



## (SG) Steel Gear Couplings



## 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.

## FEATURES AND ADVANTAGES

The crowned gear tooth ensures maximum contact at the strongest part of the tooth resulting in high torque capacities. The Steel Gear product line offers our largest capacity for torque. Available in double engagement full flex or single engagement flex rigid designs. Exposed bolt sleeve design allows for ease of assembly. Size 10 through 60 stocked in minimum plain bores, size 70 thru 120 made to order. Clearance or interference fit bores available as requested. Coupling assemblies can be interchanged one half of other gear couplings made to AGMA standards.



### Fully Interchangeable

Coupling assemblies are fully interchangeable with other gear couplings made to AGMA standards.

### Crowned Gear Teeth

Advanced CAD design ensures maximum contact at the strongest part of the tooth.

### Ease of Assembly

The "SG" design incorporates exposed bolts with captive nuts for ease of assembly.

### High Torque Capacity

With careful selections of material and optimization of pitch circle diameter, torque rating up to 1 million inch pounds can be achieved.

# “SG” STEEL GEAR COUPLING

## Coupling Selection Basics

In selecting couplings, the characteristics of driving and driven machines must be considered. Factors in Tables 1 and 2, in conjunction with the following procedure, are for general guidance and are complimentary to customers' specialist knowledge of their own equipment.

1. Select coupling type from page 4.
2. Select Service Factor (SF) from Table 2.
3. Calculate required minimum rating thus:
  - a) Normal Service (Nominal Torque):  

$$\text{Rating Ft\#} = \frac{(\text{HP})(63025)(\text{SF})}{(12)(\text{RPM})}$$
  - b) Repetitive High Peak Torque applications
    - i. Non-Reversing Duty;  
 Rating, Ft# = Peak Torque
    - ii. Reversing Duty:  
 Rating Ft# = Peak Torque x 1.5

NOTE: Occasional peak torques of twice the catalog rating can be accommodated providing they occur less than a 1000 times during the life of the coupling.

4. Select coupling which has a rating equal to or above that arrived in item 3 above.

Determine maximum coupling bore from Table 1 (pg. 4). Hub Boss Diameters are given in the following dimension tables (pg. 5, Dimension “D”).

Check that the above max. bore is suitable for shafts. If not, go to next coupling size and repeat check.

5. Having found a suitable coupling to satisfy the above conditions, check that the coupling is capable of speed required.

## Misalignment

“SG” Steel Gear Couplings are designed to accommodate parallel and angular misalignment and axial movement.

While some sizes of “SG” Steel Gear Couplings are capable of static misalignment of up to  $1\frac{1}{2}\%$  per gear hub, it is recommended that all couplings be aligned on initial installation.

Care should be taken to ensure that misalignment during operation is kept to an absolute minimum, as excesses will cause wear of the product together with high loading on associated machinery. This will have a great influence on the life of the product.

## Selection Examples

### EXAMPLE 1:

Select a double engagement coupling to connect a 4- cylinder reciprocating compressor to a 350HP, 1000RPM motor. Motor shaft 3.25 diameter, compressor shaft 2.875 diameter.

1. Type SG.
2. Service Factor 2.00 (1.00 plus 1.00) See pg. 3 for further details
3. Rating =  $\frac{(350)(63025)(2)}{(12)(1000)} = 3676.46 \text{ Ft\#}$
4. Coupling Size is 25: (capacity 4731 Ft#)  
 Application is non-reversing with cycle torque, i.e. (from table 1) Medium duty, requiring a minimum Hub OD/Bore ratio of 1.45 : 1.  
 Hub OD of Size 25 coupling is 5.16

$$\therefore \text{Max. bore} = \frac{D}{1.45} = \frac{5.16}{1.45} = 3.56$$

$\therefore$  Coupling size 25 will accommodate 3.25 diameter shaft.

