

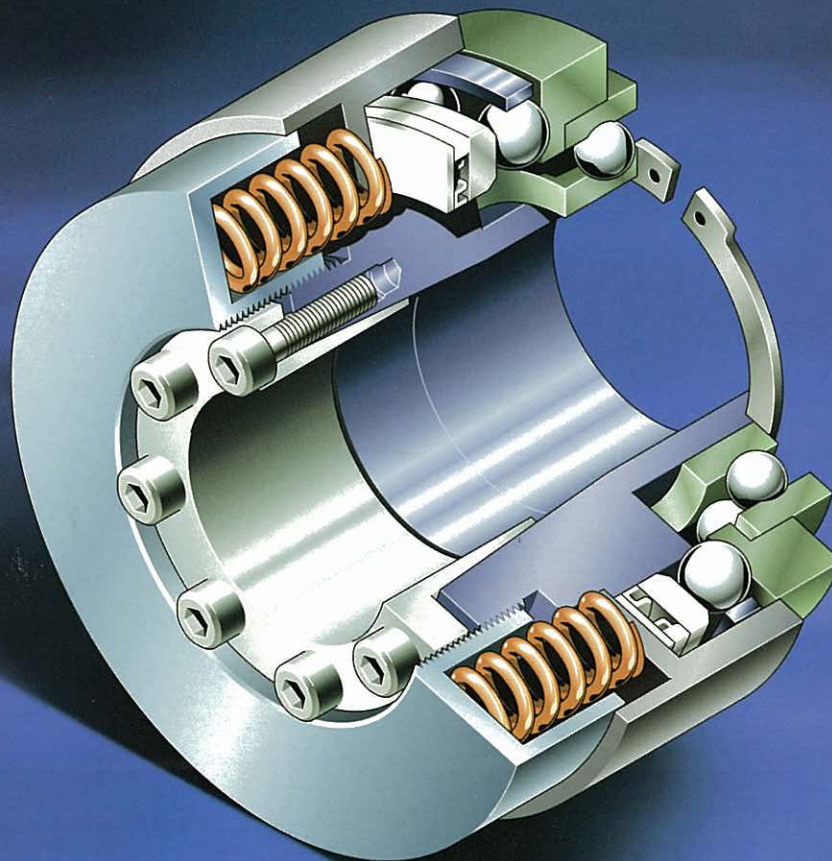
TORQUE LIMITER

SERIES 320



AUTOGARD SERIES 320 TORQUE LIMITER

Quality and Autogard are synonymous with overload protection. The company's reputation for high quality products is derived from over 35 years of design innovation and production. Autogard products are manufactured to meet ISO 9001 using the latest machine tools and high quality materials.



The Series 320 Torque Limiter Clutch has been designed to meet the emerging need for an economical, compact and reliable safety clutch. The optimised design provides a robust, backlash free clutch which will protect equipment from the damaging effects caused by overloading a drive train.

In the event of an overload, the drive balls are designed to roll out of their respective seats producing an axial movement in the cover plate. A proximity sensor or limit switch can be used to detect this movement, sending a signal to master control or a PLC.

