

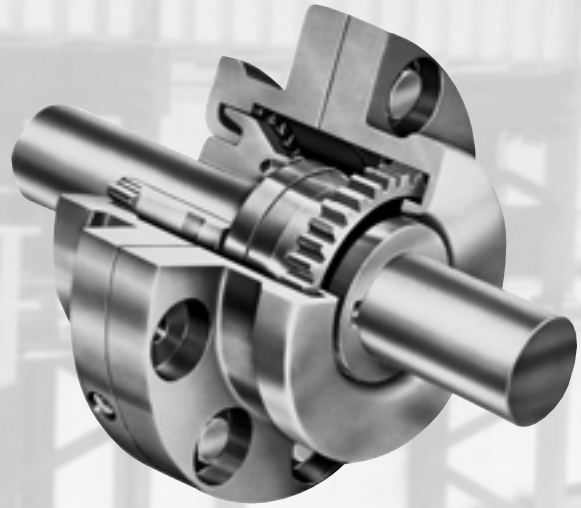
# KOP-FLEX®

## FAST'S®

**Gear Couplings  
Size 1 1/2 through 30**

## FAST'S® Model B

**Gear Couplings  
Size 1 through 3 1/2**



**The Industry Standard  
for Over 80 Years**

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**Unique All-metal  
End Ring Seal  
Designed for  
Maximum Service Life**



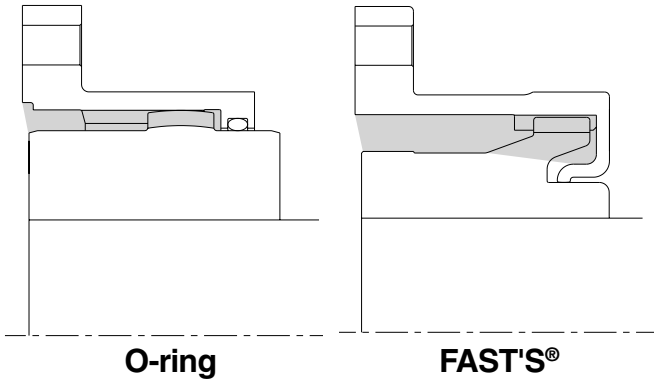
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## Why Specify FAST'S® Gear Couplings?

The FAST'S® design, with its lifetime **all-metal end ring**, provides up to **300% greater lubricant capacity**. This means that longer periods between relubrication may be scheduled.



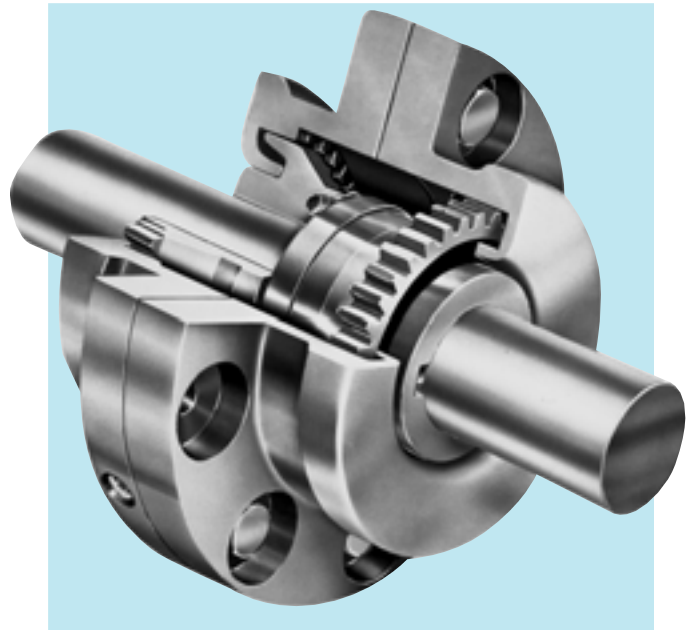
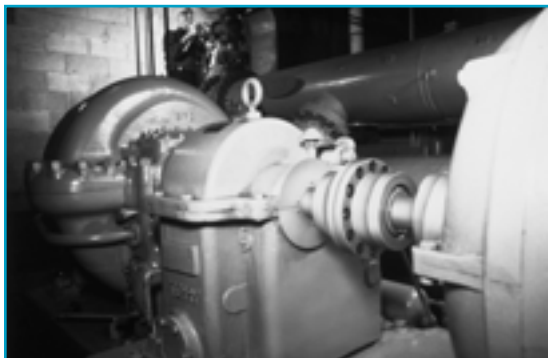
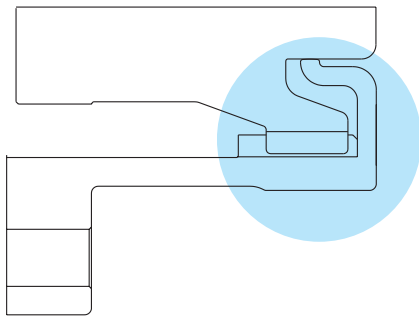
**Lubricant Capacity - FAST'S® vs. O-ring Style**

