Superflex Super-Elastic Couplings

GUARDIAN COUPLINGS™

A REGAL REXNORD BRAND

Why Choose Guardian?

For more than 70 years, Guardian has been designing and manufacturing world-class couplings and other power transmission components. Utilizing advanced manufacturing technologies and processes, Guardian provides highly-reliable coupling and component solutions to meet the most challenging industrial application requirements.

Guardian provides a wide range of standard and custom products including flywheel couplings, hydraulic pump mounts, bearing supported stub shafts, flexible shaft-to-shaft couplings, motion control couplings as well as compression pipe couplings.

Durable Guardian products are utilized in key industries including mobile hydraulics, farm & ag, tree care, concrete, food & beverage, material handling, automation, power generation, and oil & gas on applications such as skid steers, aerial lifts, harvesters, wood chippers, concrete pumps, dewatering pumps, baggage handlers, conveyors, robotics, compressors, and generator sets.

GUARDIAN COUPLINGS™
A REGAL REXNORD BRAND

SUPERFLEX FEATURES AND ADVANTAGES

The Guardian Superflex coupling consists of two hubs, a 55 durometer, shore “A” super elastic flexible rubber element, and bolts with self locking nuts.

The rubber element is provided with an outer metallic band that is to be removed after mounting. This allows the rubber to expand from its original pre-stressed condition. As a result of this, the allowable torsional load of the rubber element is influenced favorably (i.e., a lower tensile stress and a higher permissible vibratory torque load).

The Superflex Coupling has been used world-wide on a variety of applications including light towers, gen-sets, compressors, welding sets and other construction machinery with large driven inertias.

See page 3 for Product Specifications, page 4 for Misalignment Capabilities and page 5 for the Selection Procedure.

WHY DO CUSTOMERS CHOOSE **GUARDIAN'S** SUPERFLEX COUPLINGS?

Portable Quarry and Mining Screens

A leading global manufacturer of vibrating screens and portable screening platforms used at mining and quarry operations, needed a robust coupling solution that could withstand the screen's high-frequency vibration. A blind-fit coupling was required because the hydraulic motor and vibratory screen shafts were enclosed in an adaptor housing.

Material is fed onto the top of the unit, vibration causes the material to move down as it drops through a series of several screens with selected size mesh openings. The material is sorted based on the mesh opening sizes, from larger openings in the top screen to smaller openings in the bottom screen.

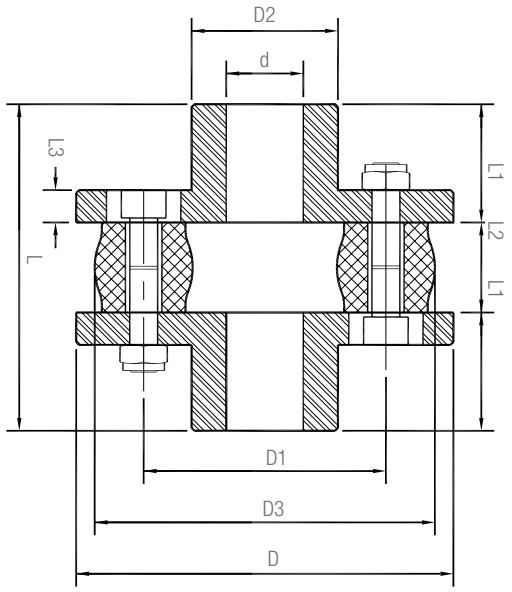
The OEM consulted with Guardian engineers after testing three competitor coupling designs without success. Upon careful review of the Guardian coupling choices available, the Superflex coupling was selected due to it's ability to withstand the harsh environment and stand up to the severe shock and vibratory loading of the screen. Ultimately, a Superflex 27 unit was tested and performed up to the customers' expectations.

The Superflex coupling consists of two hubs and a 55 durometer, shore "A" super elastic flexible rubber element. Once installed, the rubber element expands from its original pre-stressed condition. As a result, it's torsional load is influenced favorably, permitting lower tensile stress and higher vibratory torque load. The Superflex Model 27 features a nominal torque capacity of 2,390 in.lbs. (6549 in.lbs.) and provided additional misalignment capabilities required by the customer.