5. Coupling Size 25 is suitable for duty, capable of accepting 3.25 bore and suitable for operating at 1000RPM.

### EXAMPLE 2:

Select a double engagement coupling for a heavy duty pulveriser with a normal demand of 250 HP from a motor running at 750 RPM. Shafts are 3.50 and 4.00 diameters.

1. Type SG.
2. Service Factor 1.75
3. Rating =  $\frac{(250)(63025)(1.75)}{(12)(750)} = 3063.72 \text{ Ft\#}$
4. Coupling Size is 25: (capacity 4731 Ft#) Application is heavy duty requiring a minimum Hub Boss/Bore ratio of 1.5 : 1.

Boss of Size 25 coupling is 5.16

$$\therefore \text{Max. bore} = \frac{D}{1.5} = \frac{5.16}{1.5} = 3.44$$

As the shaft sizes are 3.50 and 4.00 then the coupling size will need to be increased to accommodate the 4.00 shaft.

Boss of Size 30 is 5.98

$$\therefore \text{Max. bore} = \frac{5.98}{1.5} = 3.99$$

Coupling size of 30 is suitable for the duty and of accepting shafts of 90mm and 100mm.

5. Check speed capability.

# “SG” STEEL GEAR COUPLING

## Keyway Sizes/Bore Tolerances

### Fractional Bores and Keyways

Nominal Bore Diameter	Nominal Keyway Size Width x Depth	Bore Tolerance Industry Std. for Class 1, Clearance Fit	
1/2 to 9/16	1/8 x 1/16	+0.01	-0.000
5/8 to 7/8	3/16 x 3/32	+0.01	-0.000
15/16 to 1-1/4	1/4 x 1/8	+0.01	-0.000
1-5/16 to 1-1/4	5/16 x 5/32	+0.01	-0.000
1-7/16 to 1-3/4	3/8 x 3/16	+0.01	-0.000
1-13/16 to 2	1/2 x 1/4	+0.01	-0.000
2-1/16 to 2-1/4	1/2 x 1/4	+0.015	-0.000
2-5/16 to 2-3/4	5/8 x 5/16	+0.015	-0.000
2-13/16 to 3-1/4	3/4 x 3/8	+0.015	-0.000
3-5/16 to 3-3/4	7/8 x 7/16	+0.015	-0.000
3-13/16 to 4	1 x 1/2	+0.015	-0.000
4-1/16 to 4-1/2	1 x 1/2	+0.02	-0.000
4-9/16 to 5-1/2	1-1/4 x 5/8	+0.02	-0.000
5-9/16 to 6-1/2	1-1/2 x 3/4	+0.02	-0.000
6-9/16 to 7-1/2	1-3/4 x 7/8	+0.025	-0.000
7-9/16 to 9	2 x 1	+0.03	-0.000
9-1/16 to 11	2-1/2 x 1-1/4	+0.03	-0.000

### Metric Bores and Keyways

Diameter Over To	Keyway Width x Depth	Tolerance H7, MM	
12 17	5 x 2.3	+0.018	-0.000
17 22	6 x 2.8	+0.021	-0.000
22 30	8 x 3.3	+0.021	-0.000
30 38	10 x 3.3	+0.025	-0.000
38 44	12 x 3.3	+0.025	-0.000
44 50	14 x 3.8	+0.025	-0.000
50 58	16 x 4.3	+0.030	-0.000
58 65	18 x 4.4	+0.030	-0.000
65 75	20 x 4.9	+0.030	-0.000
75 85	22 x 5.4	+0.030	-0.000
85 95	25 x 5.4	+0.035	-0.000
95 110	28 x 6.4	+0.035	-0.000
110 130	32 x 7.4	+0.035	-0.000
130 150	36 x 8.4	+0.040	-0.000
150 170	40 x 9.4	+0.040	-0.000
170 200	45 x 10.4	+0.046	-0.000
200 230	50 x 11.4	+0.046	-0.000
230 260	56 x 12.4	+0.046	-0.000
260 290	63 x 12.4	+0.052	-0.000

## Reciprocating Engine Service Factors

For engine drives where good flywheel regulation prevents excessive torque fluctuations.