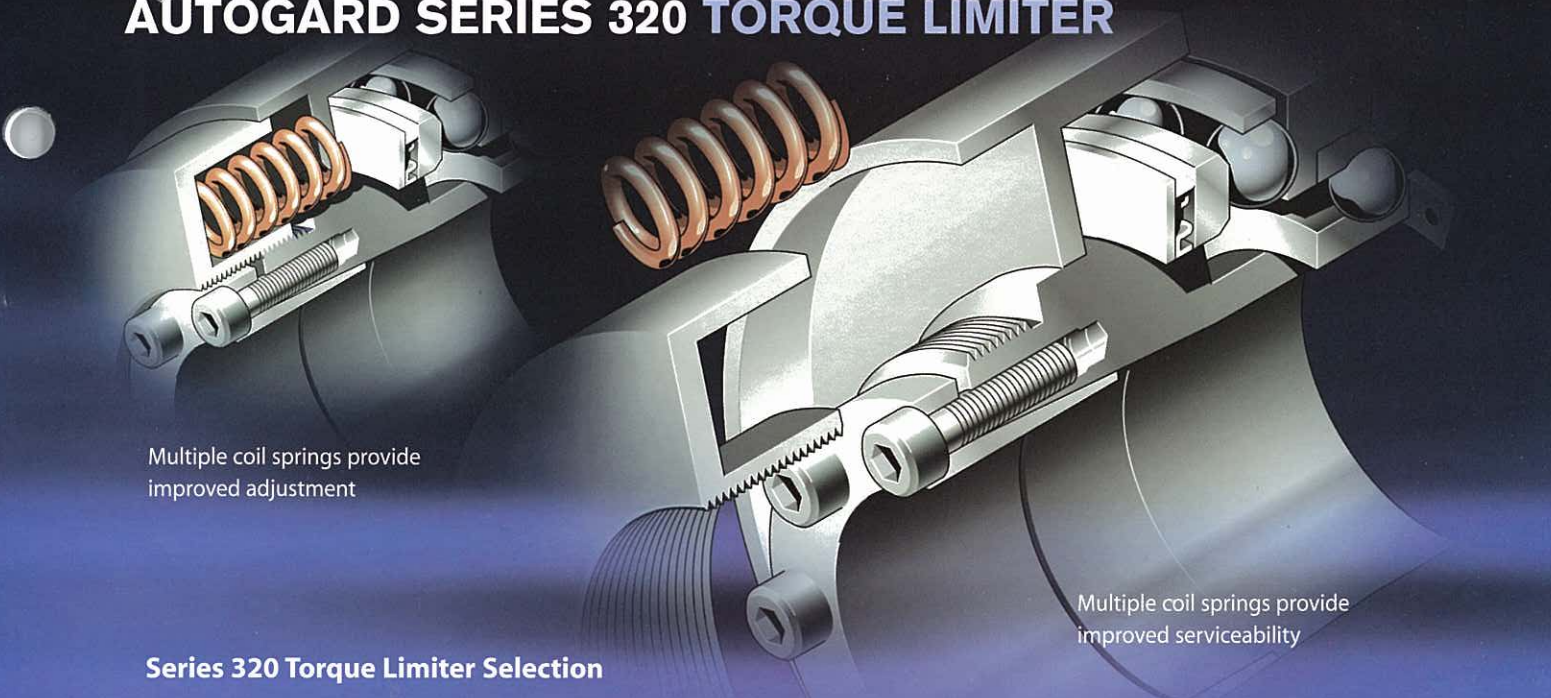
Re-engagement is automatic once the overload is removed. The Series 320 can be provided in a timed (synchronised) or un-timed (rapid reset) versions.

The Autogard Series 320 is designed to meet the most exacting needs of modern machinery.

Features and Benefits

- Accurate torque limitation prevents costly downtime caused by overloads.
- The compact design reduces weight and inertia on the equipment.
- The standard design can accommodate larger torque ranges than many other models currently available.
- Series 320 is offered in a larger number of styles ensuring the right solution is available for all applications.
- Backlash free operation.
- Automatic re-engagement.
- One revolution synchronous re-engagement.
- Springs can be inspected and changed without removing the clutch from the drive train.
- Coil springs allow one standard design to accommodate the full torque range as opposed to regressive disc springs which can only accommodate a narrow torque band.

AUTOGARD SERIES 320 TORQUE LIMITER



Multiple coil springs provide improved adjustment

Multiple coil springs provide improved serviceability

Series 320 Torque Limiter Selection

Method

Data required for Torque Limiter Selection.

- Horsepower and rpm of the driver.
- Shaft details of the driving and driven equipment.

(1) Calculate the maximum Torque (in - lbs):

$$\text{Torque (in - lbs)} = (\text{HP} \times 63,000) / \text{rpm}$$

Select the Torque Limiter, which has a higher torque rating.

Consideration should be given to start torque or other special circumstances depending on the position chosen in the drive system. The accuracy of the Autogard Series 320 will ensure that disengagement will only take place when the pre-set torque is exceeded.

(2) Check the Limiting Conditions:

- (a) Check the hub bore capacity is suitable
- (b) Check the Torque Limiter dimensions such as Overall Length and Outside Diameters.

(3) Select and specify appropriate drive medium or coupling.

All Autogard Series 320 units may be supplied from the factory at a pre-set torque and with required Drive Medium assembled to the unit.

