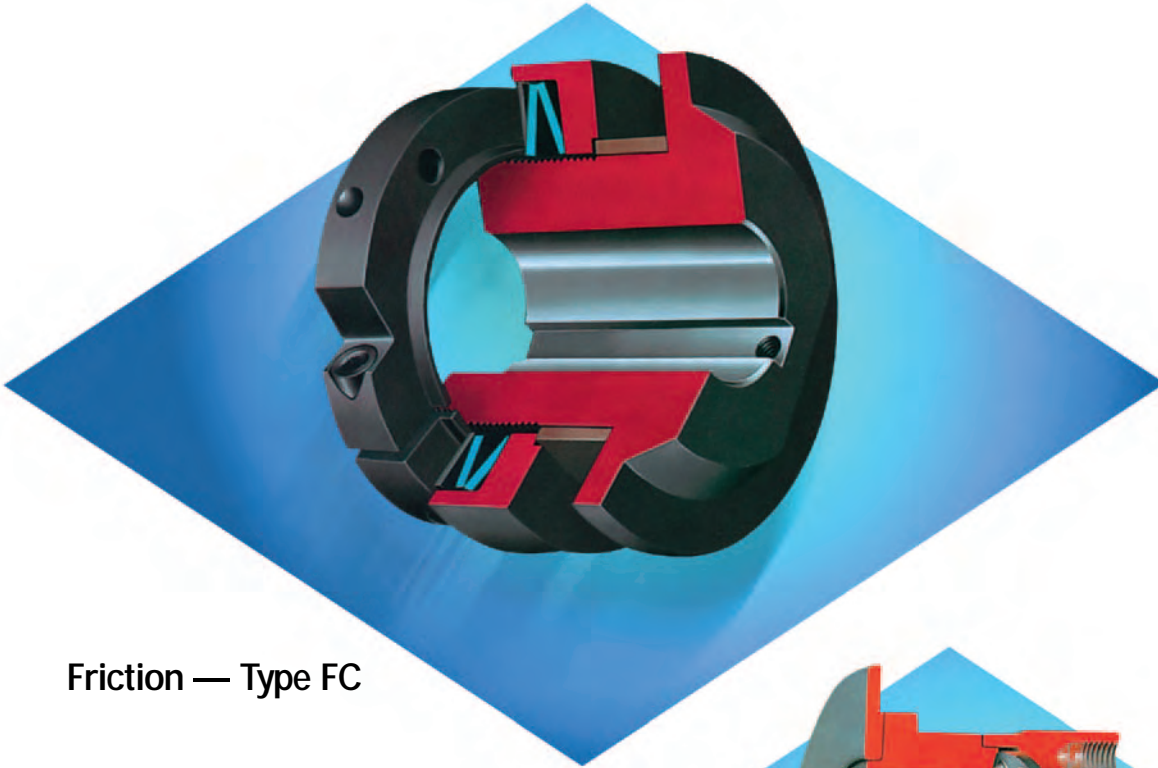
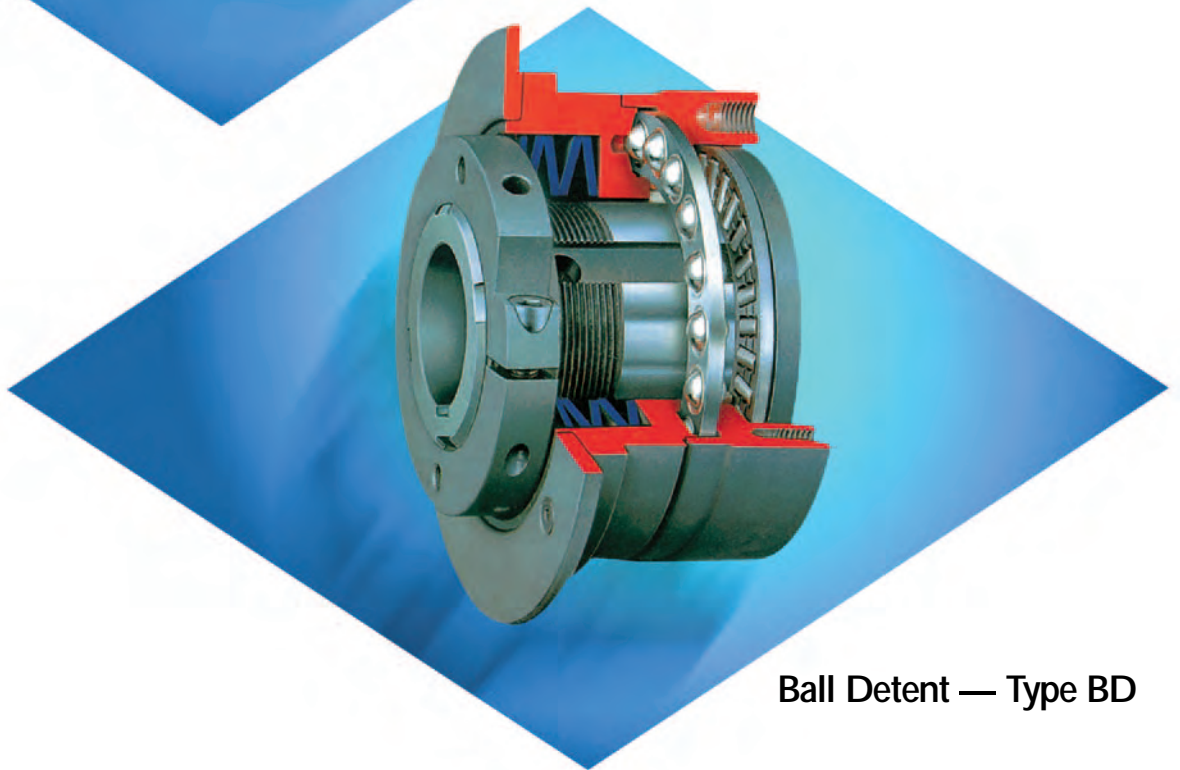


RFC TORQUE LIMITERS



Friction — Type FC



Ball Detent — Type BD

Introduction

Modern technology has enabled the designer to develop high performance machinery. Higher speeds and efficiencies dictate more reliable performance. One proven method of increasing reliability is to employ the use of overload protection devices in your equipment. RINGFEDER Corporation has the solution to your needs with our RFC Torque Limiters.

RFC Torque Limiters are reliable, high quality mechanical overload protection devices. These devices protect personnel, equipment and property in the event of a mechanical overload. We offer our overload devices in a variety of styles and in combinations with various couplings to meet your specific needs.

RFC Torque Limiters are available in *Friction*, *Ball Detent* and *Axial* type overload devices and they are easily adjustable over a range of torques.

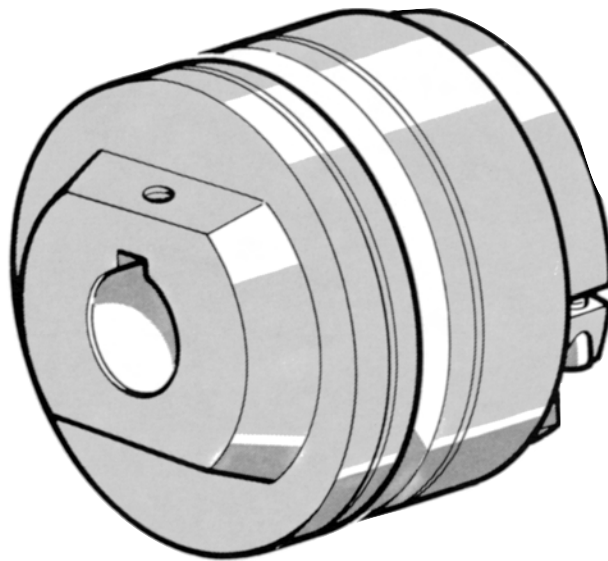
Please contact us for specific design details.

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Axial Overload Device — Type AX	35

FRICITION TORQUE LIMITERS

Type FC



FRICTION TORQUE LIMITERS — Type FC

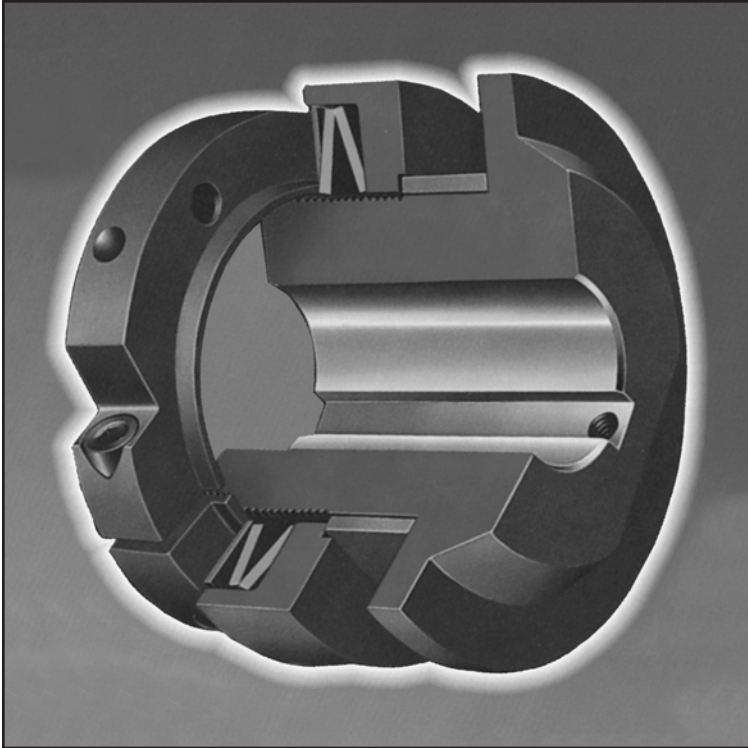


Fig. 1

BENEFITS and FEATURES

FRICTION TORQUE LIMITERS, Type FC, are simple but effective and economical torque limiters designed to protect mechanical parts and machines from damage or destruction when an overload occurs. They will slip when the torque setting is exceeded. Once the overload is removed, the Torque Limiter will continue to transmit the pre-set torque. Depending on the severity of the slippage and the exerted spring pressure on the friction linings, the Torque Limiter would not have to be re-adjusted each time. Thus, they eliminate the problems arising from machine down time caused by breaking of unprotected parts.

Due to their predetermined slippage torque, they also offer dynamic dampening in case of sudden shock loads, accelerations, stops or motion reversals.

HOW TO ORDER

Specify Torque Limiter type, size, configuration and spring orientation and desired bore.

Example 1:

Friction Torque Limiter size 140 with Reduced Diameter and single layer springs with pilot bore —
FC 140/RD SL Pilot Bore

Example 2:

Random Reset Ball Detent Torque Limiter size 90 with extended hub and spring configuration 3 with 0.875 finished bore and key —
BDR 90.3/SH with 0.875 bore and key

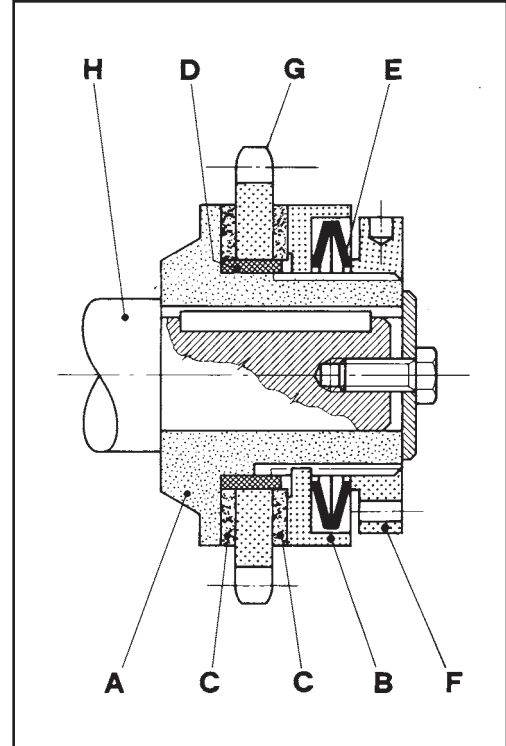


Fig. 2

OPERATION

The driven component, such as a sprocket, gear, pulley, etc., as shown in Fig. 2 as 'G', is clamped between the two friction linings 'C' and centered on the hub 'A' by means of a bronze bushing 'D'. By turning the adjusting nut 'F', the disc springs 'E' are compressed exerting a clamping force on the control element 'B' and the friction linings which in turn clamp the driven component.

The transmissible torque is proportional to the clamp force which can be varied by turning the adjusting nut 'F'. It allows accurate and continuous setting of the required torque. Once the desired torque setting is obtained, the adjusting nut must be locked in this position by means of a locking screw.

1. DRIVEN PARTS

The thickness of the driven parts (sprockets, gears, pulleys, etc.) must be less or equal to the max. thickness dimension G shown in the specifications. It is important that the contact surfaces are parallel, preferably ground on both sides to provide a smooth rubbing surface of 65 to 125 micro-inches and be free of rust, grease and oil. This will ensure good surface contact with the friction discs and transmission of rated torque values.

2. FRICTION DISC MATERIALS

It is recommended that the Friction Clutches be used in dry condition. No oil or any other kind of liquid should get in contact with the friction discs since it will reduce the torque transmission capability. In applications where contact with oil or other liquids is possible, please consult with us. Friction discs are made from non-asbestos materials that meet US and European regulations.

To attain torque capacity, the clutch should be slipped several times at approximately 50% of its capacity to burnish the surfaces of the friction lining and drive components.

After final setting, occasional adjustments may be necessary to compensate for friction lining wear.

3. TORQUE CAPACITIES and DISC SPRINGS CONFIGURATIONS

All Ringfeder **FRICTION TORQUE LIMITERS, Type FC** are available in two spring configurations:

Single Layer — SL and Double Layer — DL

Each overload device is shipped with the configuration the customer specifies in their order. However, since

each device is shipped standard with two springs, the customer can reconfigure the springs themselves, if required. Consult our installation instructions or call us for assistance.

Additionally, Torque Limiters sizes 70 to 170 can accommodate more springs to make a Triple Layer version — TL. Please order the springs separately.

Since the compression force of double and triple layer springs is quite high, applications where there are frequent slippages should be avoided. With frequent slippages, the friction linings may wear too quickly to be economical.

In Figure 3, the relative relationship of the spring configurations can easily be seen. The optimum torque settings are in the upper portion of the torque curve which gives minimum torque variations (ΔM) for a given amount of wear (ΔF).

3.1 HELICAL SPRINGS

Helical Springs are used for lower torque requirements and they allow a more accurate torque adjustment than the disc springs. Therefore, there is also a reduced torque variation due to lower wear on the friction linings.

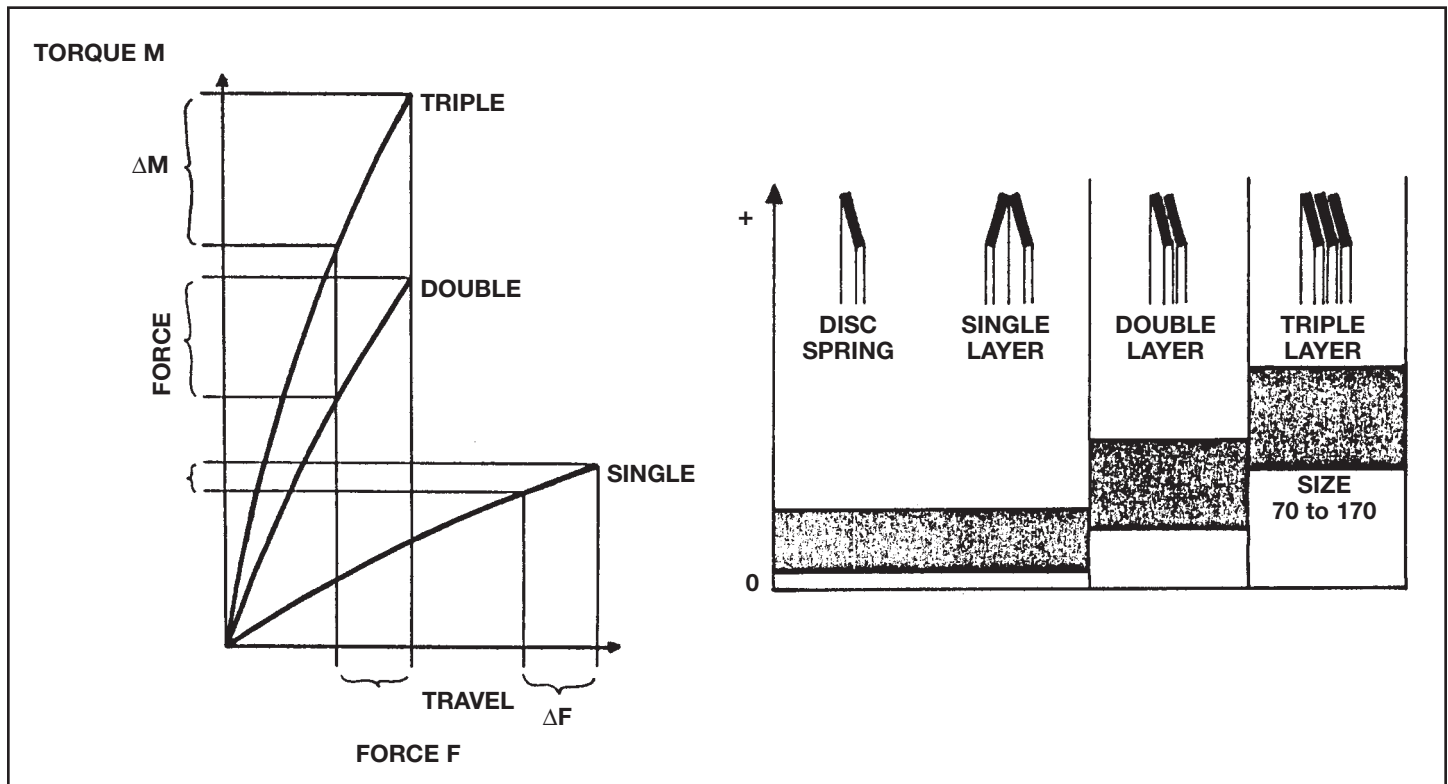


Fig. 3 — Force/Travel relationships of various Spring Configurations.

4. MOUNTING ON THE SHAFT

Friction Torque Limiters are available either finish bored or with a pilot bore to allow the customer to do his own machining. Tables 1 and 2 show suggested Bore Tolerance and Permissible Run-out.

The torque limiter can be attached to the shaft in any of the ways shown below. (See Fig. 4)

- Drive by means of a key and axial positioning with a bolt and end cap.
- Drive by means of a key and axial fixing with a set screw from the limiter body onto the key.
- Drive by means of a key and a set screw placed at the end of the limiter hub.

