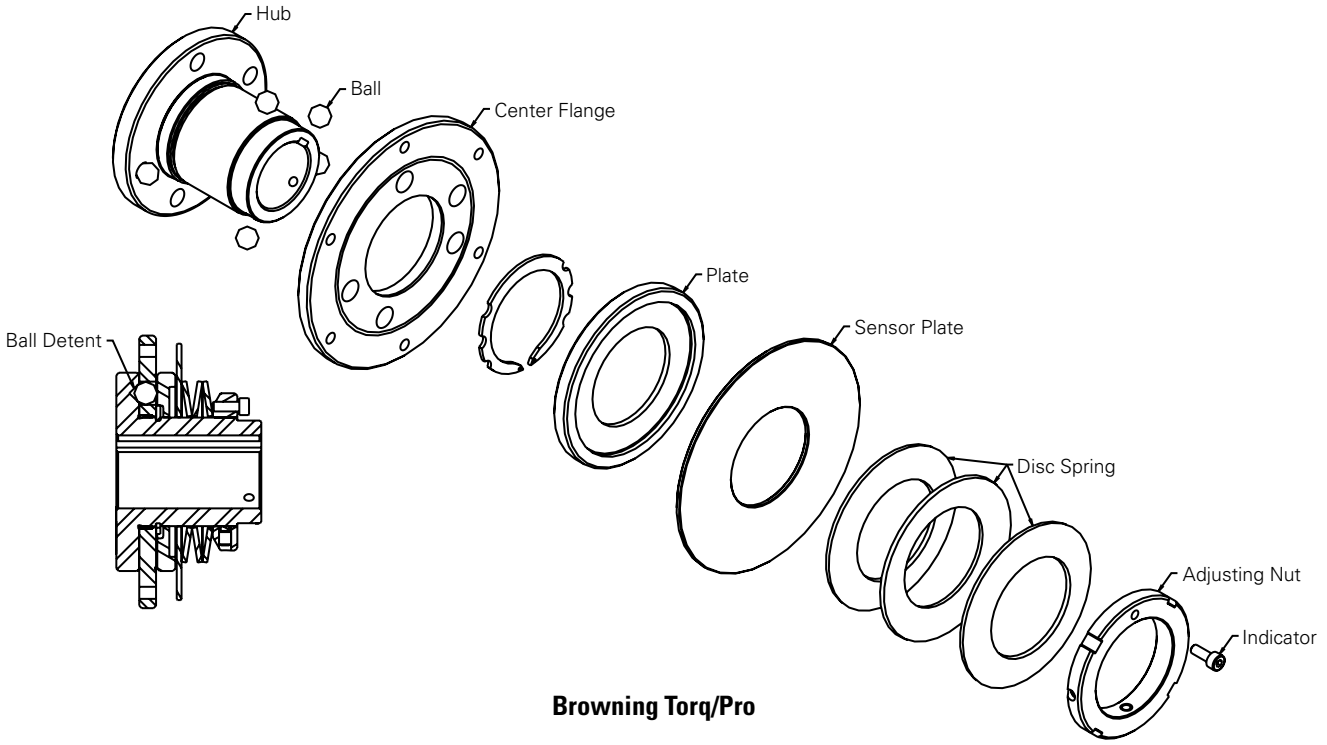
BROWNING TORQ/GARD
(Page 111)

FEATURES

- Precise overload protection with an elegant yet rugged cam-in-detent system
- Fast reaction and automatic reset provide unsurpassed protection
- Detector plates, coupling options and other accessories enhance design flexibility
- Fully enclosed unit

Bore range.....0.75" - 2.44"
Torque range.....1 - 675 lb-ft.
Precision tripping torque.....±5%

Designed to help protect your equipment!



Browning Torq/Pro

Browning shear pin hubs have the most basic design. When the pre-determined overload occurs, the pin breaks. The inner part of the hub remains in place, while the outer part rotates freely, allowing the drive to idle.

Morse and Browning torque limiters are more sophisticated and utilize friction facings to allow slipping when an overload occurs. Both units re-engage automatically after the overload has been removed. Replacement parts are readily available.

Browning Torq/Pro, Torq/Pro X and Torq/Pro Z (refer to image above) all function using a ball and detent design, which allows for one position engagement and practically eliminates backlash. Torque is transmitted from the center flange through the ball to the detent in the hub. When an overload occurs, the balls are released and roll between the plate and the hub. Different spring sets are available to help you achieve desired trip torque.

Browning Torq/Gard has a spring-loaded cam follower seated in a single hub cam detent causing the hub and clutch body to rotate as a unit. When the preset torque limit is exceeded by an overload condition, the follower is released from the cam detent disconnecting the hub from the body. Replacement parts are readily available.

Torque Overload Device Product Types

Product Features

TYPES	SHEAR PIN HUB	BROWNING TORQUE LIMITER	MORSE TORQUE LIMITER	TORQ/PRO	TPX	TPZ	TORQ/GARD
Drive Feature	Pin	Friction Pad	Friction Pad	Ball Detent	Zero Backlash Ball Detent	Manual Reset Ball Detent	Precision Cam Follower
Featured Use	Economical Good Accuracy	Economical	Economical	General Use	High Precision	Quick Response ON/OFF Capabilities	Fully Enclosed Maintenance Free
Accuracy of Trip Torque	+20%	+25%	+25%	+10%	+3%	+10%	+5%
Max. Torque Range (Ft/Lbs)	21.572	733	6300	5270	578	332	675
Max. Speed (rpm)	500	1400	1400	1200	1400	1800	900
Max. Bore Inches (mm)	5 (127)	2.5 (63)	4.87 (123)	5.118 (130)	2.755 (70)	1.96 (50)	2.44 (62)
Resetting Type	Manual	Automatic	Automatic	Jog	Jog	Manual	Jog
Single Position Reset	Yes	No	No	Yes	Yes	Yes	Yes
Backlash	Zero	Friction Slip type	Friction Slip type	Small	Zero	Small	Small

* Axial Gard trip loads are in pounds-force (lbf).

Mechanical Torque Overload Devices

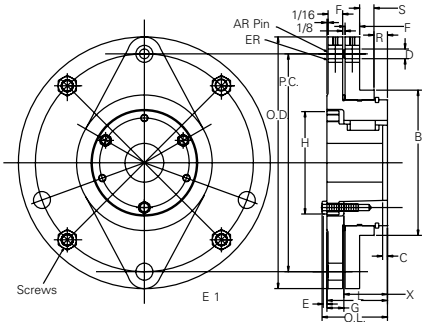
- Release Type
  - Torq/Gard for Precision Use — Refer to pages 111 - 116
  - Torq/Pro for General Use — Refer to pages 97 - 110
- Shear Pin Type — Refer to pages 84 - 87
- Friction Type
  - Torque Limiter — Refer to pages 88 - 96

Browning shear pin hubs are designed to prevent damage to machinery due to sudden overload or jamming by shearing the necked pin at a predetermined load. The inner part of the hub is keyed to the shaft and remains stationary while the outer part, to which the sprocket is bolted, rotates freely after pin breakage, allowing the drive to idle. Shear pin hubs are ideal for heavily lubricated areas where a cost effective solutions is needed.

Browning shear pin hubs and sprockets consist of three separate stock parts:

- Steel sprockets
- Hub assembly
- Malleable bushing

Each part is individually packaged. The hub assembly includes sprocket mounting bolts, two hardened liners and one minimum strength shear pin. Additional liners and shear pins are available from stock in a wide range of shear strengths. Sprockets are available in pitches and numbers of teeth shown on page 85, machined to fit shear pin hubs. Stock Browning type "A" sprockets with other numbers of teeth can be machined to fit these hubs. Bushings are stock Browning split taper bushings. Both Type 1 and Type 2 shear pin hubs are grease packed to provide low friction rotation in case of pin breakage. Type 2 hubs are provided with a grease fitting for relubrication.



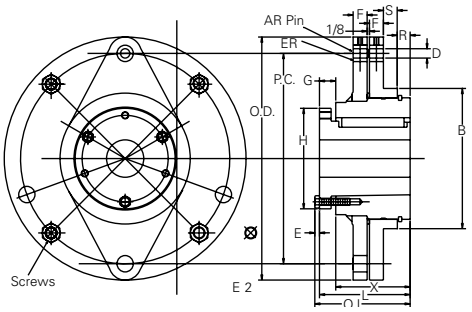
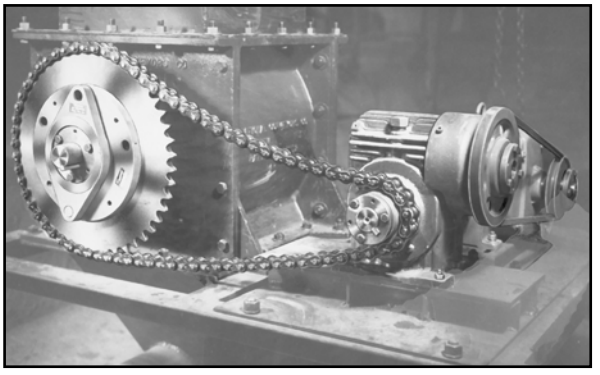


TABLE 1 **STOCK SHEAR PIN HUBS - SPECIFICATIONS**

PART NO.	TYPE	DIMENSIONS																CAPSCREWS	
		OD.	O.L.	P.C.	B	C	D	E	F	G	H	L	P	R	S	T	X	NO.	SIZE
SHH1	1	51/2	21/4	4,500	3,250	13/16	1/4	3/16	1/2	4/9	21/2	11/4	-	1/2	5/16	21/16	15/8	3	3/8
SHP1	1	75/8	23/8	6,500	4,500	3/16	3/8	1/4	1/2	5/8	3	115/16	-	1/2	7/16	2 1/8	11/2	3	1/2
SHO1	1	10	3 9/32	8,625	6,000	1/2	1/2	3/8	3/4	3/4	41/8	21/2	-	11/16	5/8	3	21/4	4	1/2
SHR1	1	13	311/32	11,250	7,500	3/16	1/2	1/2	3/4	7/8	53/8	27/8	-	5/8	3/4	31/16	23/16	4	5/8
SHR2	2	16 1/4	5 5/32	14,000	7,500	-	3/4	1/2	7/8	7/8	53/8	47/8	11/2	3/4	3/4	-	4	4	5/8
SHS2	2	18 3/8	71/8	16,000	8,000	-	3/4	3/4	1	1	63/8	63/4	12/3	113/16	11/8	-	5 11/16	4	3/4
SHU2	2	21	10 19/32	18.000	9.500	-	1	15/32	1 1/4	1 1/2	8 3/8	10 1/8	2 1/4	3 3/4	1 1/2	-	8 5/8	4	7/8

TABLE 2 **BUSHINGS**

PART NO.		BORE RANGE	TORQUE RANGE INCH POUNDS	WT. LESS BUSHING
HUB	BUSHING			
SHH1	H	3/8 - 1 1/2	930 - 3730	5.2
SHP1	P1	1/2-1 3/4	1340 - 14950	10.8
SHO1	QI	3/4-2 11/16	7140 - 38890	27.3
SHR1	RI	11/8-33/4	9310 - 50720	45.8



INDUSTRIES

- Wood products
- Aggregate processing
- Conveyor manufacturing
- Agriculture

APPLICATIONS

- Primary drives
- Conveyors
- Wrapping and cartoning equipment
- Industrial equipment
- Agricultural equipment

STEEL LINERS FOR SHEAR PIN HUBS

Hardened and Ground

TABLE 3

PART NO.	HUB SIZE	DIMENSIONS			WT. LBS.
		O.D.	I.D.	LENGTH	
HL	SHH1	.502	.250	1/2	.02
PL	SHP1	.752	.375	1/2	.05
QL	SHQ1, SHR1	.877	.500	3/4	.08
R2L	SHR2	1.252	.750	7/8	.20
S2L	SHS2	1.377	.750	1	.30
U2L	SHU2	1.752	1.000	1 1/4	.60

Liners are packaged three of a size to a box. Weights shown are per liner.

TABLE 4 STOCK SPROCKETS FOR SHEAR PIN HUBS

PART NO.	DIAMETER		CHAIN SIZE	NO. TEETH	FITS HUB	WT. LBS.	PART NO.	DIAMETER		CHAIN SIZE	NO. TEETH	FITS HUB	WT. LBS.
	OUTSIDE	PITCH						OUTSIDE	PITCH				
540H40	6.65	6.373"	40	40	SHH1	1.8	S80036	11.98	11.474	80	36	SHQ1	11.7
540H45	7.45	7.168	40	45	SHH1	2.8	S80040	13.31	12.746	80	40	SHQ1	16.3
540H48	7.93	7.645	40	48	SHH1	3.0	S80045	14.9	14.336	80	45	SHQ1	20
540H60	9.84	9.554	40	60	SHH1	5.0	S80048	15.86	15.29	80	48	SHQ1	24.7
550H36	7.52	7.171	50	36	SHH1	2.9	S80054	17.77	17.198	80	54	SHQ1	31.4
550H40	8.32	7.966	50	40	SHH1	3.9	S80060	19.68	19.107	80	60	SHQ1	39.3
560P60	14.76	14.331	60	60	SHP1	18.3	5120R248	23.79	22.935	120	48	SHR2	88
560P72	17.63	17.194	60	72	SHP1	27.8	5120R260	29.52	28.661	120	60	SHR2	144
S60045	11.18	10.752	60	45	SHQ1	7.7	S120S245	22.35	21.503	120	45	SHS2	74
S60048	11.89	11.467	60	48	SHQ1	9.5	S120S260	29.52	28.661	120	60	SHS2	142
S60054	13.33	12.899	60	54	SHQ1	12.5	S140S240	23.29	22.305	140	40	SHS2	81
S60060	14.76	140.331	60	60	SHQ1	16.8	S140S245	26.08	25.087	140	45	SHS2	105
S60072	17.63	17.194	60	72	SHQ1	25.3	S140S260	34.44	33.438	140	60	SHS2	200
							5160U245	29.8	28.671	160	45	SHU2	182
							5160U260	39.36	38.215	160	60	SHU2	329

Stock Type "A" sprockets can be reworked to fit shear pin hubs.

TABLE 5 STOCK SHEAR PINS

SHH1 HUB		SHP1 HUB		SHQ1 & SHR1 HUBS		SHR2		SHS2 HUB		SHU2 HUB	
PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.
1H	.03	1P	.06	1Q	.09	1R	.13	1S	.25	1U	.38
2H	.03	2P	.06	2Q	.09	2R	.13	2S	.25	2U	.38
3H	.03	3P	.06	3Q	.09	3R	.13	3S	.25	3U	.38
4H	.03	4P	.06	4Q	.09	4R	.13	4S	.25	4U	.38
		5P	.06	5Q	.09	5R	.13	5S	.25	5U	.38
		6P	.06	6Q	.09	6R	.13	6S	.25	6U	.38
		7P	.06	7Q	.09	7R	.13	7S	.25	7U	.38
		8P	.06	8Q	.09	8R	.13	8S	.25	8U	.38
				9Q	.09	9R	.13	9S	.25	9U	.38
						10R	.13	10S	.25	10U	.38
						11R	.13	11S	.25	11U	.38
						12R	.13	12S	.25	12U	.38
						13R	.13			13U	.38
						14R	.13			14U	.38

Shear pins are packaged five pieces per carton. Weights shown are per pin.

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

TABLE 6 STOCK SHEAR PINS

SHEAR PIN NECK DIAMETER	SHEAR PIN HUB NUMBER															
	SHH1				SHP1				SHQ1				SHR1			
	PIN PART NO.	IN. LBS TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.	PIN PART NO.	IN. LBS TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.	PIN PART NO.	IN. LBS TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.	PIN PART NO.	IN. LBS TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.
3/32"	1H	930	1.4	3/4"	1P	1340	2.1	7/8"	-	-	-	-	-	-	-	-
1/8	2H	1660	2.6	7/8	2P	2390	3.8	1	-	-	-	-	-	-	-	-
5/32	3H	2590	4.1	1	3P	3740	5.9	1 1/8	-	-	-	-	-	-	-	-
3/16	4H	3730	5.9	11/8	4P	5380	8.5	1 3/8	1Q	7140	11.3	1 7/16	1Q	9310	14.7	1 9/16"
7/32	-	-	-	-	SP	7330	11.6	1 7/16	2Q	9720	15.4	1 5/8	2Q	12690	20.1	1 3/4
1/4	-	-	-	-	6P	9570	15.1	1 9/16	3Q	12700	20.1	1 3/4	3Q	16570	26.2	1 15/16
9/32	-	-	-	-	7P	12100	19.2	1 3/4	4Q	16060	25.4	1 7/8	4Q	20950	33.2	2 1/16
5/16	-	-	-	-	8P	14950	23.7	*1 3/4	5Q	19840	31.4	2	5Q	25880	41.0	2 1/4
11/32	-	-	-	-	-	-	-	-	6Q	24010	38.0	2 1/8	6Q	31320	49.6	2 3/8
3/8	-	-	-	-	-	-	-	-	7Q	28590	45.3	2 1/4	7Q	37290	59.1	2 1/2
13/32	-	-	-	-	-	-	-	-	8Q	33530	53.2	2 7/16	8Q	43740	69.4	2 5/8
7/16	-	-	-	-	-	-	-	-	9Q	38890	61.7	2 1/2	9Q	50720	80.4	2 3/4

SHEAR PIN NECK	SHEAR PIN HUB NUMBER											
	SHR2				SHS2				SHU2			
	PIN PART NO.	IN. LBS. TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.	PIN PART NO.	IN. LBS. TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.	PIN PART NO.	IN. LBS. TORQUE	H.P. AT 100 RPM	MINIMUM RECOMMENDED SHAFT DIA.
9/32"	1R	26080	41.2	2 1/4"	-	-	-	-	-	-	-	-
5/16	2R	32210	51.1	2 3/8	-	-	-	-	-	-	-	-
11/32	3R	38970	61.8	2 1/2	1S	44540	70.6	2 5/8"	-	-	-	-
3/8	4R	46410	73.6	2 3/4	2S	53040	84.1	2 7/8	1U	59670	94.7	2 15/16"
13/32	5R	54430	86.3	2 7/8	3S	62200	98.7	3	2U	69980	111.0	3 1/8
7/16	6R	63120	100.1	3	4S	72140	114.5	3 1/8	3U	81160	128.8	3 1/4
15/32	7R	72490	115.0	3 1/8	5S	82840	131.4	3 1/4	4U	93200	147.9	3 7/16
1/2	8R	82480	130.9	3 1/4	6S	94270	149.6	3 7/16	SU	106050	168.3	3 9/16
17/32	9R	93110	147.7	3 7/16	7S	106410	168.9	3 9/16	6U	119710	190.0	3 3/4
9/16	10R	104370	165.6	3 1/2	8S	119280	189.3	3 3/4	7U	134190	212.9	3 7/8
19/32	11R	116290	184.5	3 5/8	9S	132910	210.9	3 7/8	8U	149520	237.3	4
5/8	12R	128850	204.5	*3 5/8	10S	147250	233.7	4	9U	165670	262.9	4 1/8
21/32	13R	142040	225.4	*3 5/8	11S	162330	257.6	4 1/8	10U	182620	289.8	4 1/4
11/16	14R	155900	247.4	*3 5/8	12S	178170	282.8	*4 3/16	11U	200440	318.1	4 7/16
23/32	-	-	-	-	-	-	-	-	12U	219070	347.7	4 9/16
3/4	-	-	-	-	-	-	-	-	13U	238570	378.6	4 11/16
25/32	-	-	-	-	-	-	-	-	14U	258870	410.9	4 13/16

* Note:These sizes require extra capacity alloy steel shafting to ensure against shaft distortion under peak load. The above table is representative of average field conditions. Minimum shaft diameters shown are based on the standard shaft size formula:

$$D = \sqrt[3]{\frac{5.1\,T}{S}}$$ where

D =Shaft diameter in inches

T =Torque in inch pounds

S = Allowable torsional shearing stress of 12000 lbs/in^2

For severe or unusual applications, refer to Application Engineering at 1-800-626-2093.