Example

Driver: Geared Motor (7 Hp at 120 rpm)

Driven equipment: Packaging Machine

Start-up Torque = 2 x Running Torque
System must be direct driven

Motor shaft: 2.13 in Compressor shaft: 2.00 in

$$\text{Torque (in - lbs)} = (7 \text{ Hp} \times 63,000) / 120$$

$$\text{Maximum Nominal Torque} = 3675 \text{ in - lbs}$$

$$\text{Maximum Start-up Torque} = 3675 \times 2 = 7350 \text{ in - lbs}$$

Series 320 Selection based on Start-up rating: 320-4
Coupling style 5, 6, 7 or 8 is acceptable for direct drives
Select a 320-4 / 8 : (Type 8)

Coupling Bore Capacity: 3.00 in maximum

Keyed Hub Bore Capacity: 2.25 in

The 320-4 / 8 is acceptable in this application

Ordering the 320 Series Torque Limiter

When ordering please provide the following designation:

Model - Size / Type / Feature / S_ Bore / S_ Bore

Feature: SR - Synchronous Reset (Standard)
RR - Rapid Reset (Optional)

Example: 320 - 2 / 8 / SR / S2175 / SE - 163

Refers to a Series 320 size 2 Torque Limiter designed for Synchronous Reset.

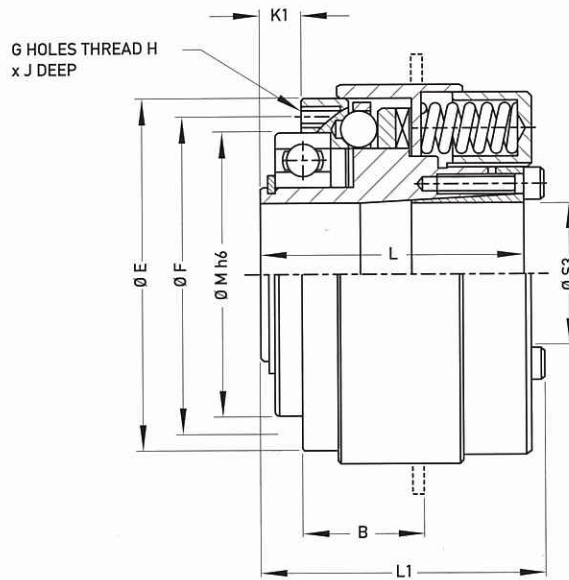
Bore S2 = 1.75 in and Bore S3 = 1.63 in

Also specify

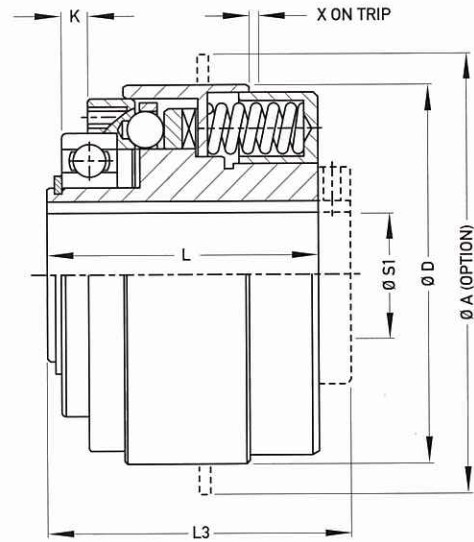
- Torque setting or torque range required
- Pulley or sprocket details where required

AUTOGARD SERIES 320

STANDARD HUB



Type 1



Type 2

Technical Data - Type 1 and Type 2

Size		01	0	1	2	3	4
Torque - in-lbs	Minimum	44.3	88.5	177	354	708	1,328
	Maximum	443	885	1,770	3,540	6,195	13,275
Weight - lbs		2.2	4.2	6.4	9.9	16.3	28.6
Mass Moment of Inertia	Hub Side	1.367	3.076	6.494	15.04	32.13	87.83
Lb-in2	Flange Side	0.342	1.708	3.416	6.83	13.66	37.24