Table 1

BORE RANGE		BORE TOLERANCES			
		TOLERANCE H8		TOLERANCE H7	
INCHES OVER - TO	MM OVER - TO	INCHES/1000	µm	INCHES/1000	µm
0.24 - 0.4	6 - 10	+ 0.9 / - 0	+ 23 / - 0	+ 0.6 / - 0	+ 15 / - 0
0.40 - 0.71	10 - 18	+ 1.0 / - 0	+ 25 / - 0	+ 0.7 / - 0	+ 18 / - 0
0.71 - 1.19	18 - 30	+ 1.2 / - 0	+ 30 / - 0	+ 0.8 / - 0	+ 21 / - 0
1.19 - 1.97	30 - 50	+ 1.6 / - 0	+ 41 / - 0	+ 1.0 / - 0	+ 25 / - 0
1.97 - 3.15	50 - 80	+ 1.8 / - 0	+ 46 / - 0	+ 1.2 / - 0	+ 30 / - 0
3.15 - 4.73	80 - 120	+ 2.2 / - 0	+ 56 / - 0	+ 1.4 / - 0	+ 35 / - 0
4.73 - 7.09	120 - 180	+ 2.5 / - 0	+ 63 / - 0	+ 1.6 / - 0	+ 40 / - 0
7.09 - 9.85	180 - 250	+ 2.8 / - 0	+ 71 / - 0	+ 1.8 / - 0	+ 46 / - 0

Permissible run-out

The maximum run-out of the friction surfaces in relation to the bore is given in the table below:

Table 2

TORQUE LIMITER SIZE	PERMISSABLE RUN OUT	
	IN.	MM
40, 50, 70, 90	0.002	0.05
115, 140, 170	0.003	0.08
200, 240, 300, 350	0.004	0.1

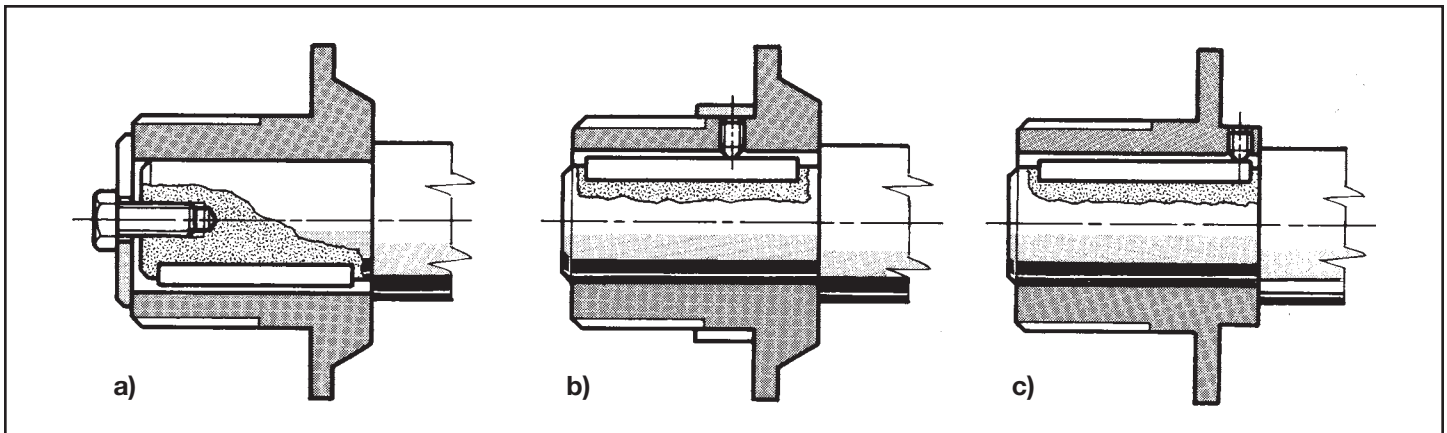


Fig. 4

5. BRONZE BUSHING SIZING

The Friction Torque Limiters are supplied with a bronze bushing at its maximum length M in order to accommodate the max. thickness G of the driven part. (See Fig. 5a and 5b and corresponding specifications.)

If the thickness of the driven part is less than max. G dim., then the bushing length has to be shortened according to the following formula:

$$M = G + 1.5 \times H$$

M = required bushing length
 G = actual driven part thickness
 H = friction disc thickness

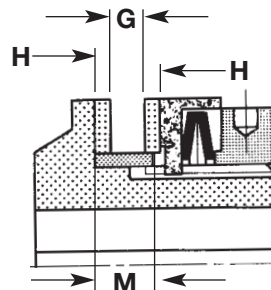


Fig. 5a

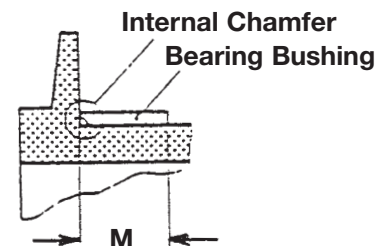


Fig. 5b

6. TORQUE ADJUSTMENT

FC 40 - FC 170 Sizes: Make sure that the required disc spring configuration (SL or DL) is installed. Loosen the locking screw A (See Fig. 6) and tighten the adjusting nut with the proper spanner or hook wrench until a slight contact with the springs is established. Then tighten the adjusting nut further to obtain the pressure necessary to transmit the required torque with-out slipping. Now check if slip occurs at the required torque value and then tighten the locking screw.

FC 200 - FC 350 Sizes: These larger units have a series of smaller disc springs mounted on threaded holding pins which are threaded into the adjusting nut B (Fig. 7). Make sure that the required disc spring configuration (SL or DL) is installed. Loosen the spring holding pins C and make pre-adjustment of the adjusting nut. Then tighten the spring holding pins and check whether the required torque is obtained without slipping. If necessary, make required corrections in the same manner. Detailed installation instructions are available upon request.

7. MAINTENANCE

The FC-Series torque limiters do not normally require any maintenance. However, as with all friction torque limiters, regular inspection of the friction surfaces and other related components is highly recommended. The friction pads should be replaced when they have each worn to one quarter of their original, new thickness. See dimension "H" in the specification tables for the thickness of new pads.

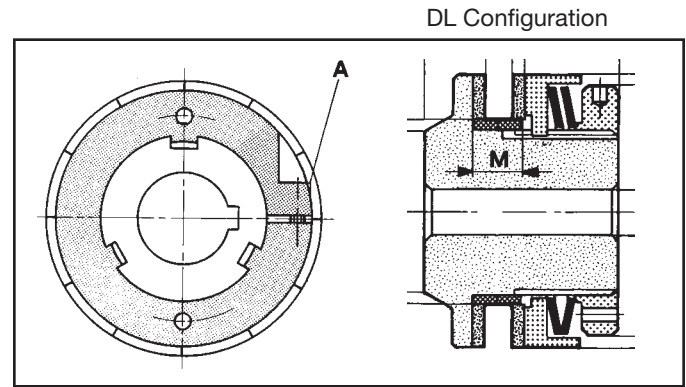


Fig. 6

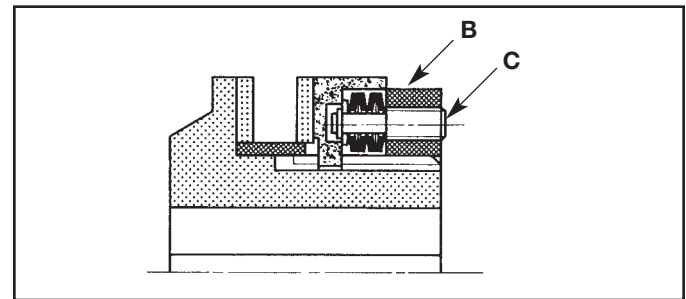
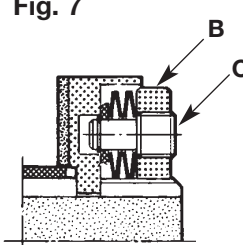
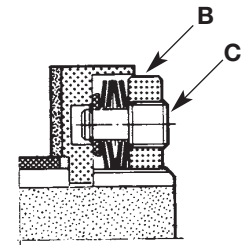


Fig. 7



SL Configuration
FC 200 - FC 350

Fig. 8a



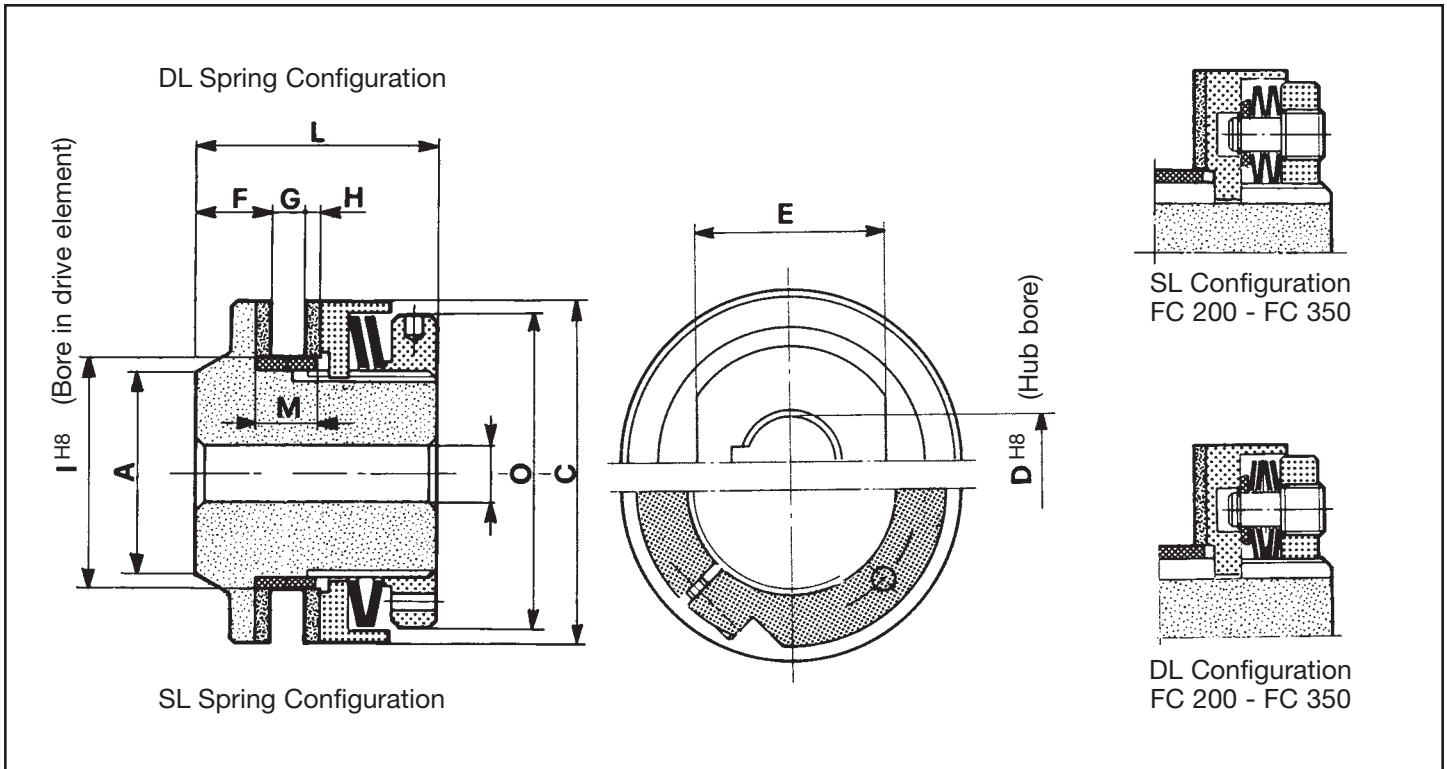
DL Configuration
FC 200 - FC 350

Fig. 8b

Table 3

TORQUE LIMITER				FACE WRENCH						HOOK WRENCH			
FC	BD	V	U	PART NO.	RANGE	A	B	C	WT g	PART NO.	DIA. RANGE	E	WT g
40		4	27	41046	18 - 40	5	150	5	90	51854	35 - 60	175	100
	70		36										
50		5	39	41061	40 - 80	6	220	6	245	51870	60 - 90	250	280
70	90		51										
90	110	6	68	41087	80 - 125	7	320	8	670	51888	115 - 230	420	1200
115	130	8	86	41103		8							
140	160		105										
170	200		125	41111	125 - 200	450	10	1750					

NOTE: Dimensions in millimeters, weight in grams (g) 1000g = 2.2046 lbs.
V = Nominal pin diameter — Adjusting nut hole size U = Distance between holes in face of adjusting nut



METRIC Dimensions

SIZE	SL		TORQUES (Nm)				A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H8} BORE	L	M	O	MAX SPEED (RPM)	WEIGHT (kg)
	MIN	MAX	MIN	MAX	DL	TL			MIN	MAX										
40	1.5	7.5	3.8	15	—	—	24	40	5	12	22	8.5	4	2.5	24	30	8	35	10000	0.2
50	3	15	7.5	30	—	—	30	50	8	20	28	11	5	3	38	38	10	46	7500	0.4
70	14	70	35	140	60	200	44	70	10	25	40	18	9	4	45	55	15	63	5600	1
90	25	125	63	250	120	400	60	90	15	35	50	19	11	4	60	60	17	82	4300	1.8
115	50	250	125	550	240	800	76	115	20	45	64	21	15	4	72	70	21	105	3300	3.4
140	110	550	275	1100	480	1600	92	140	25	55	80	24	17	5	85	80	25	129	2700	6
170	140	700	350	1400	630	2100	106	170	30	65	90	29	20	5	100	95	28	159	2200	9.8
200	240	1200	600	2400	—	—	120	202	40	80	105	31	24	5	120	105	32	193	1900	14
240	400	2000	1000	4000	—	—	155	242	50	100	136	33	25	5	145	120	35	230	1600	25.6
300	700	3500	1750	7000	—	—	185	300	60	120	165	36	30	6	175	130	40	287	1250	42
350	1200	6000	6000	12000	—	—	230	352	55	140	220	53	30	6	237	165	40	334	1000	84

INCH Dimensions

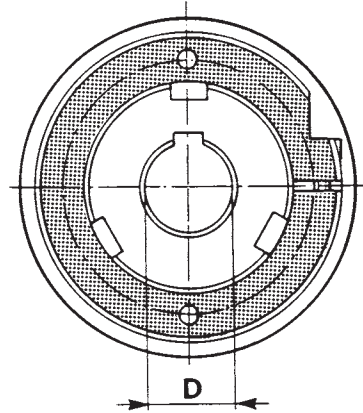
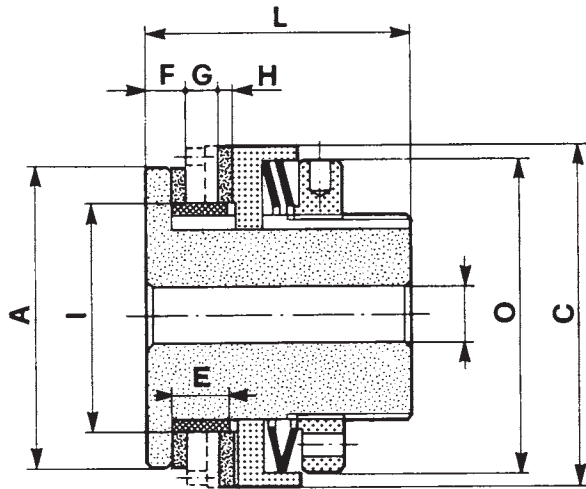
SIZE	SL		TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H8} BORE	L	M	O	MAX SPEED (RPM)	WEIGHT (lbs)
	MIN	MAX	MIN	MAX	DL	TL			MIN	MAX										
40	13	66	34	133	—	—	0.94	1.57	0.20	0.47	0.87	0.33	0.16	0.10	0.945	1.18	0.31	1.38	10000	0.4
50	27	133	66	266	—	—	1.18	1.97	0.31	0.79	1.10	0.43	0.20	0.12	1.496	1.50	0.39	1.81	7500	0.9
70	125	620	310	1239	531	1770	1.73	2.76	0.39	0.98	1.57	0.71	0.35	0.16	1.772	2.17	0.59	2.48	5600	2.2
90	221	1106	558	2213	1062	3540	2.36	3.54	0.59	1.38	1.97	0.75	0.43	0.16	2.362	2.36	0.67	3.23	4300	4.0
115	443	2213	1106	4868	2124	7081	2.99	4.53	0.79	1.77	2.52	0.83	0.59	0.16	2.835	2.76	0.83	4.13	3300	7.5
140	974	4808	2434	9736	4249	14162	3.62	5.51	0.98	2.17	3.15	0.94	0.67	0.20	3.346	3.15	0.98	5.08	2700	13.2
170	1239	6196	3098	12392	5576	18588	4.17	6.69	1.18	2.56	3.54	1.14	0.79	0.20	3.937	3.74	1.10	6.26	2200	21.6
200	2124	10621	5311	21243	—	—	4.72	7.95	1.57	3.15	4.13	1.22	0.94	0.20	4.724	4.13	1.26	7.60	1900	30.8
240	3540	17702	8851	35405	—	—	6.10	9.53	1.97	3.94	5.35	1.30	0.98	0.20	5.709	4.72	1.38	9.06	1600	56.03
300	6196	30979	15490	61958	—	—	7.28	11.81	2.36	4.72	6.50	1.42	1.18	0.24	6.890	5.12	1.57	11.30	1250	92.4
350	10620	53104	53104	106209	—	—	9.06	13.86	2.17	5.51	8.66	2.09	1.18	0.24	9.331	6.50	1.57	13.15	1000	184.8

RFC FRICTION TORQUE LIMITERS — With Reduced Hub Diameter

FC.../RD



DL Configuration



SL Configuration

METRIC Dimensions

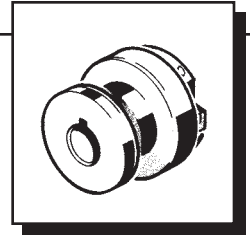
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	SL MIN	SL MAX	DL MIN	DL MAX			MIN	MAX								
70	8	40	20	80	59	70	10	25	15	9	9	4	45	58	63	2900
90	16	80	40	160	79	90	15	35	17	11	11	4	60	70	82	2200
115	32	160	80	320	89	115	20	45	21	12	14	4	72	82	105	1700
140	64	320	160	640	104	140	25	55	25	17	17	5	85	99	129	1500

INCH Dimensions

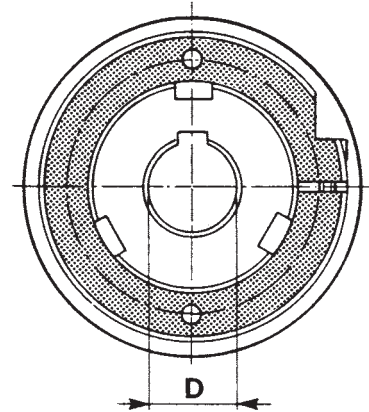
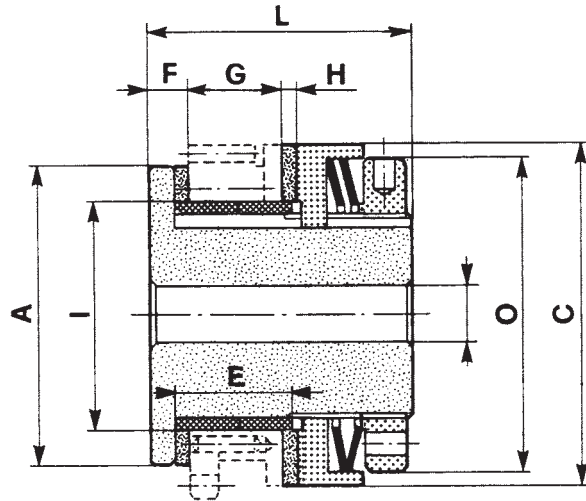
SIZE	TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H8} BORE	L	O	MAX SPEED (RPM)
	SL MIN	SL MAX	DL MIN	DL MAX			MIN	MAX								
70	71	354	177	708	2.32	2.76	0.39	0.98	0.59	0.35	0.35	0.16	1.772	2.28	2.48	2900
90	142	708	354	1416	3.11	3.54	0.59	1.38	0.67	0.43	0.43	0.16	2.362	2.76	3.23	2200
115	283	1416	708	2832	3.50	4.53	0.79	1.77	0.83	0.47	0.55	0.16	2.835	3.23	4.13	1700
140	566	2832	1416	5664	4.09	5.51	0.98	2.17	0.98	0.67	0.67	0.20	3.346	3.90	5.08	1500

RFC FRICTION TORQUE LIMITERS — With RD for Wide Components

FC.../RDW



DL Configuration



SL Configuration

METRIC Dimensions

SIZE	TORQUES (Nm)				A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H8} BORE	L	O	MAX SPEED (RPM)
	MIN	MAX	MIN	MAX			MIN	MAX								
70	8	40	20	80	59	70	10	25	30	9	24	4	45	58	63	2900
90	16	80	40	160	79	90	15	35	34	11	28	4	60	70	82	2200
115	32	160	80	320	89	115	20	45	42	12	35	4	72	82	105	1700
140	64	320	160	640	104	140	25	55	50	17	42	5	85	99	129	1500

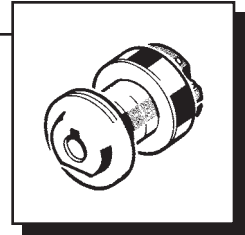
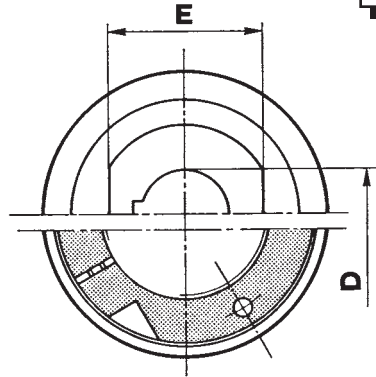
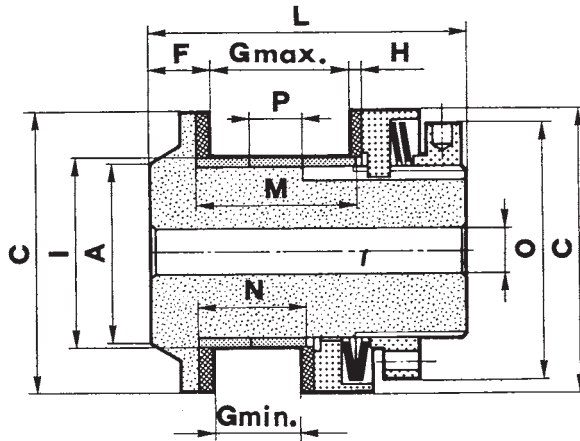
INCH Dimensions

