

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.

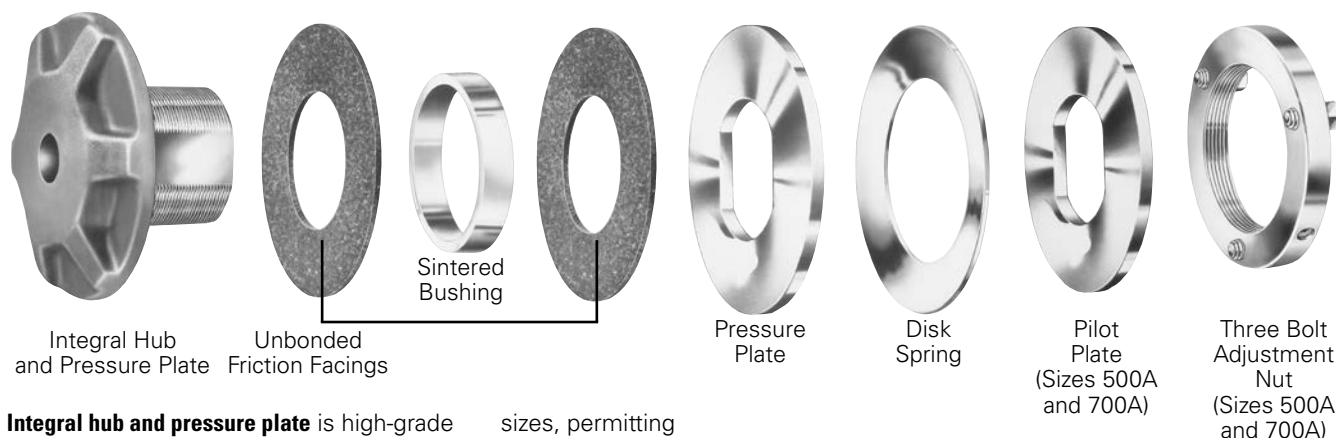
The Morse torque limiter is a protective device that limits torque transmitted in a drive system by slipping when the torque demand exceeds a preset value as a result of shock loads, overloads or machine jams. It automatically reengages when the overload torque has passed; no resetting is required. The 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.

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.



### 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



**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 ride 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.

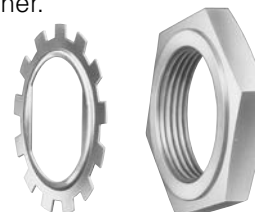
**Pressure plate** is designed with flats to fit securely on the hub with a 63 micro-inch finish on the facing side.

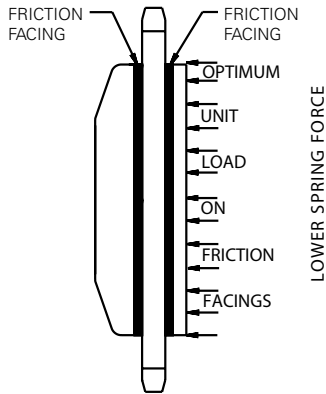
**Disk spring** provides axial load to the pressure plate, friction facings and center member.

**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.

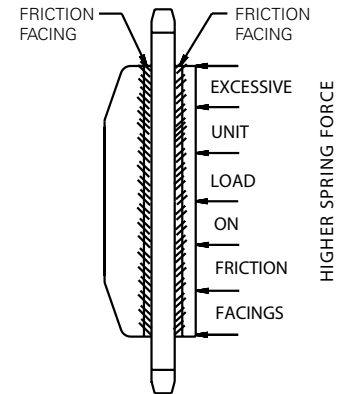
**Three bolt adjustment nut** on the 500A and 700A sizes make adjustment easy. This principle was originated by Morse and has been standard for many years on 13" and 20" size torque limiters.

**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

- Specify bore size
- Series
- Number of disc springs (max. 2)
- Overall diameter (3.5 inches)

#### 350 AG 5 26

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

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

For selection assistance, call Application Engineering at 1-800-626-2093 or visit [www.RegalPTS.com](http://www.RegalPTS.com)



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	1 1/8	3/4	3/4, 7/8, 1	2 1/2	.365 .425 .480
350A-2	25	110	1 1/8	3/4	3/4, 7/8, 1	2 1/2	.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, 1 15/16, 2	15	.520 .580 .695 .810 .925
700A-2	165	800	2 5/8	1	1 1/2, 1 3/4, 1 15/16, 2	15	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	4 7/8	2		250	1/2
20-10	3150	6300	4 7/8	2		250	5/8

\*When ordering, specify required bushing length.

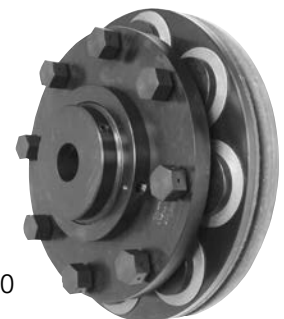
\*\*When more than half of maximum torque is to be used at over 500 rpm refer application to Application Engineering.