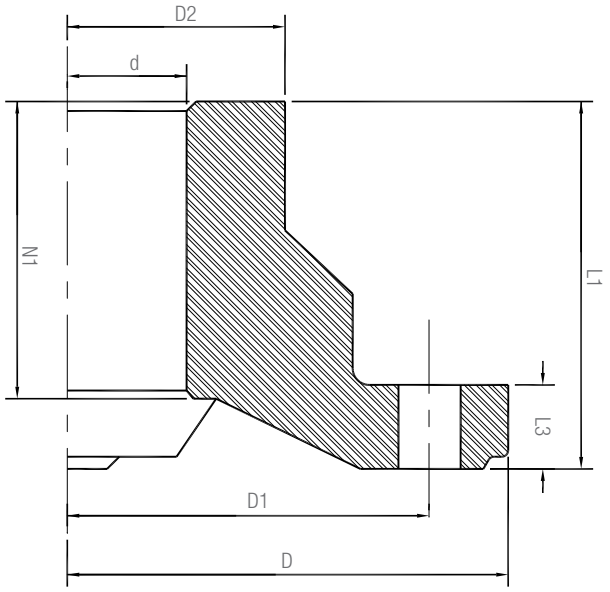
The Superflex's successful integration and long lasting performance on the initial screen model led the OEM to specify the coupling on several more models within their product line.

- Super elastic flexible rubber element of 55 durometer, shore "A" hardness
- Nominal torque capacity: 2,390 in.lbs. (6,549 in.lbs.)
- 5,000 RPM max. speed
- Nominal angular displacement: 2-3˚ (4-6˚ max.)

SUPERFLEX COUPLING SPECIFICATIONS



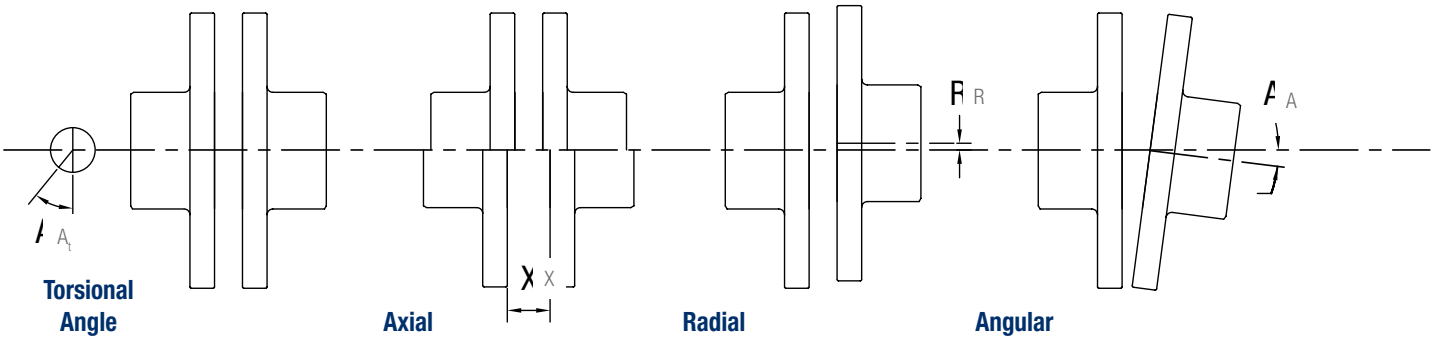
Superflex 4/8/16/27/55/80



Superflex 120/240

			SF-4	SF-8	SF-16	SF-27	SF-55	SF-80	SF-120	SF-240
T_{KN}	Nominal Torque	IN#	354	708	1,416	2,390	4,868	7,080	10,620	21,240
T_{KMAX}	Max Torque	IN#	885	1,770	3,540	6,549	12,213	17,258	26,108	52,215
N_{MAX}	Max Speed	RPM	9,000	7,500	6,500	5,000	4,000	3,500	3,000	2,000
d_{MAX}	Max Bore	IN.	1.102	1.378	1.654	2.362	2.952	3.346	3.740	5.118
D	Outside Diameter	IN.	4.173	5.276	5.945	7.520	9.449	10.236	10.157	13.228
D1	Bolt Circle Diameter	IN.	2.559	3.346	3.937	5.197	6.693	7.323	8.268	11.024
D2	Hub Diameter	IN.	1.575	2.047	2.520	3.521	4.331	5.039	5.709	7.874
D3	Element Diameter	IN.	3.583	4.646	5.591	7.126	9.213	10.000	11.063	14.961
L	Overall Length	IN.	3.976	4.567	5.827	6.181	8.189	10.197	11.811	14.961
L1	Length thru Bore	IN.	1.437	1.654	2.007	2.106	2.874	3.760	4.370	5.512
N1	Length thru Bore	IN.	—	—	—	—	—	—	3.543	4.646
L2	Element Length	IN.	1.102	1.260	1.811	1.969	2.441	2.677	3.071	3.937
L3	Flange Thickness	IN.	0.453	0.453	0.531	0.551	0.787	1.063	1.102	1.260
M	Weight	#	4.41	6.62	11.00	24.25	48.50	70.56	92.61	187.43
J	Mass Moment of Inertia	# IN SEC2	0.023	0.053	0.106	0.319	1.142	1.690	1.903	6.859
C_{Tdyn}	Dynamic Torsional Stiffness	IN# RAD	2,522	5,045	10,089	18,762	38,055	60,446	127,440	469,935
Bolts DIN 912 (8.8)			6X M8 × 50	6X M10 × 55	6X M12 × 75	6X M14 × 80	6X M20 × 110	6X M20 × 120	8X M20 × 130	8X M27 × 160
Tightening Torque		FT#	19	37	59	96	295	295	295	738