SIZE	TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H8} BORE	L	O	MAX SPEED (RPM)
	MIN	MAX	MIN	MAX			MIN	MAX								
70	71	354	177	708	2.32	2.76	0.39	0.98	1.18	0.35	0.94	0.16	1.772	2.28	2.48	2900
90	142	708	354	1416	3.11	3.54	0.59	1.38	1.34	0.43	1.10	0.16	2.362	2.76	3.23	2200
115	283	1416	708	2832	3.50	4.53	0.79	1.77	1.65	0.47	1.38	0.16	2.835	3.23	4.13	1700
140	566	2832	1416	5664	4.09	5.51	0.98	2.17	1.97	0.67	1.65	0.20	3.346	3.90	5.08	1500

RFC FRICTION TORQUE LIMITERS — For Extra Wide Components

FC.../EW

DL Configuration



SL Configuration

METRIC Dimensions

SIZE	TORQUES (Nm)						A	C	D ^{H8} BORE		E	F	G		H	I ^{H8} BORE	L	M	N	O	P	MAX SPEED (RPM)
	SL	DL		TL		MIN			MAX	MIN			MAX									
70	14	70	35	140	60	200	44	70	10	25	40	18	25	40	4	45	94	45	30	63	15	5600
90	25	125	63	250	120	400	60	90	15	35	50	19	28	45	4	60	102	51	34	82	17	4300
115	50	250	125	550	240	800	76	115	18	45	64	21	36	57	4	72	120	63	42	105	21	3300
140	110	550	275	1100	480	1600	92	140	25	55	80	24	67	92	5	85	170	100	75	129	25	2700
170	140	700	350	1400	630	2100	106	170	30	65	90	29	76	132	5	100	215	140	84	159	28	2200

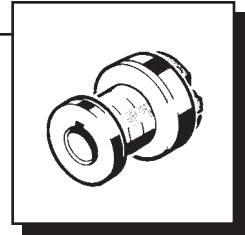
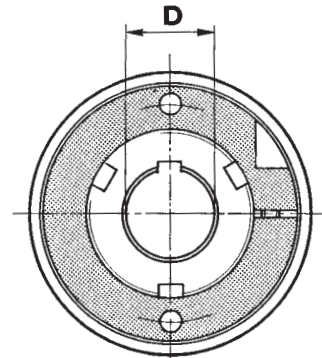
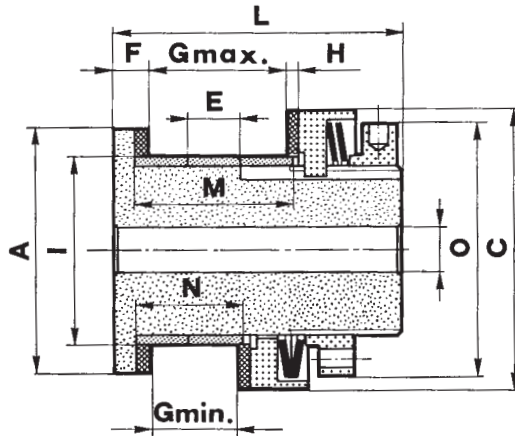
INCH Dimensions

SIZE	TORQUES (lb-in)						A	C	D ^{H8} BORE		E	F	G		H	I ^{H8} BORE	L	M	N	O	P	MAX SPEED (RPM)
	SL	DL		TL		MIN			MAX	MIN			MAX									
70	125	620	310	1239	531	1770	1.73	2.76	0.39	0.98	1.57	0.71	0.98	1.57	0.16	1.772	3.70	1.77	1.18	2.48	0.59	5600
90	221	1106	558	2213	1062	3540	2.36	3.54	0.59	1.38	1.97	0.75	1.10	1.77	0.16	2.362	4.02	2.01	1.34	3.23	0.67	4300
115	443	2213	1106	4868	2124	7081	2.99	4.53	0.71	1.77	2.52	0.83	1.42	2.24	0.16	2.835	4.72	2.48	1.65	4.13	0.83	3300
140	974	4808	2434	9736	4249	14162	3.62	5.51	0.98	2.17	3.15	0.94	2.64	3.62	0.20	3.346	6.69	3.94	2.95	5.08	0.98	2700
170	1239	6196	3098	12392	5576	18588	4.17	6.69	1.18	2.56	3.54	1.14	2.99	5.20	0.20	3.937	8.46	5.51	3.31	6.26	1.10	2200

RFC FRICTION TORQUE LIMITERS — With RD for Extra Wide Components

FC... /RDW-E

DL Configuration



SL Configuration

METRIC Dimensions

SIZE	TORQUES (Nm)				A	C	D ^{H8} BORE		E	F	G		H	I ^{H8} BORE	L	M	N	O	MAX SPEED (RPM)
	MIN	MAX	MIN	MAX			MIN	MAX			MIN	MAX							
70	8	40	20	80	59	70	10	25	15	9	25	40	4	45	85	45	30	63	2900
90	16	80	40	160	79	90	15	35	17	11	28	45	4	60	94	51	34	82	2200
115	32	160	80	320	89	115	20	45	21	12	36	57	4	72	111	63	42	105	1700
140	64	320	160	640	104	140	25	55	25	17	67	92	5	85	163	100	75	129	1500
170	110	550	550	1100	119.5	170	30	65	28	18	76	132	5	100	204	140	84	159	*

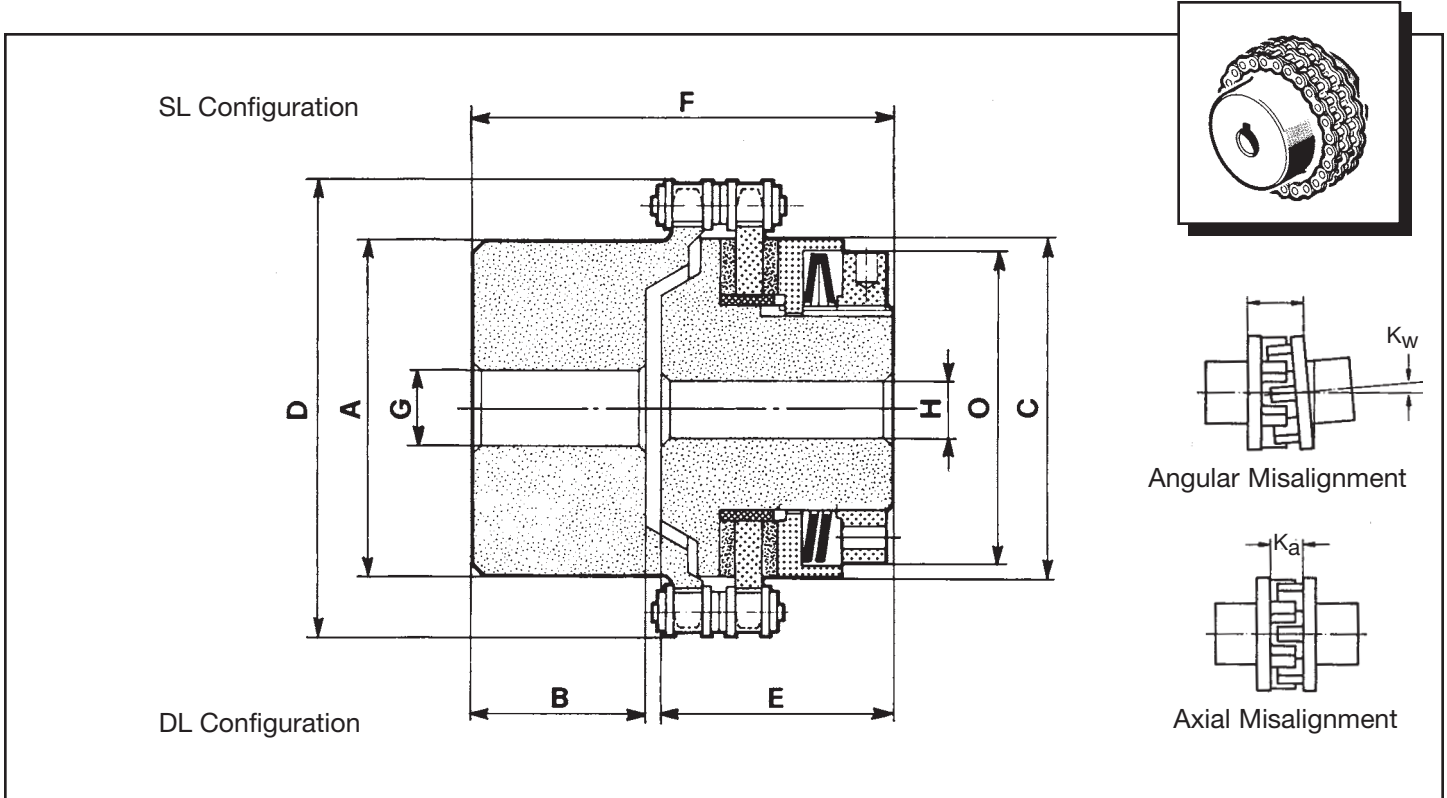
INCH Dimensions

SIZE	TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G		H	I ^{H8} BORE	L	M	N	O	MAX SPEED (RPM)
	MIN	MAX	MIN	MAX			MIN	MAX			MIN	MAX							
70	71	354	177	708	2.32	2.76	0.39	0.98	0.59	0.35	0.98	1.57	0.16	1.772	3.35	1.77	1.18	2.48	2900
90	142	708	354	1416	3.11	3.54	0.59	1.38	0.67	0.43	1.10	1.77	0.16	2.362	3.70	2.01	1.34	3.23	2200
115	283	1416	708	2832	3.50	4.53	0.79	1.77	0.83	0.47	1.42	2.24	0.16	2.835	4.37	2.48	1.65	4.13	1700
140	566	2832	1416	5664	4.09	5.51	0.98	2.17	0.98	0.67	2.64	3.62	0.20	3.346	6.42	3.94	2.95	5.08	1500
170	974	4868	4868	9736	4.70	6.69	1.18	2.56	1.10	0.71	2.99	5.2	0.20	3.937	8.03	5.51	3.31	6.26	*

*Call Ringfeder Corporation for assistance.

RFC FRICTION TORQUE LIMITERS — Chain Couplings

FCC.../CH



METRIC Dimensions

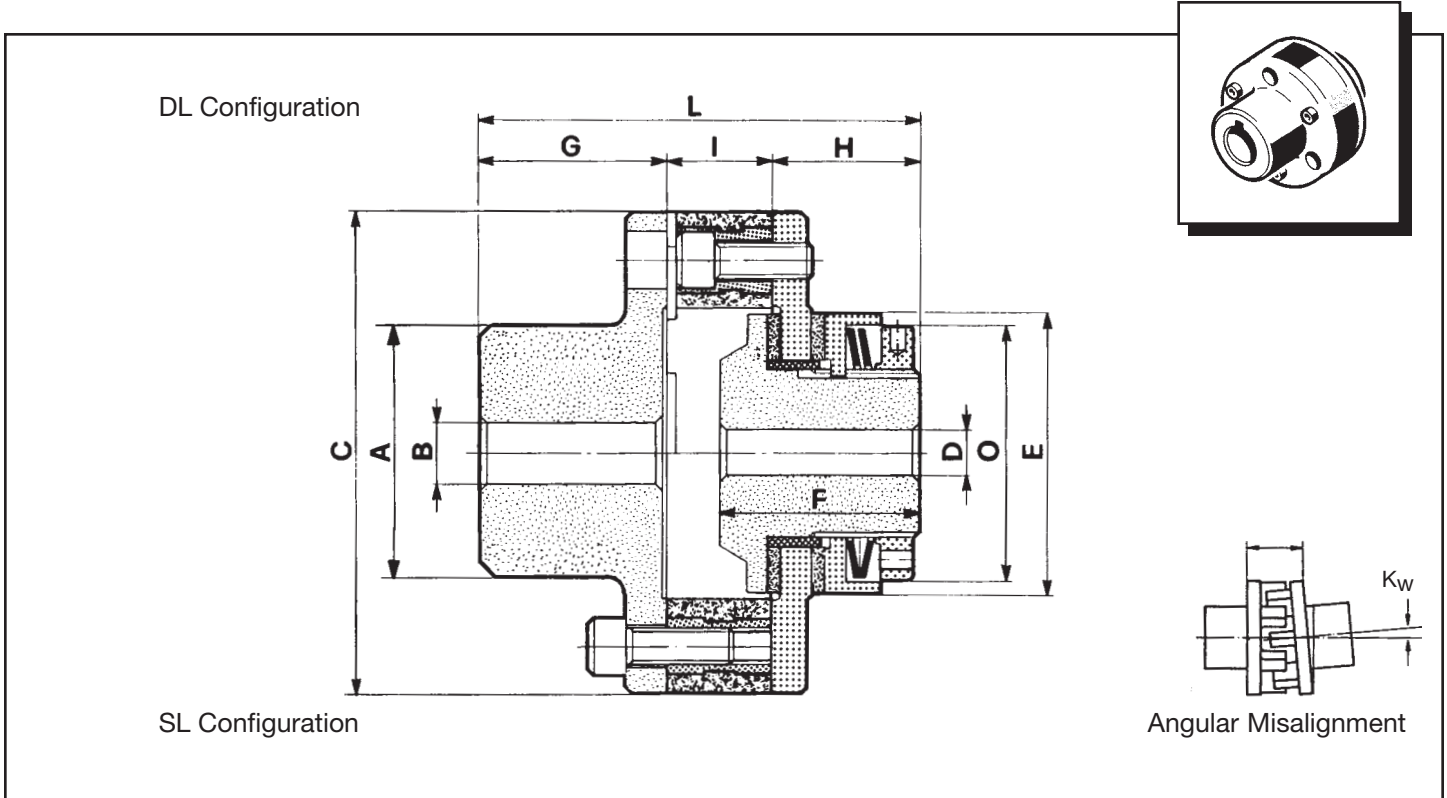
SIZE	SL		TORQUES (Nm)				A	B	C	D	E	F	G ^{H8} BORE		H ^{H8} BORE		O	K _A	K _W
	MIN	MAX	MIN	MAX	MIN	MAX							MIN	MAX	MIN	MAX			
50	3	15	7.5	30	—	—	50	20	50	75	35	57	12	30	8	20	46	0.20	30'
70	14	70	35	140	60	200	70	28	70	102	55	85	16	35	10	25	63	0.25	30'
90	25	125	63	250	120	400	90	45	90	126	60	108	20	45	15	35	82	0.30	30'
115	50	250	125	550	240	800	110	55	115	156	70	128	25	55	20	45	105	0.35	30'
140	110	550	275	1100	480	1600	130	60	140	200	80	145	30	65	25	55	129	0.40	30'
170	140	700	350	1400	630	2100	130	85	170	224	95	184	30	75	30	65	159	0.50	30'
200	240	1200	600	2400	—	—	150	100	202	291	105	208	40	90	40	80	193	0.80	30'
240	400	2000	1000	4000	—	—	170	120	242	310	120	244	50	110	50	100	230	1.00	30'

INCH Dimensions

SIZE	SL		TORQUES (lb-in)				A	B	C	D	E	F	G ^{H8} BORE		H ^{H8} BORE		O	K _A	K _W
	MIN	MAX	MIN	MAX	MIN	MAX							MIN	MAX	MIN	MAX			
50	27	133	66	266	—	—	1.97	0.79	1.97	2.95	1.38	2.24	0.47	1.18	0.31	0.79	1.81	0.008	30'
70	125	620	310	1239	531	1770	2.76	1.10	2.76	4.02	2.17	3.35	0.63	1.38	0.39	0.98	2.48	0.010	30'
90	221	1106	558	2213	1062	3540	3.54	1.77	3.54	4.96	2.36	4.25	0.79	1.77	0.59	1.38	3.23	0.012	30'
115	443	2213	1106	4868	2124	7081	4.33	2.17	4.53	6.14	2.76	5.04	0.98	2.17	0.79	1.77	4.13	0.014	30'
140	974	4808	2434	9736	4249	14162	5.12	2.36	5.51	7.87	3.15	5.71	1.18	2.56	0.98	2.17	5.08	0.016	30'
170	1239	6196	3098	12392	5576	18588	5.12	3.35	6.69	8.82	3.74	7.24	1.18	2.95	1.18	2.56	6.26	0.020	30'
200	2124	10621	5311	21243	—	—	5.91	3.94	7.95	11.46	4.13	8.19	1.57	3.54	1.57	3.15	7.60	0.031	30'
240	3540	17702	8851	35405	—	—	6.69	4.72	9.53	12.20	4.72	9.61	1.97	4.33	1.97	3.94	9.06	0.039	30'

RFC FRICTION TORQUE LIMITERS — Flexible Coupling Combination

FCC.../FL



METRIC Dimensions

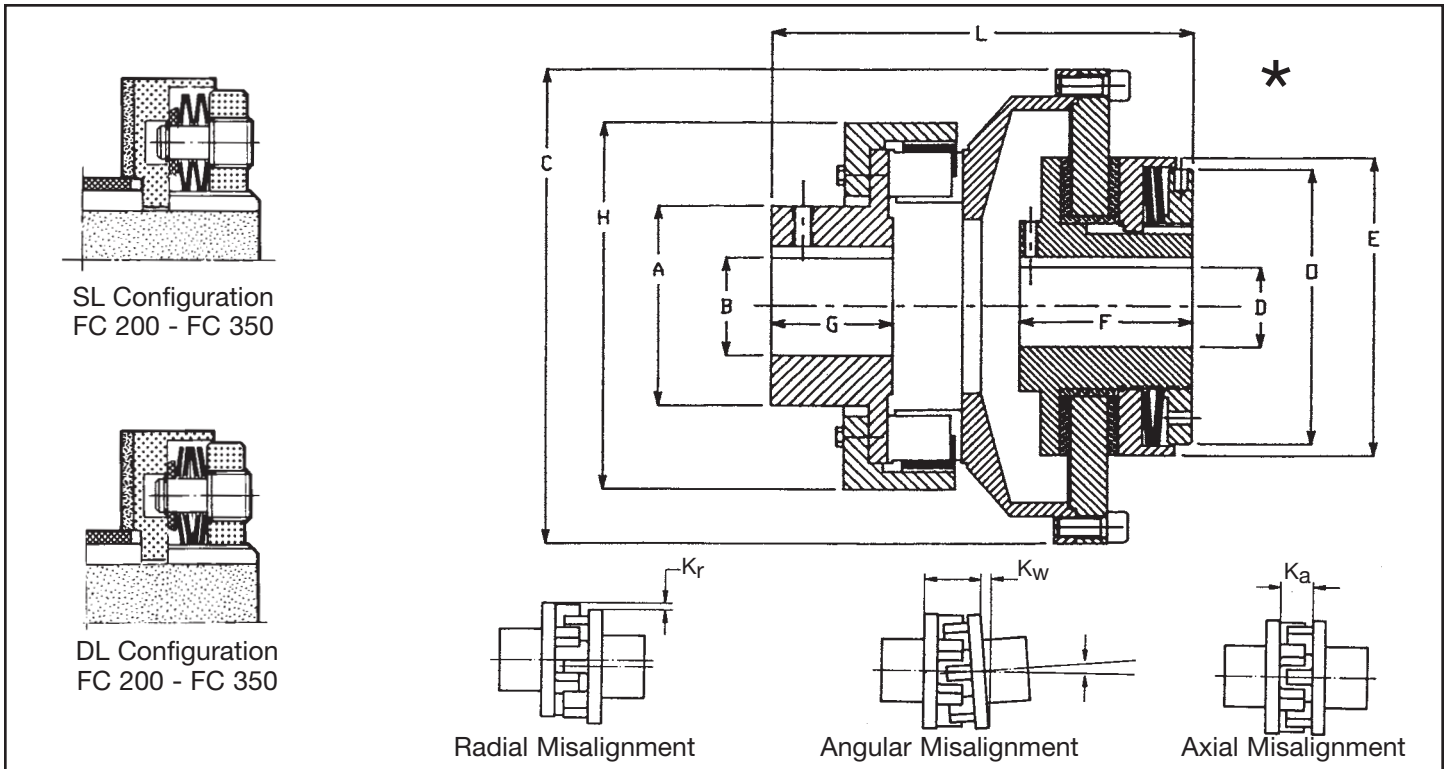
SIZE	TORQUES (Nm)						A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	I	L	O	MAX SPEED (RPM)	K _w
	SL MIN	SL MAX	DL MIN	DL MAX	TL MIN	TL MAX		MIN	MAX		MIN	MAX									
50	3	15	7.5	30	—	—	42	8	25	80	8	20	50	38	40	35	18	93	46	7500	3°
70	14	70	35	140	60	200	70	10	45	125	10	25	70	55	55	41	28	124	63	5600	3°
90	25	125	63	250	120	400	90	20	60	155	15	35	90	60	60	44	34	138	82	4300	3°
115	50	250	125	550	240	800	110	25	70	172	20	45	115	70	70	62	38	170	105	3300	3°
140	110	550	275	1100	480	1600	130	30	85	193	25	55	140	80	100	81	42	223	129	2700	3°
170	140	700	350	1400	630	2100	150	35	100	233	30	65	170	95	120	96	48	264	159	2200	3°