No. of Cylinders	Service Factor
6 and over	0.5 + S.F. TABLE 2
4 or 5	1.0 + S.F. TABLE 2
Less than 4	Refer to GUARDIAN

For drives where the operation is near or actually passes through a major torsional natural frequency, a mass elastic analysis of the system is advised.

## Table 1: Max. Coupling Bore Sizes

Duty Class	Load Classification	Coupling Bore
Uniform	Steady load, very rarely subjecting to maximum loading	Use maximum bores from tables
Medium	Steady load with superimposed cyclic load fluctuation	Max. = $\frac{D}{1.45}$ Bore
Heavy	Repeated maximum load fluctuation/shock loads	Max. = $\frac{D}{1.5}$ Bore
Extra Heavy	Regularly subjected to fully reversing maximum loads	Max. = $\frac{D}{1.6}$ Bore

## Minimum Service Factors (SF)

### For “SG” Steel Gear Coupling

These service factors are for general guidance only and are complimentary to customers’ knowledge of their own equipment.

Table 2

Application	Service Factor	Application	Service Factor
<b>AGITATORS</b> .....	1.0	<b>PAPER MILLS</b>	
<b>BLOWERS</b>		Bleacher.....	1.0
Centrifugal.....	1.0	Felt stretcher.....	1.25
Lobe/Vane.....	1.25	Stock chest/stock pump-rotary/winder.....	1.5
<b>CLAY WORKING MACHINES</b>		Blealer and pulpek/Calender/Couch/Dryer/Fourdrinier/Press/Pulp grinder/Suction roll.....	1.75
Brick press, Pug mill, Briquette machine.....	1.75	Jordan/Stock pump-reciprocating.....	2.0
<b>COMPRESSORS</b>		Barking drum/Chipper.....	2.5
Centrifugal.....	1.0	<b>PLASTIC</b>	
Lobe/Rotary.....	1.25	Calenders/Crushers.....	1.5
Reciprocating		Extruders/Mixers.....	
1 to 3 cylinders.....	3.0	<b>PULVERISERS</b>	
4 or more cylinders.....	1.75	Roller/Hammer mill, light duty.....	1.5
<b>CONVEYORS</b>		Hog/Hammer mill, heavy duty.....	1.75
Uniformly fed horizontal: Screw, Apron, Assembly, Belt, Chain, Flight, Oven.....	1.0	<b>PUMPS</b>	
Heavy Duty Dredge, Inclined belt and screw.....	1.5	Centrifugal.....	1.0
Reciprocating.....	3.0	Descaling with accumulators/Rotary gear, Lobe and Vane.....	1.25
<b>CRANES AND HOISTS</b>		Reciprocating:	
Main hoist - medium duty/ Mine hauling.....	2.5	1 cylinder, single or double acting.....	3.0
Main hoist - heavy duty.....	3.0	2 cylinders, single acting.....	2.0
Long or cross travel/Slew or luff skip, hoise/slope.....	1.75	2 cylinders, double acting.....	1.75
<b>CRUSHERS</b> .....	2.5	3 cylinders or more.....	1.5
<b>DREDGERS</b> .....	2.0	<b>RUBBER INDUSTRY</b>	
<b>ELEVATORS</b>		Extruder.....	1.75
Centrifugal and gravity discharge.....	1.25	Calender.....	2.0
<b>FANS</b>		Banbury mixer/Cracker/Mixing mill/Plasticator/Refiner.....	2.5
Centrifugal.....	1.0	<b>STEEL INDUSTRY</b>	
Forced Draught.....	1.5	Soaking pit/Cover drive - Lift.....	1.0
Induced draught with damper Mine/Cooling tower.....	2.0	Travel.....	2.0
Induced draught without control.....		Coilers (up or down) Hot mills only Coilers (up or down) Cold mills only.....	1.5
<b>FOOD</b>		<b>Coke Plants:</b>	
Beet slicer.....	1.75	Pusher ram drive.....	2.5
Dough mixer.....		Door Opener.....	2.0
Meat grinder.....		Straighteners.....	
Cereal cooker.....	1.25	Cold mills-Strip and temper mills Drawbench/Furnace pusher/hot and cold saws/Ingot cars/Reelers/Seamless tube mills piercer/Rod mills/mill tables/Manipulators/Feed rolls-blooming mills.....	3.0
Bottling, can filling.....	1.0	Hot mills-Strip and sheet mills Pusher and Lorry car traction drive.....	3.0
<b>GENERATORS</b>		Cooling beds.....	1.5
Even load.....	1.0	Wire drawing/Sitters, steel mills only.....	1.75
Hoist and Railway service.....	1.5	<b>SUGAR INDUSTRY</b>	
Welder load.....	2.0	Cane carrier and leveller.....	1.75
<b>KILN</b> .....	2.0	Can knife and crusher.....	2.0
<b>LAUNDRY MACHINES</b> .....	2.0	Mill stands, Turbine driven-Helical or Herringbone gears.....	1.5
<b>MACHINE TOOLS</b>		Electric drive or steam driven with all Helical or Herringbone or spur gears with any prime mover.....	1.75
Main drives.....	1.5	<b>TEXTILES</b>	
Notching press/Planer/Punch.....	1.75	Batcher.....	1.25
Auxiliary and traverse drives.....	2.0	Dyeing machinery.....	
<b>METAL WORKING</b>		Calender/Card machine/Dry can/Loom.....	1.5
Bending.....	1.5	<b>TOBACCO AND CIGARETTE MACHINERY</b> .....	1.5
Shears.....		<b>WATER AND WASTE TREATMENT</b>	
Presses.....	2.0	Aerators.....	1.5
Hammers.....		Screw pumps.....	
Straighteners.....		Screens.....	
Punching.....		<b>WIND TURBINES</b> .....	1.25
<b>MILLS (Rotary Type)</b>		<b>WOOD WORKING MACHINERY</b>	
Ball or Pebble.....	2.0	Trimmers, haulage, barkers, planes, saws.....	2.0
Rod or Tube.....			
Dryer and Cooler.....	1.75		
<b>MIXERS</b>			
Drum.....	1.5		
Concrete (continuous or intermittent).....	1.75		
Grizzly.....	2.0		
<b>OIL INDUSTRY</b>			
Chiller.....	1.25		
Oil well pumping (return 150% peak torque).....	2.0		