## Why Is The Design Unique?

The all-metal end ring, used exclusively in FAST'S® couplings, eliminates the need for any type of perishable lube seal (o-rings, lip seals, cork gaskets, etc.). The end ring not only provides the dam over which lubricant must flow to escape, but it additionally pilots the sleeve with respect to the hub during start-up and shut-down operations. It further eliminates partial tooth disengagement with resulting tooth overloads by providing sleeve teeth which are flush against the inside wall of the end ring.

It is the only coupling designed to use oil lubrication.

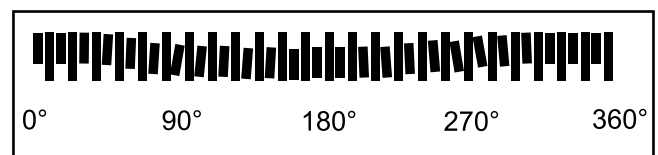
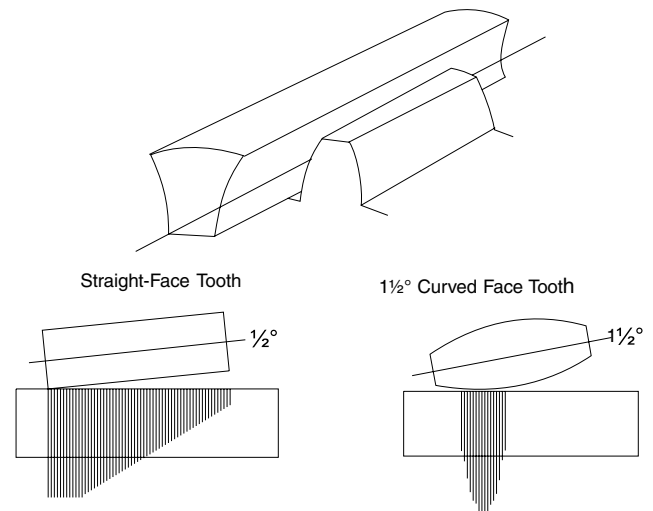
To be sure that your couplings provide Maximum Life, always specify FAST'S® couplings, with the all-metal end ring!



**FAST'S® Gear Coupling Size 1 1/2 - 7**

## What Tooth Form Is Used?

The Straight-Faced involute hub tooth form featured in the FAST'S® coupling is virtually unique in the industry today. It is this tooth form that distributes tooth contact pressures across the full length of the hub tooth, best developing the needed hydrodynamic lube film, minimizing tooth wear and extending coupling life. It is the only hub tooth form available in the standard FAST'S® coupling line.



**Tooth Motion Under Misalignment**

### The FAST'S® Coupling

The FAST'S® gear coupling is available in two basic product lines:

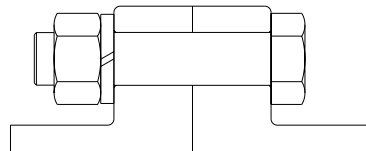
- **FAST'S® coupling** for medium to heavy-duty applications.
  - Sizes 1 1/2 through 7 with integral end ring.
  - Sizes 8 through 30 with bolt-on end ring.
- **FAST'S® Model B coupling** for light to medium-duty applications. Model B couplings are not interchangeable with standard FAST'S® couplings.
  - Sizes 1 1/2 through 3 1/2 with integral end ring.