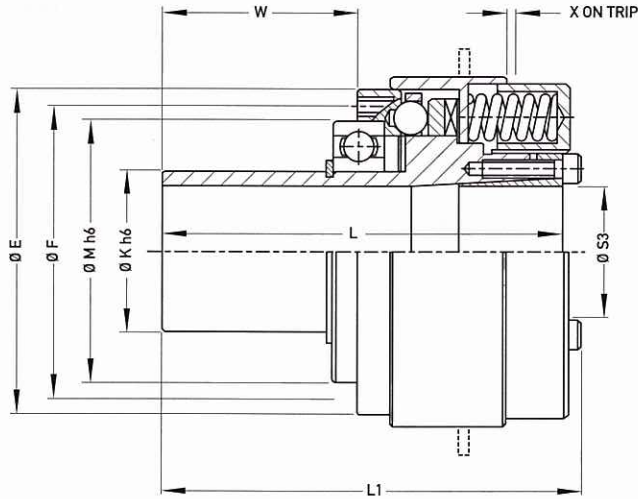
Dimensional Data (in) - Type 1 and Type 2

Size		01	0	1	2	3	4
Bore (S3) - Clamped Collar	Minimum	0.39	0.59	0.87	1.26	1.38	1.65
	Maximum	0.75	1.13	1.38	1.75	2.13	2.56
Bore (S1) - Keyed Hub	Maximum	0.75	0.94	1.25	1.50	2.00	2.25
A		3.15	3.94	4.57	5.51	6.30	7.48
B		0.84	1.09	1.29	1.49	1.64	1.94
D		2.68	3.31	3.94	4.72	5.20	6.54
E		2.50	3.10	3.69	4.37	5.00	6.18
F		2.20	2.80	3.35	3.94	4.57	5.67
G		8	8	8	8	8	8
H		M4	M5	M6	M6	M8	M10
J		0.24	0.31	0.39	0.50	0.50	0.71
K		0.20	0.28	0.28	0.31	0.31	0.31
K1		0.31	0.43	0.47	0.47	0.63	0.63
L		1.85	2.36	2.80	3.31	3.74	4.33
L1		1.97	2.56	3.03	3.54	3.98	4.65
L3		2.05	2.68	3.15	3.74	4.13	4.80
M		1.85	2.44	2.95	3.54	3.94	4.53
X		0.05	0.06	0.07	0.09	0.09	0.11

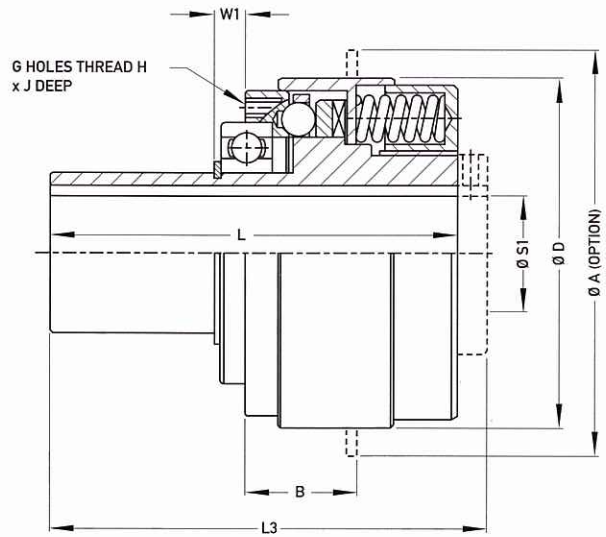
- (1) The Drive Medium must be bored to suit dimension "M". Clutches may be ordered complete with Drive Medium (V-Belt Pulleys, Timing Pulleys etc.)
 (2) Weights and Inertia values are for unbored units.

AUTOGARD SERIES 320

LONG PROJECTING HUB



Type 3



Type 4

Technical Data - Type 3 and Type 4

Size		01	0	1	2	3	4
Torque - in-lbs	Minimum	44.3	88.5	177	354	708	1,328
	Maximum	443	885	1,770	3,540	6,195	13,275
Weight - lbs		2.6	5.0	7.7	12.4	20.0	34.9
Mass Moment of Inertia	Hub Side	1.367	3.418	6.835	16.40	35.20	94.67
Lb-in2	Flange Side	0.684	2.051	4.101	8.54	16.40	44.09