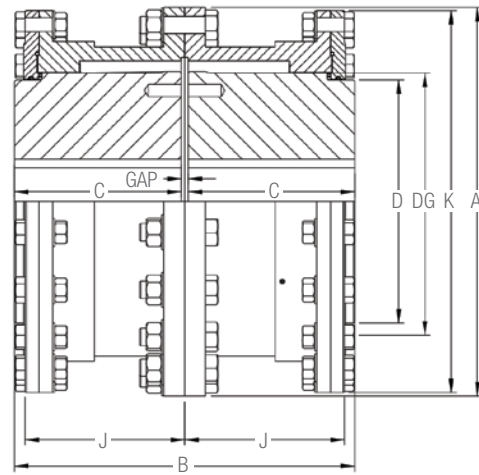
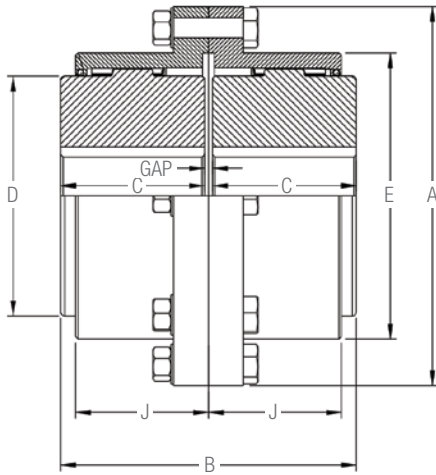
# STEEL GEAR COUPLING FLEX / FLEX DESIGN