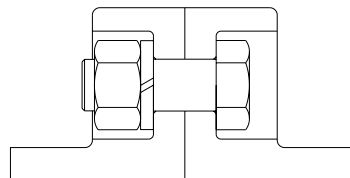
**FAST'S® Gear Coupling Size 8-30**

### Center Flange Bolting:

All couplings feature precision-drilled flange bolt holes, and tight tolerance Grade 5 flange bolts to assure a long-lasting flange to flange and fastener fit. Exposed bolt flanges are standard. Shrouded bolt flanges can be supplied through size 5. **Size #5 1/2 and larger couplings are only available with exposed bolt flanges.**



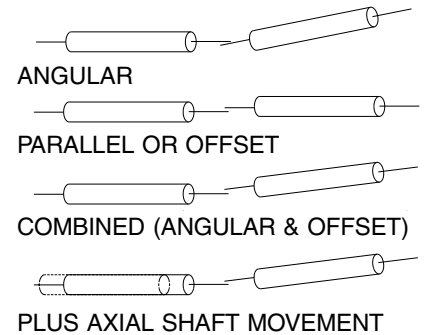
EXPOSED BOLTS



SHROUDED BOLTS



### Shaft Misalignment:

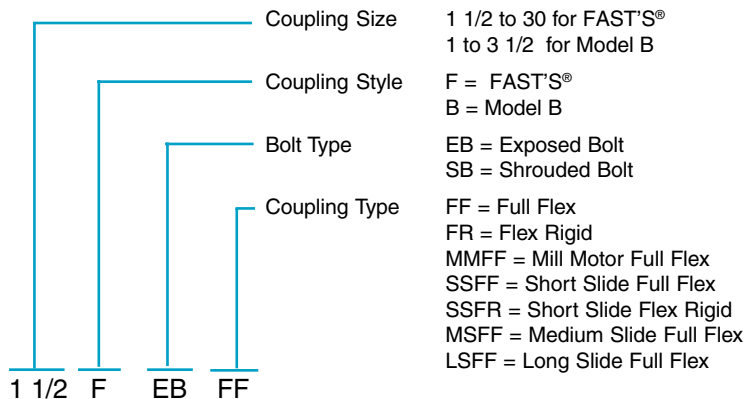


### Misalignment Capabilities

FAST'S® couplings are designed for  $\pm 1/2^\circ$  static misalignment per half coupling.

Minimizing operating misalignment will maximize the life of the coupling. Refer to the Installation and Alignment Instructions for alignment recommendations.

### PART NUMBER EXPLANATION Complete Rough Bore Coupling



Visit [www.kopflex.com](http://www.kopflex.com)

## How to Order

### Coupling Parts

Description

- \*FHUB = Flex Hub
- \*RHUB = Rigid Hub
- \*MMHUB = Mill Motor Hub
- \*SSHUB = Short Slide Hub (Full Flex)
- \*SRHUB = Short Slide Hub (Flex Rigid)
- \*MSHUB = Medium Slide Hub
- \*LSHUB = Long Slide Hub
- SLEEVE = Standard Sleeve
- MSSLEEVE = Medium Slide Sleeve
- LSSLEEVE = Long Slide Sleeve
- FS = Fastener Set (w/gasket)
- VSFS = Vertical/Slide Fastener Set (w/gasket)
- ERFS = End Ring Fastener Set
- LEFD = LEF Disk
- SPRxxx = Spacer for x.xx shaft separation
- SP = Stop Plate for Slide Couplings
- ERING = End Ring

\* For finish bored hubs, add FB and bore size. All finish bores and keyways per AGMA 9002-A86 with interference fits. Clearance bores are available on request with one setscrew over keyway.

1 1/2F FHUB FB

Values listed are intended only as a general guide, and are typical of usual service requirements. For systems which frequently utilize the peak torque capability of the power source, verify that the magnitude of this peak torque does not exceed the 1.0 Service Factor Rating of the coupling selected. Applications which involve extreme repetitive shock or high-energy load absorption characteristics should be referred — with full particulars — to KOP-FLEX.

Values contained in the table are to be applied to smooth power sources such as electric motors and steam turbines. For drives involving internal combustion engines of four or five cylinders, add 1.0 to the values listed; for six or more cylinders, add 0.5 to the values listed. For systems utilizing AC or DC Mill Motors as the prime mover, refer to Note (1).

