

Autogard Torque Limiter T-Series





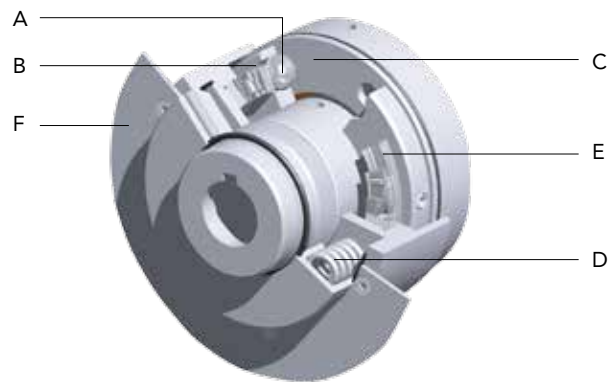
Torque Limiter T-Series

For more than 80 years, Autogard® products have led the industry in overload protection with high-quality products, design innovation and production. Autogard products are manufactured to meet ISO 9001 using the latest machine tools and high-quality materials.

Autogard Torque Limiters act like a mechanical “circuit breaker” to protect the weakest member of the drive train. The most effective location for the torque limiter is as close as possible to the component being protected. The T-series is a state-of-the-art mechanical device that will disengage at a pre-set torque value. The trip torque is set above the normal startup and operating torque, but below a torque setting which would normally damage the driving and/or driven equipment. In the event of overload or jam, the torque limiter eliminates the threat of damage by disconnecting the inertia in the drive train.

The Autogard T-Series was specifically designed to replace the Torq/Gard® TGC Series. It matches all critical envelop dimensions, and meets or exceeds maximum bore size and maximum torque limitations. The Autogard T-Series can be furnished complete as a coupling style or with a sprocket, sheave, etc.

Figure 1



Letters correspond to paragraph below.

Disengagement on Overload

In normal drive condition, torque is transmitted through balls (A) which are located in holes in the flange (B) and detents in the drive plate (C). The balls are held in detents under pressure from springs (D). When the driven machine either jams or an overload occurs which is greater than the torque setting, the balls roll out of their seats and roll freely between thrust ring (E) and the flat surface of the drive plate (C). The axial movement of balls (A) during this process causes the switch plate (F) to move and thereby provides a means of detecting disengagement. It is important to stop the motor promptly when an overload occurs.

Re-engagement

Re-engagement occurs when the balls rotate back into the detents located in the drive plate (C).

T-Series Applications

Packaging Equipment
Filling Machines
Paper Converting
Equipment
Paper Binding
Conveyor Drives



Features and Benefits:

- Direct drop-in replacement for Torq-Gard TGC
- Proven design with thousands of units successfully in operation
- Robust all-steel construction available in stainless steel or nickel plated
- Enclosed and sealed design
- Accurate torque limitation prevents costly downtime
- Cost-effective design
- Standard designs can accommodate large torque ranges
- Instantaneous disengagement protects equipment from damaging inertias
- Bi-directional protection
- Easy to adjust to desired allowable torque
- Available with split-and-clamp hub option
- Wide range of mounting configurations ensures the right solution for any problem:
 - Timing, HTD and V-Belt Drives
 - Chain and sprocket drives
 - Gear drives
 - Flexible or rigid couplings
 - Flywheel or large gear mounting

Selection:

Data required for torque limiter selection:

- Application details for service factors
- Kilowatt (kW) or horsepower (hp) and rpm of the driver
- Shaft details of the driving and driven equipment

- (1) Calculate the nominal torque.
 $\text{Torque (lb-in)} = \text{hp} \times 63025/\text{rpm}$

Consideration should then be given to start torque or other special circumstances depending on the position chosen in the drive system. Choose a set torque with a suitable margin over nominal. Select the torque limiter which has a higher torque rating.

- (2) Check limiting conditions:
 - (a) Check hub bore capacity.
 - (b) Check the torque limiter dimensions such as the overall length and outside diameter.
- (3) Select and specify the appropriate drive medium or coupling.