INCH Dimensions

SIZE	TORQUES (lb-in)						A	B BORE		C	D BORE		E	F	G	H	I	L	O	MAX SPEED (RPM)	K _w
	SL MIN	SL MAX	DL MIN	DL MAX	TL MIN	TL MAX		MIN	MAX		MIN	MAX									
50	27	133	66	266	—	—	1.65	0.31	0.98	3.15	0.31	0.79	1.97	1.50	1.57	1.38	0.709	3.66	1.81	7500	3°
70	125	620	310	1239	531	1770	2.76	0.39	1.77	4.92	0.39	0.98	2.76	2.17	2.17	1.61	1.102	4.88	2.48	5600	3°
90	221	1106	558	2213	1062	3540	3.54	0.79	2.36	6.10	0.59	1.38	3.54	2.36	2.36	1.73	1.339	5.43	3.23	4300	3°
115	443	2213	1106	4868	2124	7081	4.33	0.98	2.76	6.77	0.79	1.77	4.53	2.76	2.76	2.44	1.496	6.69	4.13	3300	3°
140	974	4808	2434	9736	4249	14162	5.12	1.18	3.35	7.60	0.98	2.17	5.51	3.15	3.94	3.19	1.654	8.78	5.08	2700	3°
170	1239	6196	3098	12392	5576	18588	5.91	1.38	3.94	9.17	1.18	2.56	6.69	3.74	4.72	3.78	1.890	10.39	6.26	2200	3°

RFC FRICTION TORQUE LIMITERS — MMS Coupling Combination

FCC.../MS



METRIC Dimensions

SIZE	TORQUES (Nm)						A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	L	O	MAX SPEED (RPM)	WEIGHT (kg)	K _R	K _A	K _W
	SL MIN	SL MAX	DL MIN	DL MAX	TL MIN	TL MAX		MIN	MAX		MIN	MAX											
40	1.5	7.5	3.8	15	—	—	55	8	35	96	5	12	38	28	40	77	104.5	35	9800	2.3	0.5	1.0	1.0
50	3	15	7.5	30	—	—	72	10	45	80	8	20	50	35	48	114	118	46	7100	3.7	0.6	1.0	1.2
70	14	70	35	140	60	200	78	10	50	137	10	25	70	55	52	127	141	63	5600	5.7	0.6	1.0	1.3
90	25	125	63	250	120	400	96	20	60	170	15	35	90	60	61	156	170	82	4300	10.6	0.7	1.2	1.5
115	50	250	125	550	240	800	120	25	75	230	20	45	115	70	75	202	206	105	3300	22.1	0.9	1.2	1.7
140	110	550	275	1100	480	1600	120	25	75	230	25	55	140	80	75	202	206	129	2700	24.7	0.9	1.2	1.7
170	140	700	350	1400	630	2100	130	30	80	300	30	65	170	95	82	230	256	159	2200	39.8	1.0	1.5	1.8
200	240	1200	600	2400	—	—	145	35	90	300	40	80	202	105	89	257	275	193	1900	49	1.2	1.5	2.0
240	400	2000	1000	4000	—	—	160	45	100	380	50	100	242	120	97	290	327	230	1600	85.6	1.4	1.5	2.2
300	700	3500	1750	7000	—	—	192	63	120	380	60	120	300	130	116	330	359	287	1250	124	1.6	1.5	2.4

INCH Dimensions

SIZE	TORQUES (lb-in)						A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	L	O	MAX SPEED (RPM)	WEIGHT (lbs)	K _R	K _A	K _W
	SL MIN	SL MAX	DL MIN	DL MAX	TL MIN	TL MAX		MIN	MAX		MIN	MAX											
40	13	66	34	133	—	—	2.17	0.31	1.38	3.78	0.20	0.47	1.50	1.10	1.57	3.03	4.11	1.38	9800	5.1	0.02	0.04	0.04
50	27	133	66	266	—	—	2.83	0.39	1.77	3.15	0.31	0.79	1.97	1.38	1.89	4.49	4.65	1.81	7100	8.1	0.02	0.04	0.05
70	125	620	310	1239	531	1770	3.07	0.39	1.97	5.39	0.39	0.98	2.76	2.17	2.05	5.00	5.55	2.48	5600	12.5	0.02	0.04	0.05
90	221	1106	558	2213	1062	3540	3.78	0.79	2.36	6.69	0.59	1.38	3.54	2.36	2.40	6.14	6.69	3.23	4300	23.3	0.03	0.05	0.06
115	443	2213	1106	4868	2124	7081	4.72	0.98	2.95	9.06	0.79	1.77	4.53	2.76	2.95	7.95	8.11	4.13	3300	48.6	0.04	0.05	0.07
140	974	4808	2434	9736	4249	14162	4.72	0.98	2.95	9.06	0.98	2.17	5.51	3.15	2.95	7.95	8.11	5.08	2700	54.3	0.04	0.05	0.07
170	1239	6196	3098	12392	5576	18588	5.12	1.18	3.15	11.81	1.18	2.56	6.69	3.74	3.23	9.06	10.08	6.26	2200	87.6	0.04	0.06	0.07
200	2124	10621	5311	21243	—	—	5.71	1.38	3.54	11.81	1.57	3.15	7.95	4.13	3.50	10.12	10.83	7.60	1900	107.8	0.05	0.06	0.08
240	3540	17702	8851	35405	—	—	6.30	1.77	3.94	14.96	1.97	3.94	9.53	4.72	3.82	11.42	12.87	9.06	1600	188.3	0.06	0.06	0.09
300	6196	30979	15490	61958	—	—	7.56	2.48	4.72	14.96	2.36	4.72	11.81	5.12	4.57	12.99	14.13	11.30	1250	272.8	0.06	0.06	0.09

*Note: Coupling construction may vary slightly depending on size. Please obtain exact design before ordering.

RFC *Torque Limiters offer a variety of combinations to meet your specific needs. Please contact us for more information on any of the products shown below.*

RFC FRICTION TORQUE LIMITERS — Type FC

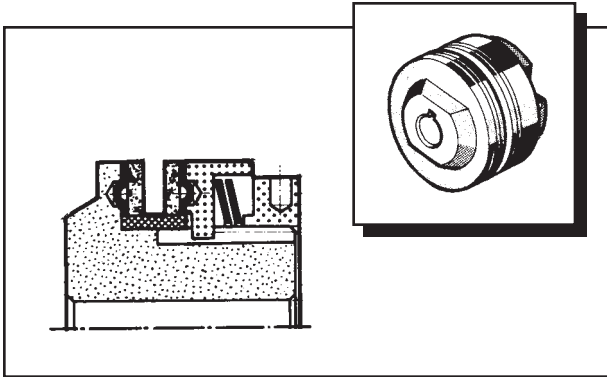


Fig. 9
Friction Torque Limiter with Rust Proof Linings — FC.../RP

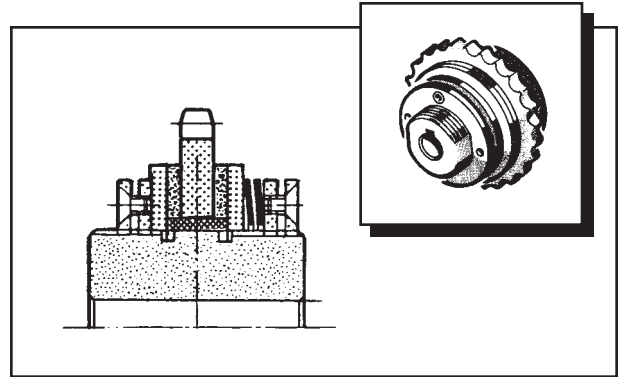


Fig. 10
Friction Torque Limiter complete with Sprocket — FC.../SP

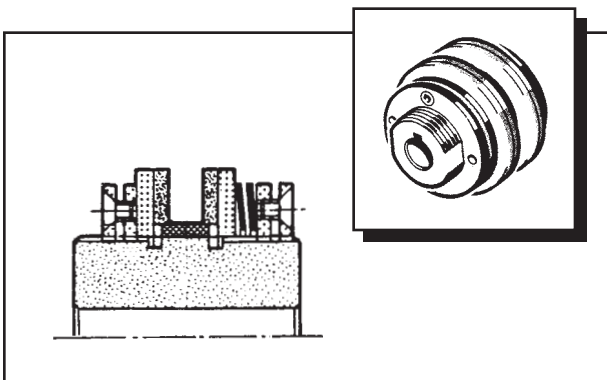


Fig. 11
Friction Torque Limiter with Axial adjustment — FC.../AX

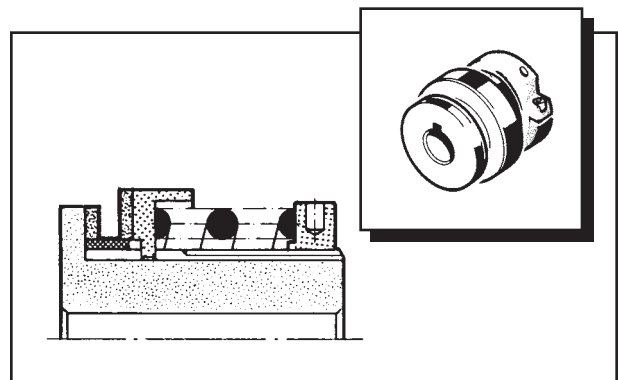


Fig. 12
Friction Torque Limiter for lower torques — FC.../LT

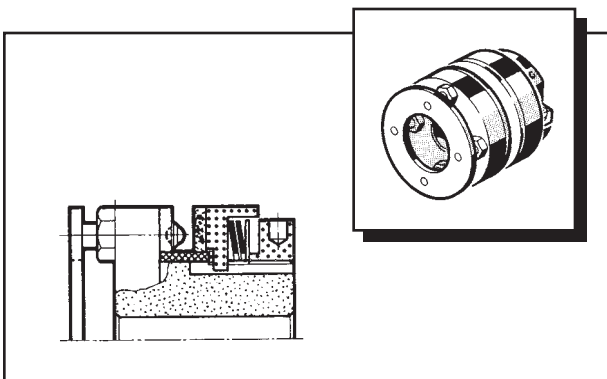


Fig. 13
Friction Torque Limiter with Overload signal — FC.../OS

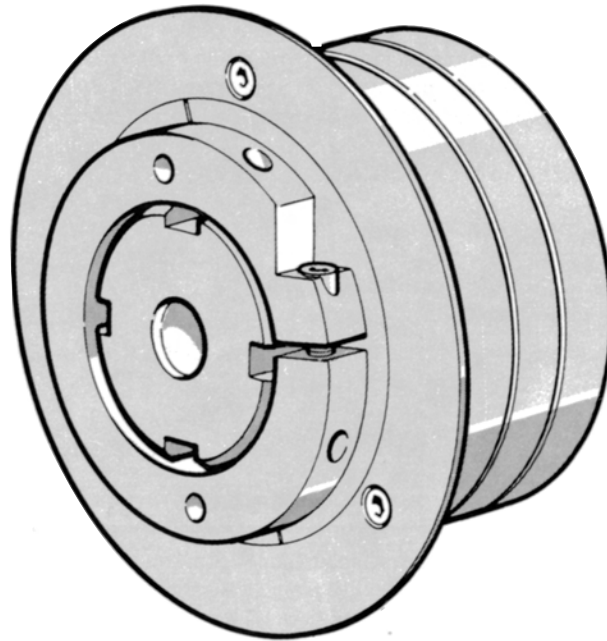
*Please contact us
for your specific needs.*

CAUTION

All rotating equipment is potentially dangerous and must be properly guarded. It is the user's responsibility to check for all applicable safety codes and provide suitable guards and protection.

BALL DETENT TORQUE LIMITERS

Type BD



BALL DETENT TORQUE LIMITERS — Type BD

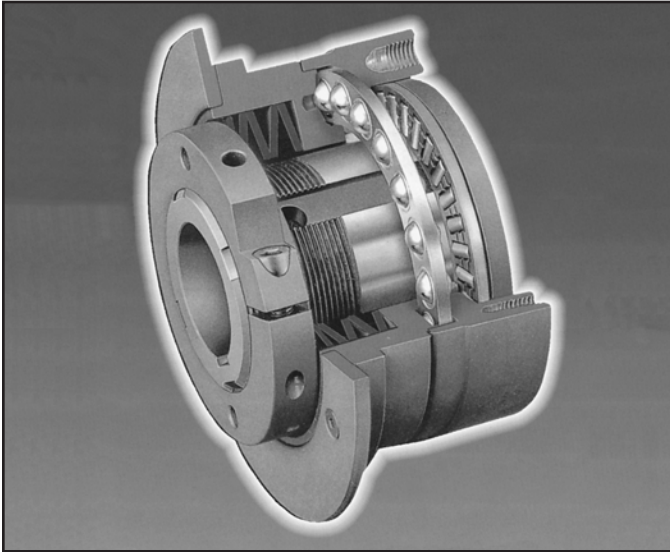


Fig. 14

BENEFITS and FEATURES

BALL DETENT TORQUE LIMITERS, Type BD, are economical and effective mechanical devices designed to protect rotating machine components and machines from damage or destruction in case of a jam-up or an overload. When an overload occurs, the torque limiter will quickly and accurately disengage at a pre-set torque value and trip an optional mechanical, optical or proximity limit switch. This limit switch signal is then used to either alert an operator or shut-off the drive immediately or do both simultaneously. The torque limiter should be set to a torque value that is higher than the normal start-up and operating torque, but less than the possible higher torque that could cause damage to the weakest drive train component.

Our units, designed with the highest quality materials and workmanship and in accordance to ISO 9000 standards, offer the following features:

- Reliable, accurate and consistent disengagement at the set torque value — it depends only on disc springs and balls or rollers.
- Easily adjustable over a wide torque range — to meet specific needs of operating and start-up conditions.
- Operate in either direction of rotation.
- Quick and automatic resetting — reduction of expensive downtime.
- Two types available:
 - Type BDR — Automatic Random Reset
 - Type BDS — Automatic Single Position ResetEach is available in various Models to meet a variety of specific requirements.

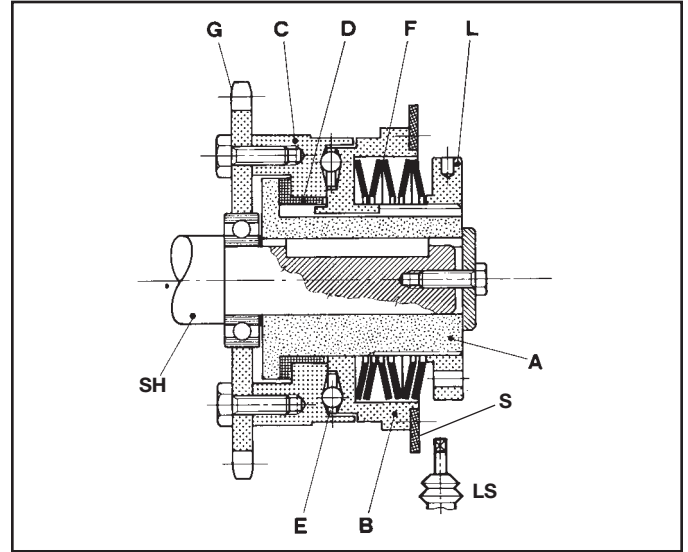


Fig. 15

OPERATING PRINCIPLE

Torque transmission between a shaft SH and a driven component G is achieved by means of a series of caged drive balls or rollers E which are seated in detents in opposing faces of fixed pressure flange C and sliding control element B. They are held under pressure by disc springs F which are compressed by adjusting nut L. The adjusting nut is threaded onto hub A and it is used for easy adjustment of desired release torque setting. The control element B is splined to the hub A which is keyed to shaft SH. Please refer to Fig. 15. This whole assembly rotates as one and provides a positive drive under normal operating conditions (See Figs. 16 and 19.1).

When a jam or an overload occurs and the torque reaches the pre-set value, the balls start to roll out from their detents overcoming the thrust of the spring load and forcing the control element to move axially. At this point, the switch plate S which is attached to the control element starts making contact with the limit switch LS (Figs. 19.2 and 17). With the overload increasing further, the balls roll completely out of their detents and the additional axial movement H of the control element and switch plate trips the limit switch (Figs. 18 and 19.3, 4).

This signal should be used to shut-off the drive promptly and alert the operator. If the overload is not removed, the limiter will continue to “trip out” until the overload is removed. However, the limiter must not be allowed to ratchet for any extended time in order to prevent wear and damage of the ball or roller seat surfaces.

OPERATING DETAILS

Normal Operation

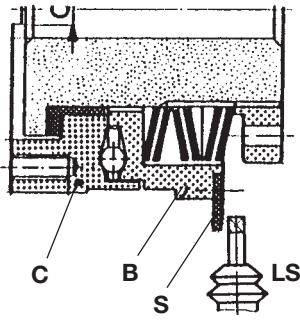


Fig. 16

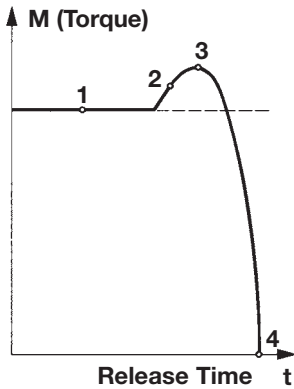


Fig. 17

Full Disengagement

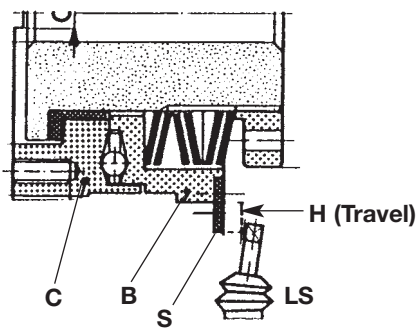
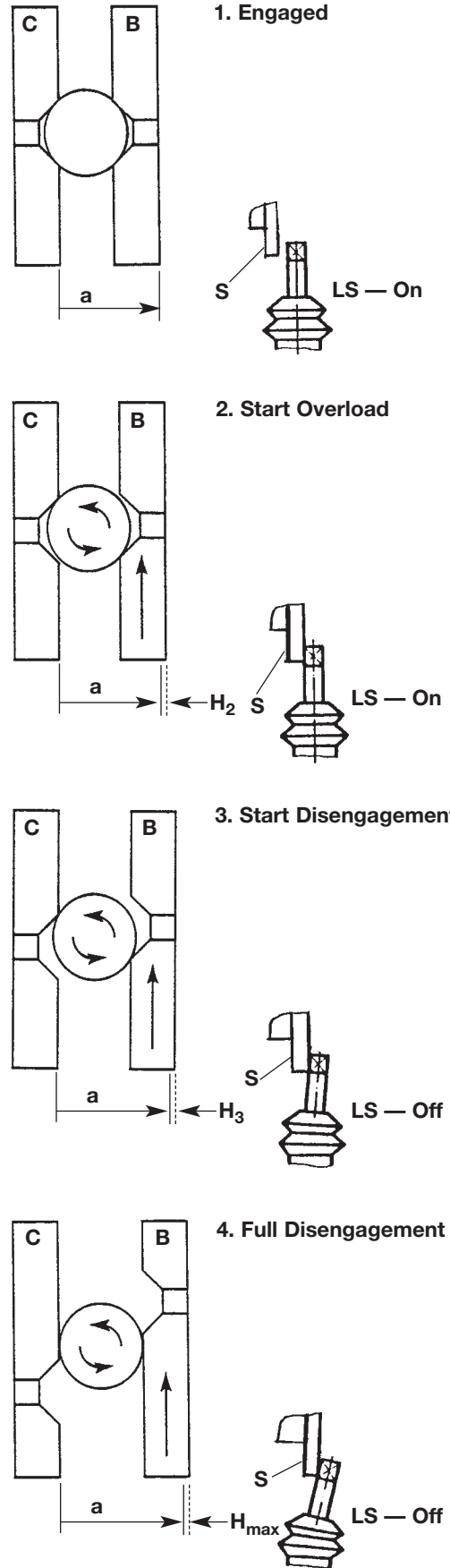


Fig. 18

Fig. 19



FUNCTION

There are two Basic Types available:

TYPE BDR — Automatic Random Reset

The BDR Limiter has a series of caged balls seated in equally spaced detents between the pressure flange C and control element B (See Fig. 20). Upon receiving an overload, the balls roll from their initial location to the adjacent detent causing an axial movement of the control element. This movement actuates a mechanical limit switch or a proximity sensor to shut down the drive. After the overload is removed, the balls settle in this new position and the limiter is automatically reset. If the overload is not removed, the limiter will continue to “trip out” until the overload is removed. However, the limiter must not be allowed to ratchet through for any extended time in order to prevent wear or damage to the ball seating surfaces.

