Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath Gear Couplings

Lovejoy offers a variety of designs and models in its gear coupling family. From standard, off-the-shelf stock to new, high speed, special designs, Lovejoy can satisfy your gear coupling needs.

Continuous and Flanged Sleeve

The original Continuous Sleeve, or "C", coupling offers a lightweight, compact, and simple design without compromising torque carrying capacity. The Flanged Sleeve, or "F", coupling is available in exposed or shrouded bolt styles in which the number of bolts, size of bolts, and bolt circle are identical with industry standards. Within these two basic product lines, modifications and variations exist to serve a wide variety of applications such as extended distances between shaft ends, Mill Motors, limited end float, or vertical. Many designs can be created for unique applications as well.

CONTINUOUS SLEEVE GEAR COUPLING

FLANGED SLEEVE GEAR COUPLING

⚠ WARNING

You must refer to page iv for Important Safety Instructions and Precautions for the selection and use of these products. Failure to follow the instructions and precautions can result in severe injury or death.

Gear Couplings

VIRTUS
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Lovejoy/Sier-Bath Continuous Sleeve Series

Absorbs Misalignment, End-Float

The basic principle of the Lovejoy/Sier-Bath Gear Coupling is similar to that of conventional flexible gear couplings. While it is desirable to align shafts as accurately as possible, the purpose of any flexible coupling is to absorb probable misalignment (angular and offset), and end-float. The Lovejoy/ Sier-Bath Coupling accomplishes this through the rocking action of the hubs in the sleeve.

Simplified Method of Closure

The essential difference between the Lovejoy/Sier-Bath Coupling and conventional types is its simplified design. This is made possible by the advanced assembly and lubrication sealing arrangement, which eliminates the need for cumbersome flanges, bolts and nuts. BUNA N lubrication seals and steel snap rings hold in the lubricant and provide the means of assembly.

Standard Types and Sizes

Lovejoy/Sier-Bath Couplings are stocked in Standard, Mill Motor, Vertical, Floating Shaft and Spacer Types—sizes $^{7}/_{8}$ to 12, to accommodate bores up to 12.50″. Load capacities range from 4 to 4,000 HP per 100 RPM.

Special Types and Sizes

Many special types have been manufactured, such as Brakedrum Type, Sliding Hub Type, Jordan Type, etc. Specifications on sizes larger than standard are available. Size range is virtually unlimited. Exceptional simplicity makes great design flexibility possible. Unusual requirements can also be met.

Features and Benefits of Continuous Sleeve Type Couplings

- Simple and inexpensive type of gear coupling.
- All steel sleeves and hubs.
- Reinforced rubber seals with steel snap rings to hold lubricant in place.
- Available as vertical and horizontal couplings.
- Wide variety of special variations available such as full-flex, flex–rigid, mill motor, floating shaft and spacer types.
- Standard configurations are available off-the-shelf.

Two Hubs — One Sleeve

Major components are machined from medium carbon steel. Gear teeth are precision cut 20° pressure angle with minimum backlash and are smaller for even distribution of load, greater capacity, and longer life. Interference fit on bore is standard.

Two Seals

The seals are made of BUNA N with two reinforcing washers bonded to the inside faces which positively retain lubricant and seal interior against foreign matter. Seals are patented Lovejoy/Sier-Bath design and are tested.

Two Snap Rings

The spiral wound rings are made of oil hardened spring steel and securely hold the coupling together. Each ring is simple to install and remove yet withstands over 100,000 pounds of end-thrust.

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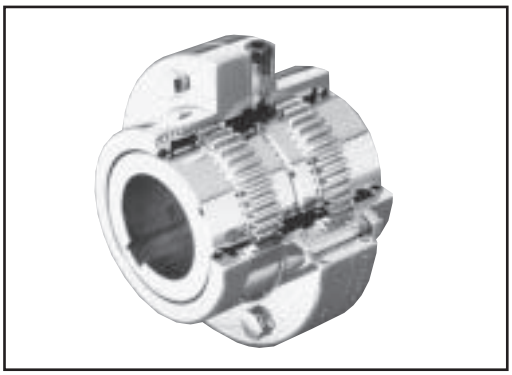
Lovejoy/Sier-Bath Flanged Sleeve Series

Misalignment and End-Float Capability

The Lovejoy/Sier-Bath Flanged Sleeve gear coupling is a flexible coupling that compensates for angular misalignment, parallel misalignment, and end float. Angular and parallel misalignment, and combinations thereof, will result in angular misalignment at the gear mesh. Lovejoy/Sier-Bath Flanged Sleeve couplings can accommodate 1½° of relative angular misalignment in each gear mesh up to size 5½. Sizes 6 and larger can accommodate ¾° of angular misalignment at each gear mesh. The hub teeth are fully crowned to provide for a larger contact area and lower stresses under misaligned conditions. The crowned tooth design also avoids the end loading that occurs on straight teeth under misalignment.



Features and Benefits of Flanged Sleeve Couplings

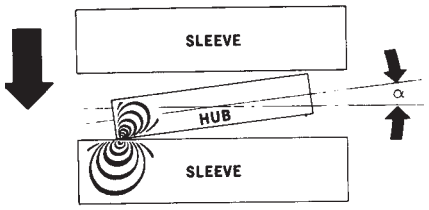
- Patented Vari-Crown® tooth form for long life.
- Standard 20° pressure angle.
- Heat treated bolts for greater strength.
- Bolts and nuts are coated for corrosion resistance and ease of maintenance.
- Interchangeable with industry standards.
- Large bore and torque capacities.
- Piloted gear fit for higher speeds and less vibration.
- Interference fit on bore is standard.

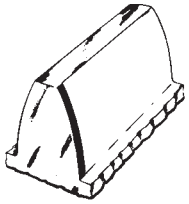
Standard and Special Types and Sizes

The standard Flanged Sleeve series is offered in exposed and shrouded bolt patterns through size 5½. The exposed bolt pattern is available for sizes larger than size 6. It has the same number of bolts, size of bolts, and bolt circle as industry standards up to size 7. Heat treated bolts are plated for corrosion resistance.

Modifications and variations of the standard Flanged Sleeve coupling exist to suit specific or unique applications. Sizes can go as large as size 30 which can accommodate up to 54″ bores. Insulated couplings, Jordan types, extended slide, vertical, brakedrum, and continuously lubricated are some of the special designs that can be made.

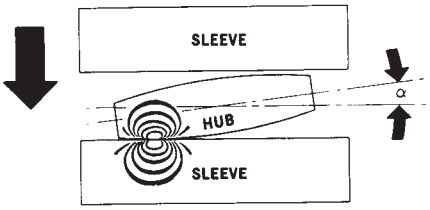
Vari-Crown Tooth Form

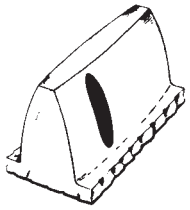




Straight

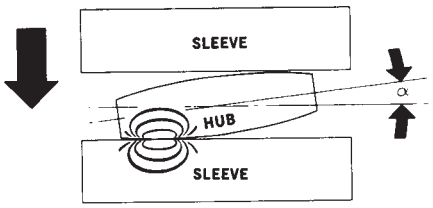
With straight hub teeth, there is a high concentration of load under misaligned conditions. As misalignment increases, more of the load is carried by the ends of the teeth, resulting in premature breakdown and coupling failure.

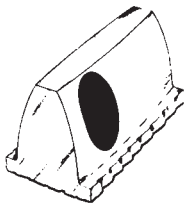




Conventional Crown

Some manufacturers use a conventionally crowned hub tooth known by various trade names. Regardless of the nomenclature, however, the contour of the tooth is a segment of an arc. Under all operating conditions, equal or similar contact areas between the hub teeth and the sleeve teeth exist.





Lovejoy/Sier-Bath Vari-Crown

The Sier-Bath Vari-Crown tooth form has a crown at the center of the tooth which is similar to a conventionally crowned tooth coupling. However, as soon as misalignment occurs, the transmitted torque is carried on a flattened area of the hub tooth which is considerably broader and stronger than the conventionally crowned tooth form. Note the larger contact area and reduced stress area of the Vari-Crown tooth form.

Patented Vari-Crown Tooth Form for Long Life

Facts

- It can be shown[1] that bodies with the smallest relative curvature have the largest area of contact under load, or specifically, a body with the largest radius of curvature has the largest area of contact with another body when under load. More importantly, under a given load the bodies with the greater radii of curvature have lower induced surface contact stresses.