Torque ratings shown are in inch pounds and are based on 60,000 pounds ultimate shear strength.

Horsepower ratings are shown at 100 rpm. Horsepower varies directly with speed, therefore the horsepower for 200 rpm would be twice that shown, etc. Shear pin hubs should not be used on high speed drives.

Use only Browning shear pins with Browning shear pin hubs.

SELECTION OF SHEAR PIN HUBS AND SPROCKETS

In selecting Browning shear pin hubs and sprockets, check torque requirements (including a suitable starting load factor of 1.5 or more) and select a hub and pin neck diameter to suit, see Table 6 above. Also check selected hub for size of sprocket and bore range. When shear torque is not known, it may be computed from either of the following formula:

1. $T = \frac{63000 \times HP \times F}{RPM}$
2. $T = \frac{D \times CL \times F}{2}$ or

where T= Torque in inch pounds

D= Pitch diameter of sprocket in inches

HP= Horsepower

RPM= Speed in revolutions per minute

CL= Chain pull in pounds

F= Starting load factor, usually 1.5 or more

Both overload service factors and starting load factors must be considered when designing a drive with a shear pin hub, but both are not considered at the same time. Overload service factors are expressions of drive life desired in chain and sprocket drives while the starting load factor reflects only the starting torque that must be overcome by the shear pin. Therefore, the drive should be calculated on the overload service factor, but the shear pin selection should be made on the starting load factor.

Example:

A chain drive with shear pin protection is desired from a speed reducer to a belt conveyor. The speed reducer is driven by a 10 HP normal torque motor. Speed reducer output shaft is 1 1/4 diameter and output speed is 550 rpm. Conveyor shaft is 1 7/16 and speed is 192 rpm. Center distance is approximately 30".

A. For example if the overload service factor is 1.2 and a drive consisting of a #60 chain, 122 links long, a 21 tooth driver sprocket, and a 60 tooth driven sprocket will deliver 12.3 HP, which is ample.

B. Using a starting load factor of 1.5, the torque is:

$$T = \frac{63000 \times 10 \times 1.5}{192}$$

C. From Table 6 above, select the hub and shear pin with the torque value nearest 4922 inch pounds. An SHP1 hub with a 4P pin has a torque rating of 5380 inch pounds, which is ample.

D. Required drive is as follows:

1—60P21 sprocket, P1 1 1/4 bushing

1—SHP1 hub with 4P shear pin and S60P60 sprocket

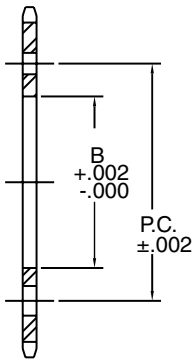
1—#60 riveted chain, 7.625 feet complete (121 links plus 1 connecting link).

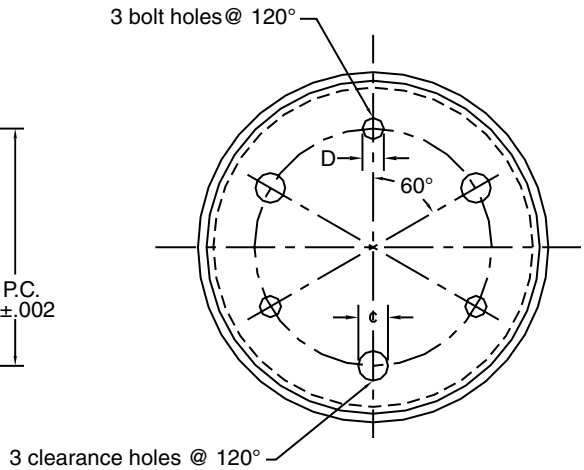
Dimensions for Machining Parts to Fit Stock Shear Pin Hubs

TABLE 7

PART NO.	B	C	D	P.C.
SHH1	3.252	9/16	13/32	4.500"
SHP1	4.502	13/16	17/32	6.5
SHQ1	6.002	15/16	17/32	8.625
SHR1	7.502	15/16	21/32	11.25
SHR2	7.502	1 5/16	23/32	14
SHS2	8.002	1 7/16	25/32	16

Exercise extreme care in machining the bore to avoid undesirable run-out of the part. Use Browning stock sprockets shown in Table 4, page 85 whenever possible. These sprockets are precision machined and ready to use.



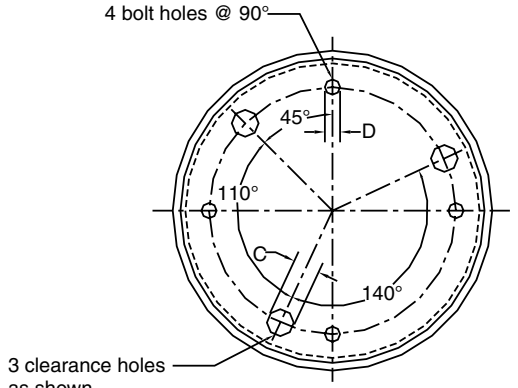


For SHH1 and SHP1 hubs

TABLE 8 MINIMUM POSSIBLE SPROCKET SIZES FOR STOCK SHEAR PIN HUBS

PART NO.	MINIMUM NUMBER OF TEETH FOR CHAIN SIZE										
	NO. 35	NO. 41	NO. 40	NO. 50	NO. 60	NO. 80	NO. 100	NO. 120	NO. 140	NO. 160	NO. 200
SHH1	50	38	38	31	27	*	*	*	*	*	*
SHP1	67	51	51	42	36	28	*	*	*	*	*
SHO1	-	66	66	54	45	35	29	*	*	*	*
SHR1	-	-	85	69	58	44	36	*	*	*	*
SHR2	-	-	-	85	72	55	44	38	33	*	*

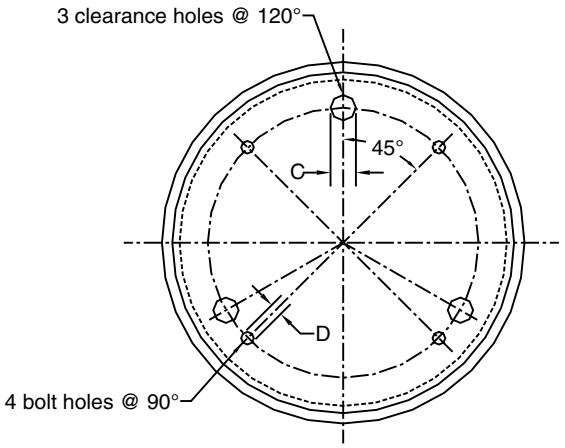
* These sizes of hubs should not be used with these sizes of chain.



For SHQ1 and SHR1 hubs

MADE-TO-ORDER SHEAR PIN SPROCKETS

In addition to the stock shear pin hubs and sprockets shown on pages 85 and 86, many sizes of the shear pin sprockets can be made-to-order in either finished bore or bushing type.



For SHR2, SHS2 and SHU2 hubs

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Design Features

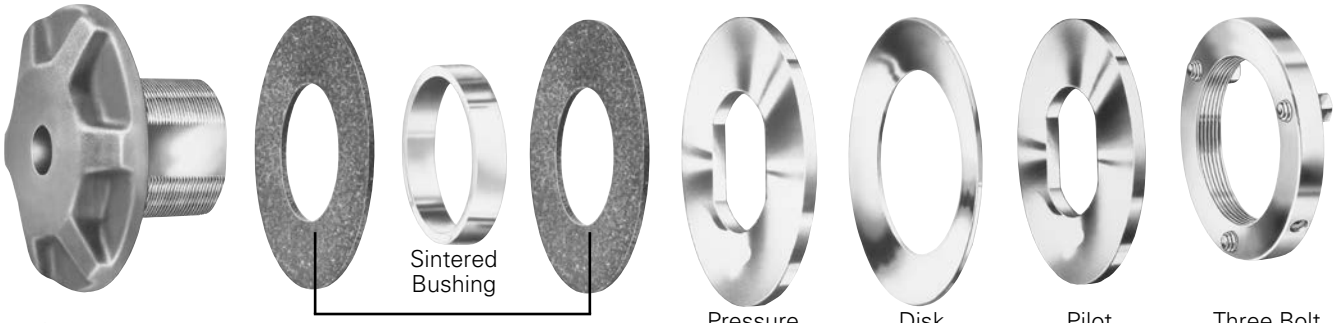
In response to industry needs, Morse introduced the first spring loaded, friction type protective device in 1949, called the Morse torque limiter. As the originator of the torque limiter, Morse has gained wide experience in its design and application. Through the years, Morse has successfully adapted torque limiters to thousands of conveyor, material handling and agricultural applications.

The Morse torque limiter is a protective device that limits torque transmitted in a drive system by slipping when the torque demand exceeds a preset value as a result of shock loads, overloads or machine jams. It automatically reengages when the overload torque has passed; no resetting is required. The Morse torque limiter helps prevent machine damage and eliminates costly downtime. Using spring loaded friction surfaces for its operation, the Morse torque limiter presets slip torque by adjustment of the spring force. This device can be used with a sprocket, gear, sheave or flange plate as the center member that is clamped between two friction facings.

FEATURES

- Simple design
- Economical
- Easy adjustment
- Compact
- Wide torque range
- Dependable
- Minimum maintenance
- Durable
- Safe, non-asbestos, no-lead pads
- Replacement parts in stock
- Friction facings

The Morse torque limiter is available in seven sizes – 150, 250A, 350A, 500A, 700A, 13" and 20". Morse has over 50 years of experience in designing and applying torque limiters as trouble-free, long lasting devices to protect machinery.



Integral hub and pressure plate is high-grade cast iron with a 63 micro-inch finish on the friction facing side. Sturdy ribbed construction aids in heat dissipation, helps prevent deflection under spring load and maintains contact between the friction facing and pressure plate. The resulting uniform distribution of the spring load over the friction surfaces minimize face pressure (psi) and friction facing wear and provides accurate slip control.

Unbonded friction facings are made of non-asbestos, non-lead material, providing a high coefficient of friction and long wear.

Sintered steel bushing on which the center member and friction facings rides are coated with a dry film lubricant; therefore, no oil is present to contaminate friction facings and reduce torque capacity. The bushing "free floats" on the hub. Morse offers a wide selection of bushing widths in all torque limiter sizes, permitting close matching of center member and bushing width to minimize bearing pressure and promote longer bushing life.

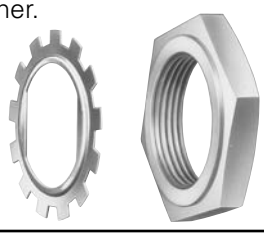
Pressure plate is designed with flats to fit securely on the hub with a 63 micro-inch finish on the facing side.

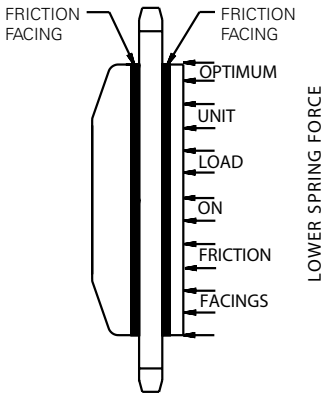
Disk spring provides axial load to the pressure plate, friction facings and center member.

Pilot plate serves as "back-up" to the pressure plate on the 500A and 700A models and ensures even distribution of load over the full diameter of the disk spring. The tabbed lockwashers acts as a pilot for models 250A and 350A.

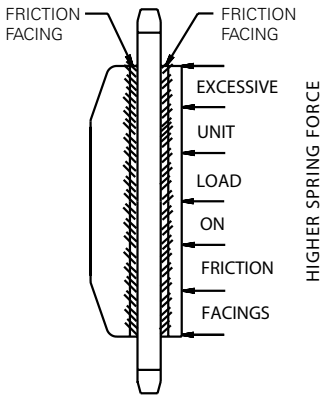
Three bolt adjustment nut on the 500A and 700A sizes make adjustment easy. This principle was originated by Morse and has been standard for many years on 13" and 20" size torque limiters.

Multiple torque adjustment settings are provided on sizes 250A and 350A. Adjust the single hex nut with adjustable or open end wrenches and lock in position with a lock washer.





Torque limiter capacities are directly proportional to the spring force applied to the friction surfaces and it is a simple matter to increase capacity by increasing spring force – but not without sacrifice. The higher the unit load or pressure (psi) on the friction surfaces, the quicker the friction facings will deteriorate as they slip against the pressure plates and center member. If ratings are established on the basis of extremely high friction face loadings, the torque limiter serves as nothing more than a shear pin mechanism, instead of the solution developed by Morse.



The spring is designed so that its force varies little over a wide deflection range at the rated capacity of the torque limiter. This provides load re-engagement near the pre-set torque level as the friction facing wears.

TORQUE LIMITER ACCESSORIES

GROUND SPROCKETS

As a stock item, Morse offers "A" plate sprockets with faces ground to 63 micro-inches and bores sized specifically for torque limiter applications. Select your ground sprocket from the stock sizes listed on page 92. The sprocket will be shipped "off-the-shelf" as Morse continues to deliver prompt and efficient service.

COUPLINGS

For overload slip protection combined with the ability to couple driving and driven shafts, Morse offers a torque limiter coupling in four sizes. This device consists of a stock torque limiter and a roller chain type coupling.

Morse also offers 13" and 20" torque limiters. See the following pages for details.

Part Number Explanation

350A -2 TL x FB

- FB — Specify bore size
- TL — Series
- -2 — Number of disc springs (max. 2)
- 350A — Overall diameter (3.5 inches)

Required bushing is ordered separately; bushing length determined by sprocket selection.

350 AG 5 26

- 26 — Number of teeth in sprocket
- 5 — #50 pitch roller chain
- AG — A plate, ground (63 micro-inch)
- 350 — Fits Morse TL model 350

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

Dimensions

Model 150

Models 250A* and 350A*
(U.S. Patent No. 3,447,342)

Models 500A* and 700A*
(U.S. Patent No. 3,201,953)

MODEL NO.	TORQUE CAPACITY LBFT.**		MAX. BORE W/STD. KW AND SS	STOCK MIN. PLAIN BORE	STOCK FINISHED BORE WITH STD. KEYWAY AND SETSCREW	APPROX. WT. LBS.	STD.* BUSHING LENGTHS
	MIN.	MAX.					
150	1	15	1/2	3/8	3/8, 7/16,1/2	0.6	Not Used
250A-1	5	20	7/8	1/2	1/2, 5/8, 3/4, 7/8	1	.365 .425
250A-2	10	40	7/8	1/2	1/2, 5/8, 3/4, 7/8	1	.480 .540
350A-1	15	55	11/8	3/4	3/4, 7/8, 1	2 1/2	.365 .425 .480
350A-2	25	110	11/8	3/4	3/4, 7/8, 1	21/2	.540 .655 .770
500A-1	35	155	1 3/4	7/8	7/8, 1, 1 1/8, 1 3/16, 1 1/4, 1 3/8, 1 7/16, 1 1/2, 1 5/8	6 1/2	.425 .480 .540
500A-2	65	310	1 3/4	7/8	7/8, 1, 1 1/8, 1 3/16, 1 1/4, 1 3/8, 1 7/16, 1 1/2, 1 5/8	6 1/2	.655 .770
700A-1	85	420	2 5/8	1	1 1/2, 1 3/4, 115/16,2	15	.520 .580 .695 .810
700A-2	165	800	2 5/8	1	1 1/2, 1 3/4, 1 15/16,2	15	.925 1.155 1.375
13-8	500	1450	3 1/4	1 1/2	Subject to rebore Charge for bore keyway, and Setscrew	85	3/8 1/2
13-16	1000	2300	3 1/4	1 1/2		85	9/16
20-5	1575	3150	47/8	2		250	1/2
20-10	3150	6300	47/8	2		250	5/8

*When ordering, specify required bushing length.

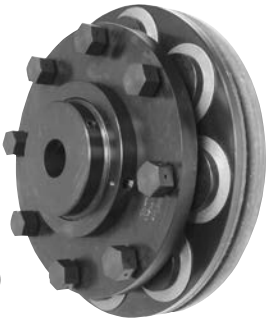
**When more than half of maximum torque is to be used at over 500 rpm refer application to Application Engineering.

KEYWAYS	
DIAM. OF SHAFT	*KEYWAY WIDTH & DEPTH
1/2 - 9/16	1/8 x 1/16
5/8 - 7/8	3/16 x 3/32
15/16 - 1 1/4	1/4 x 1/8
15/16 -1 3/8	5/16 x 5/32
17/16 -1 3/4	3/8 x 3/16
113/16 - 2 1/4	1/2 x 1/4
25/16 - 2 3/4	5/8 x 5/16

*Width tolerances for straight and tapered keyways are plus .002 minus .000.