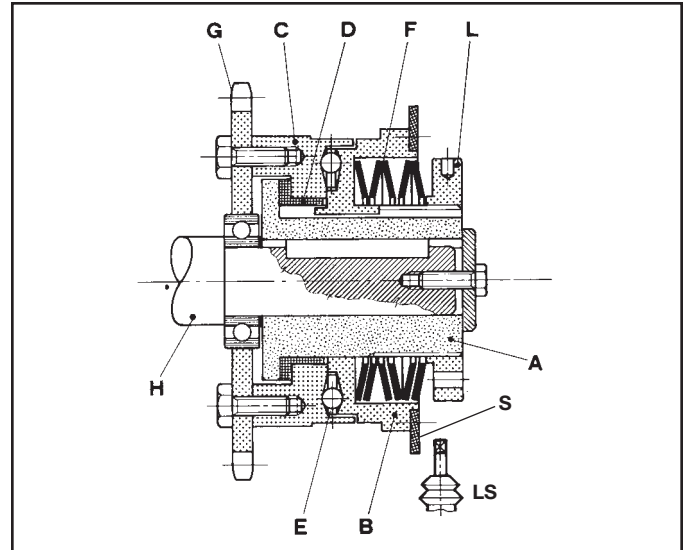
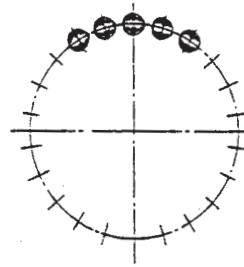


Fig. 20



TYPE BDS — Automatic Single Position Reset

The BDS Limiter functions on the same principle as the BDR except that it uses a series of rollers instead of balls. The rollers are arranged in a specific pattern and kept captive in the pressure flange (See Fig. 21). Matching detents are provided in the control element.

When an overload occurs, the rollers slide out of their detents forcing the control element to move axially to contact the limit switch. During rotation with the rollers out of their detents, sliding occurs between rollers and the ground, smooth surface of the control element, assuring a low residual torque. If necessary, this residual torque can be reduced further by replacing the bronze bushing D with a needle bearing.

Since the rollers are arranged in an irregular pattern, they will meet their corresponding detents again only after one full revolution. This guarantees a fully synchronized re-engagement.

When the overload has been removed, the limiter is automatically reset to its original position by clockwise or counter clockwise rotation. If the overload is still present, the limiter will continue to rotate through its detent setting until the overload is removed or the machine is stopped. Here again the limiter must not be allowed to rotate for a long time.

Other available combinations of re-engagement positions, upon request, are: 1/2, 1/3, 1/4, 1/5, 1/6 of a revolution.

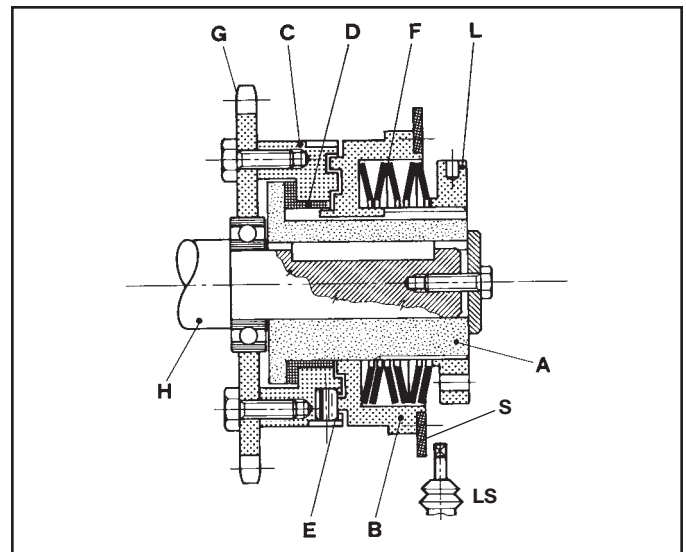
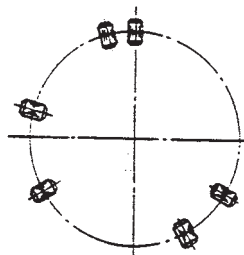


Fig. 21



GENERAL INFORMATION

TORQUE ADJUSTMENT

BD Torque Limiters up to and including Size 200

Torque adjustments are easily achieved by turning the adjusting nut incrementally to compress the disc springs, thereby increasing the torque setting proportionately. A face or hook wrench (Table 3) is used for this purpose. Once the desired torque setting is reached, the locking screw located in the adjusting nut should be tightened.

The BDR and BDS Torque Limiters have three possible torque ranges per unit size depending on the thickness and orientation of the disc springs (See Fig. 20).

BD Torque Limiters Sizes 230 and Larger

As with the larger Friction Torque Limiters, the torque setting is accomplished with a series of smaller diameter disc spring packs mounted on an adjusting screw which are screwed into the adjusting nut. By using 3, 6 or 12 spring packs and varying the adjusting screw travel, three torque setting ranges per unit size can be achieved.

For details, please refer to the Torque Rating Specifications.

Mounting on the Shaft

The Torque Limiter should be keyed to the shaft to avoid slipping. If it is fitted on the end of the shaft, it is usually secured with a bolt and an end cap (See Fig. 20). If it is to be mounted midshaft, appropriate shoulders or spacers are required.

Torque Limiter hubs can be supplied with a pilot bore or finished bore with recommended bore tolerances per Table 1 and a square keyway per ANSI B17.1 if not otherwise specified.

Attachment of the Driven Component

The driven component G, such as sprocket, sheave, timing belt pulley, etc., is generally bolted to the flange C by means of provided tapped holes (See Fig. 20 and specifications in the catalog).

Please note that the basic model of the Torque Limiter is not suitable to support radial loads.

Therefore, the driven component G must be supported on the shaft by means of a bearing or bushing as shown in Fig. 20.

There are various other models available with extended support hubs to meet this requirement as illustrated in this catalog.

Drive Shut-Down on Overload

We highly recommend that in all applications an automatic mechanism, such as a limit or proximity switch, be provided to quickly shut down the drive when an overload condition occurs. All our BD-Torque Limiters are equipped with a Switch Plate S which generates an axial movement H to trip or actuate the limit switch (See Figs. 16 and 19). For this purpose, we also offer our own, special limit switch (See pg. 34).

Maintenance

The drive balls or rollers and bronze bushings or needle bearings of our units are packed with grease at assembly. Under normal, reasonably clean conditions or with suitable cover, the unit should perform properly with an annual inspection and regreasing. However, for operation in adverse, ambient operating conditions, our engineering department should be consulted.

GENERAL SAFETY PRECAUTIONS

RFC Torque Limiters are manufactured for reliability and high standard of workmanship.

Similar to all mechanical devices each application must be considered on its own merits with regard to safety (i.e. lifting equipment, explosive conditions, etc.).

All rotating equipment is potentially dangerous and must be properly guarded. It is the user's responsibility to check for all applicable safety codes and provide suitable guards and protection. Our staff is always available to discuss special applications.

HOW TO ORDER

Specify Torque Limiter type, size, configuration and spring orientation and desired bore.

Example 1:

Friction Torque Limiter size 140 with Reduced Diameter and single layer springs with pilot bore —
FC 140/RD SL Pilot Bore

Example 2:

Random Reset Ball Detent Torque Limiter size 90 with extended hub and spring configuration 3 with 0.875 finished bore and key —
BDR 90.3/SH with 0.875 bore and key

APPLICATIONS

There are a multitude of applications for Torque Limiters in combination with sprockets, sheaves, timing belt pulleys, gears, flexible couplings, etc. in:

- Packaging Machinery
- Textile Machinery
- Conveying Equipment
- Assembly Machines
- Automation and Feeding Equipment
- Machine Tools
- Food Processing Machines
- Material Handling Equipment
- Wood Working Machines
- Chemical Processing Equipment

SELECTION GUIDE

The wide range of mounting configurations and torque capacities of our Torque Limiters makes it easy to find a standard unit to meet your requirements.

Step 1:

Since the Torque Limiter is intended to protect the weakest member of the drive train, it should always be located as close as possible to the component being protected.

Recommended locations for BDR or BDS limiter are shown in Figs. 22, 23 and 24. When other locations are necessary, please consult with us.

Step 2:

Determine overload release torque by one of these methods:

- a) Calculate theoretical running torque at selected limiter location using the following equation and a service factor K (Table 4) for start-up, high inertia starts or peak load conditions.

$$\text{Release Torque (in-lbs)} = \frac{\text{HP} \times 63,000 \times K}{\text{RPM}}$$

Table 4

Driving Machine	Hydraulic Motor Electric Motor	4/6 Cyl. Combustion Eng.	1/3 Cyl. Combustion Eng.
Standard smooth running	1 - 1.1	1.2 - 1.3	1.5
Uneven running with slight shocks	1.3 - 1.5	1.7 - 2	2.5
Uneven running with medium shocks and counterweight	1.8 - 2	2.3 - 2.5	3
Uneven running with counter weights and strong shocks	2.3 - 2.5	2.8 - 3	3.5

- b) Determine “weak link” in drive train and it’s maximum torque rating. The selected overload release torque must be lower than the maximum torque rating of the “weak link”.

Step 3:

Determine bore sizes and keyways.

- a) Shaft size at Torque Limiter location determines Limiter bore size.
- b) Shaft size at coupling location determines coupling bore size. (If applicable!)

Step 4:

Select from the specification tables the Torque Limiter size and model that meets your requirements or contact us for assistance.

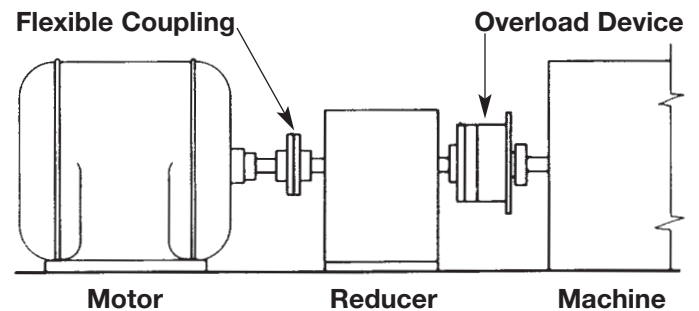


Fig. 22

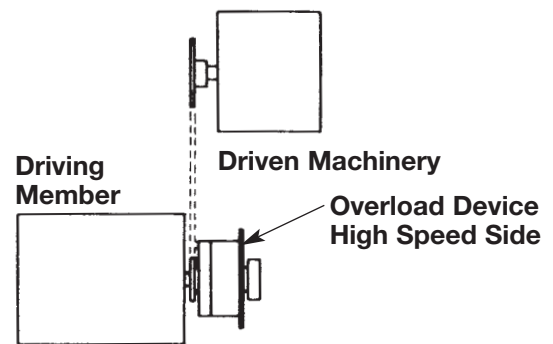


Fig. 23

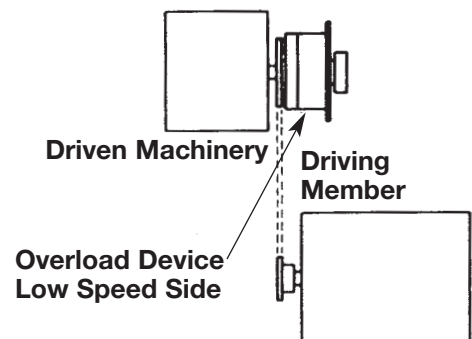


Fig. 24

TORQUE RATING SPECIFICATIONS

METRIC SPECIFICATIONS

TORQUE LIMITER SIZE	NUMBER OF SPRINGS	SPRING ARRANGEMENT	SPRING TYPE	TORQUES BDR (Nm)		BDR MAX SPEED (RPM)	TORQUES BDS (Nm)		BDS MAX SPEED (RPM)	MAX SHAFT SIZE MM
				MIN	MAX		MIN	MAX		
BD_70 .1 .2 .3	5 5 6	SL SL DL	0/1 0/2 0/2	2.5 5 10	5 10 20	4300 2150	5 10 20	10 20 40	1430 710 315	20
BD_90 .1 .2 .3	7 5 5	SL SL SL	1/1 1/2 1/3	6 12 25	12 25 50	2880 1440	12 25 50	25 50 100	980 480 240	25
BD_110 .1 .2 .3	6 5 4	SL SL SL	2/1 2/2 2/3	12 25 50	25 50 100	2360 1180	25 50 100	50 100 200	790 390 200	35
BD_130 .1 .2 .3	6 5 4	SL SL SL	3/1 3/2 3/3	25 50 100	50 100 200	2000 1000	50 100 200	100 200 400	660 330 160	45
BD_160 .1 .2 .3	6 5 4	SL SL SL	4/1 4/2 4/3	50 100 200	100 200 400	1660 830	100 200 400	200 400 800	550 270 130	55
BD_200 .1 .2 .3	7 5 5	SL SL SL	5/1 5/2 5/3	90 180 350	180 350 700	1360 680	175 350 700	350 700 1400	400 200 100	65
BD_230 .1 .2 .3	NUMBER OF SPRING PACKS									
			3 6 12	150 300 600	300 600 1200	600	300 600 1200	600 1200 2400	— — —	75
BD_270 .1 .2 .3			3 6 12	250 500 1000	500 1000 2000	500	500 1000 2000	1000 2000 4000	— — —	100

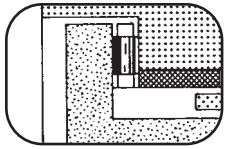
INCH SPECIFICATIONS

TORQUE LIMITER SIZE	NUMBER OF SPRINGS	SPRING ARRANGEMENT	SPRING TYPE	TORQUES BDR (IN-LBS)		BDR MAX SPEED (RPM)	TORQUES BDS (IN-LBS)		BDS MAX SPEED (RPM)	MAX SHAFT SIZE INCH
				MIN	MAX		MIN	MAX		
BD_70 .1 .2 .3	5 5 6	SL SL DL	0/1 0/2 0/2	22 44 89	44 89 177	4300 2150	44 89 177	89 177 354	1430 710 315	0.78
BD_90 .1 .2 .3	7 5 5	SL SL SL	1/1 1/2 1/3	53 89 221	106 178 443	2880 1440	106 221 443	212 443 885	980 480 240	1.00
BD_110 .1 .2 .3	6 5 4	SL SL SL	2/1 2/2 2/3	106 221 443	212 443 885	2360 1180	221 443 885	443 885 1770	790 390 200	1.375
BD_130 .1 .2 .3	6 5 4	SL SL SL	3/1 3/2 3/3	221 443 885	443 885 1770	2000 1000	443 885 1770	885 1770 3540	660 330 160	1.75
BD_160 .1 .2 .3	6 5 4	SL SL SL	4/1 4/2 4/3	443 885 1770	885 1770 3540	1660 830	885 1770 3540	1770 3540 7081	550 270 130	2.187
BD_200 .1 .2 .3	7 5 5	SL SL SL	5/1 5/2 5/3	797 1593 3098	1593 3186 6196	1360 680	1549 3098 6196	3098 6196 12391	400 200 100	2.56
BD_230 .1 .2 .3	NUMBER OF SPRING PACKS									
			3 6 12	1328 2655 5310	2655 5310 10621	600	2655 5310 10621	5310 10621 21242	— — —	2.953
BD_270 .1 .2 .3			3 6 12	2213 4425 8851	4425 8851 17701	500	4425 8851 17701	8851 17701 35403	— — —	3.937

RFC BALL DETENT TORQUE LIMITERS —

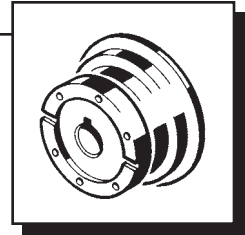
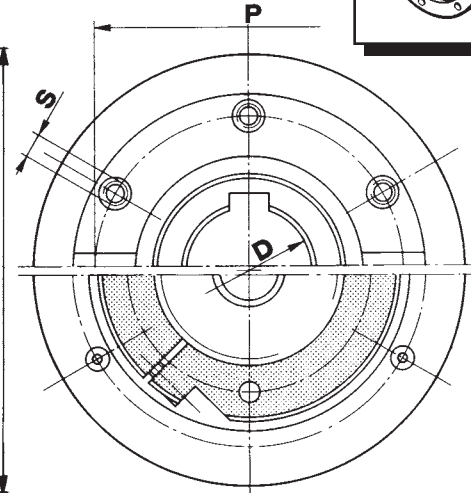
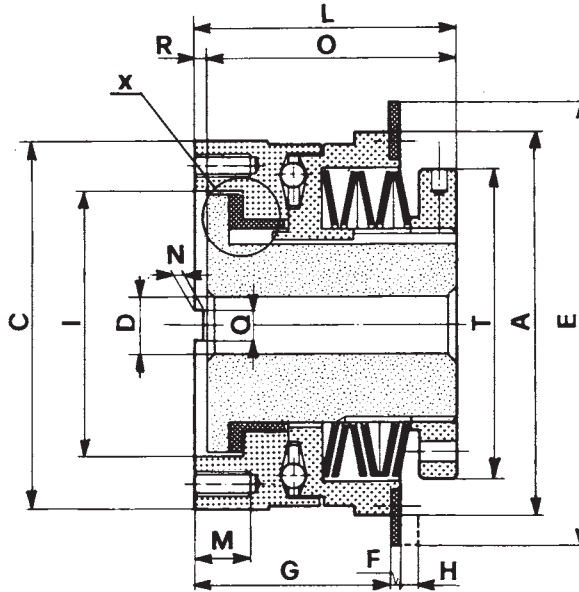
Basic Unit: Sizes 70-200

**BDR/
BDS...**



Det. X
Version with Bearing is
Available on Request

SL Spring Configuration



DL Spring Configuration

METRIC Dimensions

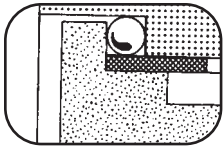
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			MIN	MAX													QTY	SIZE		
70	66	55	8	20	80	3	30	1.4	41	46	8	3.0	42	48	6	4	6	M5	42	0.5
90	90	85	10	25	105	3	47	2.9	60	62	12	3.0	58	72	6	4	6	M6	63	1.5
110	110	105	15	35	130	4	57	3.0	80	74	15	3.5	70	92	8	4	6	M6	82	2.7
130	130	125	20	45	150	4	69	3.0	90	86	15	4.0	82	108	10	4	6	M8	105	4.7
160	160	148	25	55	180	4	85	3.5	105	105	20	4.0	99	125	12	6	6	M10	129	9.8
200	194	176	28	65	220	4	98	4.5	120.5	124.5	20	4.5	118	155	14	6.5	6	M12	159	19.2

INCH Dimensions

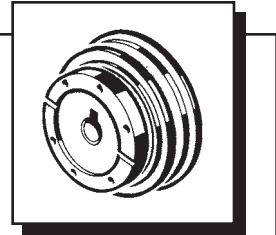
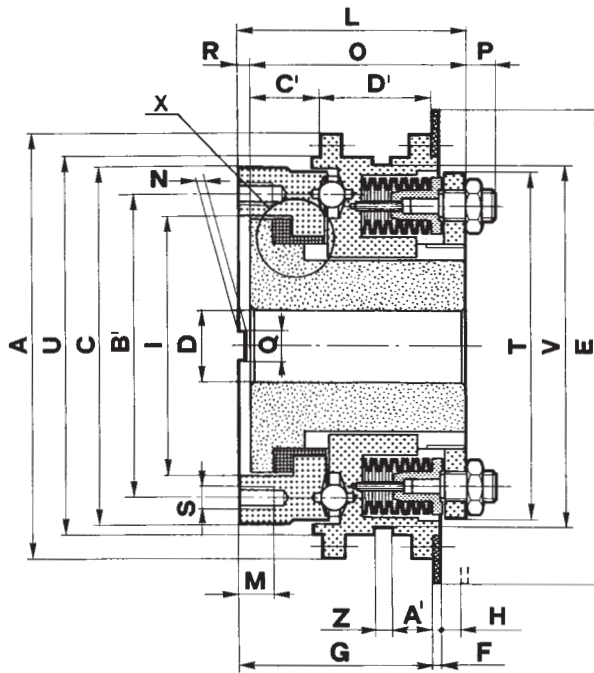
SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	WEIGHT (lbs)
			MIN	MAX													QTY	SIZE		
70	2.60	2.17	0.31	0.79	3.15	0.12	1.18	0.06	1.614	1.81	0.31	0.12	1.65	1.890	0.24	0.16	6	M5	1.65	1.1
90	3.54	3.35	0.39	0.98	4.13	0.12	1.85	0.08	2.362	2.44	0.47	0.12	2.28	2.835	0.24	0.16	6	M6	2.48	3.3
110	4.33	4.13	0.59	1.38	5.12	0.16	2.24	0.12	3.150	2.91	0.59	0.14	2.76	3.622	0.31	0.16	6	M6	3.23	5.9
130	5.12	4.92	0.79	1.77	5.91	0.16	2.72	0.12	3.543	3.39	0.59	0.16	3.23	4.252	0.39	0.16	6	M8	4.13	10.3
160	6.30	5.83	0.98	2.17	7.09	0.16	3.35	0.14	4.134	4.13	0.79	0.16	3.90	4.921	0.47	0.24	6	M10	5.08	21.6
200	7.64	6.93	1.10	2.56	8.66	0.16	3.86	0.18	4.744	4.90	0.79	0.18	4.65	6.102	0.55	0.26	6	M12	6.26	42.2