All Autogard T-Series units may be supplied from the factory at a pre-set torque and with the required drive medium assembled to the unit.

Ordering the T-Series Torque Limiter

When ordering, please provide the following designation:

Model / Size / S1 Bore / Number of Springs
Standard bore tolerance = H8 + normal fit key

Example: T60E / 1.25 / 6

Refers to:

Model/Size = T60E

S1 Bore = 1.25 inches

6 springs

Also specify torque setting if required.

Model T0

Figure 2

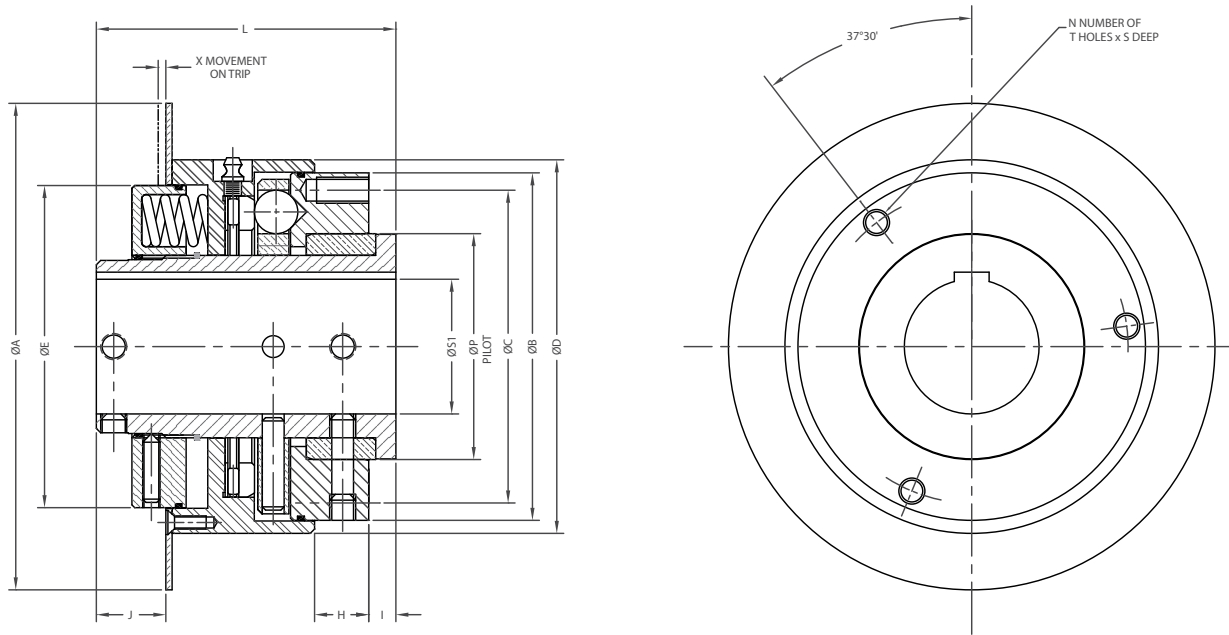


Table 1

Size	Max. Torque lb-in ①	Max. Speed rpm ②	Weight lb ③	Mass Moment of Inertia MR ² ③	
				Hub Side lb-in ² ③	Adaptor Side lb-in ² ③
T20	400	300	2.2	1.6	0.5
T60	900	300	6.0	8.1	3.1
T200	3,000	300	16	44	18
T400	6,000	300	52	317	130
T800	12,000	300	53	320	130

① See page 7, Table 11, for spring selection and torque range with specific springs.

② Higher speeds may be allowed under certain conditions. Consult Rexnord.

③ Weights and inertias apply to maximum S1 bore, full set of springs and excludes sprockets, pulleys, etc.

Table 2

Model T0 facilitates mounting of standard sprocket, pulley or gears.