**Type 1**  
Sizes 10-60



**Type 2**  
Sizes 70-120



## Type 1

Size	HP Per 100 rpm	Max. Speed (rpm)	Basic Torque (ft-lbs)	Bore Dia. (in)		Dimensions (in)						Gap	Cplg weight (lbs)	Lube weight (lbs)	Size
				Max.	Min.	A	B	C	D	E	J				
10	12	8,000	622	1.89	0.51	4.57	3.50	1.69	2.72	3.31	1.54	0.12	9.92	0.09	10
15	27	6,500	1,398	2.36	0.75	5.98	3.98	1.93	3.39	4.13	1.89	0.12	20.06	0.15	15
20	50	5,600	2,590	2.87	0.98	7.01	5.00	2.44	4.13	4.96	2.32	0.12	35.05	0.24	20
25	90	5,000	4,662	3.62	1.26	8.39	6.26	3.03	5.16	6.10	2.83	0.20	57.10	0.51	25
30	150	4,400	7,769	4.13	1.50	9.45	7.36	3.58	5.98	7.09	3.31	0.20	95.02	0.79	30
35	230	3,900	11,913	4.88	2.01	10.98	8.58	4.17	7.01	8.31	3.86	0.24	149.91	1.19	35
40	350	3,600	18,128	5.75	2.52	12.52	9.76	4.76	8.27	9.65	4.37	0.24	214.95	2.01	40
45	480	3,200	24,862	6.50	2.99	13.62	10.94	5.31	9.25	10.79	4.84	0.31	300.05	2.29	45
50	650	2,900	33,667	7.01	3.50	15.31	12.36	6.02	10.00	12.05	5.55	0.31	419.98	1.70	50
55	850	2,650	44,026	7.76	4.02	16.73	13.54	6.61	10.98	13.15	6.22	0.31	550.05	4.89	55
60	1,100	2,450	56,975	8.74	4.49	17.99	15.12	7.40	12.01	13.23	6.26	0.31	675.05	7.01	60

## Type 2

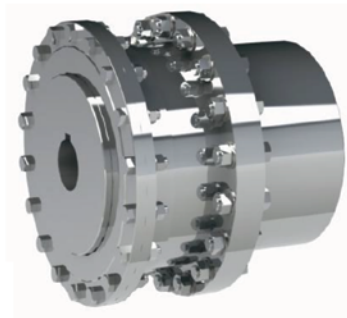
Size	HP Per 100 rpm	Max. Speed (rpm)	Basic Torque (ft-lbs)	Bore Dia. (in)		Dimensions (in)								Cplg* weight (lbs)	Lube weight (lbs)	Size
				Max.	Min.	A	B	C	D	DG	J	K	Gap			
70	1,600	2,150	82,873	10.00	3.50	20.75	17.78	8.70	13.50	14.02	7.72	20.35	0.37	1070.11	9.59	70
80	2,100	1,750	108,771	10.98	4.02	23.27	19.98	9.80	14.02	14.49	9.57	22.52	0.37	1550.05	21.01	80
90	2,850	1,550	147,617	12.01	4.49	25.98	22.24	10.87	15.51	16.50	10.43	25.24	0.51	2169.99	27.01	90
100	4,000	1,450	207,182	13.50	5.00	27.99	24.53	12.01	17.52	18.50	11.57	27.52	0.51	2870.39	33.00	100
110	5,500	1,330	284,876	15.24	5.51	30.51	26.73	13.11	19.49	20.51	12.68	29.49	0.51	3699.98	39.00	110
120	7,000	1,200	362,569	16.73	5.98	32.99	28.31	13.90	21.50	22.52	13.43	32.52	0.51	4660.08	46.01	120