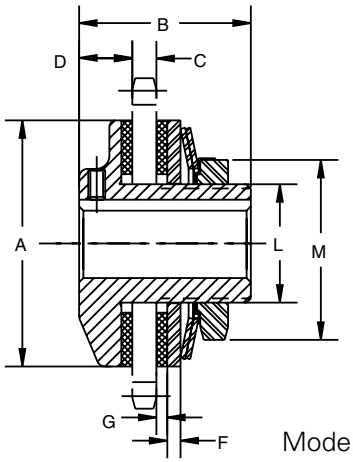
STANDARD BORE TOLERANCE		
NOMINAL DIAMETER		
Over	Thru	Tolerance
-	3	+ .002 - .000
3	4	+ .003 - .000
4	5	+ .004 - .000

Models 13 and 20

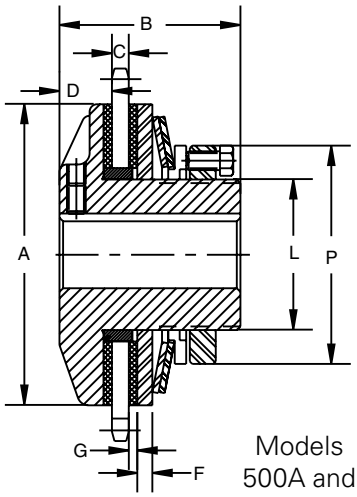


For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

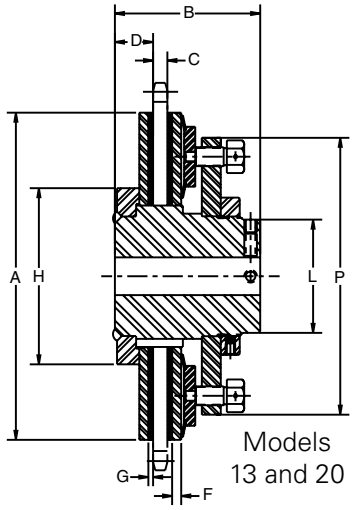
Dimensions



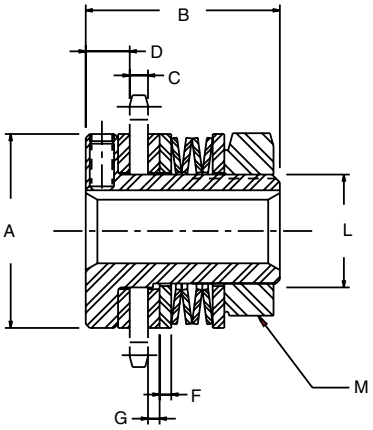
Models 250A and 350A



Models 500A and 700A



Models 13 and 20



Model 150**

DIMENSIONS

MODEL NUMBER	A OVERALL DIA. (PAD DIA.)	B OVERALL LENGTH	C WIDTH OF CENTER MEMBER (MAX)	D END FACE TO CENTER MEMBER (OFFSET)	F PRESSURE PLATE THICKNESS	G FRICTION PAD THICKNESS	H COLLAR DIA.	L HUB DIA.	M NUT DIA. (HEX)	P NUT DIA.	S.S HOLE SIZE
150	1 1/2	1 1/2	9/32	5/16	3/32	3/32	-	7/8	1 5/16	-	#10 - 24
250A-1	2 1/2	1 7/8	11/32	5/8	3/16	5/32	-	1 3/8	1 7/8	-	#10 - 24
250A-2	2 1/2	1 7/8	11/32	5/8	3/16	5/32	-	1 3/8	1 7/8	-	#10 - 24
350A-1	31/2	2 7/16	5/8	3/4	3/16	5/32	-	1 11/16	2 3/8	-	1/4 / 20
350A-2	3 1/2	2 7/16	5/8	3/4	3/16	5/32	-	1 11/16	2 3/8	-	1/4 / 20
500A-1	5	3	5/8	7/8	1/4	5/32	-	2 1/2	-	3 5/8	5/16 - 19/18
500A-2	5	3	5/8	7/8	1/4	5/32	-	2 1/2	-	3 5/8	5/16 - 19/18
700A-1	7	3 7/8	1 1/8	15/16	5/16	3/16	-	3 3/4	-	5 1/4	3/8 - 16
700A-2	7	3 7/8	1 1/8	15/16	5/16	3/16	-	3 3/4	-	5 1/4	3/8 - 16
13-8	13	5 3/4	27/32	1 7/16	3/8	3/16	7	4 1/2	-	11	1/2 - 13
13-16	13	5 3/4	27/32	1 7/16	3/8	3/16	7	4 1/2	-	11	1/2 - 13
20-5	20	7 1/4	15/16	1 13/16	1/2	3/16	9 3/4	6 1/2	-	16 1/4	5/8 - 11
20-10	20	7 1/4	15/16	1 13/16	1/2	3/16	9 3/4	6 1/2	-	16 1/4	5/8 - 11

MINIMUM SPROCKET TEETH AND BUSHING LENGTH

MODEL NO.	SPKT. BORE DIAM. OVER BUSHING	SPROCKET PITCH AND NUMBER OF TEETH																																	
		3/8" - #35			1/2" - #41			1/2" - #40			5/8" - #50			3/4" - #60			1" - #80			1 1/4" - #100			1 1/2" - #120			1 3/4" - #140			2" - #160		
		SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH	SPROCKET MIN. TEETH		BUSH LENGTH
		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO		STOCK	MTO	
250A-1	1.627 / 1.629	25	25	.365	*20	20	.425	20	20	.480	*16	16	.540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250A-2	1.627 / 1.629	25	25	.365	*20	20	.425	20	20	.480	*16	16	.540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350A-1	1.940 / 1.942	35	33	.365	*26	26	.425	*26	26	.480	*21	21	.540	18	18	.655	*15	15	.770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350A-2	1.940 / 1.942	35	33	.365	*26	26	.425	*.26	26	.480	*21	21	.540	18	18	.655	*15	15	.770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500A-1	2.878 / 2.880	-	-	-	*35	35	.425	35	35	.480	30	29	.540	25	25	.655	*19	19	.770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500A-2	2.878 / 2.880	-	-	-	*35	35	.425	35	35	.480	30	29	.540	25	25	.655	*19	19	.770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700A-1	4.129 / 4.131	-	-	-	-	-	-	*48	48	.520	*40	39	.580	*35	33	.695	26	26	.810	*21	21	.925	*18	18	1.155	*16	16	1.155	*15	15	1.375
700A-2	4.129 / 4.131	-	-	-	-	-	-	*48	48	.520	*40	39	.580	*35	33	.695	26	26	.810	*21	21	.925	*18	18	1.155	*16	16	1.155	*15	15	1.375
13-8	6.378 / 6.380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*45	44	3/8	*36	36	1/2	*32	31	9/16	*30	27	9/16	*24	24	9/16
13-16	6.378 / 6.380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*45	44	3/8	*36	36	1/2	*32	31	9/16	*30	27	9/16	*24	24	9/16
20-5	8.753 / 8.756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*54	54	1/2	*60	46	5/8	*40	40	5/8	*35	35	5/8
20-10	8.753 / 8.756	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	*54	54	1/2	*60	46	5/8	*40	40	5/8	*35	35	5/8

Sprockets must be counter bored to fit torque limiter.

* Stock minimum plain bore (MPB) only; require rebore and face grind for torque limiter use.

** Model 150 does not use bushing. Sprocket bore should be .876 - .878.

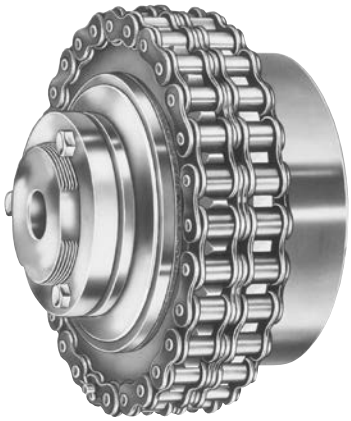
For more precise torque setting and for applications where slippage may be frequent, use a ground center member (63 micro-inch). Rated torque capacity can only be obtained with dry friction facings and with a ground center member, which has been run-in for 4 minutes at approximately 65 rpm at a torque setting of 70 to 80% of the 1 spring rating - rate of run-in is not to exceed 80 rpm. Center member faces should be flat, parallel, square with bore, and free from rust, scale and oil for optimum torque limiter performance. If center members are not in accordance with these specifications or are unground, torque limiter capacity will be erratic and generally lower than capacity with ground center members.

GROUND SPROCKETS

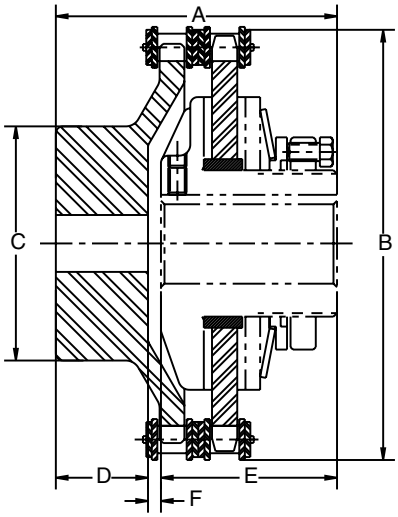
These "A" plate sprockets are stock items that are furnished with ground faces. For most economical drive designs, use these stock sprockets with the Morse torque limiter.

SPROCKET NO.	FITS TORQUE LIMITER MODEL	PITCH	NO. TEETH	OD.	APPROX. WT. LBS.	BUSHING LENGTHS
250-AG325	250	#35	25	3,194	0.2	.365
250-AG326	250	#35	26	3,314	0.3	.365
250-AG420	250	#40	20	3,457	0.5	.480
250-AG422	250	#40	22	3,778	0.6	.480
250-AG424	250	#40	24	4,098	0.8	.480
250-AG428	250	#40	28	4,738	1.0	.480
250-AG430	250	#40	30	5,057	1.2	.480
250-AG517	250	#50	17	3,719	0.6	.540
250-AG521	250	#50	21	4,522	1.0	.540
250-AG522	250	#50	22	4,722	1.1	.540
350-AG335	350	#35	35	4,392	0.6	.365
350-AG340	350	#35	40	4,990	0.8	.365
350-AG428	350	#40	28	4,738	0.9	.480
350-AG430	350	#40	30	5,057	1.1	.480
350-AG432	350	#40	32	5,377	1.3	.480
350-AG522	350	#50	22	4,722	1.1	.540
350-AG524	350	#50	24	5,122	1.4	.540
350-AG525	350	#50	25	5,322	1.5	.540
350-AG526	350	#50	26	5,522	1.7	.540
350-AG618	350	#60	18	4,704	1.4	.655
350-AG620	350	#60	20	5,185	1.8	.655
500-AG435	500	#40	35	5,855	1.2	.480
500-AG530	500	#50	30	6,321	1.9	.540
500-AG532	500	#50	32	6,721	2.2	.540
500-AG625	500	#60	25	6,387	2.3	.655
500-AG626	500	#60	26	6,627	2.8	.655
500-AG628	500	#60	28	7,107	3.8	.655
500-AG630	500	#60	30	7,586	4.0	.655
500-AG820	500	#80	20	6,914	3.9	.770
500-AG822	500	#80	22	7,555	4.9	.770
500-AG824	500	#80	24	8,196	6.1	.770
700-AG636	700	#60	36	9,022	5.6	.695
700-AG826	700	#80	26	8,836	6.1	.810
700-AG828	700	#80	28	9,475	8.2	.810
700-AG830	700	#80	30	10,114	8.8	.810
700-AG836	700	#80	36	12,030	13.8	.810
700-AG1022	700	#100	22	9,444	10.4	.925
700-AG1024	700	#100	24	10,245	12.9	.925

Note: Bushing must be ordered in addition to sprocket.



The torque limiter coupling combines overload slip protection with the ability to couple driving and driven shafts. Some angular and parallel misalignment can be accommodated by the double roller chain design.



Note: Coupling assembly includes "A" plate sprocket, "B" sprocket, bushing and double strand roller chain. The torque limiter must be ordered separately.

COUPLING MODEL NUMBER	MISALIGN		TORQUE CAPACITY LBS. FT.	MAX. BORE		SPKT. SIZE	DIMENSIONS (INCHES)						APPROX. WT. LBS.
	MAX PARALLEL	MAX ANGULAR		TORQUE LIMITER	CPLG. SPKT.		A OVERALL WIDTH	B OVERALL DIAMETER	C HUB DIAMETER	D LENGTH THRU BORE COUPLING SPROCKET	E LENGTH THRU BORE TORQUE LIMITER	F CLEARANCE	
250CP	.010	1/2°	40	7/8	1 1/4	422	3	4	2	1	1 7/8	1/8	4 1/2
350CP	.012	1/2°	110	1 1/8	1 3/4	524	4 1/16	53/8	2 3/4	1 1/2	2 7/16	1/8	111/2
500CP	.015	1/2°	310	1 3/4	2 1/2	628	43/4	73/8	4	1 5/8	3	1/8	27
700CP	.020	1/2°	800	2 5/8	3 1/2	828	65/8	97/8	6	2 5/8	3 7/8	1/8	69

*Coupling sprocket minimum plain bore.

**Torque limiter only, includes one (1) setscrew.

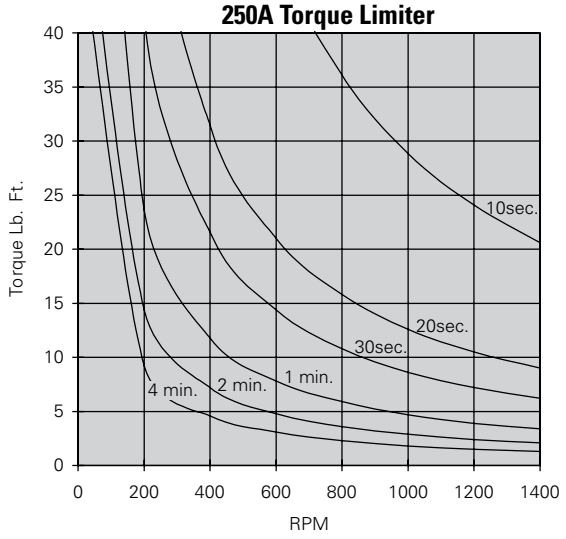
STANDARD BORE TOLERANCE		
NOMINAL DIAMETER		
OVER	THRU	TOLERANCE
-	3	+002-.000
3	4	+ .003 - .000
4	5	+ .004 - .000

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

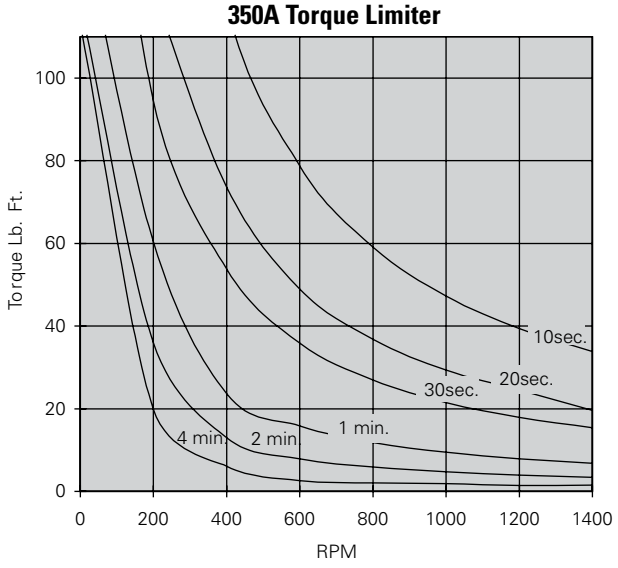
Selection

1. Select a torque limiter size with a torque capacity that slightly exceeds the required slip torque for the application.
2. Confirm the required torque limiter hub bore is available. Stock finished bores are shown in this catalog.
3. Check "minimum sprocket teeth and bushing length" table to determine that the specific sprocket to be assembled in the torque limiter is compatible.
4. If a slip condition is expected to persist for more than a few seconds, refer to the maximum duration chart. Torque limiters subjected to extended slipping beyond the recommended time limit may be damaged and may malfunction.
5. Note: Because of widely varied applications, no maximum speed is specified, however, the effects of sprocket run-out on a specific application should be considered.
6. For longest wear life, mount torque limiter on the "low-speed" shaft of a drive.

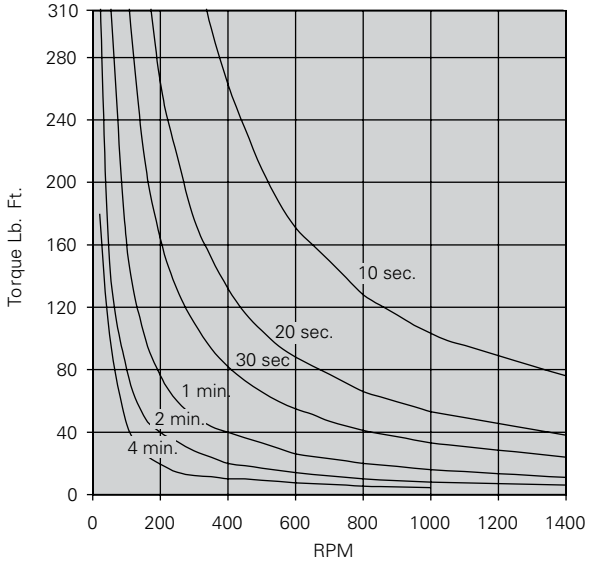
250A Torque Limiter



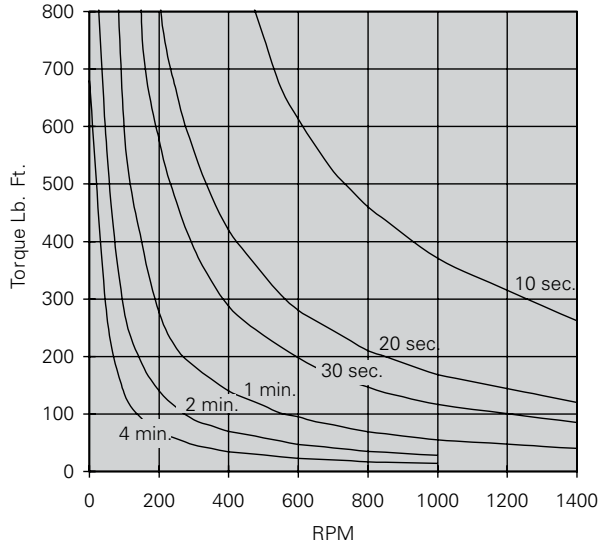
350A Torque Limiter



500A Torque Limiter



700A Torque Limiter



Browning torque limiters are torque control devices that slip under excessive load but automatically carry the desired load after the excess has been removed. The device can be easily adjusted to slip at a desired overload, and automatically reengage when overload is removed. Overload should be removed promptly since prolonged slippage can be detrimental to the friction disc. Generally, no resetting is required after the torque limiter has slipped. Torque limiters help prevent machine and product damage and costly downtime caused by shock loads, overloads or machine jams but should not be used as clutches.

Torque limiters are primarily used with sprockets and Browning stocks a wide variety of sizes as indicated. Other stock Type "A" sprockets can be reworked for torque limiters.

Maximum torque ratings can be obtained by using a drive member with center flanges ground to approximately 100 micro-inches surface finish. Rough or rusty center flanges will cause erratic torque values and rapid wear on friction discs. Oil or grease on the center flange or friction discs will reduce torque values.

Browning torque limiters are friction-type torque overload devices that reset to any position. Torque limiters offer:

- •High accuracy
- •Low cost
- •Compact
- •Reversible
- •Non asbestos pads
- •No need to reset

INDUSTRIES SERVED

- Material handling
- Agricultural
- General industrial
- Aggregate processing
- Conveyor manufacturing
- Food and beverage

APPLICATIONS

- Primary drives
- Conveyors
- Wrapping and cartoning equipment
- Industrial equipment
- Agricultural equipment

Torque Limiter Adjustment
Adjustment of Browning torque limiters is fast, simple and positive. Only an open end wrench and a socket head setscrew wrench are needed.

1. Back-off the three cap screws until the points are recessed in the threaded adjusting collar.
2. Tighten the threaded adjusting collar by hand and then tighten the cap screws with an open end wrench until the heads bottom.
3. Try the unit in its application and if further adjustment is necessary, loosen cap screws until points are recessed in the adjusting collar. Torque can also be checked by applying tension to one strand of chain with a spring scale or other means.
4. Tighten or loosen the adjusting collar as needed, then retighten the cap screws until the heads bottom.

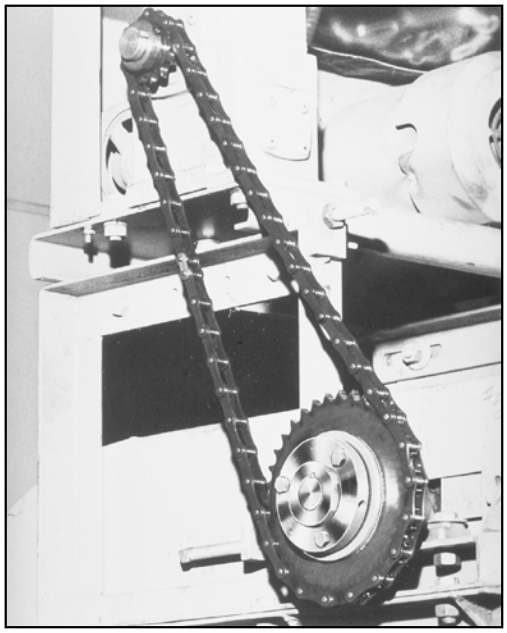
TORQUE LIMITER SELECTION

When the torque at which the device should slip is determined,simply choose a torque limiter from Table 2, which has a maximum torque rating as great or greater than the required torque. Check Table 3 to see if required bore is available. It is a good practice to select the torque limiter with a maximum torque rating reasonably greater than the required torque when possible. Do not use torque limiters on high speed drives.

Example:

To prevent damage to a conveyor system, a device is needed on the head pulley shaft that will slip at 2100 inch pounds of torque. Shaft size is 1 1/4" diameter.

From Table 2, note that a T45L torque limiter will produce a maximum torque of 2800 inch pounds. It is also available with a 1 1/4" bore. The proper torque limiter is T45L x 1 1/4.



Part Number Explanation

T45L x FB
- FB — Specify bore size in inches
- T45L — Browning torque limiter with 4.5" OD

Bushing is supplied with Browning torque limiter.
Sprocket for torque limiter is ordered separately 50T45L26.