Size	Max. Bore S1 in ①	A in	B in	D in	E in	H in	I in	J in	L in	X in
T20	0.8125	3.94	2.36	2.62	2.16	0.35	0.25	0.53	2.25	0.06
T60	1.2500	5.25	3.38	3.63	3.09	0.69	0.40	0.66	3.50	0.09
T200	1.9375	7.00	5.00	5.38	4.64	0.78	0.39	1.00	4.31	0.11
T400	2.5000	10.75	7.50	8.00	6.34	1.30	0.42	1.44	6.19	0.16
T800	2.5000	10.75	7.50	8.00	6.34	1.30	0.42	1.44	6.19	0.16

① Rectangular keys must be used for maximum bore diameters.

Table 3

Size	Smallest sprocket (No. of teeth - See ☉)					Smallest Pulley Diameter in ☉	Drive Media Fixing Details				
	3/8 in pitch (#35)	1/2 in pitch (#40)	5/8 in pitch (#50)	3/4 in pitch (#60)	1 in pitch (#80)		C in	N (holes)	P in	S in	T (thread)
T20	24	19	16	14	11	3.00	1.965	6	1.562/1.560	0.37	#10-24 UNC
T60	32	25	21	18	15	4.00	2.875	3	2.375/2.373	0.56	1/4"-20 UNC
T200	46	35	29	25	20	5.88	4.500	3	3.250/3.247	0.75	3/8"-16 UNC
T400	67	51	41	35	27	8.50	6.500	3	4.500/4.497	1.12	1/2"-13 UNC
T800	67	51	41	35	27	8.50	6.500	3	4.500/4.497	1.12	1/2"-13 UNC

☉ Clamp collar versions also available. Consult Rexnord.

☉ The pulley diameter quoted is to the bottom of the V-pulley or the inside diameter for the flange of the timing pulley.