\* Coupling weight, without bore machining

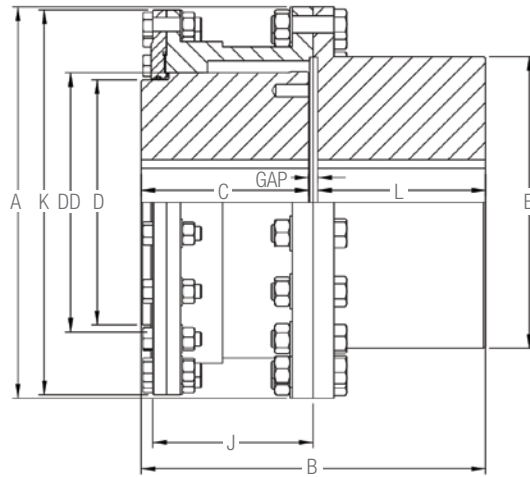
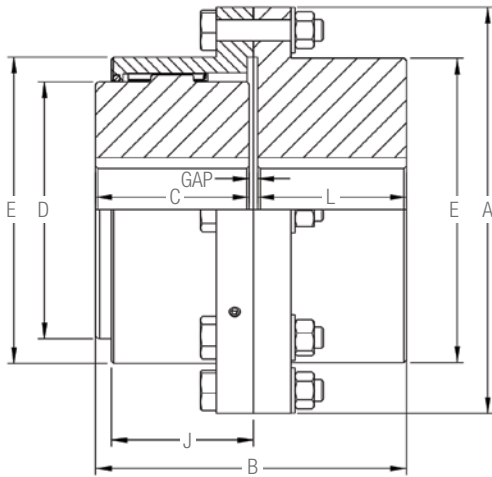
## STEEL GEAR COUPLING FLEX / RIGID DESIGN



**Type 3**  
Sizes 10-60



**Type 4**  
Sizes 70-120



### Type 3

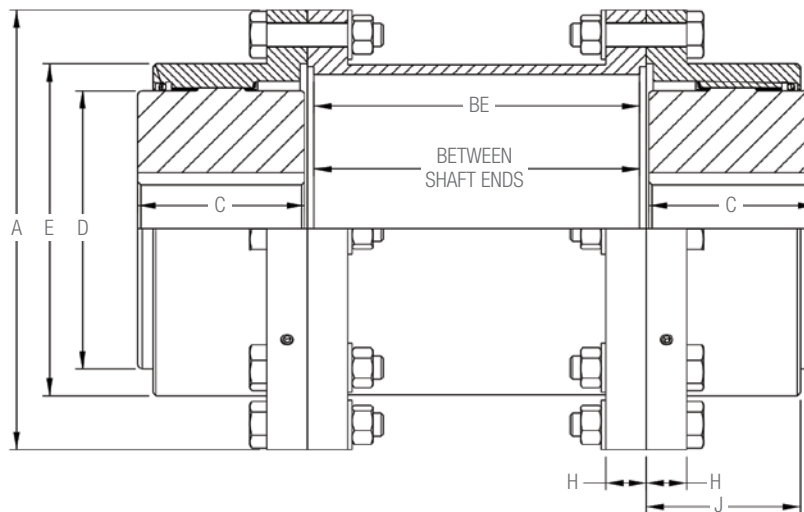
Size	HP Per 100 rpm	Max. Speed (rpm)	Basic Torque (ft-lbs)	Bore Dia. (in)			Dimensions (in)								Cplg weight (lbs)	Lube weight (lbs)	Size
				Max.		Min.	A	B	C	D	E	J	L	Gap			
				DE	DA												
10	12	8,000	622	2.36	1.89	0.51	4.57	3.43	1.69	2.72	3.31	1.54	1.57	0.16	9.92	0.04	10
15	27	6,500	1,398	2.95	2.36	0.75	5.98	3.90	1.93	3.39	4.13	1.89	1.81	0.16	20.06	0.09	15
20	50	5,600	2,590	3.62	2.87	0.98	7.01	4.88	2.44	4.13	4.96	2.32	2.28	0.16	35.05	0.15	20
25	90	5,000	4,662	4.37	3.62	1.26	8.39	6.14	3.03	5.16	6.10	2.83	2.91	0.20	59.97	0.26	25
30	150	4,400	7,769	5.12	4.13	1.50	9.45	7.24	3.58	5.98	7.09	3.31	3.46	0.20	95.02	0.40	30
35	230	3,900	11,913	5.87	4.88	2.01	10.98	8.39	4.17	7.01	8.31	3.86	4.02	0.22	134.92	0.60	35
40	350	3,600	18,128	6.73	5.75	2.52	12.52	9.57	4.76	8.27	9.65	4.37	4.53	0.28	220.02	1.04	40
45	480	3,200	24,862	7.64	6.50	2.99	13.62	10.79	5.31	9.25	10.79	4.84	5.16	0.31	300.05	1.26	45
50	650	2,900	33,667	8.74	7.01	3.50	15.31	12.17	6.02	10.00	12.05	5.55	5.79	0.35	429.90	2.01	50
55	850	2,650	44,026	9.76	7.76	4.02	16.73	13.78	6.61	10.98	13.15	6.22	6.81	0.35	580.03	2.49	55
60	1,100	2,450	56,975	10.51	8.74	4.49	17.99	15.12	7.40	12.01	14.41	6.65	7.32	0.39	714.95	3.75	60