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

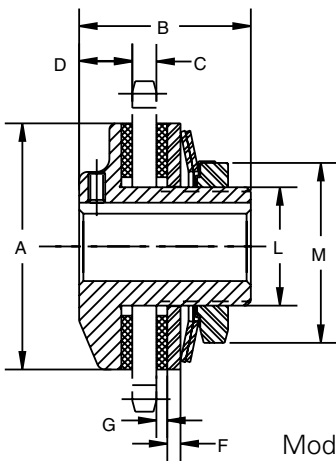
\*Width tolerances for straight and tapered keyways are plus .002 minus .000.

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

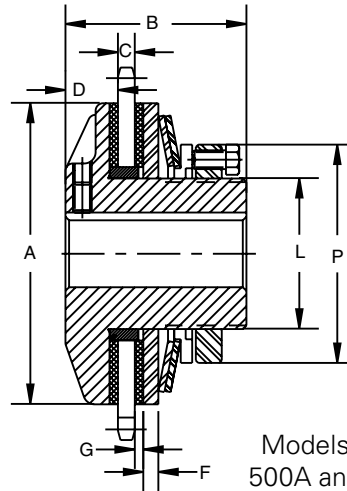
Models  
13 and 20



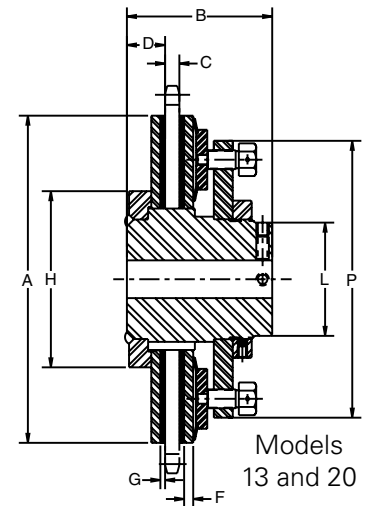
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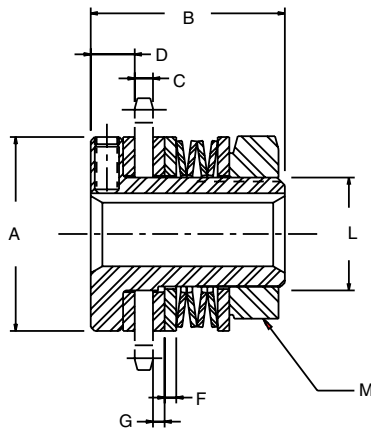
Models  
250A and  
350A



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	3 1/2	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		
		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
700A-2	4.129 / 4.131	-	-	-	-	-	-	*48	48	.520	*40	39	.580	*35	33	.695	26	26	.810	*21	21	.925	*18	18
13-8	6.378 / 6.380	-	-	-	-	-	-	-	-	-	-	-	-	*45	44	3/8	*36	36	1/2	*32	31	9/16	*30	27
13-16	6.378 / 6.380	-	-	-	-	-	-	-	-	-	-	-	-	*45	44	3/8	*36	36	1/2	*32	31	9/16	*30	27
20-5	8.753 / 8.756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*54	54	1/2	*60	46	5/8	*40	40
20-10	8.753 / 8.756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*54	54	1/2	*60	46	5/8	*40	40

■ Sprockets must be counter bored to fit torque limiter.

\* Stock minimum plain bore (MPB) only; require rebores 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

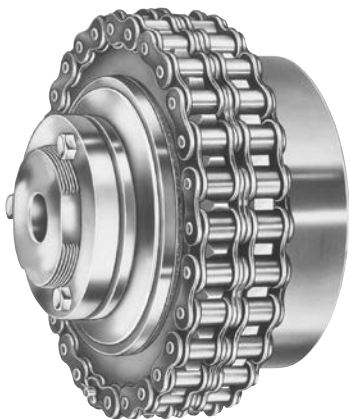
not to exceed 80 rpm. Center member faces should be flat, parallel, square with bore, and free from rust, scale and oil for optimum torque limiter performance. If center members are not in accordance with these specifications or are unground, torque limiter capacity will be erratic and generally lower than capacity with ground center members.

## GROUND SPROCKETS

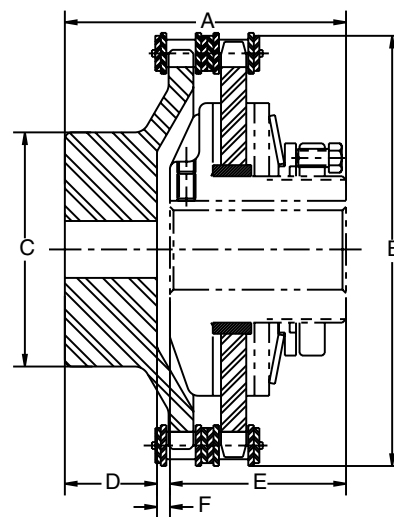
These "A" plate sprockets are stock items that are furnished with ground faces. For most economical drive designs, use these stock sprockets with the Morse torque limiter.

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](http://www.RegalPTS.com)

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.