Model T0E

Figure 3

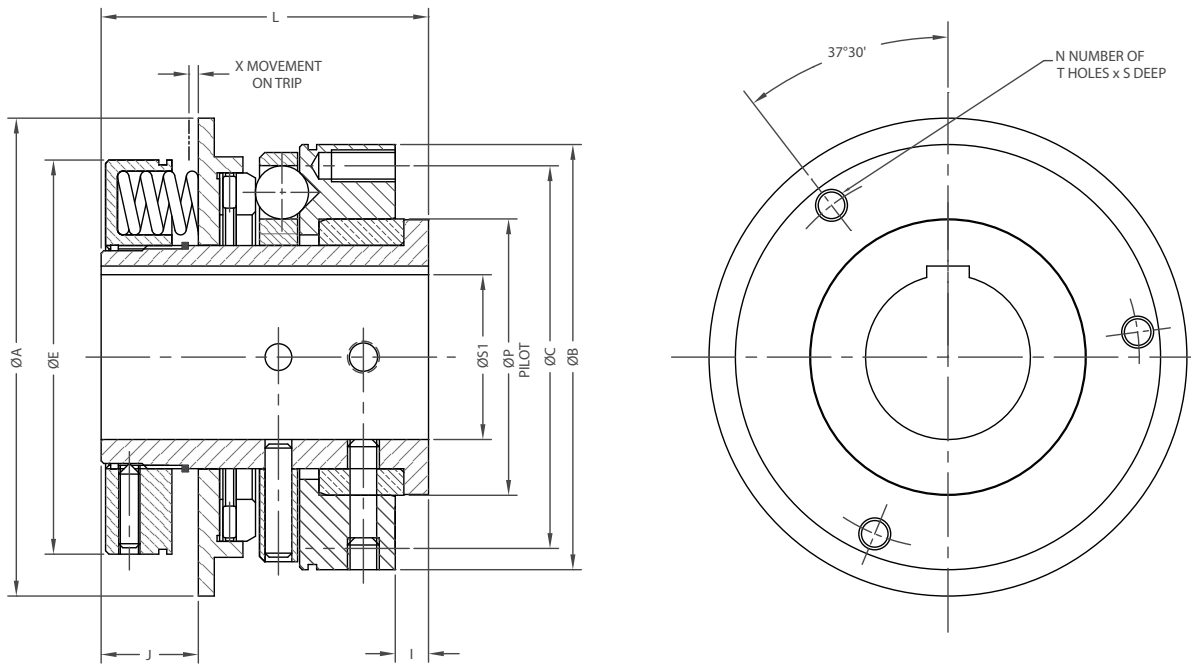


Table 4

Size	Max. Torque lb-in ^①	Max. Speed rpm ^②	Weight lb ^③	Mass Moment of Inertia MR ² ^③	
				Hub Side lb-in ² ^①	Adaptor Side lb-in ² ^②
T20E	400	300	1.7	0.8	0.5
T60E	900	300	4.9	4.6	3.1
T200E	3,000	300	13	25	18
T400E	6,000	300	41	167	130
T800E	12,000	300	42	170	130

① See page 7, Table 11, for spring selection and torque range with specific springs.

② Higher speeds may be allowed under certain conditions. Consult Rexnord.

③ Weights and inertias apply to maximum S1 bore, full set of springs and excludes sprockets, pulleys, etc.

Table 5

Model T0E for use with sprockets, pulleys or gears.

Size	Max. Bore S1 in ^①	A in	B in	E in	I in	J in	L in	X in
T20E	0.8125	3.00	2.36	2.16	0.25	0.52	2.000	0.06
T60E	1.2500	4.00	3.38	3.09	0.40	0.86	3.190	0.09
T200E	1.9375	5.62	5.00	4.64	0.39	1.14	3.850	0.11
T400E	2.5000	8.00	7.50	6.34	0.42	1.57	5.500	0.16
T800E	2.5000	8.00	7.50	6.34	0.42	1.57	5.500	0.16

① Rectangular keys must be used for maximum bore diameters.

Table 6

Size	Smallest sprocket (No. of teeth - See ①)					Smallest Pulley Diameter in ②	Drive Media Fixing Details				
	3/8 in pitch (#35)	1/2 in pitch (#40)	5/8 in pitch (#50)	3/4 in pitch (#60)	1 in pitch (#80)		C in	N (holes)	P in	S in	T (thread)
T20E	24	19	16	14	11	3.00	1.965	6	1.562/1.560	0.37	#10-24 UNC
T60E	32	25	21	18	15	4.00	2.875	3	2.375/2.373	0.56	1/4"-20 UNC
T200E	46	35	29	25	20	5.88	4.500	3	3.250/3.247	0.75	3/8"-16 UNC
T400E	67	51	41	35	27	8.50	6.500	3	4.500/4.497	1.12	1/2"-13 UNC
T800E	67	51	41	35	27	8.50	6.500	3	4.500/4.497	1.12	1/2"-13 UNC

① Clamp collar versions also available. Consult Rexnord.

② The pulley diameter quoted is to the bottom of the V-pulley or the inside diameter for the flange of the timing pulley.



Additional Models

Figure 4: Model TC — includes a clamp collar and for use with sprockets, pulleys or gears