MISALIGNMENT CAPABILITIES



Series	SF-4	SF-8	SF-16	SF-27	SF-55	SF-80	SF-120	SF-240
Torsional Angle (Degree)	8	8	8	8	8	8	6	5
Axial (Inches)	0.12	0.12	0.16	0.16	0.16	0.16	0.28	0.31
Radial (Inches)	0.08	.08	0.08	0.08	0.08	0.12	0.12	0.12
Angular (Degree)	4.6	4.6	4.6	5.2	5.2	5.2	4	4

Power Ratings

N	SF-4	SF-8	SF-16	SF-27	SF-55	SF-80	SF-120	SF-240
RPM	HP							
50	.26	.54	1.07	1.88	3.89	5.63	8.45	16.90
100	.54	1.07	2.28	3.75	7.78	11.26	16.90	33.66
200	1.07	2.28	4.56	7.64	15.42	22.53	33.66	67.45
300	1.74	3.35	6.71	11.40	23.20	33.66	50.56	101.11
400	2.28	4.56	8.98	15.15	30.84	44.92	67.45	134.77
600	3.35	6.71	13.54	22.80	46.40	67.45	101.11	202.22
750	4.16	8.45	16.90	28.43	57.93	84.21	126.32	252.78
800	4.56	8.98	17.97	30.31	61.82	89.80	134.77	269.54
1000	5.63	11.26	22.53	37.95	77.24	112.38	168.56	337.00
1100	6.17	12.34	24.67	41.71	85.02	123.51	185.33	370.65
1200	6.71	13.54	26.95	45.46	92.66	134.77	202.22	404.45
1300	7.24	14.62	29.23	49.35	100.44	146.03	219.12	438.10
1450	8.18	16.23	32.59	54.98	111.97	162.93	244.33	488.66
1500	8.45	16.90	33.66	56.86	115.86	168.56	252.78	505.56
1600	8.98	17.97	35.94	60.61	123.51	179.69	269.54	539.22
1800	10.06	20.25	40.50	68.26	139.06	202.22	303.33	606.67
2000	11.26	22.53	44.92	75.77	154.48	224.62	337.00	674.00
2500	14.08	28.02	56.19	94.81	193.10	280.81	421.21	842.55
2800	15.69	31.51	62.89	106.21	216.30	314.60	471.76	943.66
3000	16.90	33.66	67.45	113.72	231.72	337.00	505.56	1011.00
3250	18.24	36.48	73.08	123.24	251.04	365.15	547.66	1095.33
3500	19.71	39.29	78.58	132.76	270.35	393.18	589.77	
4000	22.53	44.92	89.85	151.67	309.00	449.37	674.00	
4500	25.21	50.56	101.11	170.58	347.59	505.56		
5000	28.03	56.19	112.38	189.62	386.21			
5500	30.84	61.82	123.51	208.53				
5750	32.32	64.64	129.14	218.05				
6000	33.66	67.45	134.77					
6500	36.48	73.08	146.03					
7000	39.29	78.58	157.30					
7500	42.11	84.21						
8000	44.92	89.80						
8500	47.74	95.48						
9000	50.56							
9500	53.37							

GUARDIAN COUPLINGS™
A REGAL REXNORD BRAND

SUPERFLEX SELECTION PROCEDURE

Drive shaft _____
Drive keyway _____
Driven shaft _____
Driven keyway _____

HP _____
RPM _____
Temperature _____
Starts/HR _____

STEP 1: Using the formula below calculate the nominal torque (Tn) of your application.