### Type 4

Size	HP Per 100 rpm	Max. Speed (rpm)	Basic Torque (ft-lbs)	Bore Dia. (in)			Dimensions (in)									Cplg* weight (lbs)	Lube weight (lbs)	Size	
				Max.		Min.	A	B	C	D	DD	E	J	L	K				Gap
				DE	DA														
70	1,600	2,150	82,873	12.01	10.00	3.50	20.75	17.87	8.70	13.50	14.02	16.73	7.72	8.66	20.35	0.51	1119.94	5.00	70
80	2,100	1,750	108,771	13.50	10.98	4.02	23.27	20.12	9.80	14.02	14.49	17.76	9.57	9.80	22.52	0.51	1539.91	11.00	80
90	2,850	1,550	147,617	15.00	12.01	4.49	25.98	22.28	10.87	15.51	16.50	20.00	10.43	10.87	25.24	0.55	2170.43	14.00	90
100	4,000	1,450	214,414	15.98	13.50	5.00	27.99	24.65	12.01	17.91	18.50	20.87	11.57	12.01	27.52	0.63	2759.94	17.00	100
110	5,500	1,330	284,876	17.52	15.24	5.51	30.51	26.85	13.11	19.49	20.51	22.99	12.68	13.11	29.49	0.63	3610.03	20.00	110
120	7,000	1,200	362,569	19.49	16.73	5.98	32.99	28.43	13.90	21.50	22.52	25.51	13.43	13.90	32.52	0.63	4580.06	24.01	120