50 T45L 26
- 26 — Number of teeth
- T45L — Browning torque limiter with 4.5" OD
- 50 — #50 roller chain

TABLE 1 STOCK SIZES AND PARTS

TORQUE LIMITERS		REPLACEMENT DISCS CD		REPLACEMENT SPRINGS ©		REPLACEMENT BEARINGS ©	
PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.	PART NO.	WT. LBS.
T25L	1.3	25D	0.06	25S	0.06	25B	0.06
T35L	2.9	35D	0.06	35S	0.06	35B	0.06
T45L	5.6	45D	0.06	45S	0.13	45B	0.06
T55L	9.6	55D	0.13	55S	0.25	55B	0.06
T65L	15.8	65D	0.13	65S	0.31	65B	0.06

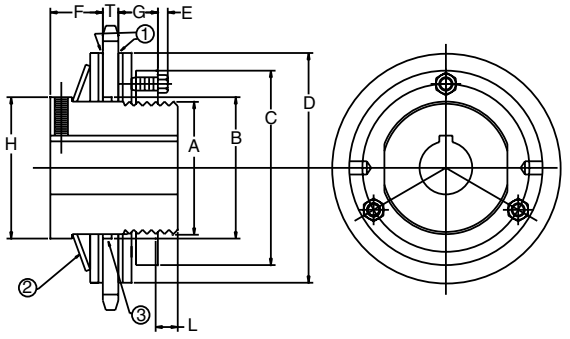


TABLE 2 TORQUE RATINGS AND SPECIFICATIONS

PART NO.	MAXIMUM TORQUE RATINGS IN INCH-POUNDS		DIMENSIONS												
								F*		G	H	L	T		
	WITH ONE SPRING	WITH TWO SPRINGS	A	B	C	D	E	ONE SPRING	TWO SPRINGS				MIN.	MAX.	
T25L	800	1100	11/4	11/2	2 3/8	2 1/2	3/16	7/8	15/16	13/16	11/2	2 1/16	3/16	3/8	
T35L	1800	3000	1 3/4	2	31/8	31/2	3/16	7/8	15/16	13/16	2	21/4	3/16	1/2	
T45L	2800	4900	2 1/4	2 1/2	4	4 1/2	1/4	11/16	1 7/32	15/16	2 1/2	2 3/4	1/4	5/8	
T55L	3800	6800	23/4	3	43/4	51/2	1/4	11/4	1 3/8	11/8	3	31/4	1/4	3/4	
T65L	4800	8800	33/4	4	5 1/2	6 1/2	9/32	1 3/8	11/2	11/8	4	35/8	5/16	1	

* These dimensions are the torque limiter set by tightening the adjusting collar by hand and tightening the cap screw until the heads bottom.

Note: Only one spring is furnished; extra springs must be purchased separately.

TABLE 3 STOCK BORES

PART NO.	SPROCKET BORES	STOCK BORES MARKED X															
		1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 5/8"	1 3/4"	1 15/16"	2"	2 1/2"
T25L	1.502 - 1.504	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-
T35L	2.002 - 2.004	-	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-
T45L	2.502 - 2.504	-	-	x	x	x	x	x	x	x	-	-	-	-	-	-	-
T55L	3.002 - 3.004	-	-	-	-	x	x	x	x	x	x	x	x	-	-	-	-
T65L	4.002 - 4.004	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x

Browning torque limiters are furnished with standard keyseats and setscrews, except 1/2" bore which has no keyseat.

TABLE 4 MINIMUM NUMBER SPROCKET TEETH AND NUMBER OF BEARINGS REQUIRED FOR TORQUE LIMITERS

TORQUE LIMITER	CHAIN SIZE											
	35		41		40		50		60		80	
	MIN. NO. TEETH	NUMBER BEARINGS	MIN. NO. TEETH	NUMBER BEARINGS	MIN. NO. TEETH	NUMBER BEARINGS	MIN. NO. TEETH	NUMBER BEARINGS	MIN. NO. TEETH	NUMBER BEARINGS	MIN. NO. TEETH	NUMBER BEARINGS
T25L	25	1	20	1	20	1	-	-	-	-	-	-
T35L	-	-	26	1	26	1	21	2	-	-	-	-
T45L	-	-	-	-	32	1	26	1	22	2	-	-
T55L	-	-	-	-	-	-	32	1	27	2	21	2
T65L	-	-	-	-	-	-	-	-	32	1	24	2

Stock torque limiters are furnished with one bearing. Where stock torque limiter sprockets require more than one bearing, the extra bearings are furnished with the sprockets.

TABLE 5 SPROCKETS FOR TORQUE LIMITERS

PART NUMBER	DIAMETER		CHAIN SIZE	NO. TEETH	FITS TORQUE LIMITER	WT. LBS.	PART NUMBER	DIAMETER		CHAIN SIZE	NO. TEETH	FITS TORQUE LIMITER	WT. LBS.
	OUTSIDE	PITCH						OUTSIDE	PITCH				
35T25L25	3.19"	2.992"	35	25	T25L	.1	50T55L32	6.72"	6.376"	50	32	T55L	2.0
35T25L30	3.79	3.588	35	30	T25L	.1	50T55L35	7.32	6.972	50	35	T55L	2.6
35T25L35	4.39	4.183	35	35	T25L	.3	50T55L40	8.32	7.966	50	40	T55L	3.8
41T25L20	3.45	3.196	41	20	T25L	.1	60T45L22	5.67	5.270	60	22	T45L	1.7
41T25L30	5.06	4.783	41	30	T25L	.8	60T45L30	7.59	7.175	60	30	T45L	4.0
41T25L40	6.65	6.373	41	40	T25L	1.7	60T45L40	9.98	9.559	60	40	T45L	8.1
40T25L20	3.45	3.196	40	20	T25L	.3	60T55L27	6.87	6.460	60	27	T55L	3.1
40T25L30	5.06	4.783	40	30	T25L	.9	60T55L35	8.78	8.367	60	35	T55L	6.0
40T25L40	6.65	6.373	40	40	T25L	2.3	60T55L40	9.98	9.559	60	40	T55L	8.0
40T35L26	4.42	4.148	40	26	T35L	.5	60T65L32	8.07	7.652	60	32	T65L	3.8
40T35L30	5.06	4.783	40	30	T35L	.8	60T65L35	8.78	8.367	60	35	T65L	5.1
40T35L40	6.65	6.373	40	40	T35L	1.9	60T65L40	9.98	9.559	60	40	T65L	7.1
50T35L21	4.52	4.194	50	21	T35L	.7	80T65L24	8.20	7.661	80	24	T65L	4.8
50T35L30	6.32	5.979	50	30	T35L	1.9	80T65L35	11.71	11.156	80	35	T65L	13.1
50T35L40	8.32	7.966	50	40	T35L	4.0	80T65L40	13.31	12.746	80	40	T65L	17.4
50T45L26	5.52	5.185	50	26	T45L	1.0							
50T45L30	6.32	5.979	50	30	T45L	1.7							
50T45L40	8.32	7.966	50	40	T45L	3.9							

Browning stock sprockets for torque limiters are ground for proper release and re-engagement. Stock Type A sprockets can also be reworked for torque limiters.

Design Features

FEATURES

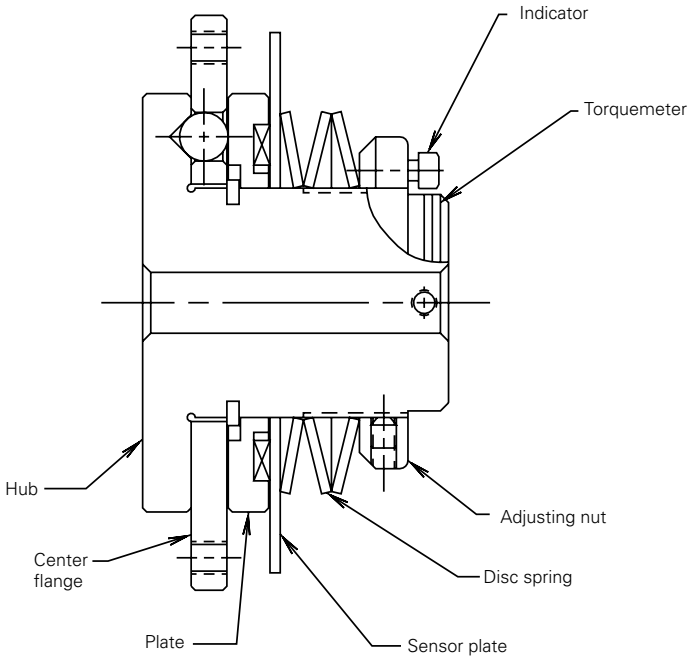
- One position type: the non-symmetric arrangement of balls and pockets allows only one engagement position.
- Automatic resetting: once the overload is removed, it reengages automatically by rotating a driving member.
- Accuracy of trip torque within ±10%: even with repeated tripping the precision remains within
  ± 10 %.
- Easy torque setting and adjusting: by tightening or loosening the adjusting nuts (bolts), the desired torque can be easily set
- Visual torquemeter: the indicator and the torquemeter can confirm the setting torque.

Browning Torq/Pro is a release-type ball-detent torque overload device with a single position reset configuration and offers:

- •Improved accuracy
- •Simple design
- •Reversible
- •Torque set scale
- •Switch detector plate

Production Protection

There is a strong push toward automating manufacturing facilities and equipment. Depending on material flow,
various machines are systematically coordinated to achieve high efficiency, productivity and performance in the total production layout. In this situation, however, small mishaps can occasionally add to total system downtime and subsequent losses. Browning Torq/Pro is based on a design concept to not only help protect machines from overload but also minimize downtime, which may be caused by the problems of just one of the interacting machines.



STRUCTURE

1. Torque is transmitted by the balls and pockets. The irregular arrangement of the balls and pockets results in only one position engagement.
2. During normal machine operation torque will be transmitted from the center flange through the balls to the pockets with the hub. If overloaded the balls are released from the pockets and roll between the plate and the hub. On tripping, the needle bearing provides smooth and light rotation.
3. On tripping, the center flange will move in the direction 2-3 mm, then the sensor plate catches the overload.
4. Adjust torque by tightening the adjusting nuts (bolts). The indicator and torquemeter show set tripping torques.

Part Number Explanation

TP 30 H FB or MPB

- FB or MPB — Specify finished bore or min. plain bore
- H — Springs (light, medium or heavy)
- 30 — Model number
- TP — Series

When ordering a Torq/Pro coupling specify Torq/Pro unit, Torq/Pro sprocket, coupling chain and adjoining sprocket.

Selecting Torq/Pro

Like other overload protection devices, position the Torq/Pro at the nearest place to the driving part where overload will occur.

1. Decide the trip limit torque from the maximum torque limit, strength of the driving part and the expected overload.
2. Confirm the bore size and rpm.
3. Select a suitable size from the ratings table.

Like other overload devices, it is best to position the Torq/Pro nearest the driven equipment where the overload is most likely to occur.

Tripping torque should be 25% greater than the operating torque to compensate for motor starting torque and intermittent, shock and reversing loads.

$$\text{Tripping Torque} = \text{Operating Torque} \times SF$$

$$\text{Torque (In. Lbs.)} = \frac{\text{Horsepower} \times 63025}{\text{rpm}}$$

$$\text{Horsepower} = \frac{\text{Torque (In. Lbs)} \times \text{rpm}}{63025}$$

1. Determine the tripping torque by either the HP or torque formula shown.
2. Select the correct Torq/Pro based on this rating.
3. Check for max. rpm and confirm stock bore size.

INSTALLATION

1. The torque of the Torq/Pro is set at the minimum value when shipped. Please check to ensure that the indicator is pointing to zero on the torque scale.

2. Loosen the fit-drive setscrew of the adjustment nut and remove the lock plug.

3. Look at the tightening graph to determine the angle to

which the adjustment nut must be tightened to produce the trip torque determined above. The torque scale is divided into increments of 60°. First turn the adjustment nut to an angle 60° before the angle determined from the graph, install the Torq/Pro onto the machine, and do a trip test. Then gradually tighten the nut until the required torque is reached.

4. After the torque is set, insert the lock plug and tighten the screw with hole so that it holds loosely.

5. Do not turn the adjustment nut beyond the largest value on the torque scale. If this is done, the spring will not have sufficient flexible leeway and the device will lock when tripping occurs.

TORQUE SETTING

TP-08, 12, 16

1. Torque is set with adjustment nut.

2. Tighten the adjustment nut at the tightening angle which is equivalent to the trip torque per tightening angle – trip torque diagram.

3. At first, tighten the adjustment nut at 60 degrees smaller than the required value and test. Then gradually increase the tripping torque to the best value.

Do not turn the adjustment nut over the maximum value of the torque indicator. Otherwise there is no margin of coil spring when tripping.

TP-20, 30, 50

1. Torque setting is adjusted by tightening or loosening the adjustment nut. Make sure that the setscrew in the nut is loosened to prevent hub thread damage. Note: There is a brass lock plug under setscrew.

2. Refer to catalog torque to determine approximate rotation of adjustment nut to obtain desired torque. It is suggested that the nut is first tightened to a value less than desired (60 degrees) and final adjusted on the shaft after making a test run.

3. Adjust to final torque by gradually tightening adjustment nut.

4. After setting torque, tighten setscrew to prevent loosening.

5. Note: Do not tighten the adjustment nut beyond maximum limit of scale because the TP unit may not trip even under overloading conditions.

TP-70, 90, 110 and 130

1. Torque adjustment is accomplished by the three adjustment bolts. First, loosen the lock nuts on the adjustment bolts **and remove the lock plugs (TP 70 and 90 do not have lock plugs).** Then, check that the match mark of the hub and adjustment plate line up and the setscrew is tight.

2. Refer to catalog torque to determine approximate rotation of the adjustment bolt to obtain desired torque. It is suggested that initially the bolt is tightened to a value less than desired (60 degrees) and final adjusted on the shaft after making a test run.

3. Adjust to final torque by gradually tightening the three adjusting bolts evenly.

4. Tighten the lock nuts to prevent the adjustment bolts from loosening.

5. Note: Do not tighten the adjusting bolts beyond the maximum limit of the scale because the TP unit may not trip even under overloading conditions.

RESETTING

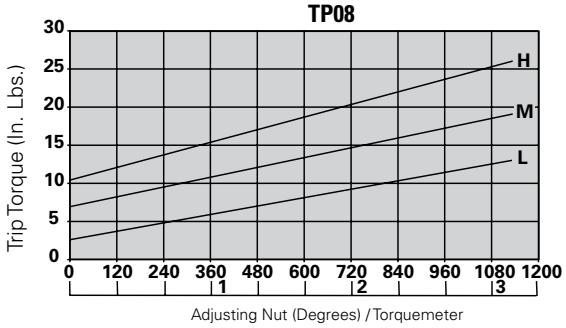
a. When TP trips, stop the drive and remove the source of the overload.

b. Reset by either rotating at 50 rpm or less or by jogging the motor.

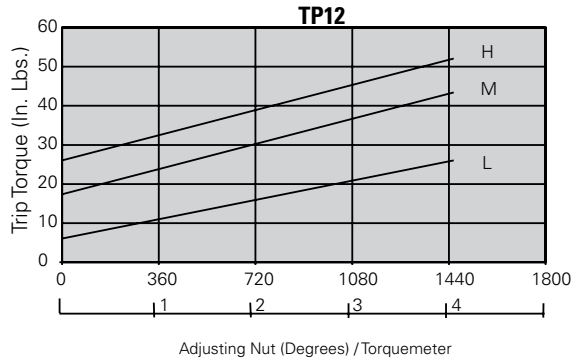
c. When resetting, an audible sound will be heard as the ball snaps into the detent.