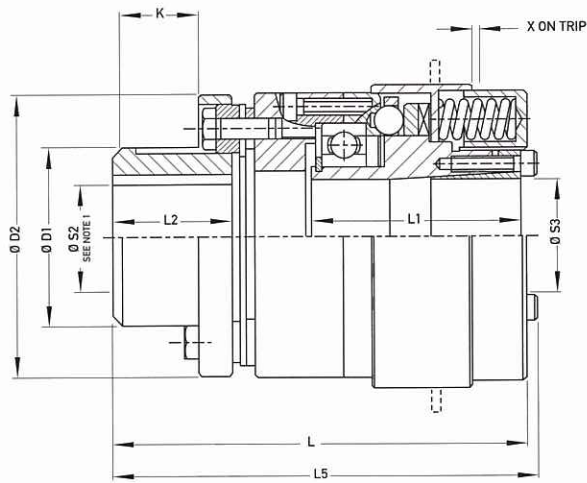
Dimensional Data (in) - Type 3 and Type 4

Size		01	0	1	2	3	4
Bore (S3) - Clamped Collar	Minimum	0.39	0.59	0.87	1.26	1.38	1.65
	Maximum	0.75	1.13	1.38	1.75	2.13	2.56
Bore (S1) - Keyed Hub	Maximum	0.75	0.94	1.26	1.50	2.00	2.25
A		3.15	3.94	4.57	5.51	6.30	7.48
B		0.84	1.09	1.29	1.49	1.64	1.94
D		2.68	3.31	3.94	4.72	5.20	6.54
E		2.50	3.10	3.69	4.37	5.00	6.18
F		2.20	2.80	3.35	3.94	4.57	5.67
G		8	8	8	8	8	8
H		M4	M5	M6	M6	M8	M10
J		0.24	0.31	0.39	0.50	0.50	0.71
K		1.18	1.57	1.77	2.17	2.56	2.95
L		2.83	3.66	4.53	5.59	5.98	7.28
L1		2.95	3.82	4.72	5.79	6.22	7.60
L3		3.03	3.82	4.84	5.98	6.38	7.60
M		1.85	2.44	2.95	3.54	3.94	4.53
W		1.30	1.69	2.17	2.64	2.87	3.58
W1		0.26	0.33	0.35	0.42	0.41	0.41
X		0.05	0.06	0.07	0.09	0.09	0.11

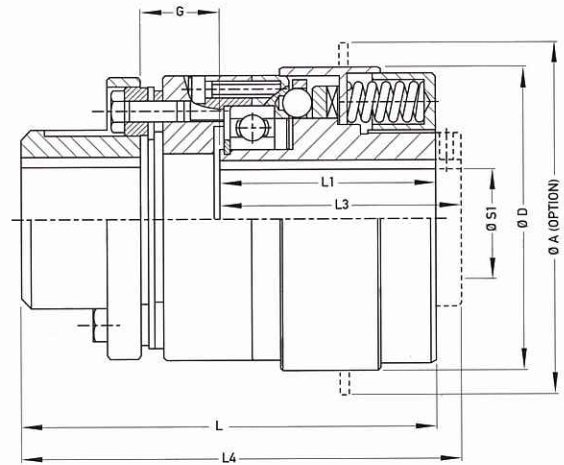
- (1) The Drive Medium must be bored to suit dimension "M". Clutches may be ordered complete with Drive Medium (V-Belt Pulleys, Timing Pulleys etc.)
 (2) Weights and Inertia values are for unbored units.

AUTOGARD SERIES 320

TORSIONALLY RIGID AUTOFLEX COUPLING



Type 5



Type 6

Technical Data - Type 5 and Type 6

Size		01	0	1	2	3	4
Torque - in-lbs	Minimum	44.3	88.5	177	354	708	1,328
	Maximum	443	885	1,770	3,540	6,195	13,275
Weight - lbs		4.9	6.7	10.5	17.8	29.2	56.0
Mass Moment of Inertia	Hub Side	4.443	5.810	12.99	33.15	72.80	226.3
Lb-in ²	Flange Side	3.759	4.443	10.25	24.95	54.34	175.7
Maximum Axial Misalignment (in)		0.03	0.03	0.03	0.04	0.04	0.06
Maximum Angular Misalignment (degrees)		0.5	0.5	0.5	0.5	0.5	0.5