\* Coupling weight, without bore machining

# STEEL GEAR COUPLING SPACER FLEX / FLEX DESIGN



## Type 5

Size	HP Per 100 rpm	Max. Speed (rpm)	Basic Torque (ft-lbs)	Bore Dia. (in)		Dimensions (in)								Cplg weight (lbs)	Lube weight (lbs)	Size
				Max.	Min.	A	BE		C	D	E	H	J			
							Min.	Max.								
10	12	7,000	622	1.89	0.51	4.57	3.27	12.24	1.69	2.72	3.31	0.55	1.54	14.99	0.09	10
15	27	5,500	1,398	2.36	0.75	5.98	3.27	12.24	1.93	3.39	4.13	0.75	1.89	29.98	0.15	15
20	50	4,600	2,590	2.87	0.98	7.01	3.27	12.24	2.44	4.13	4.96	0.75	2.32	44.97	0.24	20
25	90	4,000	4,662	3.62	1.26	8.39	3.74	12.24	3.03	5.16	6.10	0.87	2.83	85.10	0.51	25
30	150	3,600	7,769	4.13	1.50	9.45	3.74	12.24	3.58	5.98	7.09	0.87	3.31	119.93	0.79	30
35	230	3,100	11,913	4.88	2.01	10.98	4.72	12.24	4.17	7.01	8.31	1.10	3.86	195.11	1.19	35
40	350	2,800	18,128	5.75	2.52	12.52	4.72	12.24	4.76	8.27	9.65	1.10	4.37	270.06	2.01	40
45	480	2,600	24,862	6.50	2.99	13.62	4.72	12.24	5.31	9.25	10.79	1.10	4.84	365.08	2.29	45
50	650	2,400	33,667	7.01	3.50	15.31	5.75	12.24	6.02	10.00	12.05	1.50	5.55	524.92	3.90	50
55	850	2,200	44,026	7.76	4.02	16.73	5.75	12.24	6.61	10.98	13.15	1.50	6.22	675.05	4.89	55
60	1,100	2,100	56,975	8.74	4.49	17.99	5.75	12.24	7.40	12.01	14.41	0.98	6.65	789.91	7.01	60

- Coupling weight without Bore machining and Min BE.
- Application of spacer
  - 1 When it is impossible to connect hubs due to long distance between shaft ends.
  2. When it is necessary to prevent transmitting heat and electric currency.
- “BE” is the distance between shaft ends. State “BE” number when you order.

## 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*

## The Brands of Altra Industrial Motion

### Couplings

**Ameridrives**  
[www.ameridrives.com](http://www.ameridrives.com)

**Bibby Turboflex**  
[www.bibbyturboflex.com](http://www.bibbyturboflex.com)

**Guardian Couplings**  
[www.guardiancouplings.com](http://www.guardiancouplings.com)

**Huco**  
[www.huco.com](http://www.huco.com)

**Lamiflex Couplings**  
[www.lamiflexcouplings.com](http://www.lamiflexcouplings.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**TB Wood's**  
[www.tbwoods.com](http://www.tbwoods.com)

### Gear Cam Limit Switches

**Stromag**  
[www.stromag.com](http://www.stromag.com)

### Electric Clutches & Brakes

**Inertia Dynamics**  
[www.idicb.com](http://www.idicb.com)

**Matrix**  
[www.matrix-international.com](http://www.matrix-international.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**Warner Electric**  
[www.warnerelectric.com](http://www.warnerelectric.com)

### Linear Products

**Warner Linear**  
[www.warnerlinear.com](http://www.warnerlinear.com)

### Engineered Bearing Assemblies

**Kilian**  
[www.kilianbearings.com](http://www.kilianbearings.com)

### Heavy Duty Clutches & Brakes

**Industrial Clutch**  
[www.indclutch.com](http://www.indclutch.com)

**Twiflex**  
[www.twiflex.com](http://www.twiflex.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**Svendborg Brakes**  
[www.svendborg-brakes.com](http://www.svendborg-brakes.com)

**Wichita Clutch**  
[www.wichitaclutch.com](http://www.wichitaclutch.com)

### Belted Drives

**TB Wood's**  
[www.tbwoods.com](http://www.tbwoods.com)

### Gearing

**Bauer Gear Motor**  
[www.bauergears.com](http://www.bauergears.com)

**Boston Gear**  
[www.bostongear.com](http://www.bostongear.com)

**Delroyd Worm Gear**  
[www.delroyd.com](http://www.delroyd.com)

**Nuttall Gear**  
[www.nuttallgear.com](http://www.nuttallgear.com)

### Overrunning Clutches

**Formsprag Clutch**  
[www.formsprag.com](http://www.formsprag.com)

**Marland Clutch**  
[www.marland.com](http://www.marland.com)

**Stieber**  
[www.stieberclutch.com](http://www.stieberclutch.com)

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