Torque Settings

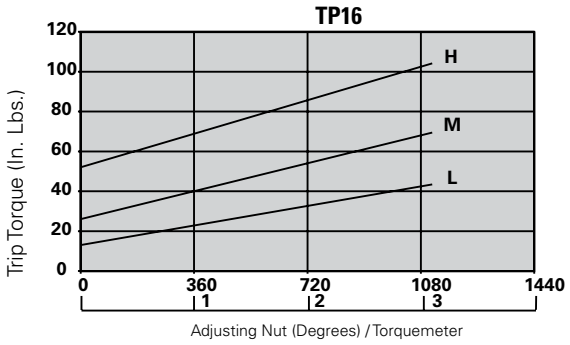
TP08



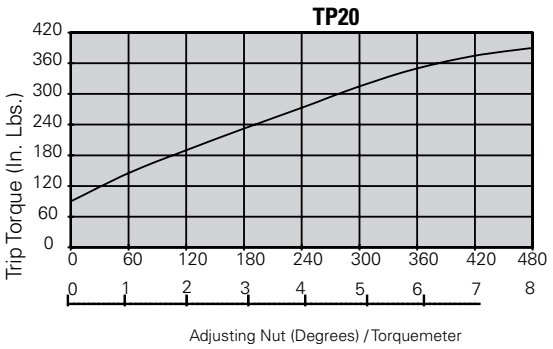
TP12



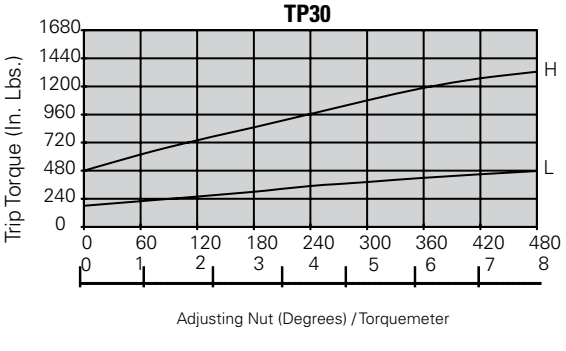
TP16



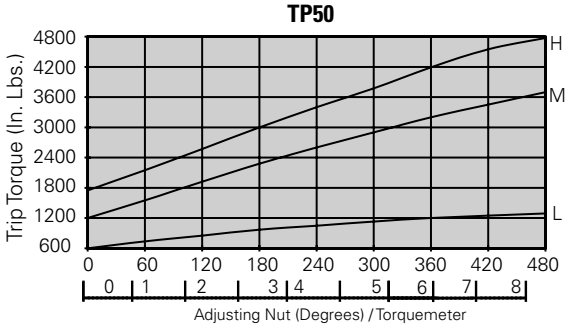
TP20



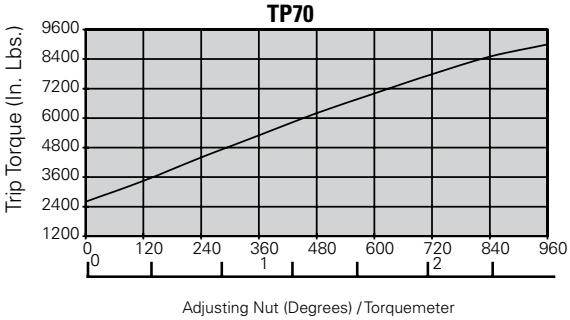
TP30



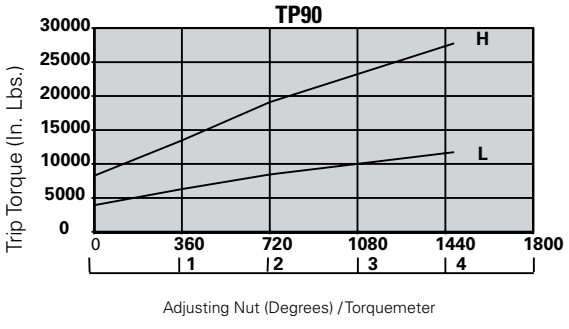
TP50



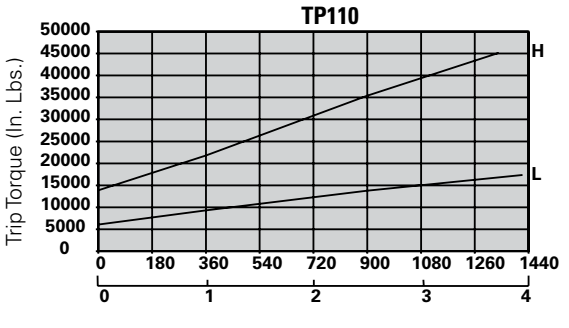
TP70



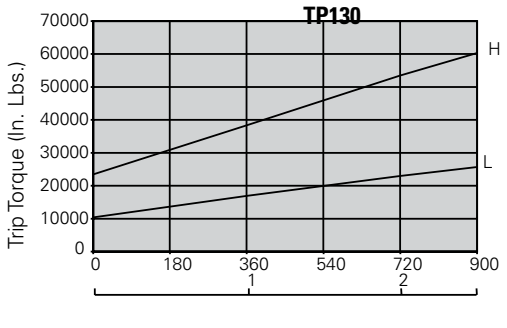
TP90

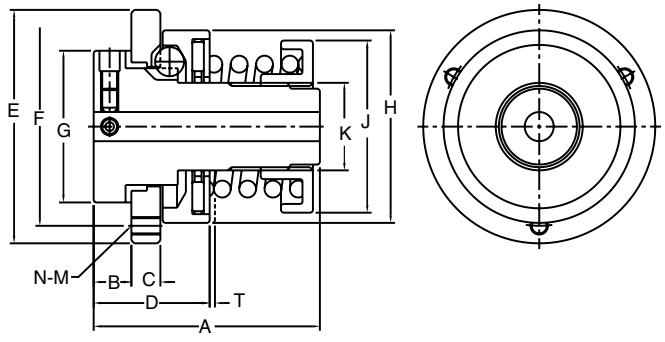


TP110

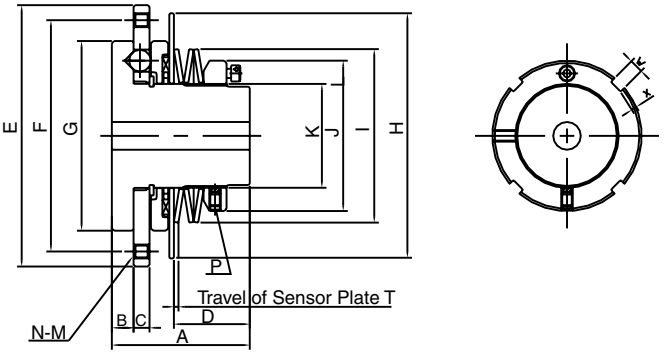


TP130





TP08 - TP16



TP20 - TP50

TABLE 1

MODEL	RPM MAX.	BORE (INCH)		TORQUE IN. LBS.)		DISC SPRING COLOR
		MIN.	MAX.	MIN.	MAX.	
TPO8L	1200	197	315	3	13	Yellow
TPO8M				7	19	Blue
TPO8H				10	26	Orange
TP12L	1000	236	472	6	26	Yellow
TP12M				17	43	Blue
TP12H				26	52	Orange
TP16L	900	276	630	13	43	Yellow
TP16M				26	69	Blue
TP16H				52	104	Orange
TP2O	700	320	875	85	400	Orange
TP3OL	500	470	1,188	175	475	Yellow
TP3OH				475	1475	Orange
TP5OL	300	860	1,938	600	1300	Yellow
TP5OM				1200	3600	Blue
TP5OH				1735	4775	Orange

Note:Example: Torq/Pro part number for minimum plain bore is TP50L.

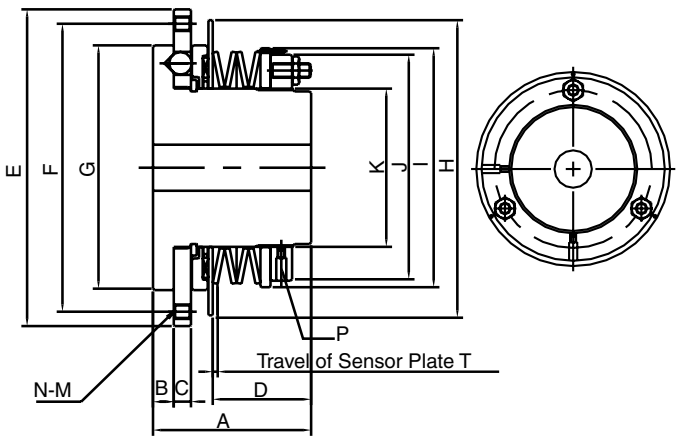
TABLE 2

MODEL	DIMENSIONS ALL DIMENSIONS ARE IN INCHES														WT. (LB.)
	A OVERALL WIDTH	B DRIVE PLATE OFFSET	C DRIVE PLATE THICKNESS	D SENSOR PLATE OFFSET	E PILOT DIAMETER	F BOLT CIRCLE	G HUB DIAMETER	H SENSOR PLATE DIAMETER	I SPRING DIAMETER	J ADJUSTING NUT DIAMETER	K HUB DIAMETER	M CAPSCREW THREADS	N NUMBER OF MOUNTING HOLES	T	
TP08	1.535	0.256	0.197	0.787	1.575	1.339	1.024	1.299	-	1.161	591	M3	3	0.035	0.3
TP12	1.850	0.315	0.236	0.925	1.890	1.575	1.260	1.575	-	1.378	787	M4	3	0.039	0.5
TP16	2.205	0.335	0.315	1.091	2.283	1.969	1.535	1.890	-	1.772	984	M4	3	0.047	1.0
TP20	1.850	0.300	0.220	0.980	3.500	3.000	2.440	3.230	2.130	1.890	1.180	10-24	4	.07	2.0
TP30	2.360	0.370	0.280	1.300	4.437	3.940	3.230	4.170	2.950	2.560	1.670	1/4 - 20	6	.08	4.5
TP50	3.190	0.570	0.340	1.760	6.250	5.500	4.800	5.910	4.590	3.860	2.760	5/16 - 18	6	.11	13.0

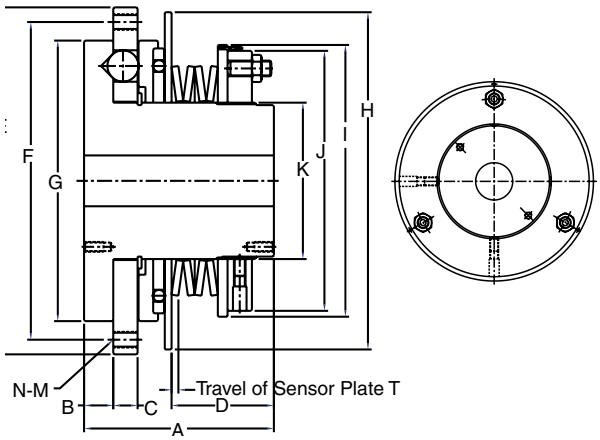
TABLE 3 TORQ/PRO STOCKED FINISHED BORES

PART NUMBER	STOCK BORES STOCK BORES MARKED X																				
	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 5/8	1 3/4"	1 15/16"	2"	2 1/8"	2 1/4"	2 7/16"	2 1/2"	2 3/4"
TP20	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP30L	-	x	x	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-
TP30H	-	x	x	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-
TP50L	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	-	-	-	-	-	-
TP50M	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	-	-	-	-	-	-
TP50H	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	-	-	-	-	-	-
TP70	-	-	-	-	-	-	-	-	-	-	-	x	-	x	x	x	x	x	x	x	x

Note: Example: Torq/Pro part number for finished bore is TP50L x 1 1/8.
Finished bores are available for all sizes upon request.



TP70 - TP90



TP110 - TP130

TABLE 4

MODEL	RPM MAX.	BORE (INCH)		TORQUE (IN. LBS.)		DISC SPRING COLOR
		MIN.	MAX.	MIN.	MAX.	
TP70	160	1.260	2.755	2600	9550	Yellow
TP90L	120	1.654	3.543	3903	11710	Yellow
TP90H				8240	27756	Orange
TP110L	100	2.047	4.331	6072	17347	Yellow
TP110H				13878	45103	Orange
TP130L TP130H	80	2.362	5.118	10408	26889	Yellow
				23419	63318	Orange

TABLE 5

MODEL	DIMENSIONS ALL DIMENSIONS ARE IN INCHES														WT. (LB.)
	A OVERALL WIDTH	B DRIVE PLATE OFFSET	C DRIVE PLATE THICKNESS	D SENSOR PLATE OFFSET	E PILOT DIAMETER	F BOLT CIRCLE	G HUB DIAMETER	H SENSOR PLATE DIAMETER	I SPRING DIAMETER	J ADJUSTING NUT DIAMETER	K HUB DIAMETER	M CAPSCREW THREADS	N NUMBER OF MOUNTING HOLES	T	
TP7O	4.330	0.570	0.470	2.700	8.625	7.880	6.690	8.070	6.540	6.180	4.170	3/8-16	6	.13	37.0
TP9O	6.181	0.984	0.866	3.488	11.614	10.433	9.291	11.417	8.386	7.992	5.118	M12	8	0.21	82.7
TP11O	7.677	1.181	0.984	4.134	13.976	12.795	11.299	13.583	10.945	10.472	6.299	M16	6	0.24	153.4
TP13O	9.055	1.378	1,063	5.118	15.748	14.173	12.559	15.354	12.441	11.969	7.480	M16	8	0.26	224.9

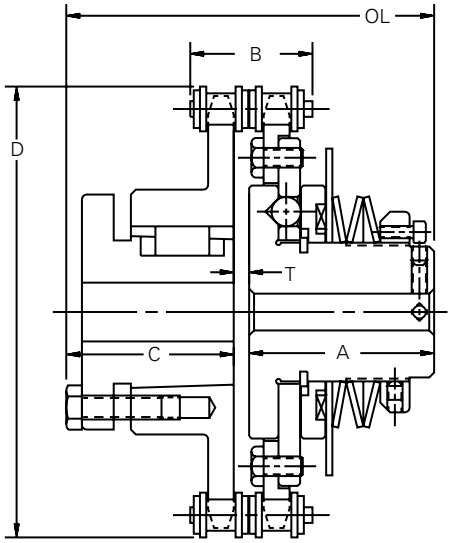


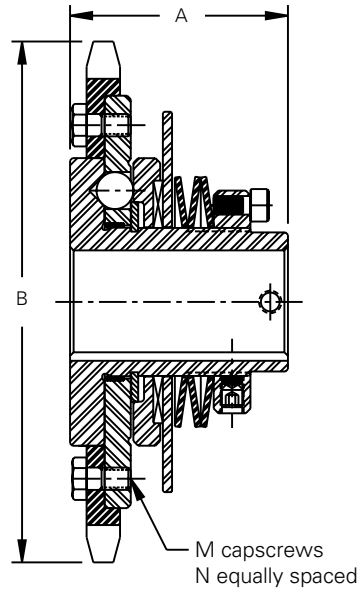
TABLE 1 **TORQ/PRO CHAIN COUPLING**

MODEL	SINGLE STRAND SPROCKET PART NUMBER	SINGLE SPROCKET FOR SPLIT TAPER BUSHING PART NUMBER	COUPLING CHAIN WITH LINK PART NUMBER	DIMENSIONS IN INCHES					
				A LENGTH THROUGH BORE	B WIDTH OF CHAIN	C LENGTH THROUGH COUPLING SPROCKET	D OVERALL DIAMETER	E CLEARANCE	L OVERALL LENGTH
TPC20	20TP40A26K	40P26	C4026	1.85	1.22	2 3/16	4.61	.16	4.20
TPC30L	30TP60A24K	60P24	C6024	2.36	1.89	2 3/16	6.45	.20	4.75
TPC30H	30TP60A24K	60P24	C6024	2.36	1.89	2 3/16	6.45	.20	4.75
TPC50L	50TP60A30K	60P30	C6030	3.19	1.89	2 25/32	7.85	.20	6.17
TPC50M	50TP60A30K	60P30	C6030	3.19	1.89	2 25/32	7.85	.20	6.17
TPC50H	50TP60A30K	60P30	C6030	3.19	1.89	2 25/32	7.85	.20	6.17
TPC70	70TP80A32K	80Q32	C8032	4.33	2.43	2 25/32	11.11	.39	7.50

Note: For complete coupling order: 1, Torq/Pro; 1, TP sprocket; 1, bushed sprocket and bushing; and 1, coupling chain.
Coupling packages are available for all Torq/Pro sizes. For more information contact Application Engineering at 1-800-626-2093.

TABLE 2 **SINGLE STRAND SPROCKET KITS**

MODEL	SPROCKET PART NUMBER	NO. OF TEETH	A OVERALL LENGTH	B OVERALL SPROCKET DIAMETER	M CAPSCREW	N
TP20	20TP40A26K	26	1.85	4.42	10-24 X 3/8	4
	20TP40A30K	30	1.85	5.06	10-24 X 3/8	4
	20TP40A36K	36	1.85	6.02	10-24 X 3/8	4
	20TP40A40K	40	1.85	6.65	10-24 X 3/8	4
	20TP50A25K	25	1.89	5.32	10-24 X 1/2	4
	20TP50A30K	30	1.89	6.32	10-24 X 1/2	4
TP30	30TP40A36K	36	2.36	6.02	1/4 -20 X 1/2	6
	30TP40A40K	40	2.36	6.65	1/4 -20 X 1/2	6
	30TP50A26K	26	2.36	5.52	1/4 -20 X 1/2	6
	30TP50A30K	30	2.36	6.32	1/4 -20 X 1/2	6
	30TP50A36K	36	2.36	7.52	1/4 -20 X 1/2	6
	30TP60A24K	24	2.41	6.15	1/4 -20 X 1/2	6
TP50	50TP60A30K	30	3.19	7.59	5/16 -18 X 3/4	6
	50TP60A36K	36	3.19	9.02	5/16 -18 X 3/4	6
	50TP80A24K	24	3.27	8.20	5/16 -18 X 3/4	6
TP70	70TP80A32K	32	4.44	10.75	3/8-16X1	6
	70TP80A36K	36	4.44	11.98	3/8-16X1	6
	70TP100A26K	26	4.56	11.05	3/8-16X1	6



Reboring

1. TP Torq/Pro Hub:
   A. Disassemble all parts from hub, being careful to keep clean and free of nicks and any damage.
   B. Chuck on flange of hub and align as illustrated (Figure 1).
   C. Rebore to desired size within catalog bore range.
2. Coupling Sprocket:
   A. Chuck on sprocket hub, indicate for alignment, and rebore.
   B. Do not exceed maximum bore.

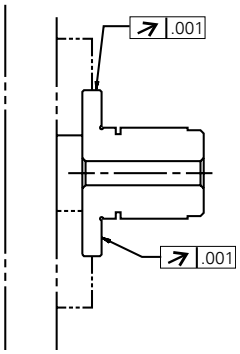


Figure1

REASSEMBLE AND MINIMUM TORQUE SETTING

1. Reassemble:

A. Assemble parts in reverse order. Refer to cross section drawing.

B. Apply grease to balls and needle bearing.

C. Be careful to orient the springs as illustrated.

2. Reset to minimum torque:

A. This auto-resetting type only requires re-starting of the motor, etc. at the drive side for re-engagement. Remove the cause of overload after stopping the equipment when the Torq/Pro trips. Reset TP with input rotation of 50 rpm or slower or by inching of motor. Never reset manually. If you hear the "clicks", the balls are back in the pocket holes.

B. TP 08, 12, 16, 20, 30, 50: Set the indicator to the "0" point on the sticker by tightening the adjustment nut.

C. TP 70, 90, 110, 130: Make sure that adjustment bolt and nuts are loose, lineup match mark on hub and adjustment plate. Then tighten the setscrews in the adjustment plate to lock position on the hub. For TP-110 and 130, tighten setscrew with lock plug. Tighten the three adjustment bolts equally to locate the indicator to the "0" point.

MOUNTING OF THE DRIVE MEMBER

1. Drive member will pilot over center flange with a clearance fit.
2. Dimensions of drive member and mounting bolts are listed (Figure 2) and following table

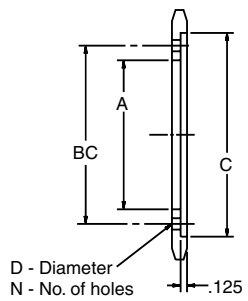


Figure 2

Model	A	BC	C	D	N	F* (min.)
TP08	1.10	1.339	1.577-1.580	9/64	3	0.125
TP12	1.30	1.575	1.892-1.895	3/16	3	0.125
TP16	1.61	1.969	2.285-2.288	3/16	3	0.125
TP20	2.50	3.000	3.502-3.505	7/32	4	0.125
TP30	3.38	3.937	4.440-4.443	9/32	6	0.125
TP50	4.94	5.500	6.252-6.255	11/32	6	0.125
TP70	6.75	7.875	8.627-8.630	13/32	6	0.125
TP90	9.45	10.433	11.616-11.619	1/2	8	0.125
TP110	11.50	12.795	13.978-13.981	21/32	6	0.125
TP130	12.78	14.173	15.750-15.753	21/32	8	0.125

Note: Dimension .125 changes to .200 if using #60 sprocket with TP30.

MOUNTING OF TP ON SHAFT

Use of a parallel key is required. Tighten the setscrew to secure to the shaft. Use of lock-tite is suggested to prevent the setscrew from loosening.

COUPLING

1. Alignment:
   A. Angular misalignment should be held within 0.5 degrees. To indicate measure dimension "C" along outside edge of sprocket in at least three locations (Figure 3).
   B. Parallel misalignment should be within limit "E" listed in table and measured with a straight edge and feeler gauges.
2. Wrap sprockets with chain to complete assembly.

MODEL	C	E
TP20	.291	.009
TP30	.382	.015
TP50	.382	.015
TP70	.602	.020

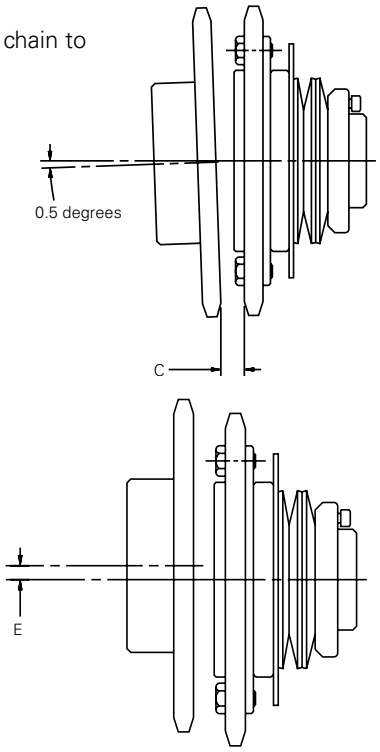


Figure 3

MAINTENANCE

1. Disassemble unit and apply grease on the ball and bearing once a year or 1000 trips.
2. Use NGLI 2 lithium based EP grease.

OVERLOAD DETECTION

With use of a proximity switch the operating system can be shut down. Whenever the TP unit trips due to an overload, the sensor plate will move a sufficient amount. Use an Omron® switch number EZE-X1R5YZ or equivalent.

Design Features

For the Protection of Servo Drives and **High-Speed Response Drive Systems**

With the advent of new industrial automation technologies, higher levels of precision are being introduced in the positioning and indexing of all types of machinery and systems, especially servomotors.

Operating errors in high tech mechanical systems can cause damage and accidents, resulting in considerable loss of time and money. The TPX high precision torque overload device satisfies the demand for precision and functionality in these types of machines and systems. This series provides drive disengagement when overload occurs and also includes features such as backlash prevention, high rigidity and easy adjustment by means of a torque scale.