- Gear tooth couplings have fewer teeth in contact as misalignment increases.

Lower Stresses

Lovejoy/Sier-Bath's solution to these facts was the development of the patented Vari-Crown tooth form. The Vari-Crown tooth form is a curve with constantly changing radii of curvature. The tooth contact area under misaligned conditions has a much larger radius of curvature than conventional crowning. The contact area is larger, thus reducing the unit stress.

Constant Velocity Power Transmission

Lovejoy/Sier-Bath produces the Vari-Crown tooth form by a generating method maintaining the necessary characteristics for conjugate tooth action, which are:

1. Constant normal base pitch at any position on the crowned teeth.
2. Correct pressure angle matching of the normal to the curved surface and the sleeve surface at any position of misalignment.

Less Backlash

The tooth design requires less backlash for a given angle of misalignment than the conventional or circular arc crown. In many applications this is a desirable feature in a gear tooth coupling.

Notes: **1.** Hertz's study of contact stresses of curved surfaces.

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Gear Coupling Selection Process

Factors Affecting Selection

Following is a list of factors that may have to be considered. No priority can be put on these factors. Factors have to be weighed based on specifications and what is technically, environmentally, and economically feasible.

Only a few of these factors will come into play on any one application.

- Interchangeability with other brands.
- Bore size capacity.
- Torque capacity.
- Maximum speed capacity.
- Special balancing.
- Weight or low inertia.
- Previous purchase history.
- Availability.
- Alignment requirements.
- Rebore capability.
- Adaptability — Special modifications.
- Axial freedom or axial restrictions.
- Special seals.
- High or low temperature. requirements.
- Chemical resistance.
- Ease of installation.
- Ease of maintenance and serviceability.

Finding the Right Type of Coupling

For any one application you will find that only a few of the factors listed will have a high priority. List those priorities. This will be very helpful in picking the right type of coupling.

Selection of Type

Refer to Gear Coupling Selection Charts shown on pages G-15 through G-17. These charts summarize all Lovejoy Gear Coupling products and show individual product capacities. List the factors that are most important to selection of the right type of coupling. By the process of elimination you will eliminate those types that do not apply to the application. Here are a few examples.

1. If an exact retrofit is required all other types of couplings are eliminated from contention.
2. A retrofit or a close proximity will narrow the choices.
3. High Speed requirements eliminate all non high speed couplings or those that cannot be balanced for the RPM required.
4. Spacer or floating shaft couplings eliminate all other types.
5. Torque or HP/100 RPM requirements sometimes eliminate certain coupling types. For instance, if the application has a required torque of 2,000,000 inch pounds, smaller capacity coupling types would not be considered.

Selection of Size

Once the best type has been chosen then the coupling size is determined. Make a list of the physical attributes required, using the following list as a guideline:

- Bore and Keyway
- Bore tolerances if specified
- Nominal torque
- Peak torque a) at startup b) during operation.
- HP/100 RPM required
- Nominal RPM
- Balance tolerances if specified
- Shaft separation- BSE
- Driven equipment description, for use in applying a service factor.
- Shrouded or exposed bolts
- For modified or engineered couplings more information has to be recorded. Please consult Lovejoy Engineering.

Application Service Factors

No additional service factor should be applied if the driver side input HP or torque has already compensated for the load characteristics. By knowing the actual torque load we can compare this with the driver side torque available. If there is enough service factor applied to the driver side then match the coupling torque to the driver torque. This may be especially important if the coupling is being used between a speed reducer and the driven machine.

After the torque or horsepower is known, a service factor may have to be applied. Refer to page G-14 for the Gear Coupling Application Service Factors chart.

Application service factors are applied in order to give reasonably good life to the coupling to prevent premature wear of gear teeth and do not guarantee that the coupling will last indefinitely. Application service factors cannot compensate for poor alignment, improper selection or overlooked environmental conditions. No amount of application service factor can compensate for having selected the wrong size of coupling.

Step by Step Procedure

Having considered the preceding, the selection process steps are:

1. Choose the gear coupling series and type that meets the application requirement.
2. Determine the nominal torque in in–lbs of your application by using the following formula:

$$\text{Nominal Torque} = \text{in–lb} = \frac{(\text{HP} \times 63025)}{\text{RPM}}$$

$$\text{Nm} = \frac{(\text{KW} \times 9550)}{\text{RPM}}$$

3. Find the application in the Application Service Factor chart. Multiply the nominal torque by the application service factor to determine the total required torque.

4. Compare the required torque to the maximum torque capacity found in the Gear Coupling Selection chart for the coupling type selected.

5. Check that the maximum bore size and the maximum RPM of the coupling type selected are capable of meeting the application requirements.

6. Specify any special requirements. This includes the BSE dimension for floating shaft and spacer types, shear pin torque, slide coupling detail, and mill motor tapered shaft data.

Lovejoy Engineering will assist with any application problem.

Gear Coupling Examples

Selection Example 1: Flanged Coupling

The application is a 400 HP electric motor driving a high pressure centrifugal water pump. RPM is 3600. The motor shaft is 2.375″. Pump shaft is 2.875″. A flange type coupling is requested.

Step 1: Since a flange type is specified, this eliminates the “C” series. Choose the “F” series.

Step 2: Refer to pages G-20 and G-21 for Flanged Series Double Engagement coupling information. Review of the bore size compatibility shows that Size F 2½ is requested to accommodate a 2.875″ shaft requirement.

Step 3: Using the Application Service chart on page G-14, notice that the application service factor for centrifugal pumps is 1.0.

Step 4: Check the power capacity. Find the HP/100 RPM required for 400 HP at 3600 RPM.

$$\frac{HP}{100\ RPM} = \frac{HP \times 100}{RPM}$$

$$\frac{HP}{100\ RPM} = \frac{400 \times 100}{3600} = 11.11$$

The size F 2½ is rated at 90 HP/100 RPM. The coupling may seem too large, but it is needed to accommodate the maximum shaft size of 2.875″.

Step 5: Check the RPM. Size F 2½ is rate for 4400 RPM Max.

Step 6: Specify any special requirements, such as shaft fit, coatings, etc.

Step 7: Referring to the Gear Coupling Selection chart, the code for this coupling is F (size). Specify F 2½ and give the bore and keyway data. All couplings in this series are made with an interference fit in the bore unless otherwise specified.

Selection Example 2: Spacer Coupling

Assume the same conditions as Example 1 except that a spacer type coupling is required, with a 7″ spacer, or dropout. Follow steps 1 through 4, as in example 1, arriving at an “F” type spacer coupling. See pages G-42 for F type spacer couplings.

Step 5: Check the maximum RPM. This must be submitted to engineering to check the critical frequency for 3,600 RPM operation.

Step 6: Special requirements are the length of the spacer, S=7″. Note that the BSE dimension is going to be greater than the S dimension.
BSE = S + 2R = 7 + 2 x .094 = 7.188″
If the BSE was given as 7″ then the actual drop out would have been only 7 - 2 x .094 or 6.812. Always be sure that the coupling selected provides for the actual BSE needed.

Step 7: Referring to the Gear Coupling Selection chart, page G-16, the code for a Flanged Series Spacer Coupling is FSPCR. Specify the spacer or BSE dimension needed, the bore and keyway data and the RPM, plus any other special conditions.

Selection Example 3: Floating Shaft Coupling

The application requires a test stand dynamometer to be driven by a DC motor. The products tested are subject to occasional shock load of not more that 2x running torque and not more often than four times an hour. Design HP 1440 at 1000 RPM, with 3000 RPM maximum. The shafts are 20″ apart (BSE) and shaft sizes are 4.000″ and 3.500″. The outside diameter cannot exceed 10″, and must be greased packed.

Step 1: Since there is a 20″ BSE, this calls for a floating shaft type of coupling.

Step 2: Refer to pages G-20, G-21, and G-36 for Flanged Series Floating Shaft coupling information for a review of bore sizes available.

Step 3: Note that the rigid half of the original coupling mounts on the shafts, and that the maximum bore of the rigid half is greater than that of the flex half. Maximum bore of the size 2½ is 4.250″ (rigid); the OD is 8.38″.
Determine the HP/100 RPM for the application.

$$\frac{HP}{100\ RPM} = \frac{HP \times 100}{RPM}$$

$$\frac{HP}{100\ RPM} = \frac{1440 \times 100}{1000} = 144$$

No service factor is listed for dynamometer drives, but the shock load is not high and is infrequent and probably not a a factor in the life of the coupling. Therefore, selection will be based on the 144 HP/100 RPM.