**CAUTION** All people moving applications must be referred to engineering.

Application	Typical Service Factor
<b>AGITATORS</b>	
Pure Liquids .....	1.0
Liquids & Solids .....	1.25
Liquids — Variable Density .....	1.25
<b>BLOWERS</b>	
Centrifugal .....	1.0
Lobe .....	1.5
Vane .....	1.25
<b>BRIQUETTE MACHINES</b>	2.0
<b>CAR PULLERS — Intermittent Duty</b>	1.5
<b>COMPRESSORS</b>	
Centrifugal .....	1.0
Centriaxial .....	1.25
Lobe .....	1.5
Reciprocating — Multi-Cylinder .....	2.0
<b>CONVEYORS — LIGHT DUTY UNIFORMLY FED</b>	
Apron, Bucket, Chain, Flight, Screw .....	1.25
Assembly, Belt .....	1.0
Oven .....	1.5
<b>CONVEYORS — HEAVY DUTY NOT UNIFORMLY FED</b>	
Apron, Bucket, Chain, Flight, Oven .....	1.5
Assembly, Belt .....	1.25
Reciprocating, Shaker .....	2.5
<b>CRANES AND HOISTS (NOTE 1 and 2)</b>	
Main hoists, Reversing .....	2.5
Skip Hoists, Trolley & Bridge Drives .....	2.0
Slope .....	2.0
<b>CRUSHERS</b>	
Ore, Stone .....	3.0
<b>DREDGES</b>	
Cable Reels .....	1.75
Conveyors .....	1.5
Cutter Head Jig Drives .....	2.5
Maneuvering Winches .....	1.75
Pumps .....	1.75
Screen Drives .....	1.75
Stackers .....	1.75
Utility Winches .....	1.5
<b>ELEVATORS (NOTE 2)</b>	
Bucket .....	1.75
Centrifugal & Gravity Discharge .....	1.5
Escalators .....	1.5
Freight .....	2.5
<b>FANS</b>	
Centrifugal .....	1.0
Cooling Towers .....	1.5
Forced Draft .....	1.5
Induced Draft without Damper Control .....	2.0
<b>FEEDERS</b>	
Apron, Belt, Disc, Screw .....	1.25
Reciprocating .....	2.5

Application	Typical Service Factor
<b>GENERATORS — (Not Welding)</b>	1.0
<b>HAMMER MILLS</b>	2.0
<b>LAUNDRY WASHERS — Reversing</b>	2.0
<b>LAUNDRY TUMBLERS</b>	2.0
<b>LINE SHAFT</b>	1.5
<b>LUMBER INDUSTRY</b>	
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 Floor Chains .....	1.75
Planer Tilting Hoist .....	1.75
Slab Conveyor .....	1.5
Sorting Table .....	1.5
Trimmer Feed .....	1.75
<b>MARINE PROPULSION</b>	
Main Drives .....	2.0
<b>MACHINE TOOLS</b>	
Bending Roll .....	2.0
Plate Planer .....	1.5
Punch Press — Gear Driven .....	2.0
Tapping Machines .....	2.5
Other Machine Tools	
Main Drives .....	1.5
Auxiliary Drives .....	1.25
<b>METAL MILLS</b>	
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
<b>METAL ROLLING MILLS (NOTE 1)</b>	
Blooming Mills .....	*
Coilers, hot mill .....	2.0
Coilers, cold mill .....	1.25
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 .....	1.5
Roughing Mill Delivery Table .....	3.0
Runout Tables	
Reversing .....	3.0
Non-Reversing .....	2.0
Saws, hot & cold .....	2.5
Screwdown Drives .....	3.0
Skelp Mills .....	3.0
Slitters .....	3.0
Slabbing Mills .....	3.0
Soaking Pit Cover Drives .....	3.0
Straighteners .....	2.5
Tables, transfer & runout .....	2.0
Thrust Block .....	3.0
Traction Drive .....	3.0
Tube Conveyor Rolls .....	2.5
Unscramblers .....	2.5
Wire Drawing .....	1.5
<b>MILLS, ROTARY TYPE</b>	
Ball .....	2.25
Dryers & Coolers .....	2.0
Hammer .....	1.75
Kilns .....	2.0