INDUSTRIES SERVED

- Automotive
- Food and beverage
- Steel
- Textiles

FIELD APPLICATIONS

- Conveyors
- Food and beverage equipment
- Machine tools
- Mixers
- Packaging equipment
- Textile machinery
- X-ray machinery

FEATURES

Backlash – Patent pending, innovative ball and wedge mechanism nearly eliminates backlash.

High precision tripping – Little motion lost during tripping. Reoccurence of trip torque (dispersion rate) is held within ±3%.

Coupling capability – In the coupling model, misalignment of 0.5° - 1° due to angling error, parallelism or displacement of axis direction, is compensated for by the ball and wedge mechanism.

One position – Ball and pocket are uniquely designed to fit together in only one position, which allows the system reset to be kept in place.

Easy torque adjustment – Adjust trip torque by simply turning the adjustment nut.

Verification of torque setting – Torque setting can be easily verified by checking the torque scale and indicator.

Browning Torq/Pro TPX is a release-type ball-detent torque overload device with a single position reset configuration and offers:

- Improved accuracy
- Simple design
- Reversible
- Torque set scale
- Switch detector plate
- Reduction of nuisance trips

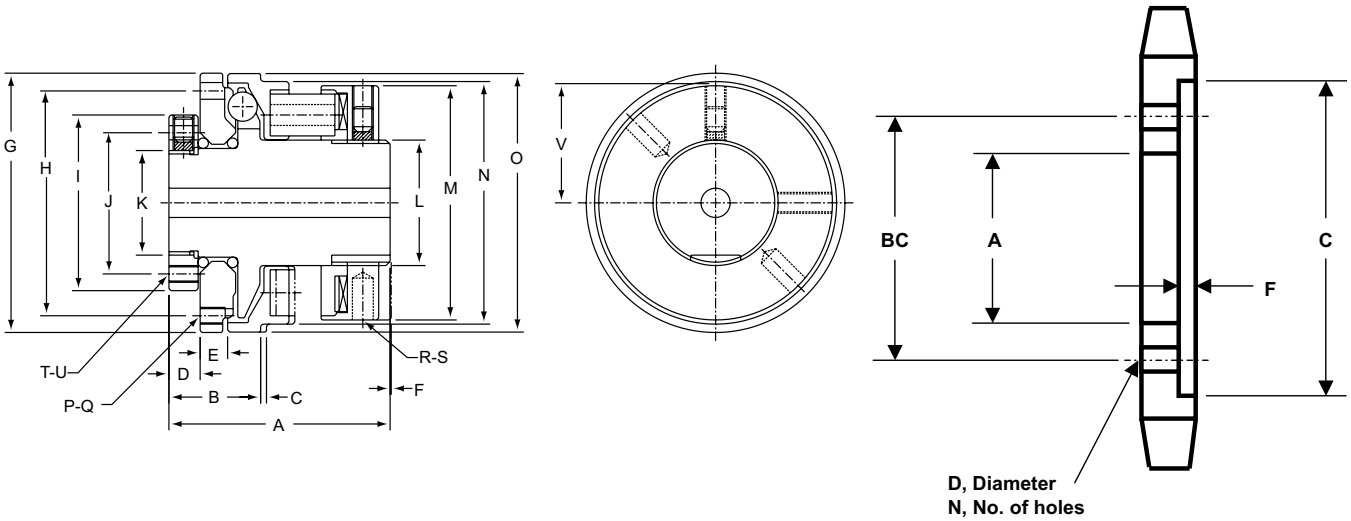


TABLE 1

MODEL	RPM MAX.	BORE MM MIN.	BORE MM MAX.	BORE INCHES MIN.	BORE INCHES MAX.	TORQUE NM MIN.	TORQUE NM MAX.	TORQUE LB/FT MIN.	TORQUE LB/FT MAX.	DISC SPRING COLOR
TPX10L	1400	7	15	5/16	9/16	1.7	6.4	1.25	4.70	Yellow x 3
TPX10M						5.4	15	3.98	11.06	Red x 3
TPX10H						11	29	8.11	21.39	Red x 6
TPX20L	1100	8.5	25	3/8	15/16	6.5	24	4.79	17.70	Yellow x 6
TPX20M						13	34	9.59	25.08	Red x 3
TPX20H						25	68	18.44	50.16	Red x 6
TPX35L	800	12	35	1/2	1 3/8	23	68	16.96	50.16	Red x 5
TPX35M						43	98	31.72	72.28	Green x 5
TPX35H						87	196	64.17	144.56	Green x 10
TPX50L	600	18	55	3/4	2 1/8	45	118	33.19	87.03	Red x 5
TPX50M						90	196	66.38	144.56	Green x 5
TPX50H						176	392	129.81	289.13	Green x 10
TPX70L	480	23	70	15/16	2 3/4	127	363	93.67	267.74	Red x 8
TPX70M						265	510	195.46	376.16	Green x 8
TPX70H						392	784	289.13	578.26	Green x 12

Note: Example: Torq/Pro part number for minimum plain bore is TPX50L MPB.

BROWNING TPX DRIVE MEMBER MOUNTING DIMENSIONS						
MODEL	A	BC	C	D	N	F* (MIN.)
TPX10	1.72	2.126	2.443-2.446	3/16	4	0.125
TPX20	2.43	2.913	3.388-3.391	7/32	6	0.125
TPX35	2.82	3.465	4.215-4.218	9/32	6	0.125
TPX50	4.20	5.118	5.829-5.832	11/32	6	0.125
TPX70	5.38	6.457	7.285-7.288	7/16	6	0.125

*.125" could be adjusted to a larger dimension to accommodate standard screw lengths

TABLE 2

MODEL	DIMENSIONS																					
	A OVERALL WIDTH		B		TRAVEL OF PRESSURE PLATE		D DRIVEN PLATE OFFSET		E DRIVE PLATE THICKNESS		F		G OUTER DIAMETER		H BOLT CIRCLE		I LOCK NUT DIAMETER		J DIAMETER		K HUB DIAMETER	
	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES
TPX10	53	2.087	22	0.866	1.40	0.055	8	0.295	6.60	0.256	+0.3	+0.012	62	2.441	54	2.126	42	1.654	34	1.339	25	0.984
TPX20	64	2.520	35	1.378	1.60	0.063	10	0.394	13.40	0.528	+0.7	+0.028	86	3.386	74	2.913	60	2.362	50	1.969	40	1.575
TPX35	68	2.677	38	1.476	2.00	0.079	11	0.433	11.60	0.457	-0.5	-.020	107	4.213	88	3.465	70	2.754	60	2.362	50	1.969
TPX50	92	3.622	55	2.157	2.60	0.102	15	0.591	19.50	0.768	+0.3	+0.012	148	5.827	130	5.118	105	4.134	-	-	80	3.150
TPX70	98	3.858	61	2.402	3.50	0.138	15	0.591	19.20	0.756	+1	+0.039	185	7.283	164	6.457	135	5.315	-	-	100	3.937

MODEL	DIMENSIONS																				WT.	
	L HUB DIAMETER		M ADJUSTMENT NUT DIAMETER		N		O PRESSURE PLATE DIAMETER		P NUMBER OF MOUNTING HOLES	Q CAPSCREW THREADS	R DIAMETER		S DEPTH		T NUMBER OF THREAD	U DEPTH OF THREAD	V HEIGHT					
	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES		METRIC	MM	INCHES	KG	LB.
TPX10	30	1.181	56	2.205	58	2.283	62	2.43	4	M 4x6	5	0.197	10	0.394	4	M4 x 7	30	1.181	0.75	1.653
TPX20	40	1.575	70	2.756	73	2.874	86	3.39	6	M5x8	5	0.197	10	0.394	6	M5 x 7	37	1.457	1.67	3.681
TPX35	55	2.165	88	3.465	91	3.583	107	4.21	6	M 6x7	6	0.236	10	0.394	6	MS x 8	46	1.811	2.51	5.533
TPX50	80	3.150	123	4.843	129	5.079	148	5.83	6	M 8x13	9	0.354	17	0.669	-	-	64	2.520	7.03	15.498
TPX70	100	3.937	148	5.827	153	6.024	185	7.28	6	M 10x13	10	0.394	18	0.709	-	-	76	2.992	11.40	25.132

SELECTION GUIDE

Install the TPX as close as possible to the location where overload is likely to occur.

SELECTING TRIP TORQUE - TPX ONLY

Set trip torque equal to the maximum amount of torque that can be applied, based on conditions such as the strength of the machine and load. When the maximum amount of torque is unclear, calculate the rated torque from the rated output and rpm of the shaft onto which the torque overload device is to be installed and
multiply this figure by the service factor. The result may be taken as the trip torque.

$$T = \frac{974 \times P}{N} \times S.F$$

T = trip torque (kgf-m)
P = rated output (kW)
N = revolutions per minute (rpm)
S.F. = service factor

1. Verification of shaft bore diameter and rpm
2. Model number selection

DETERMINATION OF SERVICE FACTOR

S.F.	Operating Conditions
1.25	Normal starting and stopping, intermittent motion
1.50	Load with severe shocks, forward and reverse motion

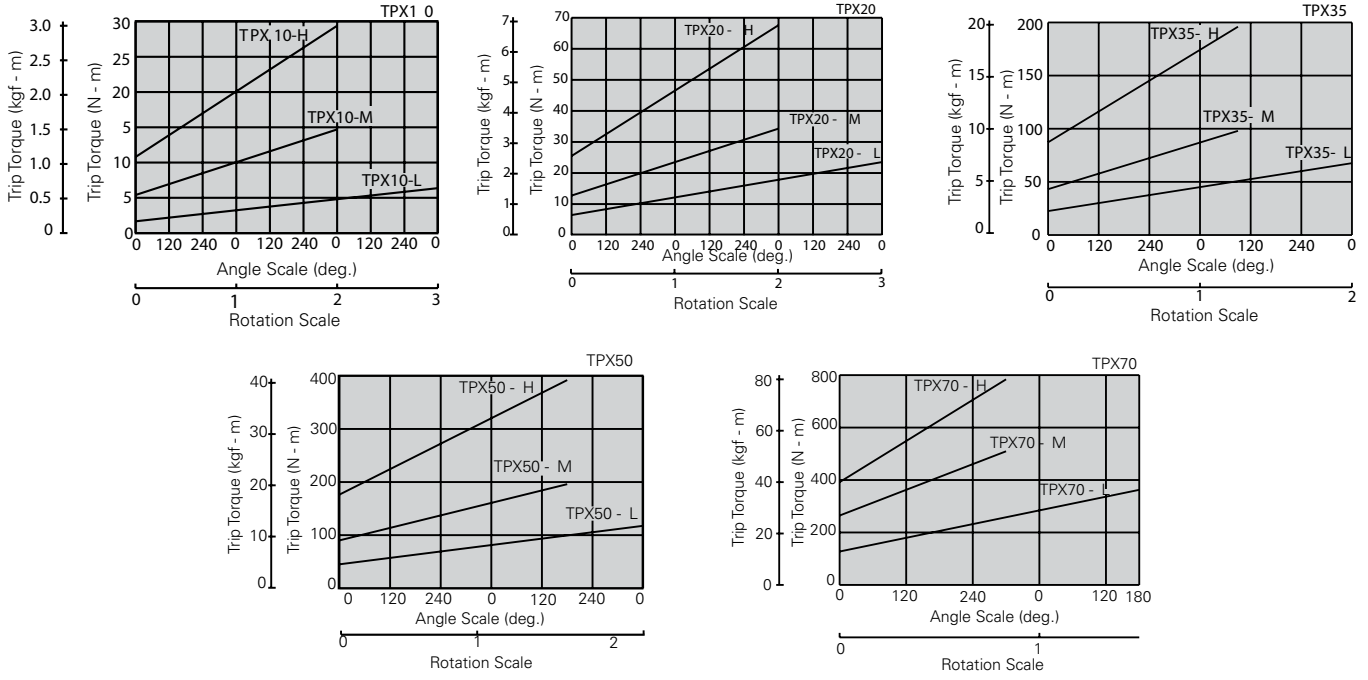
SETTING TRIP TORQUE

1. The torque of all TPX torque overload devices is set at the minimum value when shipped. Please check to make sure that the indicator is pointing to zero on the torque scale.
2. Loosen the fit-drive set screw of the adjustment nut and remove the lock plug.
3. Look at the tightening-torque graph below to determine the angle to which the adjustment nut must be tightened to produce the trip torque determined above. The torque scale is divided into increments of 60°. First turn the adjustment nut to an angle of 60° before the
angle determined from the graph, install the TPX onto the machine, and do a trip test. Then gradually tighten the nut until the required torque is reached.
4. After the torque is set, insert the lock plug and tighten the screw with hole so that it holds loosely.
5. Do not turn the adjustment nut beyond the largest value on the torque scale. If this is done, the coiled spring will not have sufficient flexible leeway and the guard will lock when tripping occurs.

RESETTING

1. The guard automatically resets when the motor or drive is restarted.
2. When tripping occurs, stop the machine and remove the cause of the overload.
3. When restarting the motor to reset the TPX, keep the revolution speed low and increase it gradually. It is very dangerous to use your hands, so keep them away from the torque overload device. When it resets it will make a "clicking" sound.

TORQUE CORRELATION



* To convert from N-m to ft-lbs divide by 1.3558

Design Features

DIRECT ATTACHMENT OFFERS GREATER PROTECTION

Browning TPZ torque overload device allows the input side to continue to revolve freely after tripping. The TPZ includes an ON-OFF clutch capability for starting and stopping rotary transmissions. It may be used as a clutch to stop rotary transmissions when applying, disconnecting or adjusting required torque needs.

INDUSTRIES SERVED

- Material handling
- Food and beverage
- Packaging

FIELD APPLICATIONS

- Binding machinery
- Food and beverage equipment
- Machine tools
- Packaging equipment

Features

Release type – after tripping due to overload, the input side continues to revolve freely.

External force resetting – after the machine has been stopped and the source of overload has been removed, the TPZ is reset by applying a load in the direction of the shaft, either manually or by means of external force.

ON-OFF clutch capability – shaft revolution can be started or stopped at will. It can be used as a mechanical ON-OFF clutch.

Single position reset – the ball and pocket act as the torque transmission element and are uniquely designed to fit together in only one position.

Torque tripping precision – precision is within ±10% – even with repeated tripping, precision remains within ±10%.

Easy torque adjustment – trip torque is adjusted by simply turning the adjustment nut.

Easy-to-read torque scale – torque setting may be easily verified using the rpm and angle scales.

MAINTENANCE

Lubrication intervals depend upon the type of application, speed, temperature and other external conditions. For general use, apply a thin layer of EP grease to the ball and bearing section every year or after every 1000 trips.

Experience will determine the best interval for each specific application.

TABLE 1

MODEL	RPM MAX.	BORE				TORQUE				DISC SPRING COLOR
		MM		INCHES		NM		LB/FT		
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
TPZ20L	1800	8	20	3/8	3/4	2.4	8.3	1.77	6.12	Yellow x 3
TPZ20M						4.1	16	3.02	11.80	Blue x 3
TPZ20H						8.2	31	6.05	22.87	Blue x 6
TPZ30L	1800	12	30	1/2	1 1/8	5.9	21	4.35	15.49	Yellow x 4
TPZ30M						20	42	14.75	30.98	Red x 4
TPZ30H						39	108	28.77	79.66	Red x 8
TPZ40L	1800	17	40	11/16	1 9/16	25	93	18.44	68.59	Blue x 5
TPZ40M						44	127	32.45	93.62	Red x 5
TPZ40H						88	245	64.91	180.71	Red x 10
TPZ50L	1800	22	50	7/8	1 15/16	63	157	46.47	115.80	Red x 5
TPZ50M						127	304	93.67	224.22	Red x 10
TPZ50H						245	451	180.71	332.65	Green x 10

Note: Example: Torq/Pro part number for minimum plain bore is TPZ50L.

TABLE 2

MODEL	DIMENSIONS																					
	A OVERALL WIDTH		B		C		D PRESSURE PLATE GROOVE		E PRESSURE PLATE THICKNESS		F		G		H		I TRAVEL OF PRESSURE PLATE		J DIAMETER		K BOLT CIRCLE	
	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES
TPZ20	74	2.913	73	2.874	1.0	0.039	8	0.315	6	0.236	13.5	0.531	0.80	31	11.00	0.433	4.10	0.161	96	3.781	86	3.386
TPZ30	83.5	3.287	82	3.228	1.5	0.059	8	0.315	6	0.236	14.5	0.571	1.10	43	11.50	0.453	4.70	0.185	118	4.646	106	4.173
TPZ40	101	3.976	100	3.937	1.0	0.039	9	0.354	8	0.315	20	0.787	1.10	43	14.00	0.551	5.90	0.232	152	5.984	139	5.472
TPZ50	114.5	4.508	112	4.409	2.5	0.098	10	0.394	9	0.354	20.2	0.795	1.20	47	16.00	0.630	7.00	0.276	178	7.008	162	6.378

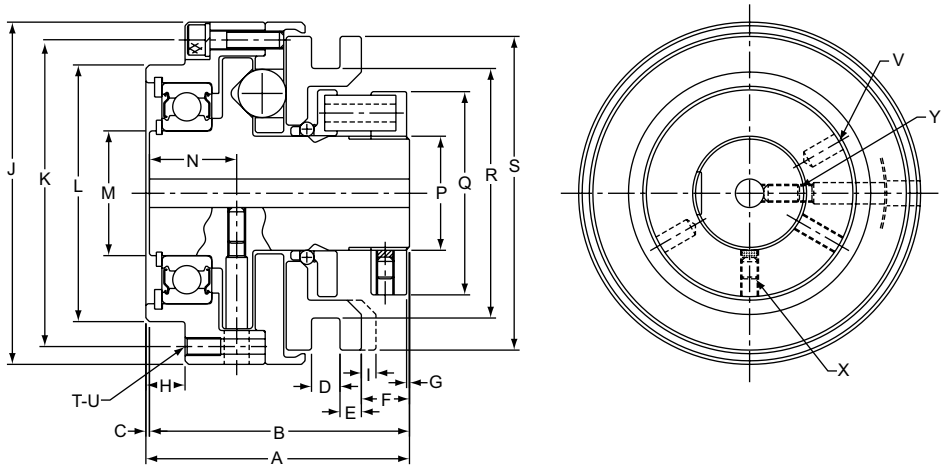
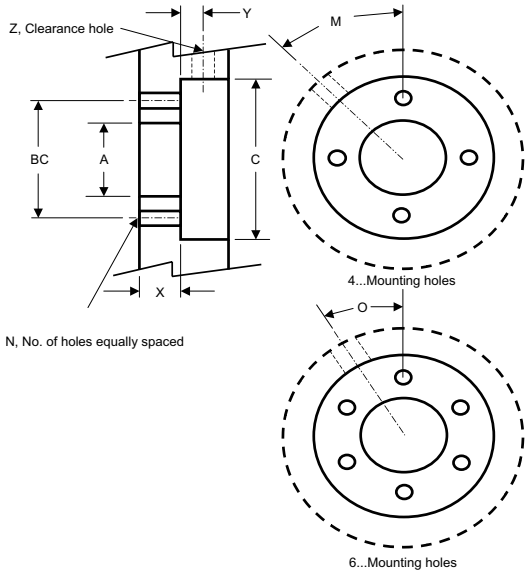


TABLE 3

MODEL	DIMENSIONS																							
	L		M HUB DIAMETER		N PILOT HOLE		P HUB DIAMETER		Q ADJUSTMENT NUT DIAMETER		R DIAMETER		S PRESSURE PLATE DIAMETER		T NUMBER OF THREAD	U SCREW DIA. X NUMBER	V DIAMETER		W DEPTH OF V		X SCREW SIZE X LENGTH	Y SCREW SIZE X LENGTH	WEIGHT	
	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN		METRIC	MM	IN	MM	IN	METRIC	METRIC	KG	LBS
TPZ20	72	2.835	35	1.378	24.5	0.965	32	1.260	58	2.283	70	2.756	88	3.465	4	M5 x 10	5	0.197	10	0.394	M5 x 10	M5 x 10	2.57	5.7
TPZ30	87	3.425	45	1.772	27.5	1.083	45	1.772	76	2.992	88	3.465	108	4.252	4	M6 X 12	6	0.236	10	0.394	M5 x 10	M6 x 10	4.17	9.2
TPZ40	114	4.488	65	2.560	32.5	1.279	65	2.559	104	4.094	119	4.685	141	5.551	6	M6 x 12	8	0.315	14	0.551	M8 x 10	M8 x 10	8.71	19.2
TPZ50	133	5.236	75	2.953	37	1.457	75	2.953	114	4.488	138	5.433	166	6.535	6	M8 x 16	9	0.354	14	0.551	M8 x 10	M8 x 10	13.70	30.2



TPZ DRIVE MEMBER MOUNTING DIMENSIONS										
MODEL	A	BC	C	D	N	X (1)	Y (2)	Z (2)	M (2)	O (2)
TPZ20	2.837-2.840	3.386	3.84	7/32	4	0.433	0.571	9/32	22.5deg	-
TPZ30	3.427-3.430	4.173	4.70	9/32	4	0.453	0.689	5/16	22.5deg	-
TPZ40	4.490-4.493	5.472	6.05	9/32	6	0.551	0.767	13/32	-	45deg
TPZ50	5.238-5.241	6.378	7.07	11/32	6	0.630	0.925	13/32	-	45deg

(1) If X is greater than dimension shown, the drive member should be counter bored to dimension C

(2) Provisions may need to be made to the drive member to access the mounting set screw and for re-engagement of the clutch
See installation and maintenance instructions for complete details on how to re-engage the clutch

The overhang of the drive member must not interfere with the on/off mechanism of the clutch

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

SELECTION GUIDE

Install the TPZ as close as possible to the location in which overload is likely to occur.