Step 4: The size 2½ is only rated for 90 HP/100 RPM. Therefore, size 3 with a rating or 150 HP/100 RPM is required. This has an OD of 9.44” (size 3½ with a 240 HP/100 RPM rating has an OD of 11″).

Step 5: Since the RPM peaks at 3000, and the BSE is 20″, the application must be submitted to engineering.

Step 6: State any special requirements.

Step 7: Referring to the Gear Coupling Selection chart, the code for this coupling is FFS (size). Specify FFS 3 and give the bore and keyway data. All couplings in this series are made with an interference fit in the bore unless otherwise specified.

Lovejoy engineering will assist in any application problem.

Gear Couplings

VIRTUS Power Transmission

Application Service Factors for Gear Couplings

Values contained in the table should be used as a general guide and are to be applied to smooth power sources such as electric motors and steam turbines. For drives involving internal combustion engines add 1.0 to the values listed.

Agitators	
Pure Liquids	1.0
Liquids—Variable Density	1.0
Blowers	
Centrifugal	1.0
Lobe	1.2
Can Filling Machines	1.0
Car Dumpers	2.0
Car Pullers, Intermittent Duty	1.5
Compressors	
Centrifugal	1.0
Reciprocating	2.2
Multi-Cylinder	2.0
Single Cylinder	2.0
Conveyors, Uniformly Loaded or Fed	
Assembly	1.2
Belt	1.2
Screw	1.2
Conveyors, Heavy Duty	
Not Uniformly Fed Assembly	1.5
Belt	1.5
Oven	1.5
Reciprocating	2.0
Screw	1.5
Shaker	1.5
Cranes and Hoists	
Main Hoists	2.0
Reversing	2.0
Skip Hoists	2.0
Trolley Drive	2.0
Bridge Drive	2.0
Crushers	
Ore	3.0
Stone	3.0
Dredges	
Conveyors	2.0
Cutter Head Drives	2.0
Maneuvering Winches	2.0
Pumps	2.0
Fans	
Centrifugal	1.0
Cooling Towers Forced Draft	1.5
Feeders	
Screw	1.5
Generators	
Not Welding	1.0
Welding	1.5
Hammer Mills	2.0
Laundry Washers	
Reversing	1.5
Lumber Industry	
Barkers—Drum Type	2.0
Edger Feed	2.0
Live Rolls	2.0
Log Haul—Incline	2.0
Log Haul—Well Type	2.0
Off Bearing Rolls	2.0
Planer Feed Chains	1.75
Planer Tilting Hoist	1.75
Planer Floor Chains	1.75
Slab Conveyor	1.5
Sorting Table	1.5
Trimmer Feed	1.5
Machine Tools	
Bending Roll	2.0
Punch Press, Gear Driven	2.0
Tapping Machines	2.0
Main Drives	1.5
Auxiliary Drives	1.5
Metal Mills	
Draw Bench—Carriage	2.0
Draw Bench—Main Drive	2.0
Forming Machines	2.0
Slitters	1.5
Table Conveyors	
Non-Reversing	2.25
Reversing	2.5
Wire Drawing & Flattening Machine	2.0
Wire Winding Machine	1.75
Metal Rolling Mills	
Blooming Mills	2.5
Coilers, hot mill	2.0
Coilers, cold mill	1.5
Cold Mills	2.0
Cooling Beds	1.75
Door Openers	2.0
Draw Benches	2.0
Edger Drives	1.75
Feed Rolls, Reversing Mills	3.5
Furnace Pushers	2.5
Hot Mills	3.0
Ingot Cars	2.5
Kick-outs	2.5
Manipulators	3.0
Merchant Mills	3.0
Piercers	3.0
Pusher Rams	2.5
Reel Drives	1.75
Reel Drums	2.0
Reelers	3.0
Rod and Bar Mills	3.0
Roughing Mill Delivery Table	3.0
Runout Tables	2.5
Saws, hot & cold	2.5
Screwdown Drives	3.0
Skelp Mills	3.0
Slitters	3.0
Slabing Mills	1.75
Soaking Pit Cover Drives	3.0
Straighteners	2.5
Tables, transfer & runout	2.5
Thrust Block	3.0
Traction Drive	3.0
Tube Conveyor Rolls	2.5
Unscramblers	2.5
Wire Drawing	1.75
Mills, Rotary Type	
Ball	2.25
Dryers & Coolers	2.0
Hammer	1.75
Kilns	2.0
Pebble & Rod	2.0
Pug	1.75
Tumbling Barrels	2.0
Mixers	
Concrete Mixers, Continuous	1.5
Concrete Mixers, Intermittent	2.0
Oil Industry	
Oil Well Pumping	2.0
Rotary Kilns	2.0
Paper Mills	
Agitators, Mixers	1.5
Barker Auxiliaries, Hydraulic	2.0
Barker Mechanical	2.0
Barking Drum Spur Gear Only	2.0
Beater & Pulper	1.75
Bleacher	1.0
Calenders	2.0
Calenders, Super	1.5
Chippers	2.5
Coaters	1.0
Converting Machines, except Cutters, Platers	1.5
Conveyors	1.5
Couch Roll	1.75
Cutters, Platters	2.0
Cylinders	1.75
Disc Refiners	1.75
Dryers	1.75
Felt Stretcher	1.25
Felt Whipper	2.0
Jordans	1.75
Line Shaft	1.5
Log Haul	2.0
Pulp Grinder	1.75
Press Roll	2.0
Reel	1.5
Stock Chests	1.5
Suction Roll	1.75
Washers & Thickeners	1.5
Winders	1.5
Printing Presses	1.5
Pumps	
Centrifugal	1.0
Reciprocating	
Single Acting 3 or more Cylinders	1.5
Double Acting 2 or more Cylinders	2.0
Rotary, Gear Type, Lobe Vane	1.5
Rubber Industry	
Mixer	2.0
Rubber Calender	2.0
Screens	
Rotary, Stone or Gravel	1.5
Steering Gear	1.0
Stokers	1.0
Textile Industry	
Dryers	1.5
Dyeing Machinery	1.5
Windlass	2.0

Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath "C" Continuous Sleeve Series

Coupling Type	Code	Page No.	Size Range	Max. Bore inch	Max. Bore mm	Max. Torque Capacity in-lb	Max. Torque Capacity Nm	Max. RPM	Max. Angular Misalignment (degrees)1	Torque Range Low	Torque Range Med	Torque Range High
Standard (Double Engagement)	C	G-26	⅞ 12	1.250 12.500	31 330	2,520 2,520,000	284.7 284,746.0	6,000 550	1° ½°	X	X	
Flex-Rigid (Single Engagement)	CFR	G-26	⅞ 6	1.250 6.625	31 186	2,520 378,000	284.7 42,712.0	6,000 2,000	½° ¼°	X		
Mill Motor	CMM	G-27	⅞ 6	1.250 6.625	31 186	2,520 378,000	284.7 42,712.0	6,000 2,000	1° ½°	X		
Floating Shaft	CFS	G-28	⅞ 6	1.250 6.625	31 186	2,520 378,000	284.7 42,712.0	Note 2	1° ½°	X		
Spacer	CSPCR	G-29	⅞ 6	1.250 6.625	31 186	2,520 378,000	284.7 42,712.0	Note 3	1° ½°	X		
Cut-out	CCS	G-30	⅞ 6	1.250 6.625	31 186	2,520 378,000	284.7 42,712.0	6,000 2,000	1° ½°	X		
Shear Pin	CSHP	G-31	1½ 6	1.250 6.625	31 186	Per Customer Specifications		6,000 2,100	1° ½°	X		

Notes: **1.** These are maximum values. For reasonable life expectancy and low reactionary loads, the misalignment should not exceed ¾° for small couplings and ½° for larger couplings.

2. The maximum RPM of a Floating Shaft coupling set may be determined by the critical speed of the floating shaft itself.