RFC BALL DETENT TORQUE LIMITERS — Basic Unit: Sizes 230-270

**BDR/
BDS...**



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METRIC Dimensions

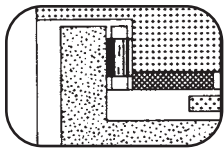
SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z	A'	B'	C'	D'
			MIN	MAX													QTY	SIZE								
230	225	189	38	75	250	5	104	5.0	136	122	18	5.1	115	15	16	7	6	M12	183	200	190	9	22.5	160	38	59
270	265	229	48	100	290	5	122	6.0	168	141	23	5.6	133	15	18	8	6	M16	227	240	230	9	26.5	200	39	75

INCH Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z	A'	B'	C'	D'
			MIN	MAX													QTY	SIZE								
230	8.86	7.44	1.50	2.95	9.84	0.20	4.09	0.20	5.35	4.80	0.71	0.20	4.53	0.59	0.63	0.28	6	M12	7.20	7.87	7.48	0.35	0.89	6.30	1.50	2.32
270	10.43	9.02	1.89	3.94	11.42	0.20	4.80	0.24	6.61	5.55	0.91	0.22	5.24	0.59	0.71	0.31	6	M16	8.94	9.45	9.06	0.35	1.04	7.87	1.54	2.95

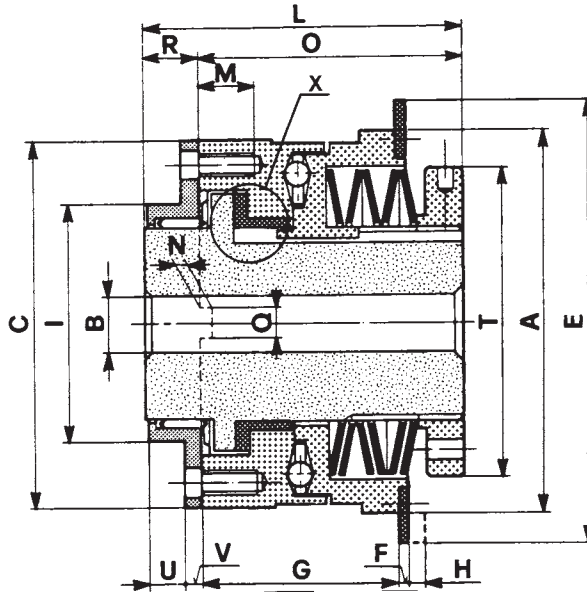
RFC BALL DETENT TORQUE LIMITERS — With Short Supported Hub: Sizes 70-200

**BDR/
BDS.../SH**

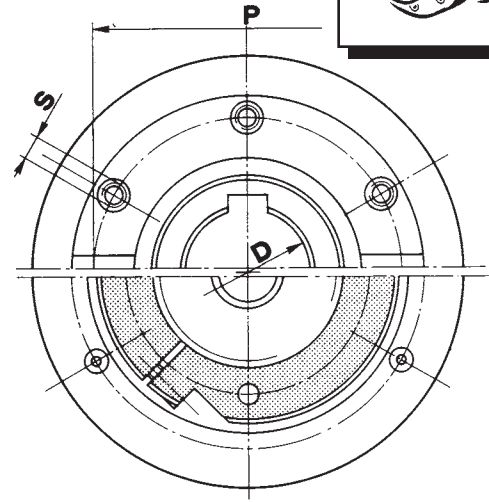


Det. X
Version with Bearing is
Available on Request

SL Spring Configuration



DL Spring Configuration



METRIC Dimensions

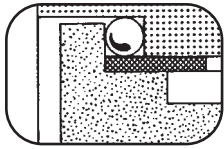
SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V
			MIN	MAX													QTY	SIZE			
70	66	55	8	20	80	3	30	1.2	38	59	8	3.0	46	48	6	13	6	M5	42	8.5	4.5
90	90	85	10	25	105	3	46	2.0	50	80	12	3.0	62	72	6	18	6	M6	63	10	8
110	110	105	15	35	130	4	56	2.3	60	93	15	3.5	74	92	8	19	6	M6	82	12	5
130	130	125	20	45	150	4	68	3.0	80	106	15	4.0	86	108	10	20	6	M8	105	12	6
160	160	148	25	55	180	4	85	3.0	100	130	20	4.0	105	125	12	25	6	M10	129	16	8.5
200	194	176	28	65	220	4	98	3.0	120	152	20	4.5	124.5	155	14	27.5	6	M12	159	19	8.5

INCH Dimensions

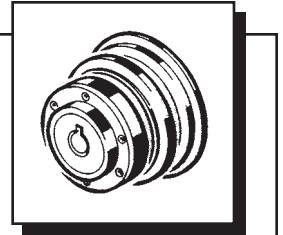
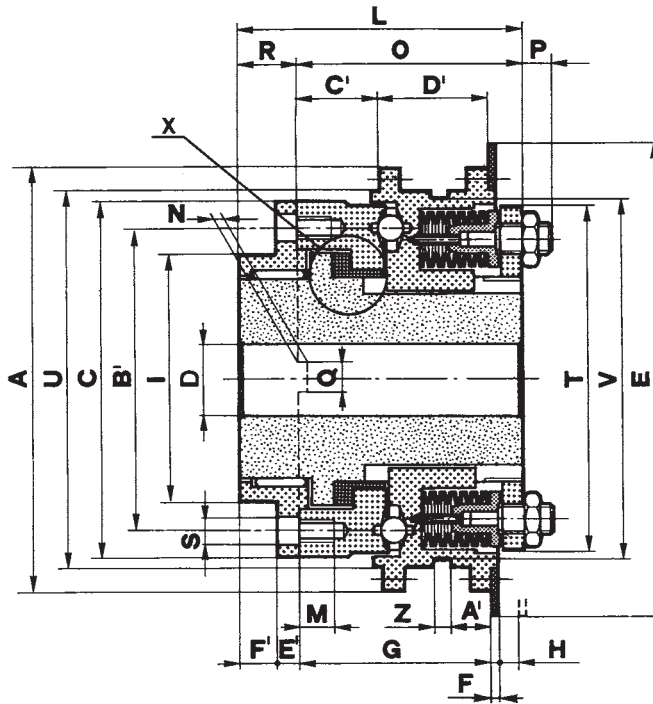
SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V
			MIN	MAX													QTY	SIZE			
70	2.60	2.17	0.31	0.79	3.15	0.12	1.18	0.05	1.496	2.32	0.31	0.12	1.81	1.890	0.24	0.51	6	M5	1.65	0.33	0.18
90	3.54	3.35	0.39	0.98	4.13	0.12	1.81	0.08	1.969	3.15	0.47	0.12	2.44	2.835	0.24	0.71	6	M6	2.48	0.39	0.31
110	4.33	4.13	0.59	1.38	5.12	0.16	2.20	0.09	2.382	3.66	0.59	0.14	2.91	3.622	0.31	0.75	6	M6	3.23	0.47	0.20
130	5.12	4.92	0.79	1.77	5.91	0.16	2.68	0.12	3.150	4.17	0.59	0.16	3.39	4.252	0.39	0.79	6	M8	4.13	0.47	0.24
160	6.30	5.83	0.98	2.17	7.09	0.16	3.35	0.12	3.937	5.12	0.79	0.16	4.13	4.921	0.47	0.98	6	M10	5.08	0.63	0.33
200	7.64	6.93	1.10	2.56	8.66	0.16	3.86	0.12	4.724	5.98	0.79	0.18	4.90	6.102	0.55	1.08	6	M12	6.26	0.75	0.33

RFC BALL DETENT TORQUE LIMITERS — With Short Supported Hub: Sizes 230-270

**BDR/
BDS.../SH**



Det. X
Version with Bearing is
Available on Request



METRIC Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z
			MIN	MAX													QTY	SIZE				
230	225	189	38	75	250	5	104	3.5	130	153	18	5.1	122	15	16	31	6	M12	183	200	190	9
270	265	229	48	100	290	5	122	4.0	160	175	23	5.6	141	15	18	34	6	M16	227	240	230	9

INCH Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z
			MIN	MAX													QTY	SIZE				
230	8.86	7.44	1.50	2.95	9.84	0.20	4.09	0.14	5.12	6.02	0.71	0.20	4.80	0.59	0.63	1.22	6	M12	7.20	7.87	7.48	0.35
270	10.43	9.02	1.89	3.94	11.42	0.20	4.80	0.16	6.30	6.89	0.91	0.22	5.55	0.59	0.71	1.34	6	M16	8.94	9.45	9.06	0.35

METRIC Dimensions

SIZE	A'	B'	C'	D'	E'	F'
230	22.5	160	45	59	11	20
270	26.5	200	47	75	9	25

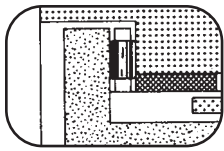
INCH Dimensions

SIZE	A'	B'	C'	D'	E'	F'
230	0.87	6.30	1.77	2.32	0.43	0.79
270	1.04	7.87	1.85	2.95	0.36	0.99

RFC

BALL DETENT TORQUE LIMITERS — With Extended Hub for Wider Components: Sizes 70-200

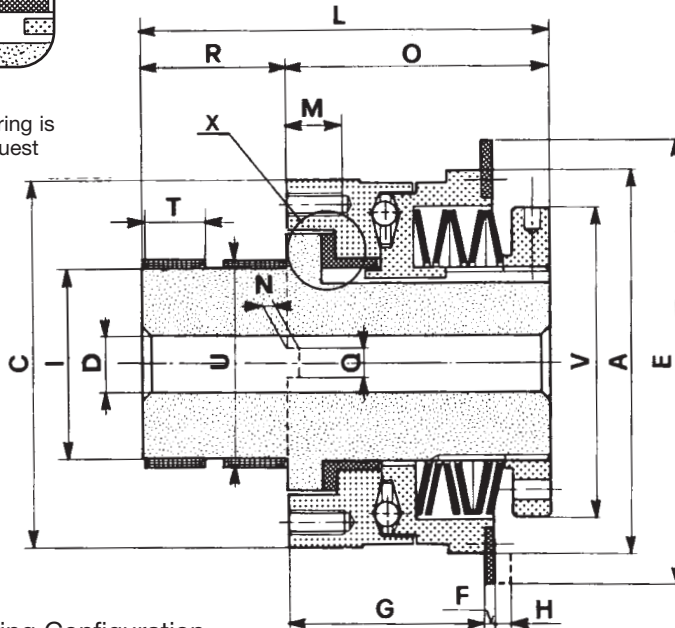
BDR/ BDS.../EH



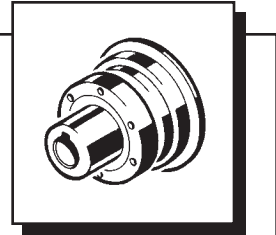
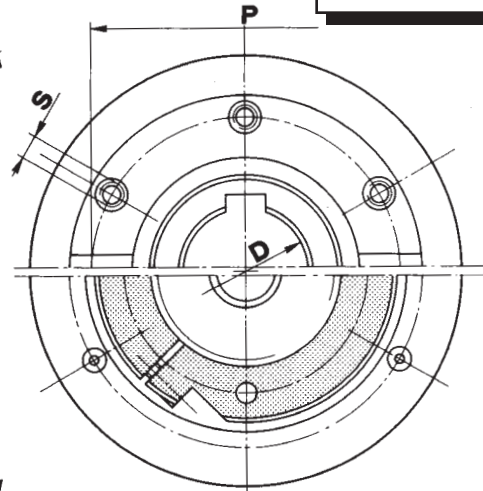
Det. X

Version with Bearing is Available on Request

SL Spring Configuration



DL Spring Configuration



METRIC Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V
			MIN	MAX													QTY	SIZE			
70	66	55	8	20	80	3	30	1.4	28	74	8	3.0	46	48	6	28	6	M5	—	—	42
90	90	85	10	25	105	3	47	2.0	40	98	12	3.0	62	72	6	36	6	M6	15	45	63
110	110	105	15	35	130	4	57	3.0	54	114	15	3.5	74	92	8	40	6	M6	17	60	82
130	130	125	20	45	150	4	69	3.0	66	135	15	4.0	86	108	10	49	6	M8	21	72	105
160	160	148	25	55	180	4	85	3.5	78	160	20	4.0	105	125	12	55	6	M10	25	85	129
200	194	176	28	65	220	4	98	4.5	90	182	20	4.5	124.5	155	14	57.5	6	M12	—	—	159

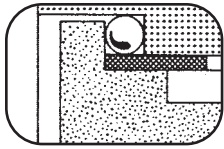
INCH Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V
			MIN	MAX													QTY	SIZE			
70	2.60	2.17	0.31	0.79	3.15	0.12	1.18	0.06	1.102	2.91	0.31	0.12	1.81	1.890	0.24	1.10	6	M5	—	—	1.65
90	3.54	3.35	0.39	0.98	4.13	0.12	1.85	0.08	1.575	3.86	0.47	0.12	2.44	2.835	0.24	1.42	6	M6	0.59	1.77	2.48
110	4.33	4.13	0.59	1.38	5.12	0.16	2.24	0.12	2.126	4.49	0.59	0.14	2.91	3.622	0.31	1.57	6	M6	0.67	2.36	3.23
130	5.12	4.92	0.79	1.77	5.91	0.16	2.72	0.12	2.598	5.31	0.59	0.16	3.39	4.252	0.39	1.93	6	M8	0.83	2.83	4.13
160	6.30	5.83	0.98	2.17	7.09	0.16	3.35	0.14	3.071	6.30	0.79	0.16	4.13	4.921	0.47	2.17	6	M10	0.98	3.35	5.08
200	7.64	6.93	1.10	2.56	8.66	0.16	3.86	0.18	3.543	7.17	0.79	0.18	4.90	6.102	0.55	2.26	6	M12	—	—	6.26

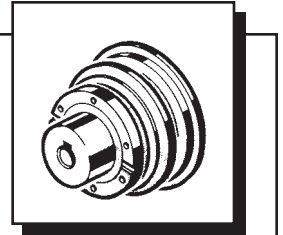
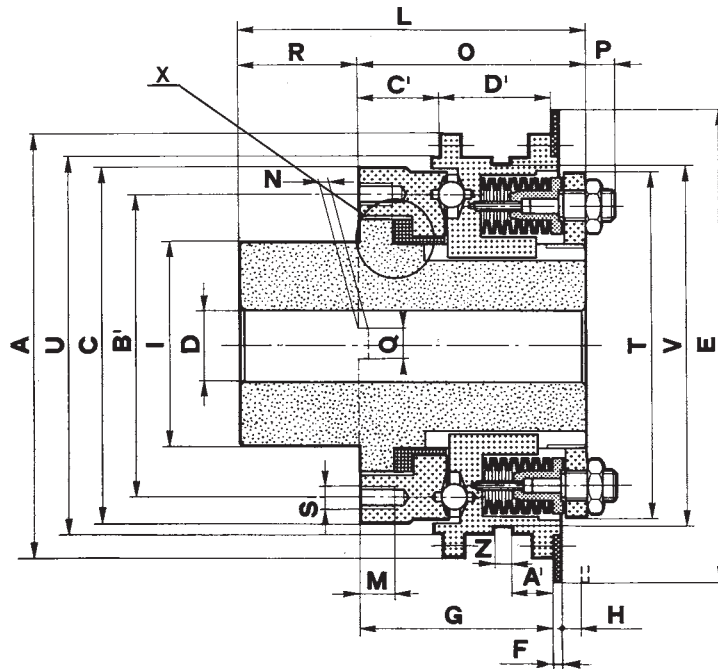
RFC

BALL DETENT TORQUE LIMITERS — With Extended Hub for Wider Components: Sizes 230-270

BDR/ BDS.../EH



Det. X
Version with Bearing is
Available on Request



METRIC Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z	A'	B'	C'	D'
			MIN	MAX													QTY	SIZE								
230	225	189	38	75	250	5	104	5.0	108	187	18	5.1	122	15	16	65	6	M12	183	200	190	9	22.5	160	45	59
270	265	229	48	100	290	5	122	6.0	135	213	23	5.6	141	15	18	72	6	M16	227	240	230	9	26.5	200	47	75

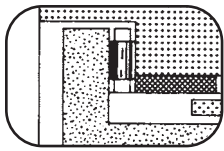
INCH Dimensions

SIZE	A	C	D ^{H8} BORE		E	F	G MAX	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T	U	V	Z	A'	B'	C'	D'
			MIN	MAX													QTY	SIZE								
230	8.86	7.44	1.50	2.95	9.84	0.20	4.09	0.20	4.25	7.36	0.71	0.20	4.80	0.59	0.63	2.56	6	M12	7.20	7.87	7.48	0.35	0.89	6.30	1.77	2.32
270	10.43	9.02	1.89	3.94	11.42	0.20	4.80	0.24	5.31	8.39	0.91	0.22	5.55	0.59	0.71	2.83	6	M16	8.94	9.45	9.06	0.35	1.04	7.87	1.85	2.95

RFC BALL DETENT TORQUE LIMITERS —

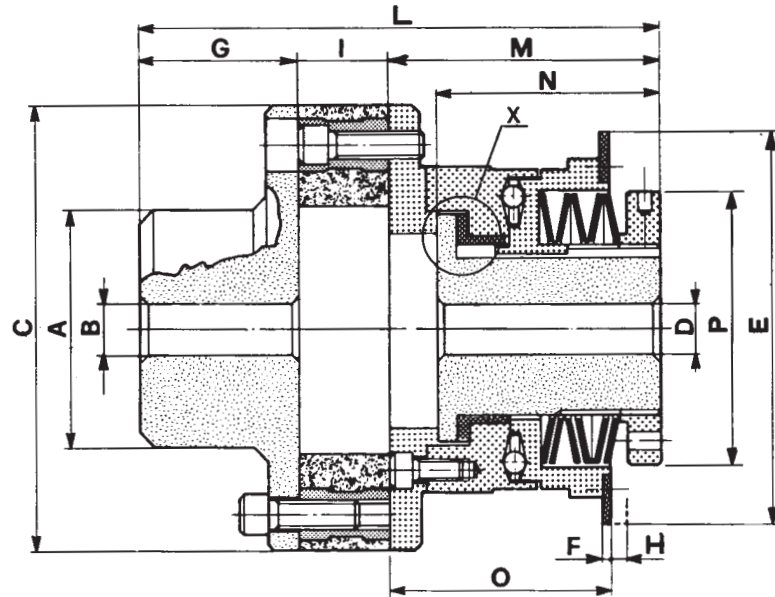
BDR Limiter – Flexible Coupling Combination

**BDR/
BDS.../CF**

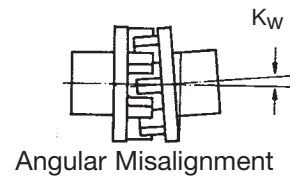
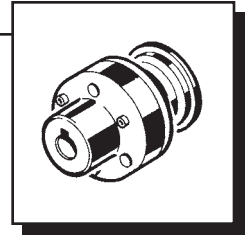