SELECTING THE TRIP TORQUE

1. Set the trip torque equal to the maximum amount of torque that can be applied, based on conditions such as the strength of the machine and load. When the maximum amount of torque is unclear, calculate the rated torque from the rated output and rpm of the shaft onto which the torque overload device is to be installed and multiply this figure by the service factor. The result may be taken as the trip torque.

$$T = \frac{974 \times P}{N} \times S.F$$

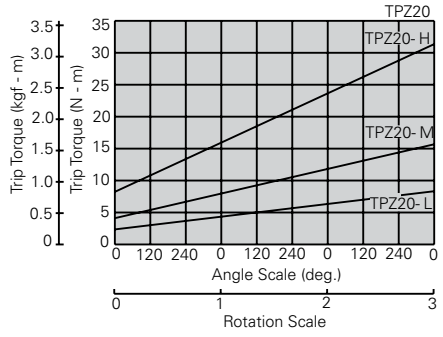
T = trip torque (kgf-m)
P = rated output (kW)
N = revolutions per minute (rpm)
S.F. = service factor

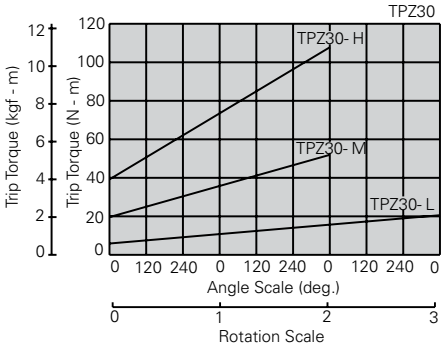
2. Verification of shaft bore diameter and rpm.

3. Model number selection.

DETERMINATION OF SERVICE FACTOR

S.F.	Operating Conditions
1.25	Normal starting and stopping, intermittent motion
1.50	Load with severe shocks, forward and reverse motion





* To convert from N-m to ft-lbs divided by 1.3558

SHAFT BORE MACHINING

1. Before machining – the torque of each TPZ torque overload device is set to the minimum value when shipped. Please verify that the rpm and angle scales both read zero.

2. Disassembly – loosen the setscrew and remove the coiled spring. Disassemble the coiled spring, plate and ball, etc. Remove the stop ring and take out the bearings and driven flange. Take care at this time that no dust or dirt accumulates.

3. Chucking – secure the exterior diameter of the hub flange in a chuck and center at the boss.

4. Machining – machine the keyway directly under the setscrew tap on the hub flange.

5. Assembly – when reassembling the parts after machining the shaft bore, grease balls A and B, the pockets and V groove.

SETTING TRIP TORQUE

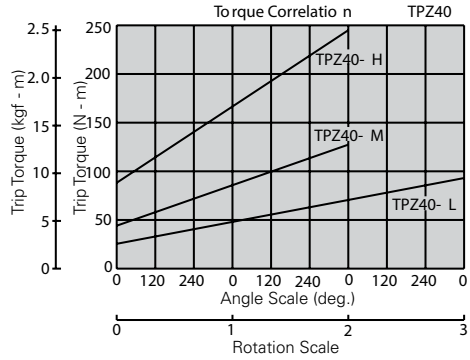
1. The torque of all TPZ torque overload devices is set at the minimum value when shipped. Check to make sure that the indicator is pointing to zero on the torque scale.

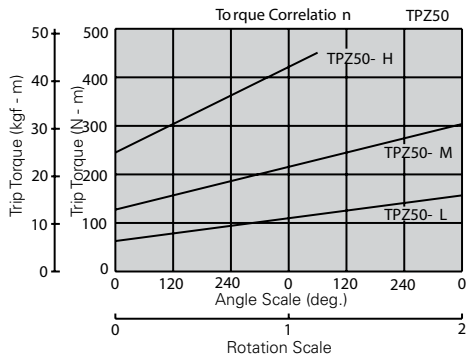
2. Loosen the fit-drive set screw of the adjustment nut and remove the lock plug.

3. Look at the tightening-torque graph below to determine the angle to which the adjustment nut must be tightened to produce the trip torque determined above. The torque scale is divided into increments of 60°. First turn the adjustment nut to an angle of 60° before the angle determined from the graph. Install the TPZ machine and do a trip test. Then gradually tighten the nut until reaching the required torque.

4. After the torque is set, insert the lock plug and tighten the screw with hole so that it holds loosely.

5. Do not turn the adjustment nut beyond the largest value on the torque scale. If this is done, the coiled spring will not have sufficient flexible leeway and the guard will lock when tripping occurs.

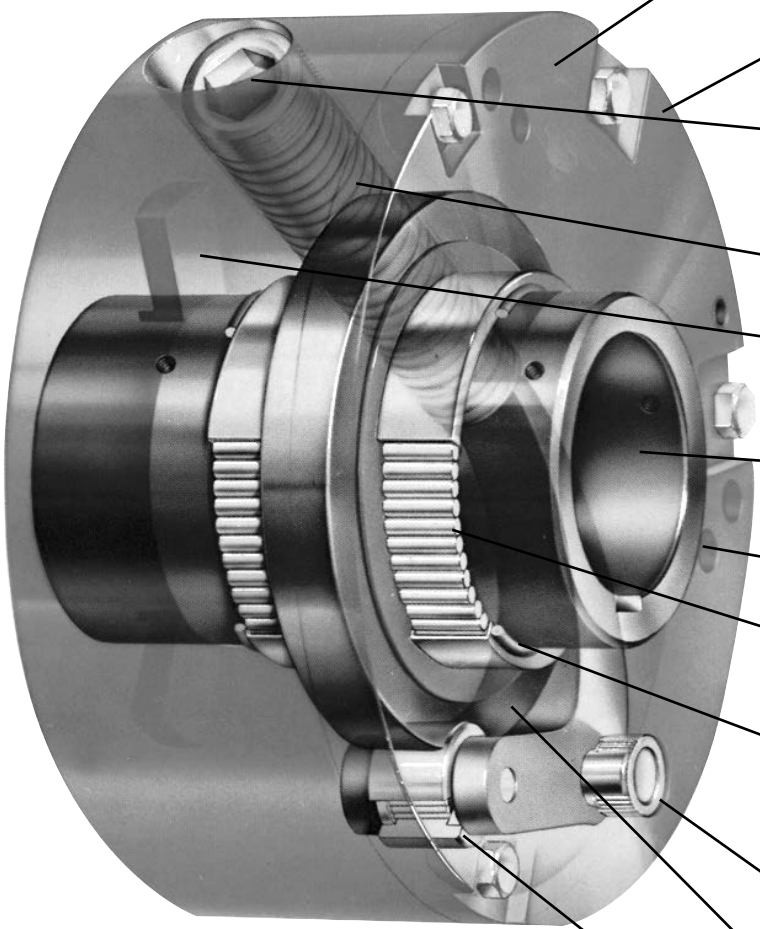




A uniquely simple design concept... ruggedly executed. Provides maximum reliability.

FEATURES

1. • Modular design – one unit for direct drive, chain drive or other power transmission options
2. • Universal mounting: eliminates special bore requirements
3. • Automatic reset
4. • Single position reset
5. • Reversible
6. • Torque repeatability



International - Orange Finish
Durable, bright orange enamel finish for high visibility, safety identification of rotating components

Close-Grained Aluminum Housing
Corrosion-resistant high tensile strength alloy minimizes weight

Hex-Socket Head Torque Control
Permits quick, easy adjustment of torque limit. May be epoxy or wax filled to prevent unauthorized changes in torque setting

Flat Wire Helical Spring
Maintains torque limit within narrow tolerance

Drilled and Tapped Mounting Lugs
Registered for plate sprocket or other output options

Maximum Shaft Bore
Arranged to accommodate stock shaft bushings

Big Forged Steel Hub
Heat-treated with oversized bore

Heavy-Duty Needle Bearings
Precision hub bearings for greater over-hung load capacity

Sealed for Life
Gasket and O-ring sealed body, packed with high-performance, moisture resistant, lithium based grease for outdoor and washdown application

Precision Needle Bearings
Years of wear-free service at lever arm pivot points

Alloy Steel Forged Cam
One-piece hardened steel cam and hub

Rugged Anti-Friction Cam Follower
Hardened, precision-ground tool steel

Torq/Gard Torque Overload Devices - Built Tough so You Can Depend on It!

Torq/Gard overload clutches help protect the entire drive train of your machinery from damage due to excessive torque generated by overloads and jamming. Instant reaction when torque exceeds preset limits provides protection far superior to that of clutches employing friction surfaces.

Unlike friction clutches, the Torq/Gard torque overload device is not subject to torque variations caused by lubricants, heat and water. This unique design maintains precise torque control as it is not subject to significant wear or thermal variations resulting from repeated engagement and disengagement of the unit.

Torq/Gard clutches are more precise than shear pins, easier to reset and are not susceptible to fatigue failures.

Torq/Gard clutches disengage at the precise torque limit you set – every time. And when the overload condition has been corrected, Torq/Gard torque overload devices are automatically reset by "jogging" the machine.

Automatic reset minimizes downtime, eliminates manual reset, and permits application in inaccessible locations.

Thermal overload devices, used with electric motors, provide no defense against inertia loads. Their slow reaction time offer little protection to sudden peak torque loads. Torq/Gard clutches give dependable instantaneous response to your overload protection needs every time!

INDUSTRIES SERVED

- Food and beverage
- Aggregate processing
- Conveyor manufacturing
- Agriculture

APPLICATIONS

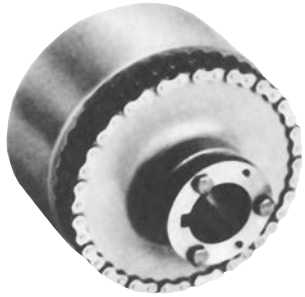
- Sorting and filling machinery
- Conveyors
- Wrapping and cartoning equipment
- Industrial equipment
- Agricultural equipment

Shaft Bushings

Ever-Flex® Couplings

Chain Drives

Detectors



Chain Couplings

Only Torq/Gard Has All These Standard Features.

SINGLE-POSITION AND REVERSIBLE

A spring-loaded cam follower seated in a single hub cam detent causes hub and clutch body to rotate together: thus the clutch always resets in the same position if tripped. Since the cam detent profile is the same in both positions, all Torq/Gard clutches are fully reversible.

AUTOMATIC RESET

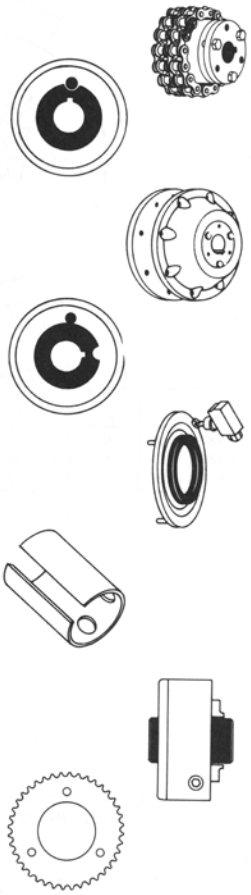
The Torq/Gard clutch is quickly reset after a jam is cleared by simply jogging the machine until the cam follower reengages the hub cam detent. This avoids potentially dangerous manual resetting and requires no tools.

BUSHINGS PERMIT A WIDE RANGE OF SHAFT SIZES

To allow you to use an off-the-shelf Torq/Gard clutch on shafts of various sizes, the clutch was designed with a larger than usual hub bore. Shafts smaller than the maximum diameter are accommodated with standard Browning bushing kits.

REGISTERED MOUNTING LUGS

All Torq/Gard clutches are designed with tapped mounting lugs to accommodate Browning single strand chain sprockets or gearbelt pulleys - without modification.



CHAIN COUPLING DRIVE OPTIONS

Browning chain coupling kits mount directly on the Torq/Gard clutch. Hubs with split taper bushings simplify drive applications.

UNIVERSAL ADAPTER PLATE

A universal adapter plate is available for direct mounting of Browning Ever-Flex couplings to the Torq/Gard. The plate may also be modified for special transmission options.

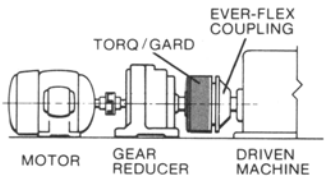
DETECTOR PLATE ASSEMBLY

The detector mechanism actuates a limit switch, which disconnects the motor from the power source when the Torq/Gard is disengaged. To reset the clutch, simply jog the machine by pressing the motor "start" button. A typical wiring diagram is provided with each Torq/Gard clutch. Detector plates are standard on all sizes. Limit switches are not supplied.

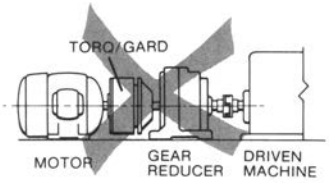
INFINITELY ADJUSTABLE WITHIN LOAD RANGE

Turning a single, hex-socket head control adjusts the Torq/Gard clutch precisely to any setting within its load range. Index marks on the clutch body give approximate settings to facilitate adjustment.

One basic design fits most installations.

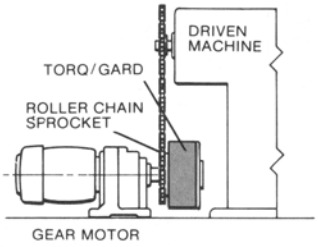


Direct drive application with the Torq/Gard mounted on the low speed output shaft of the reducer. The Torq/Gard is shown with a Browning Ever-Flex half coupling, which mounts on the clutch adapter without modification. Browning chain coupling kits are also available for the Torq/Gard when greater misalignment capabilities are required. Either side of the Torq/Gard can be used as the input.

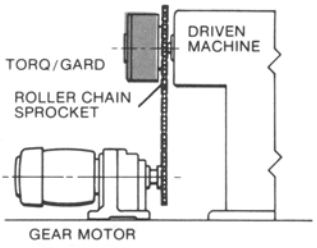


The Torq/Gard should not be used on the high-speed input side of the reducer. Clutch sensitivity becomes a function of the reducer's gear ratio. As an example, when used with a 100 to 1 reducer, a 100 inch-pound torque variation on the output side will reflect only a 1 inch-pound change on the input side. Do not exceed the maximum rpm shown in the Torq/Gard selection table.

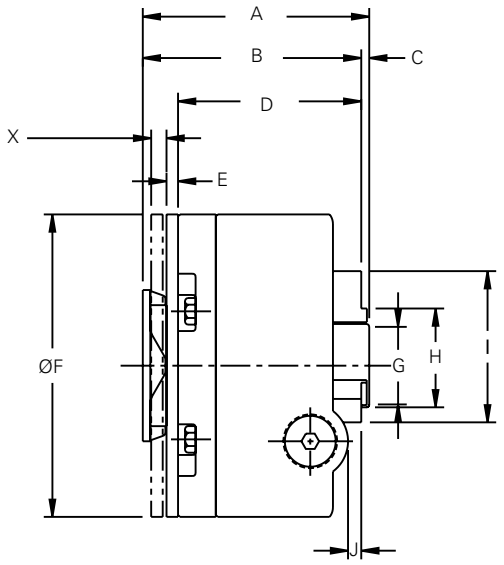
Best Arrangement!

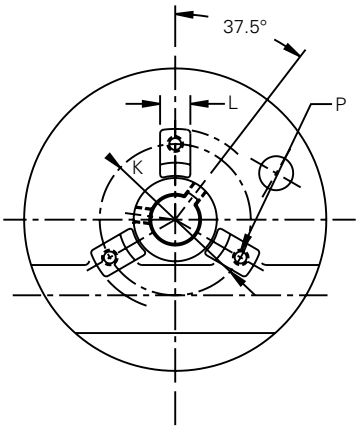


Mounting the clutch on the output of the gear motor or reducer provides the most economical clutch assembly. The Torq/Gard is designed to protect the weakest link in the drive system.



The Torq/Gard is mounted on the driven machine and is powered through a chain and sprocket drive. Mounting the clutch in this position tends to absorb peak starting torques.