3. Maximum RPM may be determined by dimensions of spacer.

Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath "F" Flanged Sleeve Series

Coupling Type	Code	Page No.	Size Range	Max. Bore		Max. Torque Capacity		Max. RPM	Max. Angular Misalignment (degrees)1	Torque Range		
				inch	mm	in-lb	Nm			Low	Med	High
Standard (Double Engagement)	F	G-34	1 9	1.625 12.000	42 340	7,600 1,827,700	859 206,520	6,000 1,800	3° 1½°	X	X	
Standard Heavy Duty	FHD	G-35	7 30	9.750 45.500	255 1155[4]	1,008,400 47,269,000	113,944 5,341,130	2,000 220	1½°		X	X
Flex-Rigid (Single Engagement)	FFR	G-36-37	1 30	1.625 45.500	42 1155[4]	7,600 47,269,000	859 5,341,130	6,000 220	1½° ¾°	X	X	X
Floating Shaft	FFS	G-36-37	1 30	1.625 45.500	42 1155[4]	7,600 47,269,000	859 5,341,130	Note 2	3° 1½°	X	X	X
Mill Motor	FMM	G-38-39	1 6	1.625 8.000	42 225	7,600 750,000	859 87,746	6,000 2,100	3° 1½°	X		
Sliding Hub	FSL FSLX	G-40-41	1 7	1.625 9.000	42 254	7,600 1,008,400	859 113,944	6,000 2,000	3° 1½°	X	X	
Spacer	FSPCR	G-42	1 7	1.625 9.000	42 254	7,600 1,008,400	859 113,944	Note 3	3° 1½°	X	X	
Rigid-Rigid	FRR	G-44	1 7	2.125 11.250	56 318	7,600 1,008,400	859 113,944	6,000 2,000	0°	X	X	

Notes:

1. These are maximum values. For reasonable life expectancy and low reactionary loads the misalignment should not exceed ¾° for small couplings and ½° for larger couplings.
2. The maximum RPM of a Floating Shaft coupling set may be determined by the critical speed of the floating shaft itself.
3. Maximum RPM may be determined by dimensions of spacer.
4. Consult Lovejoy Engineering for Metric Bores over 500 mm.

Gear Couplings

VIRTUS Power Transmission

After review of the selection process, the examples and the general selection information on pages G-12 through G-17, you can use the following charts to obtain specific information on torque capability, maximum bore, maximum misalignment, lubrication quantities and weights. For convenience, data is listed in English and metric units.

Continuous Sleeve Series

Chart 1

Size C	Capacity HP 100RPM	Capacity Torque in-lb x 10^3	Capacity Torque Nm x 10^3	Shear Pin Torque RPM	Max. Speed Unbal[1]	Parallel Misalignment inch	Parallel Misalignment mm	Grease Capacity Weight US	Grease Capacity Weight Metric	Grease Capacity Volume US	Grease Capacity Volume Metric
⅞	4	2.5	0.3	Determined By Customer Specifications	6,000	.005	.13	1.0 oz	28 g	2 oz-liq	59 mL
1½	12	7.6	0.9		5,000	.007	.18	1.5 oz	42 g	3 oz-liq	89 mL
2	32	20.2	2.3		4,200	.007	.18	2.8 oz	78 g	6 oz-liq	178 mL
2½	48	30.2	3.4		3,750	.010	.25	5.0 oz	142 g	12 oz-liq	355 mL
3	80	50.4	5.7		3,000	.012	.30	0.5 lb	226 g	18 oz-liq	533 mL
3½	140	88.2	10.0		2,800	.012	.30	0.8 lb	340 g	26 oz-liq	770 mL
4	200	126.0	14.2		2,400	.007	.18	1.0 lb	453 g	1.1 qts	1.1 L
4½	292	184.0	20.8		2,200	.007	.18	1.3 lbs	566 g	1.5 qts	1.4 L
5	430	270.9	30.6		2,100	.009	.23	1.5 lbs	679 g	1.8 qts	1.7 L
6	600	378.0	42.7		2,000	.010	.25	2.0 lbs	906 g	2.3 qts	2.2 L
7	950	598.5	67.6		1,000	.011	.28	2.5 lbs	1.1 kg	2.9 qts	2.8 L
9	2,000	1,260.0	142.4		800	.013	.33	4.5 lbs	2.0 kg	1.3 gal	5.0 L
11	3,500	2,205.0	249.2		600	.014	.36	4.8 lbs	2.2 kg	1.4 gal	5.2 L
12	4,000	2,520.0	284.7		550	.014	.36	6.5 lbs	3.0 kg	1.9 gal	7.2 L

Notes: **1.** Max Speed Balanced — Approximately 3 Times Speed Shown Unbalanced

2. Horsepower, Torque, and Parallel Misalignment Capacity for sizes ⅞ through 3½ are based on ½° misalignment per gear mesh.

3. Horsepower, Torque, and Parallel Misalignment Capacity for sizes 4 through 12 are based on ¼° misalignment per gear mesh.

Chart 2

Size C	Approximate Weight–Rough Bore: Flex-Flex lb	Flex-Flex kg	Flex-Universal (mill motor) lb	Flex-Universal (mill motor) kg	Floating Shaft (cplg only – no shaft) lb	Floating Shaft (cplg only – no shaft) kg	Spacer (cplg only – no spacer) lb	Spacer (cplg only – no spacer) kg	Cut-out Shifter lb	Cut-out Shifter kg	Shear Pin lb	Shear Pin kg	Inertia - Rough Bore: Flex-Flex in-lb-sec²	Flex-Flex Nm-sec²	Flex-Universal (mill motor) in-lb-sec²	Flex-Universal (mill motor) Nm-sec²
⅞	5.0	2.3	7	3.2	10	4.5	7.0	3.2	Determined by W and OD Dimension		N/A	N/A	.016	.002	.018	.002
1½	8.0	3.6	11	5.0	16	7.3	11	5.0			8	4	.034	.004	.039	.004
2	13	5.9	19	8.6	26	12	16	7.3			10	5	.088	.010	.109	.012
2½	20	9.1	29	13	40	18	26	12			15	7	.194	.022	.244	.028
3	33	15	46	21	66	30	43	20			23	10	.466	.053	.578	.065
3½	63	29	77	35	126	57	79	36			47	21	.989	.112	1.120	.127
4	91	41	109	49	182	83	115	52			90	41	1.99	.225	2.240	.252
4½	126	57	155	70	252	114	158	72			112	51	3.330	.376	3.870	.437
5	195	89	220	100	390	177	248	113			177	80	7.080	.800	7.690	.869
6	267	121	315	143	534	242	340	154			250	114	13.000	1.470	14.600	1.650
7	320	145											23.800	2.690		
9	520	236											54.200	6.120		
11	925	420											128.000	14.500		
12	1,200	545											168.000	19.000		

Continuous Sleeve Series Con't.

Chart 3

Size C	Rough Bore				Maximum Bore[1]			
					1 Sq. Key[1]		Metric Key	
	std. or rigid hub		shear hub		std. hub	shear	std.	shear
	inch	mm	inch	mm	inch	inch	mm	mm
⅞	0.44	11	N/A	N/A	1.250	N/A	31	N/A
1½	0.63	15	0.50	13	1.625	.938	42	24
2	0.73	18	0.88	22	2.125	1.500	56	38
2½	0.88	22	1.00	25	2.625	1.750	70	44
3	1.19	30	1.50	38	3.125	2.250	84	57
3½	1.25	32	1.50	38	3.625	2.625	97	66
4	1.75	44	2.00	51	4.125	3.625	111	92
4½	2.38	60	2.50	64	4.750	4.125	130	104
5	2.88	73	3.00	76	5.750	4.500	160	114
6	3.88	98	4.00	102	6.625	5.875	186	149
7	4.69	119	.....	.....	7.500[2]	.....	200	.....
9	5.88	149	.....	.....	9.500[2]	.....	240	.....
11	7.75	197	.....	.....	11.500[2]	.....	305	.....
12	9.75	248	.....	.....	12.500[2]	.....	330	.....

Note:

1. Bores and Keyways are standard per AGMA 9002-A86 for inch sizes through 9.000; see page ED-17 in Engineering Data section, Metric Bores are per ISO R286 and Keyways are per DIN 6885; see page ED-15 in Engineering Data section.
2. These bores have a reduced keyway.