Det. X
Version with Bearing is
Available on Request

SL Spring Configuration



DL Spring Configuration



METRIC Dimensions

SIZE	A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	I	L	M	N	O	P	K _w
		MIN	MAX		MIN	MAX											
70	40	8	25	80	8	20	80	3	40	1.4	18	115	57	42	44	42	3°
90	70	10	45	125	10	25	105	3	55	20.0	28	158	75	58	61	63	3°
110	90	20	60	155	15	35	130	4	60	3.0	34	183	89	70	76	82	3°
130	110	25	70	172	20	45	150	4	70	3.0	38	211	103	82	89	105	3°
160	130	30	85	193	25	55	180	4	100	3.5	42	269	127	99	112	129	3°
200	150	35	100	233	28	65	220	4	120	4.5	48	322	154	118	132	159	3°

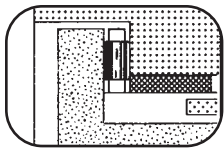
INCH Dimensions

SIZE	A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	I	L	M	N	O	P	K _w
		MIN	MAX		MIN	MAX											
70	1.57	0.31	0.98	3.15	0.31	0.79	3.15	0.12	1.57	0.06	0.709	4.53	2.24	1.65	1.73	1.654	3°
90	2.76	0.39	1.77	4.92	0.39	0.98	4.13	0.12	2.17	0.08	1.102	6.22	2.95	2.28	2.40	2.480	3°
110	3.54	0.79	2.36	6.10	0.59	1.38	5.12	0.16	2.36	0.12	1.339	7.20	3.50	2.76	2.99	3.228	3°
130	4.33	0.98	2.76	6.77	0.79	1.77	5.91	0.16	2.76	0.12	1.496	8.31	4.06	3.23	3.50	4.134	3°
160	5.12	1.18	3.35	7.60	0.98	2.17	7.09	0.16	3.94	0.14	1.654	10.59	5.00	3.90	4.41	5.079	3°
200	5.91	1.38	3.94	9.17	1.10	2.56	8.66	0.16	4.72	0.18	1.890	12.68	6.06	4.65	5.20	6.260	3°

RFC BALL DETENT TORQUE LIMITERS —

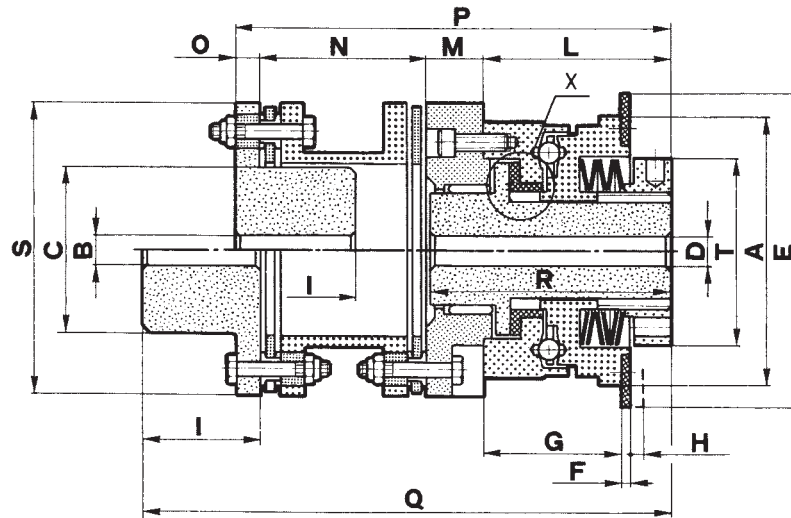
BDR Limiter w/Torsionally Rigid, Flexible Coupling

**BDR/
BDS.../CR**

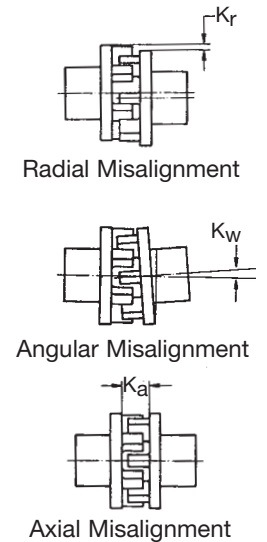
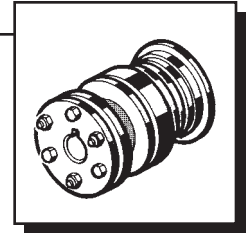


Det. X
Version with Bearing is Available on Request

SL Spring Configuration



DL Spring Configuration



METRIC Dimensions

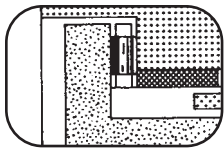
SIZE	A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	I	L	M	N	O	P	Q	R	S	T	K _R	K _A	K _W
		MIN	MAX		MIN	MAX																	
70	66	10	30	42	8	20	80	3	30	1.4	35	46	15	55	8	124	151	59	83	42	0.30	1.3	45'
90	90	10	40	56	10	25	105	3	47	2.0	40	62	20	55	8	145	177	80	98	63	0.30	1.4	45'
110	110	15	45	63	15	35	130	4	57	3.0	45	74	20	70	9	173	209	93	115	82	0.35	1.5	45'
130	130	20	55	77	20	45	150	4	69	3.0	55	86	22	90	12	210	253	106	145	105	0.45	1.7	45'
160	160	25	65	91	25	55	180	4	85	3.5	65	105	28	110	14	257	308	130	165	129	0.60	1.8	45'
200	194	28	80	112	28	65	220	4	98	4.5	80	124.5	29.5	130	17	301	364	152	205	159	0.70	2.1	45'

INCH Dimensions

SIZE	A	B ^{H8} BORE		C	D ^{H8} BORE		E	F	G	H	I	L	M	N	O	P	Q	R	S	T	K _R	K _A	K _W
		MIN	MAX		MIN	MAX																	
70	2.60	0.39	1.18	1.65	0.31	0.79	3.15	0.12	1.18	0.06	1.378	1.81	0.59	2.17	0.31	4.882	5.94	2.32	3.27	1.65	0.01	0.05	45'
90	3.54	0.39	1.57	2.20	0.39	0.98	4.13	0.12	1.85	0.08	1.575	2.44	0.79	2.17	0.31	5.709	6.97	3.15	3.86	2.48	0.01	0.06	45'
110	4.33	0.59	1.77	2.48	0.59	1.38	5.12	0.16	2.24	0.12	1.772	2.91	0.79	2.76	0.35	6.811	8.23	3.66	4.53	3.23	0.01	0.06	45'
130	5.12	0.79	2.17	3.03	0.79	1.77	5.91	0.16	2.72	0.12	2.165	3.39	0.87	3.54	0.47	8.268	9.96	4.17	5.71	4.13	0.02	0.07	45'
160	6.30	0.98	2.56	3.58	0.98	2.17	7.09	0.16	3.35	0.14	2.559	4.13	1.10	4.33	0.55	10.118	12.13	5.12	6.50	5.08	0.02	0.07	45'
200	7.64	1.10	3.15	4.41	1.10	2.56	8.66	0.16	3.86	0.18	3.150	4.90	1.16	5.12	0.67	11.850	14.33	5.98	8.07	6.26	0.03	0.08	45'

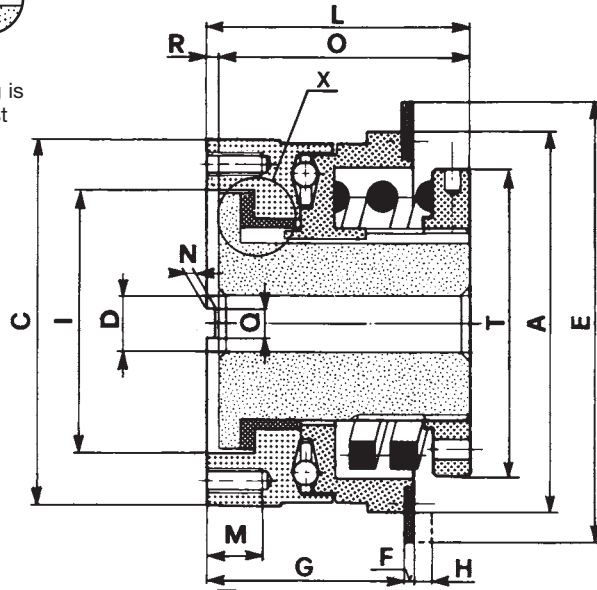
RFC BALL DETENT TORQUE LIMITERS — Basic Low Torque Unit

BDR.../LT

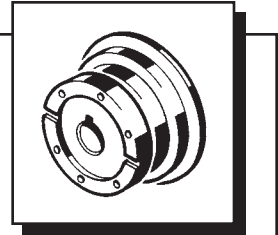
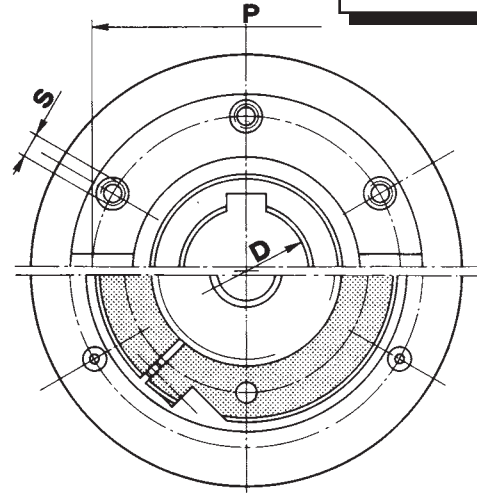


Det. X
Version with Bearing is Available on Request

Version .1



Version .2



METRIC Dimensions

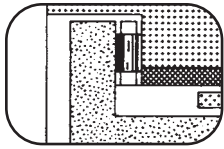
SIZE	TORQUES (Nm)				A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		
	.1		.2				MIN	MAX													QTY	SIZE	T
	MIN	MAX	MIN	MAX																			
90	5	25	5	50	90	85	10	25	105	3	47	2	60	74	12	3	70	72	6	4	6	M6	63
110	10	30	10	60	110	105	15	35	130	4	57	3	80	89	15	3.5	85	92	8	4	6	M6	82
130	15	80	15	160	130	125	20	45	150	4	69	3	90	108	15	4	104	108	10	4	6	M8	105

INCH Dimensions

SIZE	TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		
	.1		.2				MIN	MAX													QTY	SIZE	T
	MIN	MAX	MIN	MAX																			
90	44	221	44	443	3.54	3.35	0.39	0.98	4.13	0.12	1.85	0.08	2.362	2.91	0.47	0.12	2.76	2.835	0.24	0.16	6	M6	2.48
110	89	266	89	531	4.33	4.13	0.59	1.38	5.12	0.16	2.24	0.12	3.150	3.50	0.59	0.14	3.35	3.622	0.31	0.16	6	M6	3.23
130	133	708	133	1416	5.12	4.92	0.79	1.77	5.91	0.16	2.72	0.12	3.543	4.25	0.59	0.16	4.09	4.252	0.39	0.16	6	M8	4.13

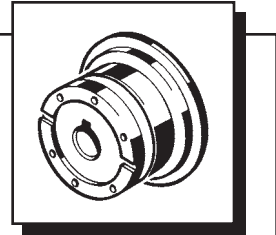
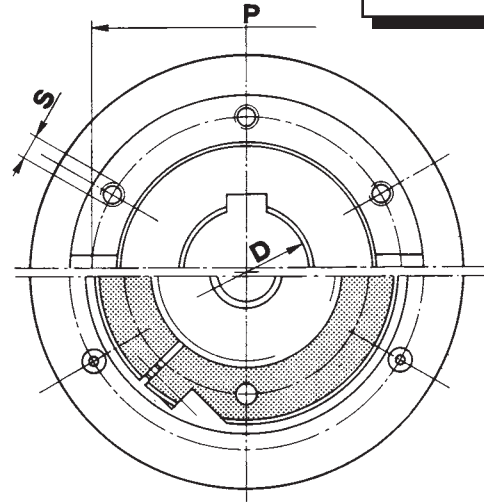
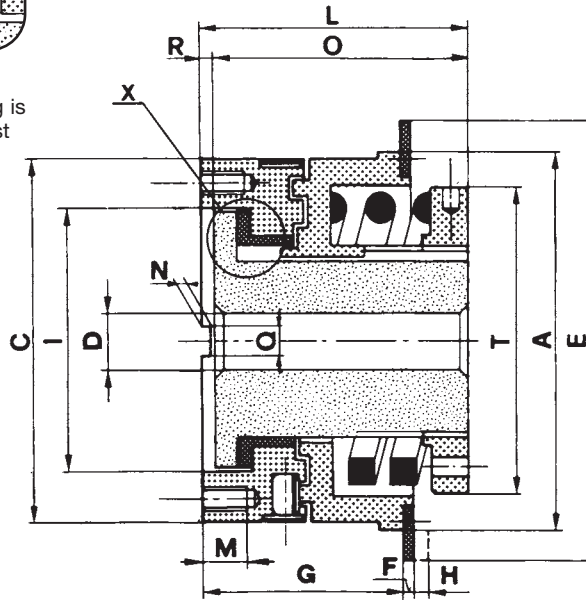
RFC BALL DETENT TORQUE LIMITERS — Basic Low Torque Unit

BDS.../LT



Det. X
Version with Bearing is Available on Request

Version .1



Version .2

METRIC Dimensions

SIZE	TORQUES (Nm)				A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T
	MIN	MAX	MIN	MAX			MIN	MAX													QTY	SIZE	
90	10	50	10	100	90	85	10	25	105	3	47	2	60	74	12	3	70	72	6	4	6	M6	63
110	20	60	20	120	110	105	15	35	130	4	57	3	80	89	15	3.5	85	92	8	4	6	M6	82
130	30	160	30	320	130	125	20	45	150	4	69	3	90	108	15	4	104	108	10	4	6	M8	105

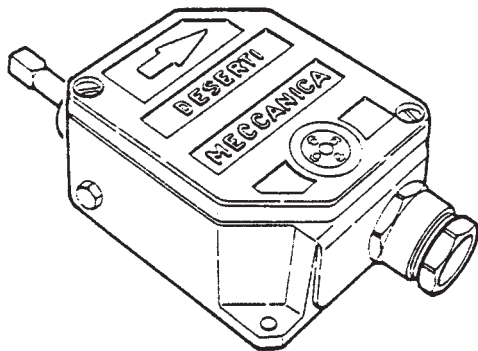
INCH Dimensions

SIZE	TORQUES (lb-in)				A	C	D ^{H8} BORE		E	F	G	H	I ^{H7} BORE	L	M	N	O	P	Q	R	S		T
	MIN	MAX	MIN	MAX			MIN	MAX													QTY	SIZE	
90	89	443	89	885	3.54	3.35	0.39	0.98	4.13	0.12	1.85	0.08	2.362	2.91	0.47	0.12	2.76	2.835	0.24	0.16	6	M6	2.48
110	177	531	177	1062	4.33	4.13	0.59	1.38	5.12	0.16	2.24	0.12	3.150	3.50	0.59	0.14	3.35	3.622	0.31	0.16	6	M6	3.23
130	266	1416	266	2832	5.12	4.92	0.79	1.77	5.91	0.16	2.72	0.12	3.543	4.25	0.59	0.16	4.09	4.252	0.39	0.16	6	M8	4.13

LIMIT SWITCH — Type LS/1

APPLICATION

This Limit Switch has been developed for applications in connection with our BD-Torque Limiters and AX-Overload Limiters. It is used for fast and accurate monitoring of the axial disengagement movement of the control element. The limit switch gives a signal to either switch off the drive or alert the operator or initiate any other control function.



DESIGN

The micro switch, mounted in an aluminum housing, is actuated by a uni-directional control lever. The housing has two diagonally arranged mounting holes.

A Zero-position adjustment of the control lever is provided by moving it either to the right or left a maximum of 5mm in either direction. This is accomplished with an external adjustment screw on the side of the housing.

Wiring Diagram

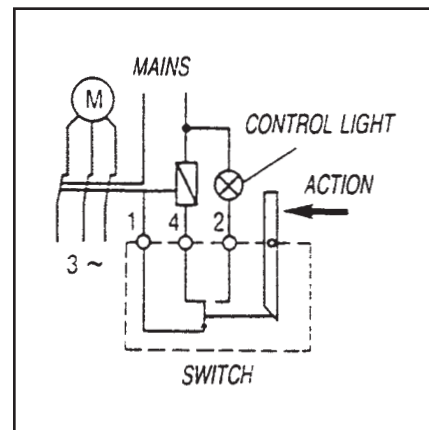


Fig. 26

Overall Dimensions (Shown in millimeters)

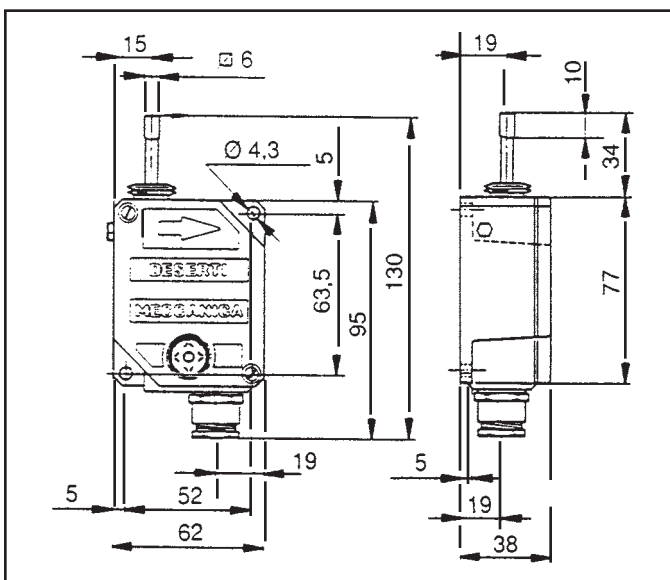
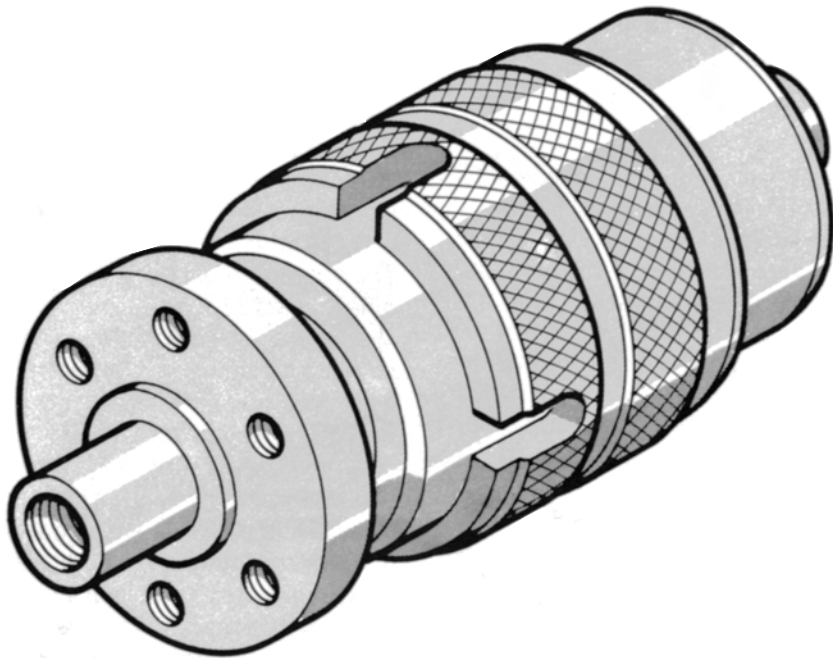


Fig. 25

- Mechanically driven switch
- Contact load: 250V AC/15A
- Switching contact: 24V DC/6A
60V DC/1.5A - 250V DC/0.2A
- Protection: IP 54
- Temperature range: -10°C ÷ +85°C
- MAX frequency: 240/min.
- Feeler stroke (to the contact): 0.5 mm (0.197")
- After-contact stroke: 5 mm ÷ 10 (0.197" to 0.394")
(according to the "0" position).
- Feeler adjusted through the external screw

AXIAL OVERLOAD LIMITERS

Type AX



AXIAL OVERLOAD LIMITERS — Type AX

APPLICATIONS

The Axial Overload Limiters are used in applications where cam or crank actuated mechanisms create linear motions and transmit axial forces in links, connecting rods or slides. For example: packaging machines, machine tools, transfer lines or any other machines equipped with linear motion components.

To protect these machines or components against possible excessive and destructive axial forces, our Axial Overload Limiters can be applied very successfully.