Tn = (HP X 63,025) / RPM (IN-LBS)

STEP 2: Using the tables below select the service factors that best suit your application. After your selection calculate your service factor (S) by using the formula below.

S= S1 X S2 X S3

STEP 3: Select a Guardian Superflex coupling which has a nominal torque (**Tkn**) on page 2 equal to or greater than the nominal torque (**Tn**) value calculated in step 1 multiplied by the service factor (**S**) as shown below.

Tkn > Tn X S (IN-LBS)

STEP 4: Verify the system speed is less than the maximum speed rating listed on page 3.

STEP 5: Verify the system misalignment with the rated misalignment of the coupling on page 4.

STEP 6: Verify min/max bore sizes of the selected coupling to the shaft sizes in your system. Also, verify dimensionally the coupling will fit in the envelop of the system.

NOTE: *These service factors are for general guidance only and are complimentary to customers knowledge of their own equipment. For further assistance in selecting a coupling or additional information on general installation instructions, including mounting and alignment, please contact Guardian Industries.*

Service Factors (S1)

Application	Engine Type (# of Cylinders)		
	4+*	2-3	1
Light Duty (e.g. conveyor belts)	1.00	1.00	1.00
Medium Duty (e.g. washing machines)	1.20	1.20	1.20
Heavy Duty (e.g. dredging engines)	1.50	1.50	1.50
Extra Heavy Duty (e.g. hammer mills)	1.60	1.60	1.60

* Also applicable for electric motors.

Temperature Service Factors (S2)

Temperature (F)	-20/80	100	140	175
Service Factor S2	1.00	1.20	1.40	1.80

Starts Per Hour Service Factors (S3)

Starts/Hr	100	200	400	800
Service Factor S3	1.00	1.20	1.40	1.60

Definition of Terms

Term	Definition
Tn	Nominal torque of the system to be transmitted by the coupling
HP	Horsepower of the engine/motor
RPM	Driven speed of the application
S	Total service factor of the system
S1	Application service factor of the system
S2	Temperature service factor of the system
S3	Number of starts per hour service factor of the system
Tkn	Continuous nominal torque of the coupling

These service factors are for general guidance only and are complimentary to customers knowledge of their own equipment. For further assistance in selecting a coupling please contact our engineering department at 219-874-5248.



ABOUT GUARDIAN COUPLINGS

For more than 70 years, Guardian has been designing and manufacturing world-class couplings and other power transmission components. Utilizing advanced manufacturing technologies and processes, Guardian provides highly-reliable coupling and component solutions to meet the most challenging industrial application requirements.

Guardian provides a wide range of standard and custom products including flywheel couplings, hydraulic pump mounts, bearing supported stub shafts, flexible shaft-to-shaft couplings, motion control couplings as well as compression pipe couplings.

Durable Guardian products are utilized in key industries including mobile hydraulics, farm & ag, tree care, concrete, food & beverage, material handling, automation, power generation, and oil & gas on applications such as skid steers, aerial lifts, harvesters, wood chippers, concrete pumps, dewatering pumps, baggage handlers, conveyors, robotics, compressors, and generator sets.

REGAL REXNORD COUPLINGS

Regal Rexnord Couplings offers the largest selection of industrial couplings available from a single source...worldwide. For over 150 years, TB Wood's, Ameridrives, Bibby Turboflex, Lamiflex, Ameridrives Power Transmission, Guardian and Huco, the industry-leading brands of Regal Rexnord Couplings have been providing innovative coupling solutions to meet the requirements for a broad variety of drivetrain applications spanning many industries including energy, metals, mining, oil & gas, and food processing. Highly-engineered Regal Rexnord coupling products represent the latest in coupling technology, featuring superior design and exceptional quality to ensure long-lasting performance in all types of environments.

Guardian Couplings Facilities

North America

USA
300 Indiana Highway 212
Michigan City, IN 46360
219-874-5248

Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings

Europe

United Kingdom
Merchant Drive, Hertford
Hertfordshire SG13 7BL - England
+44(0)1992 501900

Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings

Scan to see all the brands of Regal Rexnord

GUARDIAN COUPLINGS™
A REGAL REXNORD BRAND