Flanged Sleeve Series Sizes 1 to 9

Chart 4

Size F	Capacity			Max. Speed Unbal[3]	Parallel Misalignment	
	HP	Torque				
	100RPM	in-lb x 10^3	Nm x 10^3	RPM	in	mm
1	12	7.6	0.85	6,000	0.0555	1.4
1½	30	18.9	2.14	5,500	0.060	1.5
2	50	31.5	3.56	5,000	0.085	2.2
2½	90	56.7	6.41	4,400	0.105	2.7
3	150	94.5	10.7	4,000	0.115	2.9
3½	240	151.2	17.1	3,500	0.130	3.3
4	350	220.5	24.9	3,000	0.150	3.8
4½	480	302.4	34.2	2,700	0.175	4.4
5	690	434.7	49.1	2,500	0.200	5.1
5½	910	573.3	64.8	2,200	0.220	5.6
6	1,190	749.7	84.7	2,100	0.120	3.0
7	1,600	1,008	113.9	2,000	0.135	3.4
8	2,100	1,323	149.5	1,900	0.160	4.1
9	2,900	1,827	206.4	1,800	0.165	4.2

Notes:

1. Horespower Torque Capacity and Parallel Misalignment Capacity for sizes 1 through 5½, are based on 1½° misalignment per gear mesh and maximum bore. Consult Lovejoy for greater capacity.
2. Horsepower, Torque Capacity and Parallel Misalignment Capacity for sizes 6 through 9 are bases on ¾° misalignment per gear mesh and maximum bore. Consult Lovejoy for greater capacity.
3. For couplings operating at higher speeds, consult Lovejoy engineering.

Flanged Sleeve Series Sizes 1 to 9 con't.

Chart 5

Size F	Lube Capacity flex-flex				Lube Capacity flex-rigid			
	Weight		Volume		Weight		Volume	
	US	Metric	US	Metric	US	Metric	US	Metric
1	2 oz	57g	2 oz-liq	59 mL	1 oz	28 g	1 oz-liq	30 mL
1½	4 oz	113 g	4 oz-liq	118 mL	2 oz	57 g	2 oz-liq	59 mL
2	6 oz	163 g	6 oz-liq	178 mL	3 oz	81 g	3 oz-liq	89 mL
2½	11 oz	297 g	12 oz-liq	355 mL	5 oz	149 g	6 oz-liq	178mL
3	1.0 lb	454 g	18 oz-liq	533 mL	0.5 lb	227 g	9 oz-liq	266mL
3½	1.3 lbs	568 g	24 oz-liq	710 mL	0.6 lb	284 g	12 oz-liq	355mL
4	2.0 lbs	908 g	1.1 qts	1.1 L	1.0 lb	454 g	18 oz-liq	532mL
4½	3.5 lbs	1.59 kg	2.0 qts	1.9 L	1.8 lbs	795 g	1.0 qt	946mL
5	4.5 lbs	2.04 kg	2.5 qts	2.4 L	2.3 lbs	1.0 kg	1.3 qts	1.2 L
5½	6.5 lbs	2.95 kg	3.5 qts	3.3 L	3.3 lbs	1.5 kg	1.8 qts	1.7 L
6	7.3 lbs	3.29 kg	1.0 gal	3.8 L	3.6 lbs	1.6 kg	0.5 gal	1.9 L
7	9.3 lbs	4.20 kg	1.3 gals	4.7 L	4.6 lbs	2.1 kg	0.6 gal	2.4 L
8	18 lbs	7.95 kg	2.3 gals	8.5 L	8.8 lbs	4.0 kg	1.1 gals	4.3 L
9	20 lbs	9.08 kg	2.8 gals	10.4 L	10.0 lbs	4.5 kg	1.4 gals	5.2 L

Chart 6

Size F	Approximate Weight-Solid								Inertia-Solid							
	flex-rigid		flex-flex		flex-universal		rigid-rigid		flex-flex		flex-rigid		flex-universal		rigid-rigid	
	lb	kg	lb	kg	lb	kg	lb	kg	in-lb-sec²	Nm-sec²	in-lb-sec²	Nm-sec²	in-lb-sec²	Nm-sec²	in-lb-sec²	Nm-sec²
1	9	4	9	4	12	5	10	5	0.049	0.006	0.049	0.006	0.049	0.006	0.049	0.006
1½	17	8	19	9	24	11	20	9	0.168	0.019	0.176	0.020	0.183	0.021	0.184	0.021
2	34	15	34	15	45	20	34	15	0.388	0.044	0.393	0.044	0.445	0.050	0.399	0.045
2½	55	25	54	25	71	32	60	27	0.88	0.100	0.939	0.106	0.994	0.112	1.00	0.113
3	86	39	80	36	104	47	91	41	1.70	0.192	1.79	0.203	1.94	0.219	1.89	0.214
3½	135	61	130	59	151	69	143	65	3.84	0.435	3.94	0.446	4.27	0.482	4.05	0.457
4	195	89	190	86	234	86	211	96	7.05	0.80	7.34	0.831	7.85	0.887	7.63	0.863
4½	268	122	250	114	310	141	289	131	11.1	1.25	11.7	1.33	12.5	1.41	12.4	1.40
5	394	179	380	173	450	204	417	189	21.4	2.42	22.3	2.52	23.5	2.65	23.1	2.61
5½	526	239	520	236	609	276	541	246	33.1	3.75	34.4	3.89	36.3	4.10	35.7	4.04
6	687	312	650	295	764	347	724	329	44.7	5.06	48.3	5.46	49.6	5.60	51.8	5.86
7	1,017	462	950	431	.....	.....	1,084	492	83.3	9.42	91.5	10.3	.....	.....	99.6	11.27
8	1,609	730	1,560	708	.....	.....	.....	.....	167	18.91	185	21.0	.....	.....	204	23.02
9	2,128	966	2,015	915	.....	.....	.....	.....	287	32.47	305	34.5	.....	.....	323	36.54

Chart 7

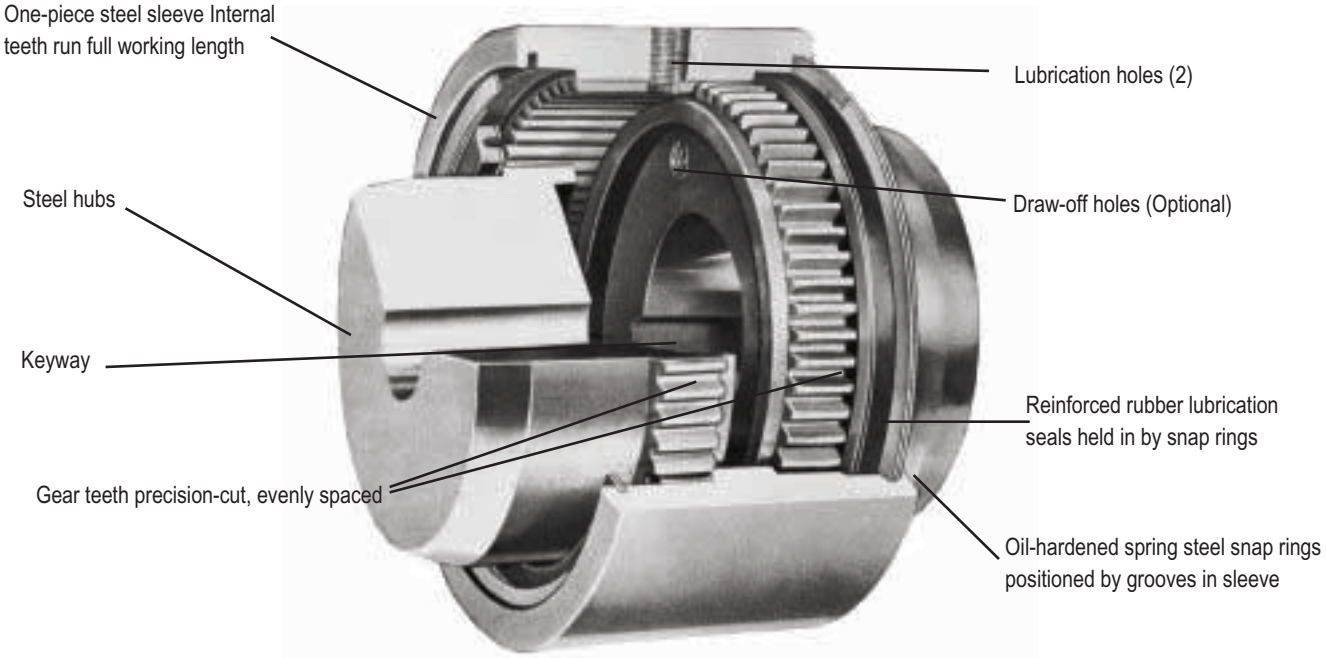
Size F	Rough Bore				Maximum Bore[1]					
					1 Sq. Key		1 Red. Key		Metric Key	
	flex hubs		rigid hubs		flex	rigid	flex	rigid	flex	rigid
	inch	mm	inch	mm	inch	inch	inch	inch	mm	mm
1	0.44	11	SOLID W/CENTER		1.625	2.125	1.750	2.250	42	56
1½	0.69	18			2.125	2.813	2.250	3.062	56	76
2	0.94	24			2.750	3.500	2.875	3.750	73	95
2½	1.44	37			3.250	4.250	3.375	4.500	88	114
3	1.44	37			4.000	4.875	4.250	5.250	107	134
3½	1.81	46			4.625	5.625	4.875	5.875	124	150
4	2.44	62			5.375	6.500	5.625	6.500	147	176
4½	3.00	76			6.000	7.375	6.500	7.625	167	202
5	3.00	76	4.00	101	6.500	8.375	7.000	8.750	176	231
5½	4.00	101	4.50	114	7.375	9.250	7.625	9.750	202	260
6	4.00	101	5.50	127	8.000	10.125	8.500	10.750	225	288
7	5.00	127	5.75	139	9.000	11.250	9.750	12.000	254	318
8	6.00	152	6.50	165	11.000	13.500	11.750	14.250	312	380
9	7.00	177	7.50	190	12.000	15.000	12.750	15.750	340	418