OPERATING PRINCIPLE

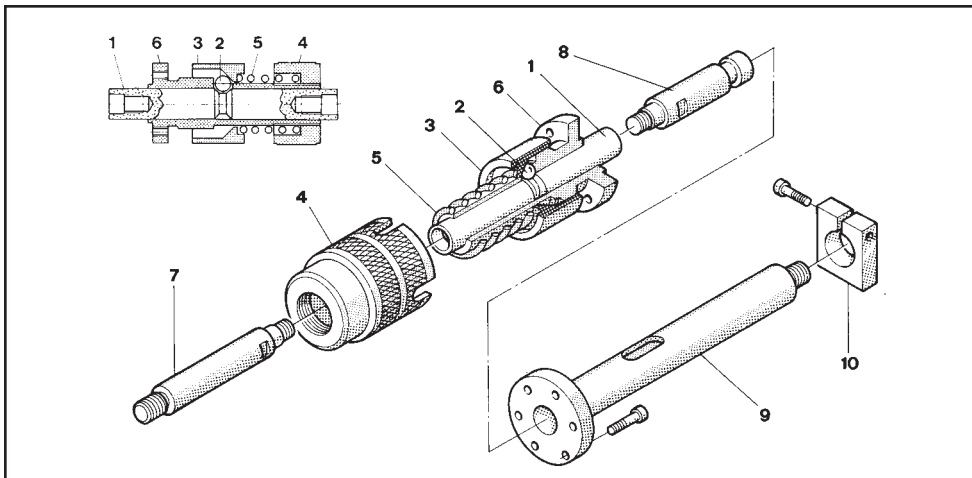
The axial force is transmitted through the Limiter in both directions, i.e. push or pull, and without any backlash. As it can be seen in Fig. 35, the operating principle is very simple and is based on the use of balls (2) which are located in a tapered groove of the limiter shaft (1) and held in position in three, equally spaced holes of the limiter body (6).

The one end of the limiter body has an external thread onto which the adjusting nut (4) is screwed on and the other end has the fastening flange.

A coil spring (5) is located between adjusting nut (4) and sleeve (3). As the adjusting nut (4) is turned, spring (5) is pressing against sleeve (3) and through its internal taper the necessary thrust is exerted to keep the balls (2) under a minimum preload.

To set the limiter to a desired axial overload release value, the adjusting nut has to be turned further to generate the required pressure on sleeve (3). Since the release load or force is directly proportional to the adjusting nut travel, the force-travel diagrams for the different axial limiter sizes should be referred to (Page 39).

Fig. 27



- 1 Limiter Shaft
- 2 Balls
- 3 Sleeve
- 4 Adjusting Nut
- 5 Spring
- 6 Limiter Body
- 7 Extension Bar
- 8 Guide Bar
- 9 Guide Tube
- 10 Limit Switch Mounting Block

The shaft of the Basic Axial Limiter (See Fig. 27) has tapped holes at both ends for attachment of rod ends, extension bars (7) or guide bars (8). These extensions together with guide tubes (9) fitted to the flange at one end of the limiter body (6), allow a certain free, telescoping travel of the limiter shaft after the disengagement at overload has occurred.

When an overload occurs, the shaft is pushed or pulled axially causing the balls to be forced out radially from the shaft groove. In doing so, they make sleeve (3) move axially. This axial movement (H) can be used to actuate a limit switch for the purpose of signaling an alarm and/or shutting down the drive.

Another method for detecting the overload motion, is the use of a proximity switch positioned over the oblong hole in the guide tube to sense the movement of the guide bar (8). An adjustable limit switch mounting block (10) attachable to the guide tube (9) can be provided.

Once the overload has been removed, the limiter will reengage automatically on reverse stroke or it can be reengaged manually.

AVAILABILITY

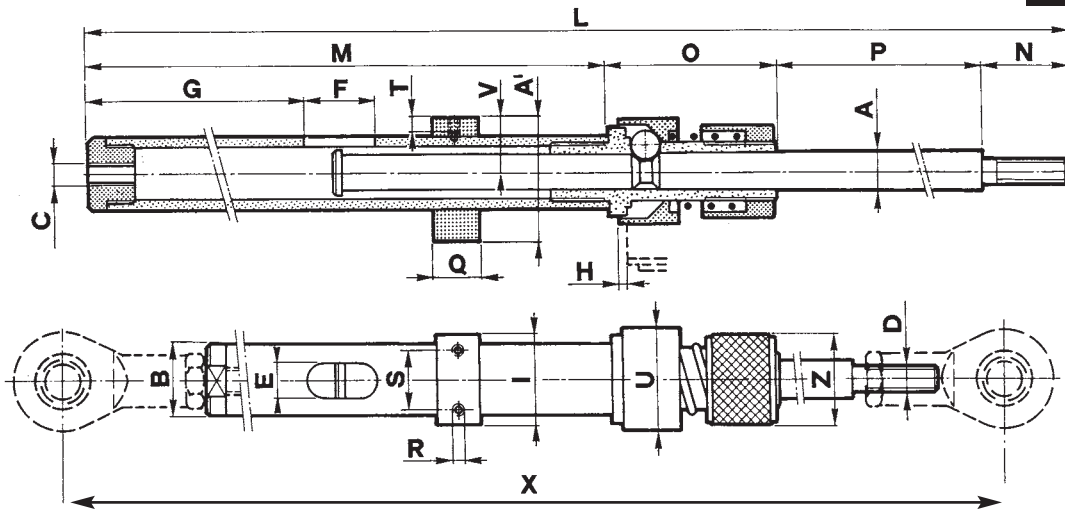
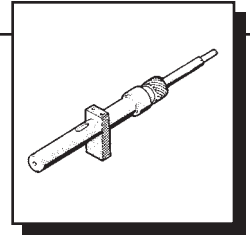
The Axial Overload Limiters are available in four different sizes and with various types of springs for each size. Extensions type (7 & 8) as well as tubes (9) are available for each size to meet the requirements of commonly used free strokes or travel. Please refer to the Specifications. Other sizes are available upon request.

MAINTENANCE

The Axial Overload Limiters are supplied greased and oiled and do not require any particular maintenance under normal operating conditions. However, when operation in dusty or aggressive environments is intended, please contact our technical department.

RFC AXIAL OVERLOAD LIMITERS

AX.../BTZ



METRIC Dimensions

SIZE	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	Z	CENTER DIST X*	MAX TRAVEL-MM.	A'
12.75	12	24	M8	M8	12.5	25	83	2	30	367	194	30	58	85	15	M5	18	6	35	20	30	425	75	44
12.90	12	24	M8	M8	12.5	25	95	2	30	534	208	30	58	238	15	M5	18	6	35	20	30	580	90	44

INCH Dimensions

SIZE	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	Z	CENTER DIST X*	MAX TRAVEL-IN.	A'
12.75	0.47	0.94	M8	M8	0.49	0.98	3.27	0.08	1.18	14.45	7.64	1.18	2.28	3.35	0.59	M5	0.71	0.24	1.38	0.79	1.18	16.73	2.95	1.73
12.90	0.47	0.94	M8	M8	0.49	0.98	3.74	0.08	1.18	21.02	8.19	1.18	2.28	9.37	0.59	M5	0.71	0.24	1.38	0.79	1.18	22.83	3.54	1.73

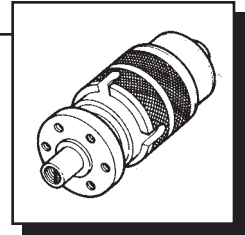
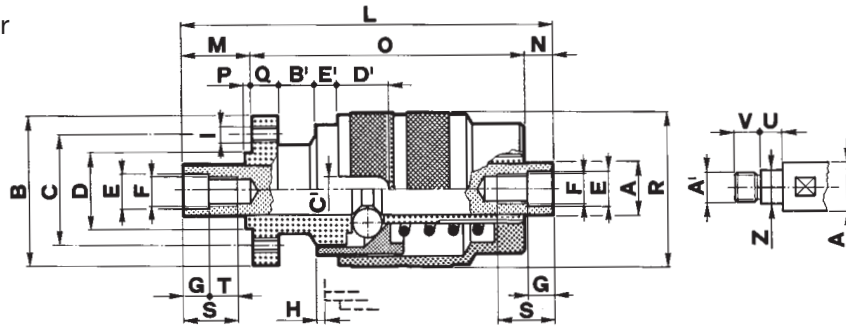
Above units are supplied with a mounting block for micro or proximity switch.

*Upon request, the Limiters can be supplied for higher or lower disengaging forces and with different free strokes.

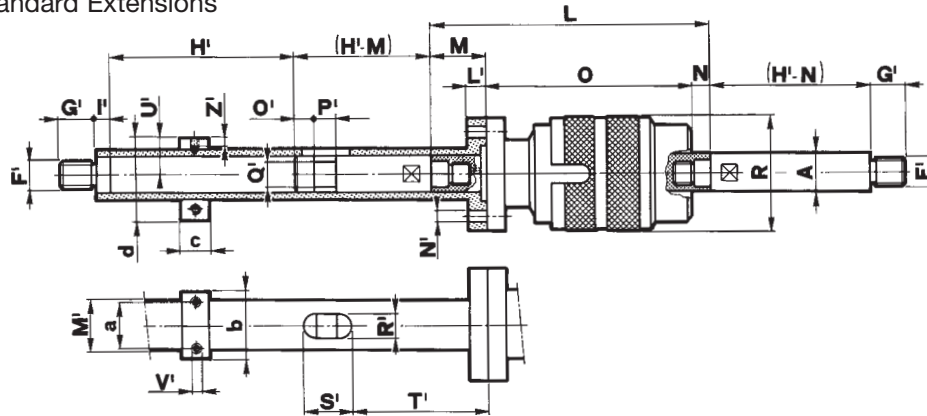
RFC AXIAL OVERLOAD LIMITERS

AX.../S

Basic Torque Limiter



Complete with Standard Extensions



METRIC Dimensions

SIZE	MAX TRAVEL-MM.	AH7	B	C	DH7	EH7	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	ZH7	—	—
14	50	14	45	35	20	11	M10X1	9	1	M5X6	120	24	10	86	2	8	45	18	9	8	8	11	—	—
20	100	20	60	45	30	14	M12X1	10	2.5	M6X6	150	29	11	110	3	10	60	22	12	9	11	14	—	—
30	150	30	80	60	40	22	M20X1	15	4	M8X6	194	34	15	145	4	11	80	32	17	14	16	22	—	—

SIZE	A'	B'	C'	D'	E'	F'	G'	I'	L'	M'	N'	O'	P'	Q'	R'	S'	T'	U'	V'	Z'	a	b	c	d
14	M10X1	12	8	15	7	M10	12	6	8	20	5.5	5	12	9	8.5	20	30	18	M5	7	18	30	15	40
20	M12X1	16	10	20	9	M14	20	8	10	26	6.5	10	12	14	12.5	25	75	20	M5	7	23	35	15	44
30	M20X1	20	12	25	10	M20X1.5	25	10	11	38	8.5	10	12	24	12.5	25	120	28	M5	7	35	50	20	63

INCH Dimensions

SIZE	MAX TRAVEL-IN.	AH7	B	C	DH7	EH7	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	ZH7	—	—
14	3.94	0.55	1.77	1.38	0.79	0.43	M10X1	0.35	0.04	M5X6	4.72	0.94	0.39	3.39	0.08	0.31	1.77	0.71	0.35	0.31	0.31	0.43	—	—
20	5.91	0.79	2.36	1.77	1.18	0.55	M12X1	0.39	0.10	M6X6	5.91	1.14	0.43	4.33	0.12	0.39	2.36	0.87	0.47	0.35	0.43	0.55	—	—
30	5.91	1.18	3.15	2.36	1.57	0.87	M20X1	0.59	0.16	M8X6	7.64	1.34	0.59	5.71	0.16	0.43	3.15	1.26	0.67	0.55	0.63	0.87	—	—

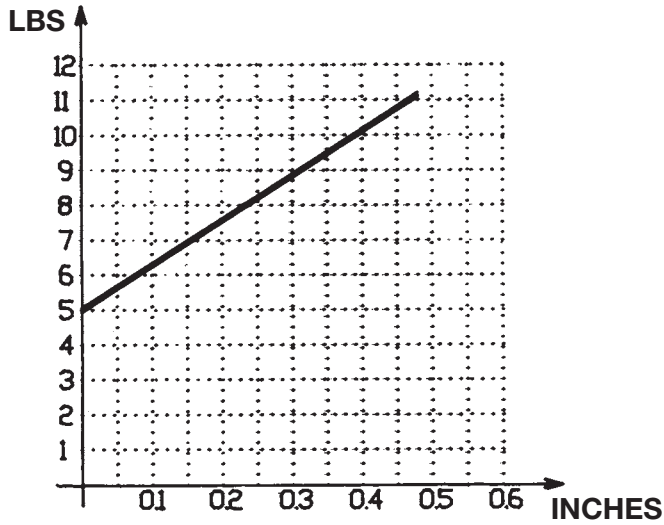
SIZE	A'	B'	C'	D'	E'	F'	G'	I'	L'	M'	N'	O'	P'	Q'	R'	S'	T'	U'	V'	Z'	a	b	c	d
14	M10X1	0.47	0.31	0.59	0.28	M10	0.47	0.24	0.31	0.79	0.22	0.20	0.47	0.35	0.33	0.79	1.18	0.71	M5	0.28	0.71	1.18	0.59	1.57
20	M12X1	0.63	0.39	0.79	0.35	M14	0.79	0.31	0.39	1.02	0.26	0.39	0.47	0.55	0.49	0.98	2.95	0.79	M5	0.28	0.91	1.38	0.59	1.73
30	M20X1	0.79	0.47	0.98	0.39	M20X1.5	0.98	0.39	0.43	1.50	0.33	0.39	0.47	0.94	0.49	0.98	4.72	1.10	M5	0.28	1.38	1.97	0.79	2.48

Above units are supplied with standard extensions and a mounting block for micro or proximity switch.

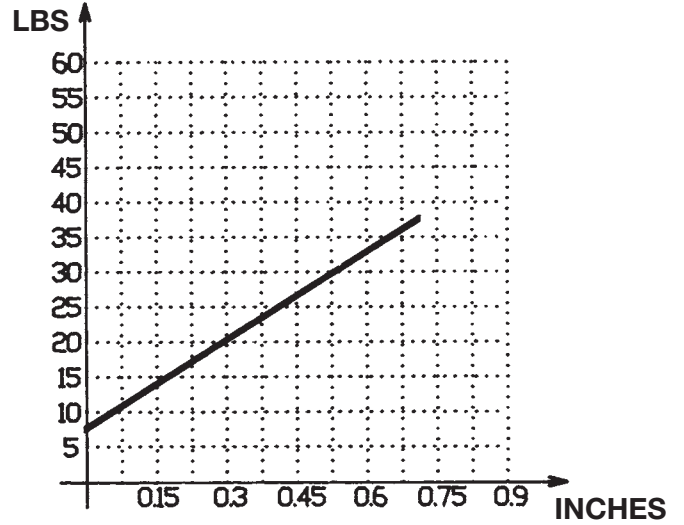
Upon request, the Limiters can be supplied for higher or lower disengaging forces and with different free strokes.

OVERLOAD RELEASE FORCE ADJUSTING DIAGRAMS

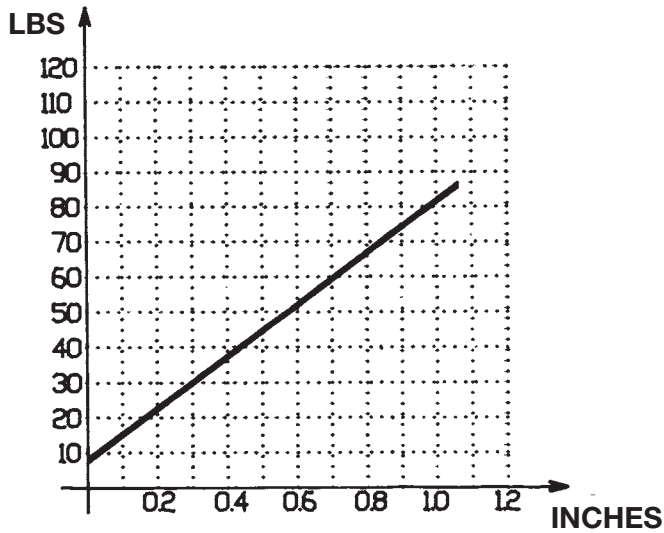
Approximate overload trip point (lbs.) setting for a given travel from initial position (inches)



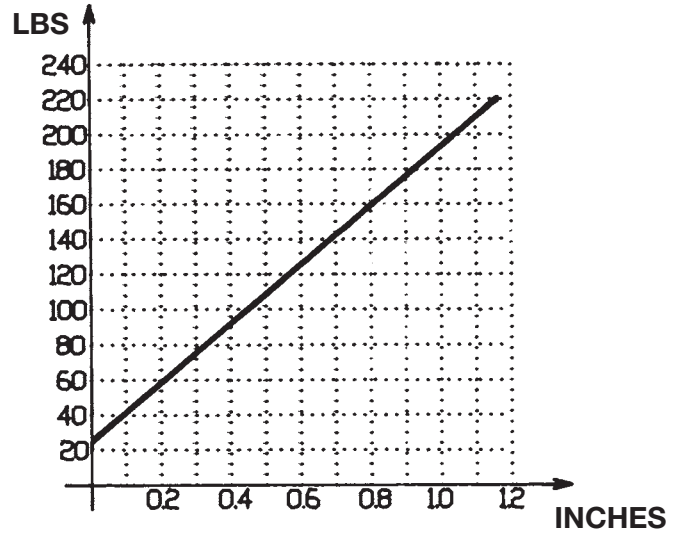
Size 12



Size 14



Size 20



Size 30

o = initial position of adjusting nut (see specification tables).

Size 12/BTZ

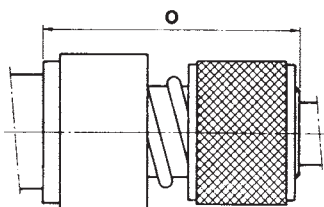


Fig. 28

Size 14 - 20 - 30

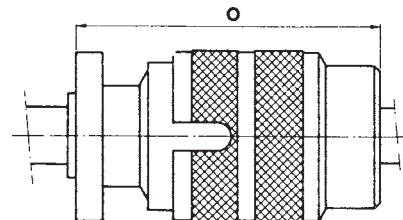


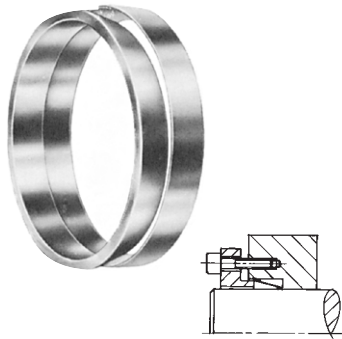
Fig. 29

We also Supply . . .

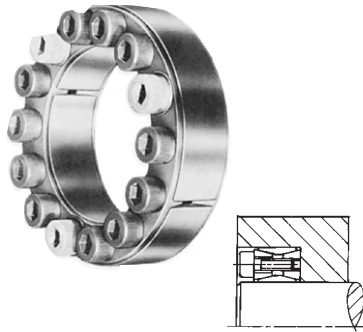
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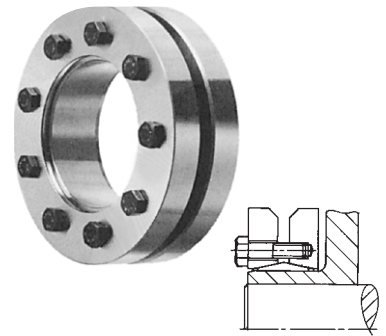
Request Separate Catalogs!



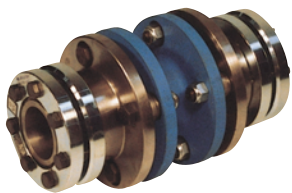
LOCKING ELEMENTS™
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LOCKING ASSEMBLIES™
(Internal Locking Devices)



SHRINK DISCS®
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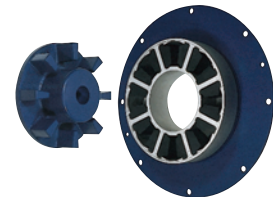
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Assure a totally backlash-free connection with precise synchronization capability. Additional features: Clearance fits for hub/shaft connection allow easy assembly and free axial movement compensation during installation which eliminates unwanted pre-loading or pre-stressing of the flexible elements.



ARCUSAFLEX® Flywheel **Couplings**

Highly flexible, backlash-free, vulcanized rubber disc couplings designed to couple the flywheel of an internal combustion engine to the shaft of the driven machine. Rubber disc element accepts relatively high angular, axial and parallel misalignments. Flange dimensions according to SAE J.620 standards.



Multi Mont OCTA Flywheel **Couplings**

Torsionally flexible, economical flange couplings for connecting the flywheel of a combustion engine to the input shaft of a driven machine. Rubber elements dampen vibrations and accommodate misalignments.

In accordance with our established policy to constantly improve our products, the specifications contained herein are subject to change without notice.

Since our Engineers cannot be aware of all applications and cannot control all the factors that may affect the function of our products, our warranty applies to our products only.

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