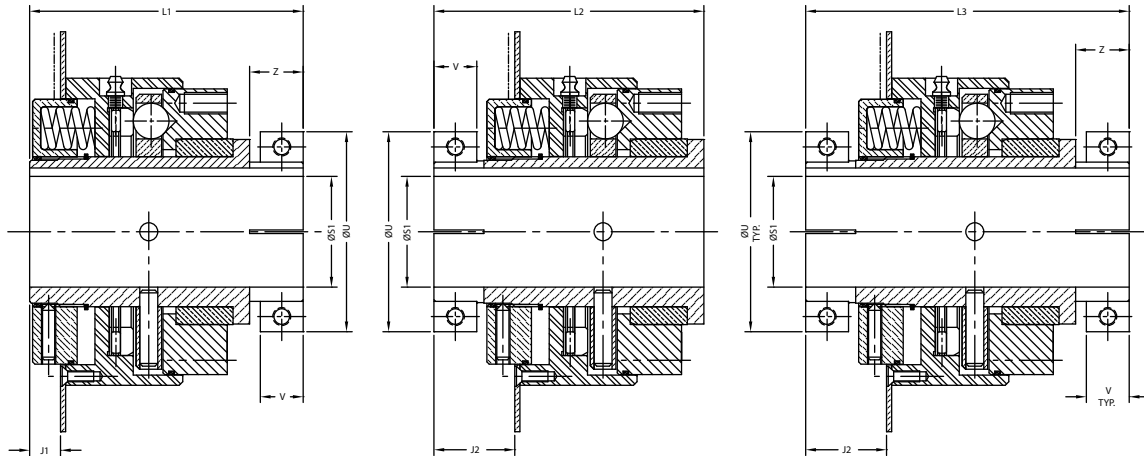
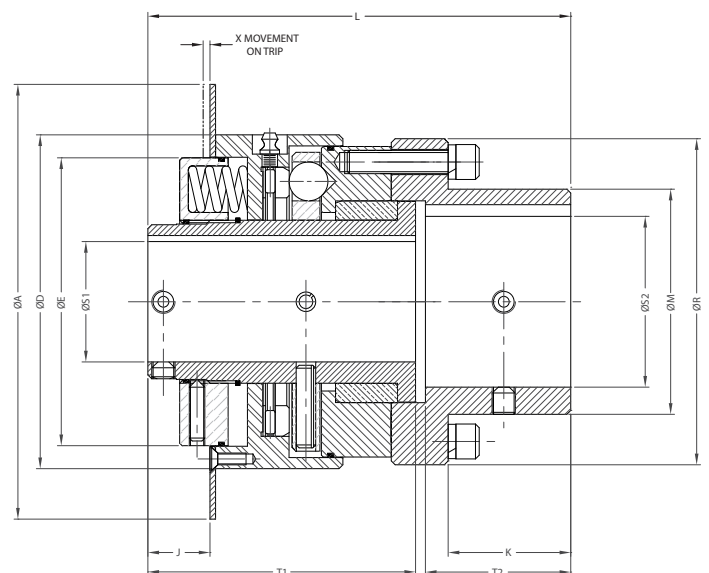