Note: **1.** Bores and Keyways are standard per AGMA 9002-A86 for inch sizes through 9.000; see page ED-17 in Engineering Data section. Metric Bores are per ISO R286, and Keyways are per DIN 6885, JS9; see page ED-15 in Engineering Data section

Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier–Bath Continuous Sleeve Series



The One-Piece Sleeve Gear Coupling

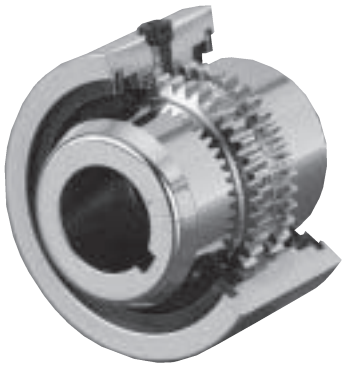
Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath Continuous Sleeve Series "C" and "CFR"

Flex-Flex

The basis for all types of Lovejoy/Sier–Bath Continuous Sleeve Flexible Gear Couplings. Suitable for most applications. Great simplicity allows inexpensive adaptation to a wide variety of special types.

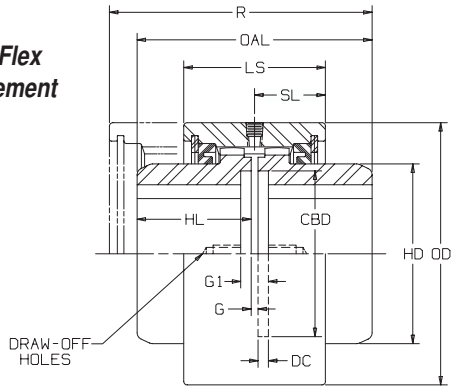


Flex-Rigid

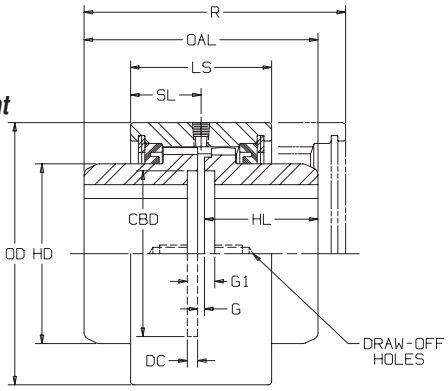
The Flex-Rigid Gear Coupling consists of a flexible hub and rigid hub with a single sleeve. The flexible hub is a standard reborable hub. The rigid hub uses a splined reborable type hub. Flex-Rigid type gear couplings are most commonly used in floating shaft applications, or on line shafting to accommodate axial expansion. The Flex-Rigid coupling accommodates angular misalignment only.

Use These Specifications for Both Standard & Vertical Shaft Type.

Standard Flex-Flex Double Engagement (C)



Flex-Rigid Single Engagement (CFR)



Size C CFR	Torque Rating in-lbs.	Max Speed Unbalanced RPM	Maximum Bore sq. key inch	Maximum Bore metric key mm	Minimum Bore inch	OAL inch	OD inch	HD inch	HL inch	LS inch	SL inch	Distance Between Shafts G inch	Distance Between Shafts G1 inch	R inch	DC inch	CBD inch
7/8	2,520	6,000	1.250	31	0.44	3.13	3.31	2.00	1.50	2.00	1.00	0.13	0.38	3.75	0.13	1.94
1 1/2	7,560	5,000	1.625	42	0.63	3.75	3.75	2.38	1.81	2.53	1.27	0.13	0.50	4.59	0.19	2.25
2	20,160	4,200	2.125	56	0.73	4.25	4.75	3.25	2.06	2.56	1.28	0.13	0.50	4.88	0.19	3.00
2 1/2	30,240	3,750	2.625	70	0.88	4.75	5.50	3.94	2.25	3.06	1.53	0.25	0.75	5.72	0.25	3.75
3	50,400	3,000	3.125	84	1.19	5.50	6.63	4.75	2.63	3.75	1.88	0.25	0.75	6.88	0.25	4.75
3 /12	88,200	2,800	3.625	97	1.25	8.75	7.50	5.38	4.25	4.00	2.00	0.25	0.75	9.25	0.25	5.50
4	126,000	2,400	4.125	111	1.75	9.00	8.75	6.25	4.38	4.63	2.31	0.25	0.75	9.50	0.25	6.50
4 1/2	183,960	2,200	4.750	130	2.38	10.25	9.50	7.25	5.00	4.88	2.44	0.25	0.75	10.38	0.25	7.25
5	270,900	2,100	5.750	160	2.88	12.25	10.75	8.25	6.00	5.75	2.88	0.25	0.75	12.25	0.25	8.13
6	378,000	2,000	6.625	186	3.88	13.00	12.25	9.50	6.38	6.50	3.25	0.25	0.75	13.38	0.25	9.25
7	598,500	1,000	7.500[2]	200	4.69	14.88	14.00	10.50	7.25	7.50	3.75	0.38	0.88	15.38	0.25	9.75
9	1,260,000	800	9.5002	240	5.88	19.00	16.25	12.63	9.25	8.13	4.06	0.50	1.00	19.00	0.25	12.50
11	2,205,900	600	11.500[2]	305	7.75	22.50	19.25	15.63	11.00	8.13	4.06	0.50	1.00	22.50	0.25	15.50
12	2,520,000	550	12.500[2]	330	9.75	25.00	20.50	16.50	12.25	8.38	4.19	0.50	1.00	25.00	0.25	16.00

Notes:

1. Draw–off holes are optional at additional charge in sizes $^{7}/_{8}$ through $3^{1}/_{2}$. They are standard on sizes 4 and up.
2. Larger sizes are available – consult Lovejoy Engineering.
3. The distance between shafts may be any dimension between G and G1.
4. For Performance Data see pages G-18 and G-19.

When ordering, please specify:

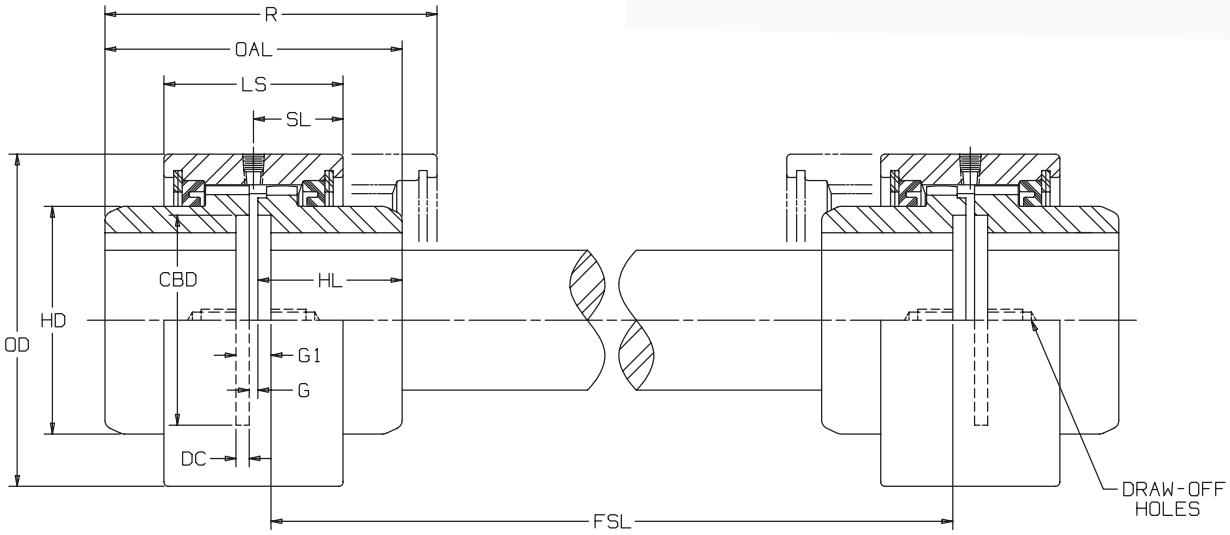
1. Required inside diameter of both hubs, with tolerances.
2. Sizes of keyways, if desired.
3. Speed and horsepower of driving unit.

Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath Continuous Sleeve Series Floating Shaft Type – "CFS"

The Floating Shaft Type coupling is designed for remote drive and excessive misalignment problems. The coupling hubs on the driver and driven ends are rigid while the two center hubs connected by the center shaft are flexible. These hubs can be reversed if necessary without sacrificing ease of installation or disassembly.



Size CFS	Torque Rating in-lbs.	Max Speed Unbalanced RPM	Maximum Bore sq. key inch	Maximum Bore metric key mm	Minimum Bore inch	OAL inch	OD inch	HD inch	HL inch	LS inch	SL inch	Distance Between Shafts[3] G inch	Distance Between Shafts[3] G1 inch	R inch	DC inch	CBD inch	FSL[4] inch
7/8	2,520	6,000	1.250	31	0.44	3.13	3.31	2.00	1.50	2.00	1.00	0.13	0.38	3.75	0.13	1.94	3.00
1 1/2	7,560	5,000	1.625	42	0.63	3.75	3.75	2.38	1.81	2.53	1.27	0.13	0.50	4.59	0.19	2.25	3.63
2	20,160	4,200	2.125	56	0.73	4.25	4.75	3.25	2.06	2.56	1.28	0.13	0.50	4.88	0.19	3.00	4.13
2 1/2	30,240	3,750	2.625	70	0.88	4.75	5.50	3.94	2.25	3.06	1.53	0.25	0.75	5.72	0.25	3.75	4.50
3	50,400	3,000	3.125	84	1.19	5.50	6.63	4.75	2.63	3.75	1.88	0.25	0.75	6.88	0.25	4.75	5.25
3 /12	88,200	2,800	3.625	97	1.25	8.75	7.50	5.38	4.25	4.00	2.00	0.25	0.75	9.25	0.25	5.50	8.00
4	126,000	2,400	4.125	111	1.75	9.00	8.75	6.25	4.38	4.63	2.31	0.25	0.75	9.50	0.25	6.50	8.25
4 1/2	183,960	2,200	4.750	130	2.38	10.25	9.50	7.25	5.00	4.88	2.44	0.25	0.75	10.38	0.25	7.25	9.50
5	270,900	2,100	5.750	160	2.88	12.25	10.75	8.25	6.00	5.75	2.88	0.25	0.75	12.25	0.25	8.13	11.50
6	378,000	2,000	6.625	186	3.88	13.00	12.25	9.50	6.38	6.50	3.25	0.25	0.75	13.38	0.25	9.25	12.25

Notes:

1. Larger sizes are available – consult Lovejoy Engineering.
2. Draw-off holes are optional at additional charge in sizes $^{7}/_{8}$ through $3^{1}/_{2}$. They are standard on sizes 4 and up.
3. May be any dimension between G and G1.
4. Minimum length of floating shaft.
5. For Performance Data see pages G-18 and G-19.

When ordering, please specify:

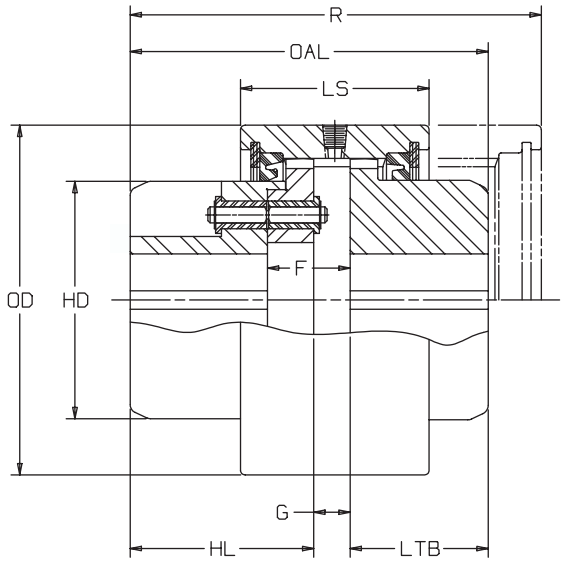
1. Required inside diameter of all hubs, with tolerances. Indicate which bores are for flexible and which for rigid hubs.
2. Sizes of keyways, if desired.
3. Speed and horsepower of driving unit.
4. A Floating Shaft coupling consists of two flexible hubs, two rigid hubs, two sleeves, four accessory kits, one shaft, and two keys, and should be ordered as "One Set Floating Shaft coupling."
5. Distance between ends of shafts to be connected.

Gear Couplings

VIRTUS Power Transmission

Lovejoy/Sier-Bath Continuous Sleeve Series Shear Pin Type – "CSHP"

The Shear Pin coupling is designed to prevent damage to connected equipment resulting from excessive torque or sudden shock. The shear pins in the Lovejoy coupling are manufactured to shear at predetermined loads which are specified by the customer. New pins may be quickly inserted.



Size CSHP	Torque Rating in-lbs.	Max Speed Unbalanced RPM	Maximum Bore std. or rigid hub sq. key inch	Maximum Bore std. or rigid hub metric key mm	Maximum Bore Shear hub sq. key inch	Maximum Bore Shear hub metric key mm	Minimum Bore inch	OAL inch	OD inch	LS inch	HD inch	LTB inch	HL inch	F inch	G inch	R inch
1 1/2	7,560	5,000	1.625	42	0.938	24	0.63	4.38	3.75	2.53	2.38	1.63	2.25	1.13	0.50	5.28
2	20,160	4,200	2.125	56	1.500	38	0.73	4.88	4.75	2.56	3.25	1.88	2.50	1.13	0.50	5.56
2 1/2	30,240	3,750	2.625	70	1.750	44	0.88	5.44	5.50	3.06	3.94	2.00	2.69	1.50	0.75	6.50
3	50,400	3,000	3.125	84	2.250	57	1.19	6.38	6.63	3.75	4.75	2.38	3.25	1.63	0.75	7.75
3 /12	88,200	2,800	3.625	97	2.625	66	1.25	8.13	7.50	4.00	5.38	4.00	3.38	1.75	0.75	8.13
4	126,000	2,400	4.125	111	3.625	92	1.75	9.00	8.75	4.63	6.25	4.13	4.13	2.00	0.75	9.50
4 1/2	183,960	2,200	4.750	130	4.125	104	2.38	9.75	9.50	4.88	7.25	4.75	4.25	2.00	0.75	9.88
5	270,900	2,100	5.750	160	4.500	114	2.88	11.50	10.75	5.75	8.25	5.75	5.00	2.25	0.75	11.50
6	378,000	2,000	6.625	186	5.875	149	3.88	13.00	12.25	6.50	9.50	6.13	6.13	2.88	0.75	13.13

Notes:

1. Larger sizes are available – consult Lovejoy Engineering.
2. Draw-off holes are available at an additional charge on sizes $^{7}/_{8}$ through $3^{1}/_{2}$. They are standard on sizes 4 and up.
3. For Performance Data see pages G-18 and G-19.

When ordering, please specify:

1. Required inside diameter of both hubs, with tolerances.
2. Sizes of keyways, if desired.
3. Speed and horsepower of driving unit.
4. Complete operational data of application.
5. Which is shear hub, and torque at which pins are to shear.