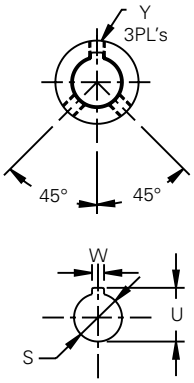


TABLE NO. 1 **MINI TORQ/GARD OVERLOAD CLUTCHES**

MODEL	MAX. BORE	A	B	C	D	E	F	G	H	I	J	K	L	P	S	U	W	X	Y
TGC3	.500	2.36	2.24	.08	1.89	.12	3.15	0.87	1.187	1.97	0.16	1.575	0.32	.164-32	.55	.64	.125	.16	.164-32
TGC6	.500	2.36	2.24	.08	1.89	.12	3.15	0.87	1.187	1.97	0.16	1.575	0.32	.164-32	.55	.64	.125	.16	.164-32
TGC20	.750	2.76	2.60	.12	2.24	.12	3.94	1.18	1.563	2.36	0.16	1.966	0.39	.190-24	.75	.86	.187	.16	.190-24

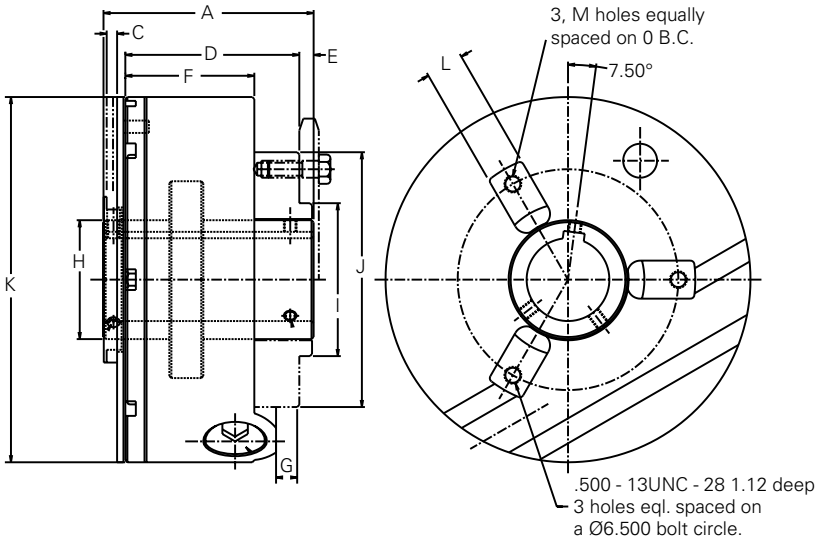
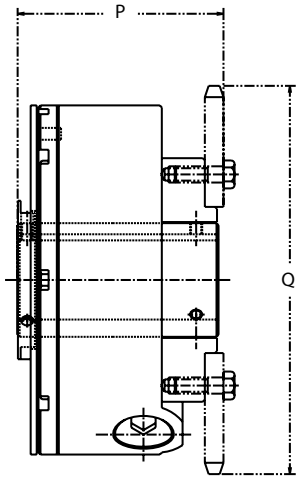


TABLE NO. 2 **TORQ/GARD OVERLOAD CLUTCHES**

MODEL	MAX. BORE	HUB KEYSEAT	A	C	D	E	G	H	I	J	K	L	M	O
TGC60	1.250	1/4 x 1/8	3.50	.25	2.67	.34	.31	1.875	2.375	3.38	5.25	.56	1/4-20NCX 9/16"	2.875
TGC200	1.938	1/2 x 1/8	4.31	.25	3.36	.39	.56	2.750	3.250	5.00	7.00	.75	3/8-16NC X 3/4	4.500
TGC400	2.438	5/8 x 3/16	6.19	.31	5.17	.42	.62	3.500	4.500	7.50	10.75	1.12	1/2-13NC X 11/8	6.500
TGC800	2.438	5/8 x 3 16	6.19	.31	5.17	.42	.62	3.500	4.500	7.50	10.75	1.12	1/2-13NC X 1 1/8	6.500

TABLE 1 SINGLE STRAND SPROCKETS ANSI STANDARD ROLLER CHAIN

MODEL	SPROCKET PART NO	NO. OF TEETH	P	Q
For No.35,3/8 Pitch				
TGC3 & TGC6	TG35A30K	30	2.40	3.79
	TG35A36K	36	2.40	4.51
	TG35A45K	45	2.40	5.59
For No.40, 1/2 Pitch				
TGC20	20TG40A26K	26	2.88	4.42
	20TG40A30K	30	2.88	5.06
	20TG40A36K	36	2.88	6.02
	20TG40A45K	45	2.88	7.45
TGC60	TG40A26K	26	3.50	4.42
	TG40A36K	36	3.50	6.02
	TG40A45K	45	3.50	7.45
	TG40A60K	60	3.50	9.84
	TG40A72K	72	3.50	11.75
For No.60, 3/4 Pitch				
TGC200	TG60A26K	26	4.38	6.63
	TG60A36K	36	4.38	9.02
	TG60A45K	45	4.38	11.18
	TG60A60K	60	4.38	14.73
	TG60A72K	72	4.38	17.60
For No.80, 1 Pitch				
TGC400	TG80A28K	28	6.35	9.48
	TG80A36K	36	6.35	12.03
	TG80A45K	4S	6.35	14.9
	TG80A60K	60	6.35	19.64
	TG80A72K	72	6.35	23.46
For No. 100, 1 1/4 Pitch				
TGC800	TG100A28K	28	6.46	11.84
	TG100A36K	36	6.46	15.04
	TG100A45K	4S	6.46	18.63
	TG100A60K	60	6.46	24.55
	TG100A72K	72	6.46	29.33



With Roller Chain Sprocket

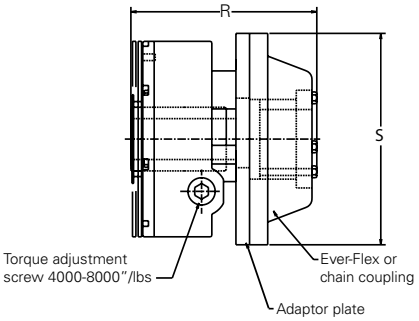


TABLE 2 TORQ/GARD BUSHING KITS

MODEL	SHAFT DIA.	BUSHING KIT NO.
TGC3 & TGC6	3/8	06BU006
TGC20	1/2	20BU008
	5/8	20BU010
TGC60	3/4	60BU012
	7/8	60BU014
	15/16	60BU015
	1	60BU100
	1 1/8	60BU102
	1 1/4	NONE
	18MM	60BU18MM
	19MM	60BU19MM
	20MM	60BU20MM
	22MM	60BU22MM
	24MM	60BU24MM
	25MM	60BU25MM
	28MM	60BU28MM
TGC200	15/16	200BU015
	1	200BU100
	1 1/16	200BU101
	1 1/8	200BU102
	1 3/16	200BU103
	1 1/4	200BU104
	1 5/16	200BU105
	1 3/8	200BU106
	1 7/16	200BU107
	1 1/2	200BU108
	1 5/8	200BU110
	1 11/16	200BU111
	1 3/4	200BU112
	1 15/16	NONE
	24MM	200BU24MM
	25MM	200BU25MM
	28MM	200BU28MM
	30MM	200BU30MM
	32MM	200BU32MM
	35MM	200BU35MM
	40MM	200BU40MM
	42MM	200BU42MM
	45MM	200BU45MM
TGC400 & TGC800	1 1/4	800BU104
	1 3/8	800BU106
	1 7/16	800BU107
	1 1/2	800BU108
	1 5/8	800BU110
	1 11/16	800BU111
	1 3/4	800BU112
	1 7/8	800BU114
	1 15/16	800BU115
	2	800BU200
	2 1/8	800BU202
	2 3/16	800BU203
	2 1/4	800BU204
	2 7/16	NONE
	35MM	800BU35MM
	38MM	800BU38MM
	40MM	800BU40MM
	42MM	800BU42MM
	45MM	800BU45MM
	48MM	800BU48MM
	50MM	800BU50MM
	55MM	800BU55MM

TABLE 3 TORQ/GARD EVER-FLEX COUPLINGS

MODEL	COUPLING HALF PART NO.	ADAPTER PLATE PART NO.	SPLIT TAPER BUSHING	R	S
TGC60	CHCFR5H	60CAP5	H	5.91	5.25
TGC200	CHCFR8P	200CAP8	P1	7.06	7.88
TGC400	CHCFR9Q	400CAP9	QI	9.22	10.75
TGC800	CHCFR100	800CAP10	QI	9.53	10.75

TABLE 4 TORQ/GARD CHAIN COUPLINGS

MODEL	SINGLE STRAN SPROCKET PART NO.	SINGLE SPROCKET FOR SPLIT TAPER BUSHING PART NO.	COUPLING CHAIN W/LINK PART NO.	R	S
TGC60	TG40A26K	40P26	40P26 Chain	6.97	4.42
TGC200	TG60A26K	60P26	60P26 Chain	7.15	6.63
TGC400	TG80A28K	80Q28	C8028 Chain	10.05	9.48
TGC800	TG80A28K	80Q28	C8028 Chain	10.05	9.48

TABLE 5 TORQ/GARD REPAIR PARTS

MODEL	DETECTOR PLATE	DETECTOR CAM	DETECTOR PLATE SPRING	TORQUE ADJUSTING SPRING
TGC60	B17056	B17055	A17059	A15731
TGC200	C16927	B16926	A16989	A13732
TGC400	C17076	C17077	A17788	A166821, A166822*
TGC800	C17076	C17077	A17788	A175381, A175382*

*Order both springs.

Selecting the Right Torq/Gard Clutch - Easy as 1 - 2 - 3

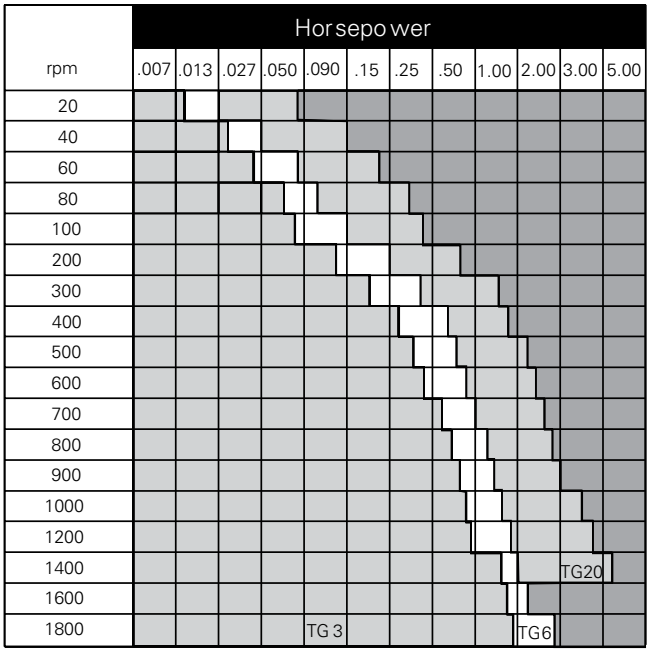
1. Torq/Gard clutches may be sized by the speed/torque chart. Tripping torque should be at least 25% greater than the operating torque to compensate for motor starting torque, intermittent loads, shock loads and reversing loads. The speed/torque chart incorporates this 25% service factor (S.F.). On shock load or reversing load applications service factor greater than 25% may be required.
2. The Torq/Gard may also be sized by applying one of the following formulas.

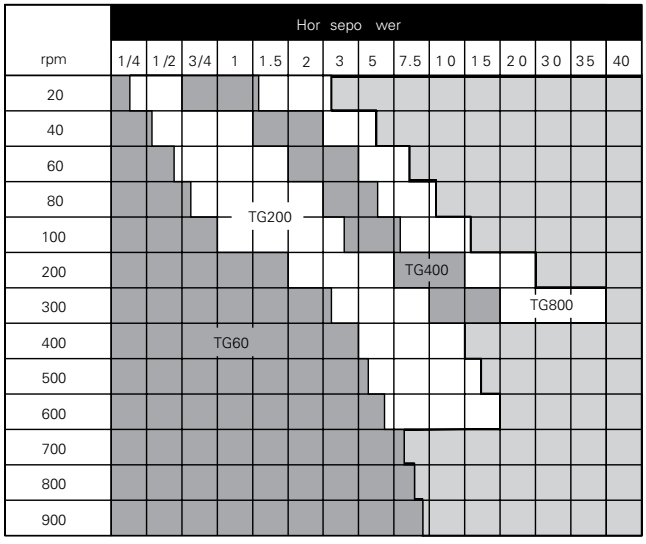
$$\text{Torque (in.-lbs)} = \frac{\text{Horsepower (HP)} \times 63025}{\text{rpm}}$$

$$\text{Horsepower} = \frac{\text{Torque (in.-lbs.)} \times \text{rpm}}{63025}$$

$$\text{Tripping Torque} = \text{Operating Torque} \times \text{S.F.}$$

3. Select the desired Torq/Gard from the rating chart. The Torq/Gard will successfully operate from 0 speed to the maximum rpm listed.





Part Number Explanation

TGC 60

- 60 — Size (1/10 of the maximum torque capacity, in.-lbs.)
- TGC — Series

If required shaft bushing is ordered separately ex.

60 BU 012

- 012 — Shaft size (16th of an inch)
- BU — Bushing kit
- 60 — Torq/Gard size

Bushing kit includes key and setscrews. Torq/Gards can be made into couplings by ordering separate components. Single strand TG sprocket kits to bolt on are stocked.

TG 40 A 45 K

- K — Kit
- 45 — Number of teeth
- A — A-plate sprocket
- 40 — #40 roller chain
- TG — Torq/Gard

Includes mounting bolts.

TORQ/GARD RATINGS

SIZE NO.	TORQUE (IN. LBS.) MIN.	TORQUE (IN. LBS.) MAX.	HP MAX.	RPM MAX.	WEIGHT (LBS.)	INERTIA WK²	BORE DIA. MAX. INCHES
3	13	32	1.5	1800	1.5	1.4	1/2
6	23	56	2.5	1800	1.5	1.4	1/2
20	56	203	4.0	1800	2.5	5.7	3/4
60	200	600	8.5	900	5.5	10	1 1/4
200	600	2000	21.5	680	12	46	1 15/16
400	2000	4000	22.2	350	38	455	2 7/16
800	4000	8000	44.4	350	38	455	2 7/16

For selection assistance, call Application Engineering at 1-800-626-2093 or visit www.RegalPTS.com

DECIMAL - MILLIMETER EQUIVALENTS

Fractional	Decimal	M.M.	Fractional	Decimal	M. M.
1/64	.015625	0.397	33/64	.515625	13.097
1/32	.03125	0.794	17/32	.53125	13.494
3/64	.046875	1.191	35/64	.546875	13.891
1/16	.0625	1.588	9/16	.5625	14.288
5/64	.078125	1.985	37/64	.578125	14.684
3/32	.09375	2.381	19/32	.59375	15.081
7/64	.109375	2.778	39/64	.609375	15.478
1/8	.125	3.175	5/8	.625	15.875
9/64	.140625	3.572	41/64	.640625	16.272
5/32	.15625	3.969	21/32	.65625	16.669
11/64	.171875	4.366	43/64	.671875	17.066
3/16	.1875	4.763	11/16	.6875	17.463
13/64	.203125	5.159	45/64	.703125	17.859
7/32	.21875	5.556	23/32	.71875	18.256
15/64	.234375	5.953	47/64	.734375	18.653
1/4	.250	6.350	3/4	.750	19.050
17/64	.265625	6.747	49/64	.765625	19.447
9/32	.28125	7.144	25/32	.78125	19.844
19/64	.296875	7.541	51/64	.796875	20.241
5/16	.3125	7.938	13/16	.8125	20.638
21/64	.328125	8.334	53/64	.828125	21.034
11/32	.34375	8.731	27/32	.84375	21.431
23/64	.359375	9.128	55/64	.859375	21.828
3/8	.375	9.525	7/8	.875	22.225
25/64	.390625	9.922	57/64	.890625	22.622
13/32	.40625	10.319	29/32	.90625	23.019
27/64	.421875	10.716	59/64	.921875	23.416
7/16	.4375	11.113	15/16	.9375	23.813
29/64	.453125	11.509	61/64	.953125	24.209
15/32	.46875	11.906	31/32	.96875	24.606
31/64	.484375	12.303	63/64	.984375	25.003
1/2	.500	12.700	1	1.000	25.400

HP and Torque

HP is the common unit of mechanical power.

$$HP = \frac{\text{Force x Feet per Minute}}{33000}$$

$$HP = \frac{\text{Torque in In.-Lbs. x rpm}}{63025}$$

One HP = .746 kilowatt

One kilowatt = 1.34 HP

Torque is a twisting moment or turning effort.

Torque in inch-pounds = Force x Lever Arm (Inches)

$$\text{Torque in inch-pounds} = \frac{63025 \times HP}{rpm}$$

The following table gives the torque in Inch-Pounds for one HP at various speeds.

TORQUE AT ONE HP

RPM	IN.-LBS.	RPM	IN.-LBS.	RPM	IN.-LBS.	RPM	IN.-LBS.
3500	18	580	109	90	700	14	4502
3000	21	500	126	80	788	12	5252
2400	26	400	158	70	900	10	6300
2000	32	300	210	60	1050	8	7878
1750	36	200	315	50	1260	6	10504
1600	39	180	350	40	1576	5	12605
1200	53	160	394	30	2101	4	15756
1160	54	140	450	20	3151	3	21008
1000	63	120	525	18	3501	2	31513
870	72	100	630	16	3939	1	63025

MINIMUM SHEAVE SIZES NEMA STANDARDS

The National Electrical Manufacturers Association recommends certain limitations on sheave diameter and width for satisfactory motor operation. The selected sheave diameter should not be smaller nor the width greater than the dimensions below. These dimensions are from NEMA Standard MG1-14.42.

FRAME	HP AT SYNC. SPEED, RPM				V-BELT SHEAVE (INCHES) CONVENTIONAL A,B,C,D AND E SECTIONS		358 3V,5VAND8V SECTIONS	
	3600	1800	1200	900	MIN PITCH DIA.	MAX WIDTH	MIN OUTSIDE DIA.	MAX WIDTH
143T	1 1/2	1	3/4	1/2	2.2	4 1/4	2.2	2 1/4
145T	2-3	1 1/2-2	1	3/4	2.4	4 1/4	2.4	2 1/4
182T	3	3	1 1/2	1	2.4	5 1/4	2.4	2 3/4
182T	5	-	-	-	2.6	5 1/4	2.4	2 3/4
184T	-	-	2	1 1/2	2.4	5 1/4	2.4	2 3/4
184T	5	-	-	-	2.6	5 1/4	2.4	2 3/4
184T	7 1/2	5	-	-	3.0	5 1/4	3.0	2 3/4
213T	7 1/2-10	7 1/2	3	2	3.0	6 1/2	3.0	3 3/8
215T	10	-	5	3	3.0	6 1/2	3.0	3 3/8
215T	15	10	-	-	3.8	6 1/2	3.8	3 3/8
254T	15	-	7 1/2	5	3.8	6 1/2	3.8	4
254T	20	15	-	-	4.4	6 1/2	4.4	4
256T	20-25	-	10	7 1/2	4.4	6 1/2	4.4	4
256T	-	20	-	-	4.6	6 1/2	4.4	4
284T	-	-	15	10	4.6	9	4.4	4 5/8
284T	-	25	-	-	5.0	9	4.4	4 5/8
286T	-	30	20	15	5.4	9	5.2	4 5/8
324T	-	40	25	20	6.0	10 1/4	6.0	5 1/4
326T	-	50	30	25	6.8	10 1/4	6.8	5 1/4
364T	-	-	40	30	6.8	11 1/2	6.8	5 7/8
364T	-	60	-	-	7.4	11 1/2	7.4	5 7/8
365T	-	-	50	40	8.2	11 1/2	8.2	5 7/8
365T	-	75	-	-	9.0	11 1/2	8.6	5 7/8
404T	-	-	60	-	9.0	14 1/4	8.0	7 1/4
404T	-	-	-	50	9.0	14 1/4	8.4	7 1/4
404T	-	100	-	-	10.0	14 1/4	8.6	7 1/4
405T	-	-	75	60	10.0	14 1/4	10.0	7 1/4
405T	-	100	-	-	10.0	14 1/4	8.6	7 1/4
405T	-	125	-	-	11.5	14 1/4	10.5	7 1/4
444T	-	-	100	-	11.0	16 3/4	10.0	8 1/2
444T	-	-	-	75	10.5	16 3/4	9.5	8 1/2
444T	-	125	-	-	11.0	16 3/4	9.5	8 1/2
444T	-	150	-	-	-	-	10.5	8 1/2
445T	-	-	125	-	12.5	16 3/4	12.0	8 1/2
445T	-	-	-	100	10.5	16 3/4	12.0	8 1/2
445T	-	150	-	-	-	-	10.5	8 1/2
445T	-	200	-	-	-	-	13.2	8 1/2

To obtain the minimum pitch diameters for flat belt, gearbelt, Poly-V®, chain or gear drives, multiply the 358 sheave pitch diameters in the table above by the following factors:

DRIVE	FACTOR
Chain	0.70
Flat Belt (Single Ply)	1.33
Gearbelt	0.90
Helical Gear	0.85
Poly-V	1.00
Spur Gear	0.75

Morse®
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APPLICATION CONSIDERATIONS

The proper selection and application of power transmission products and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components and the customer should carefully review its requirements. Any technical advice or review furnished by Regal-Beloit America, Inc. and its affiliates with respect to the use of products and components is given in good faith and without charge, and Regal assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at customer's risk.

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