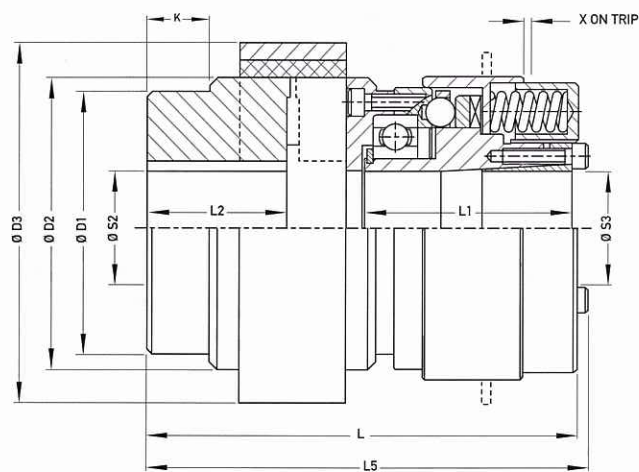
Dimensional Data (in) - Type 5 and Type 6

Size		01	0	1	2	3	4
Bore (S3) - Clamped Collar	Minimum	0.39	0.59	0.87	1.26	1.38	1.65
	Maximum	0.75	1.13	1.38	1.75	2.13	2.56
Bore (S2) - Keyed Hub	Maximum	1.25	1.25	1.44	1.88	2.50	3.38
Bore (S1) - Keyed Hub	Maximum	0.75	0.94	1.26	1.50	2.00	2.25
A		3.1	3.9	4.6	5.5	6.3	7.5
D		2.7	3.3	3.9	4.7	5.2	6.5
D1		1.7	1.7	2.1	2.8	3.6	4.8
D2		3.1	3.1	3.5	4.3	5.2	6.7
G		0.7	0.9	0.9	1.2	1.1	1.2
K		.91	.91	1.06	1.30	1.77	2.32
L		3.9	4.6	5.2	6.4	7.1	8.4
L1		1.9	2.4	2.8	3.3	3.7	4.3
L2		1.3	1.3	1.4	1.8	2.3	2.9
L3		2.0	2.7	3.1	3.7	4.1	4.8
L4		4.1	4.9	5.5	6.8	7.5	8.9
L5		4.0	4.8	5.4	6.5	7.3	8.7
X		0.0	0.1	0.1	0.1	0.1	0.1

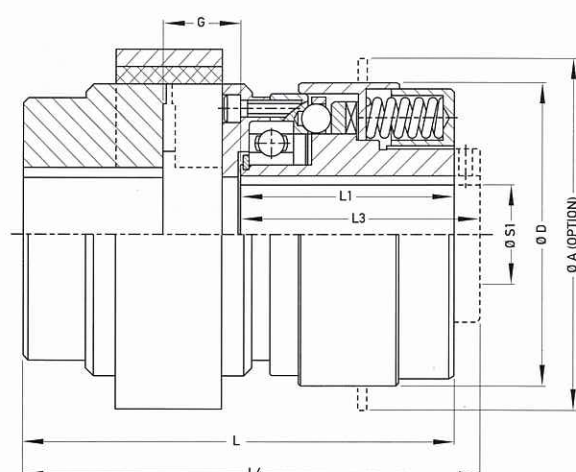
- (1) Clamp Bushes and Ringfeder™ Collars may be supplied upon request - Consult your Autogard Sales Engineer.
(2) Weights and Inertia values are for unbored units.

AUTOGARD SERIES 320

SAMIFLEX ELASTIC COUPLING



Type 7



Type 8

Technical Data - Type 7 and Type 8

Size		01	0	1	2	3	4
Torque - in-lbs	Minimum	44.3	88.5	177	354	708	1,328
	Maximum	443	885	1,770	3,540	6,195	13,275
Weight - lbs		4.2	8.8	15.7	19.1	34.3	54.0
Mass Moment of Inertia	Hub Side	4.101	16.40	58.78	66.99	231.7	402.9
	Flange Side	3.418	15.04	56.05	58.78	213.3	352.4
Lb-in ²							
Maximum Axial Misalignment (in)		+0.02	+0.02	+0.03	+0.03	+0.03	+0.04
Maximum Radial Misalignment (in)		0.004	0.004	0.006	0.006	0.008	0.008
Maximum Angular Misalignment (degrees)		2	2	2	2	1.3	1.3