Figure 5: Model T4 — for use with self-aligning equipment



T-Series Industries

Food and Beverage
Printing and Packaging
Paper Converting
Consumer Products

Figure 6: Model T5 — includes Autoflex disc coupling

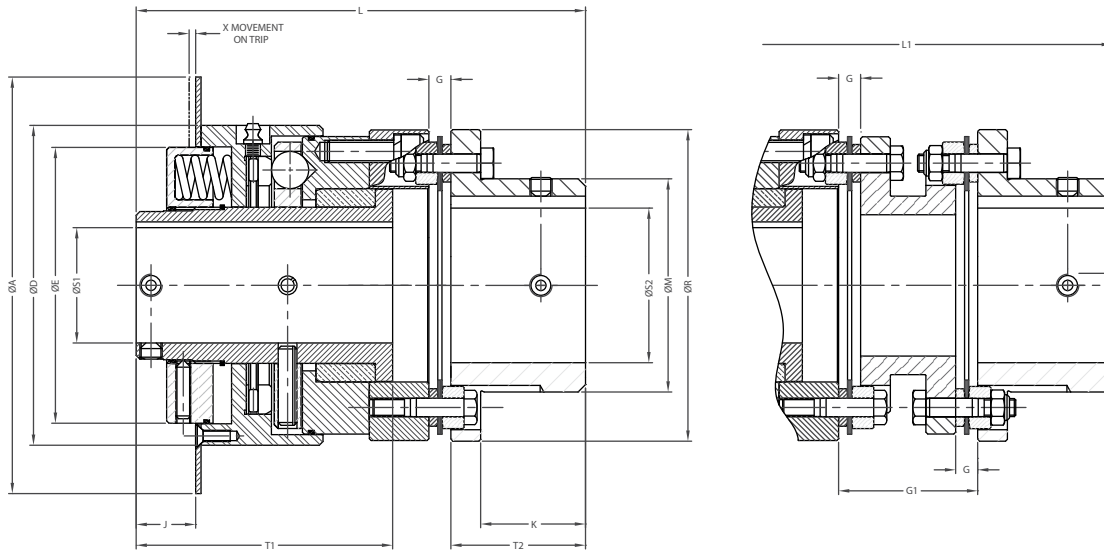


Figure 7: Model T6S — includes Samiflex torsionally soft coupling

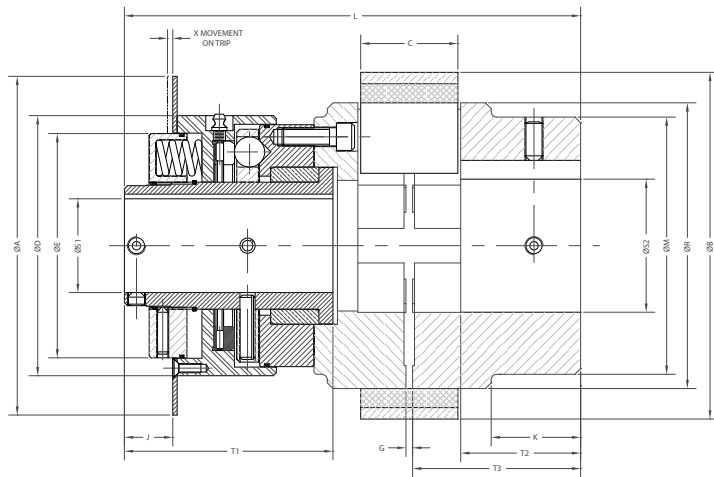
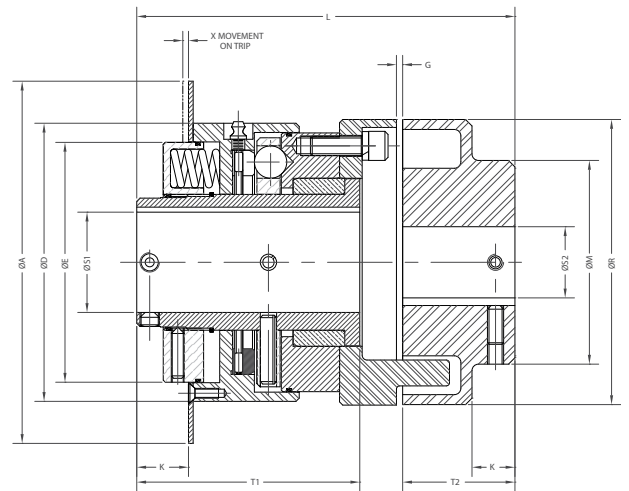


Figure 8: Model T6N — includes a flexible coupling that is torsionally resilient



Engineering Information

Torque Adjustment

The T-Series can be shipped from the factory with the torque setting specified at the time of order. Alternatively, the unit can be furnished unset allowing for adjustment at the time of installation. In many cases, the exact torque requirements are difficult to calculate with any reasonable degree of accuracy. Therefore the recommended installation procedure is to start the drive with a low torque setting, progressively tightening the adjustment nut until the torque limiter will start the equipment without disengaging. Before attempting to turn the adjusting nut, ensure that the locking screws are loosened and are relocked after final adjustment.

Shutdown on Disengagement

Switching off the drive upon disengagement will prevent unnecessary wear which could shorten the working life of the T-Series. The operation of the limit switch is effected by the movement of the cover on disengagement. A flat switch plate is attached to the cover as shown.

Protective Finish

The standard phosphate and oil finish provides a high level of corrosion resistance. Units can be supplied with a suitable alternative finish for special machinery requirements or for adverse environmental conditions. Please consult Rexnord.