Coupling Grease

high quality coupling grease for low to high-speed applications. The grease is designed to address the problems that are unique to gear coupling applications such as high pressure, high centrifugal force, prolonged work periods, and corrosive environments. *Please see pages G-11 and G-13 for specific quantities per product line.*

Lubrication

Centrifugal separation of the oil and thickener during operation is a basic problem in gear coupling applications, especially high speed applications. The higher the operating speed, the greater the amount of separation can be expected. This causes the soap properties in the grease to accumulate in the areas where lubrication is required. The soap does not provide adequate lubrication which results in accelerating the coupling wea

Contents

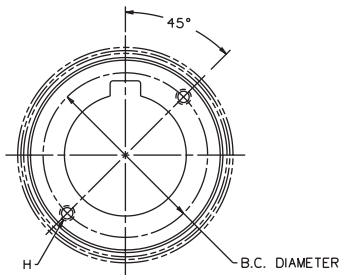
The grease contains ingredients that have been proven to in gear coupling applications. The grease contains:

- Lithium Soap
- Highly Refined Paraffinio Mineral Oil
- Rust Inhibitors
- Anti-oxidants
- EP/Anti-wear additive

Hub Puller Hole Data—F Hubs

Size	Bolt Circle Diameter	Hole Size
1	None	None
1 1/2	None	None
2	3.38	5/16-18 x .50 DP.
2 1/2	3.94	3/8-16 x .56 DP.
3	4.94	1/2-13 x .75 DP.
3 1/2	5.56	1/2-13 x .75 DP.
4	6.44	5/8-11 x .94 DP.

Size	Bolt Circle Diameter	Hole Size
4 1/2	7.38	5/8-11 x .94 DP.
5	8.00	3/4-10 x 1.13 DP.
5 1/2	9.00	1-8 x 1.50 DP.
6	9.75	1-8 x 1.50 DP.
7	11.63	1-8 x 1.50 DP.
8	14.00	1-8 x 1.50 DP.
9	15.25	1 1/4-7 x 1.88 DP.



PULLER HOLES

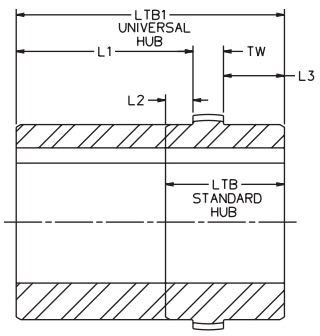
Standard & Universal Hub Dimensions

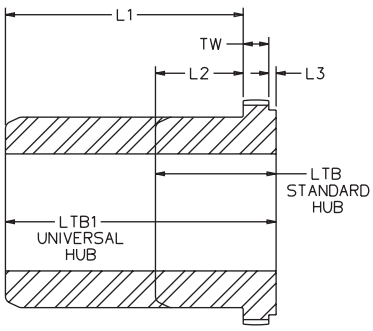
F Hubs—Inch

Size	L 1	L2	L3	TW	STD. LTB	UNIV. HUB LTB 1
1	2.75	0.44	0.75	0.50	1.69	4.00
1 1/2	3.13	0.56	0.81	0.56	1.94	4.50
2	3.63	0.56	1.25	0.63	2.44	5.50
2 1/2	4.22	0.75	1.53	0.75	3.03	6.50
3	4.44	1.03	1.69	0.88	3.59	7.00
3 1/2	4.63	1.31	1.88	1.00	4.19	7.50
4	4.97	1.47	2.16	1.13	4.75	8.25
4 1/2	5.19	1.50	2.56	1.25	5.31	9.00
5	5.06	1.59	2.94	1.50	6.03	9.50
5 1/2	5.56	1.97	3.19	1.75	6.91	10.50

C Hubs—Inch

Size	L 1	L2	L3	TW	STD. LTB	UNIV. HUB LTB 1
7/8	3.38	1.13	0.13	0.25	1.50	3.75
1 1/2	3.36	1.17	0.13	0.52	1.81	4.00
2	4.06	1.50	0.13	0.44	2.06	4.63
2 1/2	4.39	1.52	0.16	0.58	2.25	5.13
3	4.89	1.77	0.25	0.61	2.63	5.75
3 1/2	5.58	3.33	0.25	0.67	4.25	6.50
4	5.52	3.27	0.25	0.86	4.38	6.63
4 1/2	6.64	3.89	0.25	0.86	5.00	7.75
5	6.39	4.52	0.25	1.23	6.00	7.88
6	7.64	4.52	0.25	1.61	6.38	9.50





Coupling Grease

Coupling Grease should be designed to resist centrifugal separation, thereby keeping the oil portion of the grease in the working areas of the coupling. When using the Coupling Grease, lubrication intervals may be extended. A coupling exposed to extreme temperatures, excessive moisture, frequent reversals or grease leakage may require more frequent lubrication.

The benefits of using Coupling Grease include:

- Highest pressure and wear protection available.
- Built-in rust and corrosion inhibitors.
- Increased coupling life.
- Reduced maintenance costs.
- Reduced downtime.
- Superior lubrication.

In general, grease should be supplied every month and replaced every 3 months after operation.

Specifications

The specifications indicated below are average values, variations which do not affect product performance may occur.

Temperature Operating Range:
-40°F (-40°C) to 250°F (121°C)

Minimum Base Oil Viscosity:
2625SUS (567cSt) @ 100°F (38°C)

Centrifuge Separation Characteristics:
ASTM D-4425-K36 = 0/24

NLGI Grade: 1

Minimum Dropping Point:
225°F (108°C)

Minimum Timken Load: 40 lbs

If an alternative grease is used it should meet the minimum specifications listed below. Table 4 is a list of grease products that meet the general specifications but should not be considered exclusive recommendations.

Common Industrial Lubricants (NLGI Grade #2) ***Table 4***

Manufacturer	Ambient Temperature Range: 0°F to 150°F (-18°C to 66°C)	Ambient Temperature Range: -30°F to 100°F[1] (-34°C to 38°C)
Amoco Oil Co.	Amolith Grease #2	Amolith Grease #2
Atlantic Richfield Co.	Litholene HEP 2	Litholene HEP 2
Chevron U.S.A. Inc.	Chevron Dura-Lith EP-2	Chevron Dura-Lith EP 2
Cities Service Co.	Citgo HEP-2	Citgo HEP 2
Conoco Inc.	EP Conolith #2	EP Conolith #2
Exxon Company, USA	Ronex MP	Ronex MP
Gulf Oil Corp.	Gulfcrown Grease #2	Gulfcrown Grease #2
E.F. Houghton & Co.	Cosmolube #2	Cosmolube #1
Imperial Oil Ltd.	Esso MP Grease H	Lotemp EP
Kendall Refining Co.	Kenlube L-421 Gease	Kenlube L-427 Grease
Keystone Div. (Pennwalt)	#81 Light	#84 Light
Mobil Oil Corp.	Mobilux EP 111	Mobilux #1
Phillips Petroleum Co.	IB & RB Grease	Philube IB & RB Grease
Shell Oil Co.	Alvania Grease #2	Alvania Grease #2
Standard Oil Co. (OH)	Factran #2	Factran #2
Sun Oil Company	Prestige 42	Prestige 42
Texaco Lubricants	Starplex HD2	Multifak EP2
Texaco Canada Inc.	Marfak HD 2	Marfak AP
Union Oil Co. (CA)	Union Unoba #2	Union Unoba #2
Valvoline Oil Co.	Val-Lith EP #2	Val-Lith EP #2

Note: Check with lube manufacturer for approved lubricants to use in the food processing industry.

Temperature Operating Range:
0°F (-18°C) to 150°F (66°C)

Centrifuge Separation Characteristics:
Low oil separation rate and high resistance to separation from centrifuging.

NLGI Grade: 2

Minimum Dropping Point: 190°F (74°C)

Summary of Lubrications for Various Conditions.

Applications	Conditions				Grease lubrication		Oil lubrication	
	Speed	Centrifugal force	Load	Misalignment	NLGI.	Properties	Oil-filled	Continuous
Low-speed	RPM ≤ 200 x $d^{-1/2}$, d = pitch diameter of the gear tooth (inch)	< 10g	The peak torque < 2.5 times the continuous torque.	< 3/4°	No. 0, No. 1	-	Viscosity: ≥ 150 SSU at 100 °C Grade: - ISO 460 - SAE Gear Oil 140	Viscosity: ≥ 50 SSU at 100 °C Grade: - ISO 46 - SAE Engine Oil 20
Normal -speed	≤ 3,600 RPM	≤ 200g	The peak torque < 2.5 times the continuous torque.	< 3/4°	No. 2	-		
High-speed	> 3,600 RPM	> 200g	Uniform	< 1/2°	No. 3	- Good resistance to centrifugal separation.	Viscosity: 2100 to 3600 SSU at 100 °F Grade: ISO 460	
High-torque High-misalignment	< 3,600 RPM	< 200g	The peak torque > 2.5 times the continuous torque.	> 3/4°	No. 2	- Anti-friction and anti-wear additives (molydisulfide) - Extreme pressure (EP) additives. - Minimum Timken Load > 40 lb. - Minimum Dropping Point 150 °C	Viscosity: ≥ 150 SSU at 100 °C	