Dimensional Data (in) - Type 7 and Type 8

Size		01	0	1	2	3	4
Bore (S3) - Clamped Collar	Minimum	0.39	0.59	0.87	1.26	1.38	1.65
	Maximum	0.75	1.13	1.38	1.75	2.13	2.56
Bore (S2) - Coupling Hub	Minimum	0.50	0.75	0.75	0.75	1.00	1.00
	Maximum	1.50	1.63	2.17	2.17	3.75	3.25
Bore (S1) - Keyed Hub	Maximum	0.75	0.94	1.26	1.50	2.00	2.25
A		3.15	3.94	4.57	5.51	6.30	7.48
D		2.68	3.31	3.94	4.72	5.20	6.54
D1		2.56	3.15	3.35	3.35	4.33	4.92
D2		2.56	3.39	4.57	4.57	5.91	6.69
D3		3.27	4.37	5.67	5.67	7.17	7.95
G		0.59	0.83	1.14	1.22	1.42	1.34
K		—	1.42	1.77	1.77	1.85	2.05
L		3.82	5.00	6.14	6.73	7.64	8.43
L1		1.85	2.40	2.83	3.35	3.74	4.33
L2		1.38	1.81	2.20	2.20	2.48	2.76
L3		2.05	2.68	3.15	3.74	4.13	4.80
L4		4.02	5.28	6.46	7.13	8.03	8.90
L5		3.94	5.24	6.38	6.93	7.87	8.74
X		0.05	0.06	0.07	0.09	0.09	0.11

- (1) Clamp Bushes and Ringfeder™ Collars may be supplied upon request - Consult your Autogard Sales Engineer.
(2) Weights and Inertia values are for unbored units.

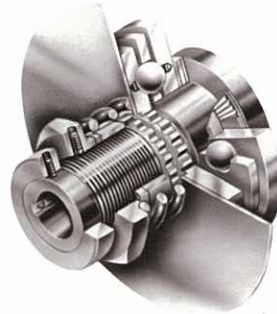
OTHER AUTOGARD PRODUCTS



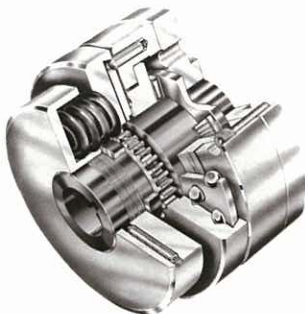
Autoflex Couplings



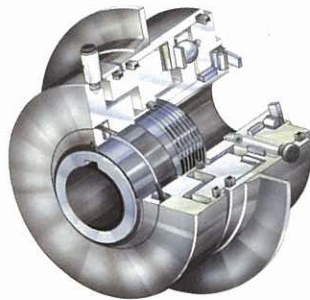
SamiFlex Elastic Couplings



Autogard Series 200 Torque Limiters



Autogard Series 400 Torque Limiters



Autogard Series 600 Torque Limiters



Monitorq

Monitorq - Torque Sensors



American Autogard Corporation

5173 26th Avenue
Rockford, Illinois 61109

Tel +1 815 229 3190

Fax +1 815 229 4615

Email sales@autogard.com

British Autogard Limited
Cirencester, United Kingdom
Tel +44 (0) 1285 640333
Fax +44 (0) 1285 659476

Autogard Kupplungen
Lemgo, Germany
Tel +49 (0) 5261 921258
Fax +49 (0) 5261 921260

Autogard Italy
Milano, Italy
Tel +39 02 92 1700 471
Fax +39 02 92 1700 472

Autogard Asia Pacific P/L
Melbourne, Australia
Tel +61 (0) 3 9532 0901
Fax +61 (0) 3 9532 1032

Autogard South Africa (Pty) Ltd
Johannesburg, South Africa
Tel +27 11 728 4868
Fax +27 11 728 5254

Autogard Japan Ltd
Tokyo, Japan
Tel +81 (0) 3 3449 9621
Fax +81 (0) 3 5449 7491

For further information on
Autogard product range and
technical specifications visit
www.autogard.com