Figure 9

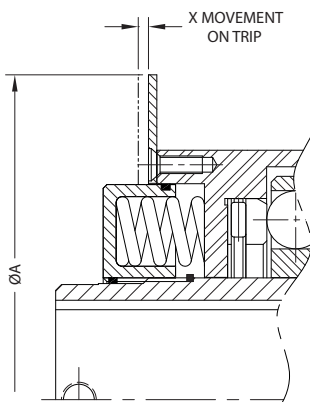


Table 7

Torque Limiters: T0 / TC / T4 / T5 / T6N / T6S					
Size	T2	T6	T20	T40	T80
X (in)	0.06	0.09	0.11	0.16	0.16
A (in)	3.94	5.25	7.00	10.75	10.75

Table 8

Torque Limiters: T0E (Economy version)					
Size	T2	T6	T20	T40	T80
X (in)	0.06	0.09	0.11	0.16	0.16
A (in)	3.00	4.00	5.62	8.00	8.00

Table 9

Spring Selection

Size	No. of Springs	Torque Range (lb-in)	
		Min.	Max.
T20	3	60	130
	6	120	260
	9	200	400
T60	4	180	450
	6	240	600
	8	320	750
	10	400	900
T200	4	480	1,200
	6	720	1,800
	8	960	2,400
T400	10	1,200	3,000
	4	1,600	4,000
	6	3,000	6,000
T800	8	4,800	9,600
	10	6,000	12,000

Maintenance and General Safety Information

Maintenance

The Autogard T-Series Torque Limiter uses journal and needle thrust bearings. The latter is packed with grease on assembly as are the driving balls. Under reasonably clean conditions the unit will operate with minimal maintenance. A grease nipple is provided in the cover for re-lubrication. The frequency of maintenance is dependent on many operating factors, but in adverse conditions, please consult Rexnord.

General Safety

Autogard Torque Limiters are reliable units, built to high standards of workmanship. Similar to all mechanical devices, each application must be considered on its own merits with reference to safety (i.e. lifting equipment, explosive conditions, etc.). As rotating components, adequate guarding must be provided, in accordance with local codes. The intended use of the torque limiter is for the protection of industrial machinery and should not be regarded as human safety devices. Rexnord staff is always available to discuss particular applications.

Other Autogard Products



Autogard Torque Limiter 200 Series



Autogard Torque Limiter 320 Series



Autogard Torque Limiter 400 Series



Autogard Torque Limiter 600 Series



Autogard Torque Limiter 820 Series



Autogard Torque Limiter WT Series

To learn more about the Autogard Torque Limiter offering and how it can provide you with high-quality overload protection, go to www.rexnord.com, where you'll find:

- Product information
- Brochures
- Manuals

866-REXNORD/866-739-6673 (toll-free within the U.S.) or 414-643-2366 (Outside the U.S.)





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414-643-2366 (Outside the U.S.)
www.rexnord.com

Why Choose Rexnord?

When it comes to providing highly engineered products that improve productivity and efficiency for industrial applications worldwide, Rexnord is the most reliable in the industry. Commitment to customer satisfaction and superior value extend across every business function.

Delivering Lowest Total Cost of Ownership

The highest quality products are designed to help prevent equipment downtime and increase productivity and dependable operation.

Valuable Expertise

An extensive product offering is accompanied by global sales specialists, customer service and maintenance support teams, available anytime.

Solutions to Enhance Ease of Doing Business

Commitment to operational excellence ensures the right products at the right place at the right time.

REXNORD

Rexnord Company Overview

Rexnord is a growth-oriented, multi-platform industrial company with leading market shares and highly trusted brands that serve a diverse array of global end markets.

Process & Motion Control

The Rexnord Process & Motion Control platform designs, manufactures, markets and services specified, highly engineered mechanical components used within complex systems where our customers' reliability requirements and the cost of failure or downtime are extremely high.

Water Management

The Rexnord Water Management platform designs, procures, manufactures and markets products that provide and enhance water quality, safety, flow control and conservation.