Application	Typical Service Factor
Pebble & Rod .....	2.0
Pug .....	1.75
Tumbling Barrels .....	2.0
<b>MIXERS</b>	
Concrete Mixers .....	1.75
Drum Type .....	1.5
<b>OIL INDUSTRY</b>	
Chillers .....	1.25
Paraffin Filter Press .....	1.75
<b>PAPER MILLS</b>	
Barker Auxiliaries, Hydraulic .....	2.0
Barker, Mechanical .....	2.0
Barking Drum Spur Gear Only .....	2.25
Beater & Pulper .....	1.75
Bleacher .....	1.0
Calenders .....	2.0
Chippers .....	2.5
Coaters .....	1.0
Converting Machines, except Cutters, Platers .....	1.5
Couch Roll .....	1.75
Cutters, Platers .....	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
<b>PRINTING PRESSES</b>	1.5
<b>PULLERS — Barge Haul</b>	2.0
<b>PUMPS</b>	
Centrifugal .....	1.0
Boiler Feed .....	1.5
Reciprocating	
Single Acting	
1 or 2 Cylinders .....	2.25
3 or more Cylinders .....	1.75
Double Acting .....	2.0
Rotary, Gear, Lobe, Vane .....	1.5
<b>RUBBER INDUSTRY</b>	
Mixer — Banbury .....	2.5
Rubber Calendar .....	2.0
Rubber Mill (2 or more) .....	2.25
Sheeter .....	2.0
Tire Building Machines .....	2.5
Tire & Tube Press Openers .....	1.0
Tubers & Strainers .....	2.0
<b>SCREENS</b>	
Air Washing .....	1.0
Grizzly .....	2.0
Rotary — Stone or Gravel .....	1.5
Traveling Water Intake .....	1.25
Vibrating .....	2.5
<b>SEWAGE DISPOSAL EQUIPMENT</b>	
Bar Screens .....	1.25
Chemical Feeders .....	1.25
Collectors, Circuline or Straightline .....	1.25
Dewatering Screens .....	1.25
Grit Collectors .....	1.25
Scum Breakers .....	1.25
Slow or Rapid Mixers .....	1.25
Sludge Collectors .....	1.25
Thickeners .....	1.25
Vacuum Filters .....	1.25
<b>STEERING GEAR</b>	1.0
<b>STOKERS</b>	1.0
<b>WINCH</b>	1.5
<b>WINDLASS</b>	1.75

\* Refer to KOP-FLEX

#### NOTES

- (1) Maximum Torque at the coupling must not exceed Rated Torque of the coupling.
- (2) Check local and industrial safety codes.

**1. Select Coupling Based on Bore Capacity.**

Select the coupling size that has a maximum bore capacity equal to or larger than the larger of the two shafts. For interference fits larger than AGMA standards, consult KOP-FLEX.

**2. Verify Coupling Size Based on Load Rating.**

- Select appropriate Service Factor from the Table on page 132.
- Calculate required HP / 100 RPM:  

$$\frac{HP \times \text{Service Factor} \times 100}{RPM} = HP / 100 \text{ RPM}$$
- Verify that the selected coupling has a rating greater than or equal to the required HP / 100 RPM.

**3. Check Balance Requirements.**

Consult Dynamic Balancing Guide to help determine if balancing is required. Verify that the maximum operating speed does not exceed the maximum speed rating of the coupling. The maximum speed rating does not consider lateral critical speed considerations for floating shaft applications.

**Note: Care must be exercised on proper selection of any shaft coupling. The Users must assure themselves that the design of the shaft to coupling hub connection is adequate for the duty intended.**

### Dynamic Balancing Guide

Balancing requirements for a coupling are dependent on factors determined by the characteristics of the connected equipment. For this reason, the Balancing Charts should be used as a GUIDE ONLY to assist in determining whether or not balancing is required.

The Balancing Charts shown are based on AGMA 9000-C90 suggested balance classes for systems with "Average" sensitivity to unbalance. For systems with higher sensitivity to unbalance, balancing of the coupling may be required at lower speeds. For systems which are less sensitive to unbalance, couplings may be able to operate at higher speeds than those shown at lower balance levels. Therefore, in the absence of either a thorough system analysis or past user experience with a similar installation, these charts should be used as a GUIDE ONLY.

**FAST'S® and SERIES H** gear couplings may be component balanced, or assembly balanced with fitted components (Type FB and Type HB, respectively).

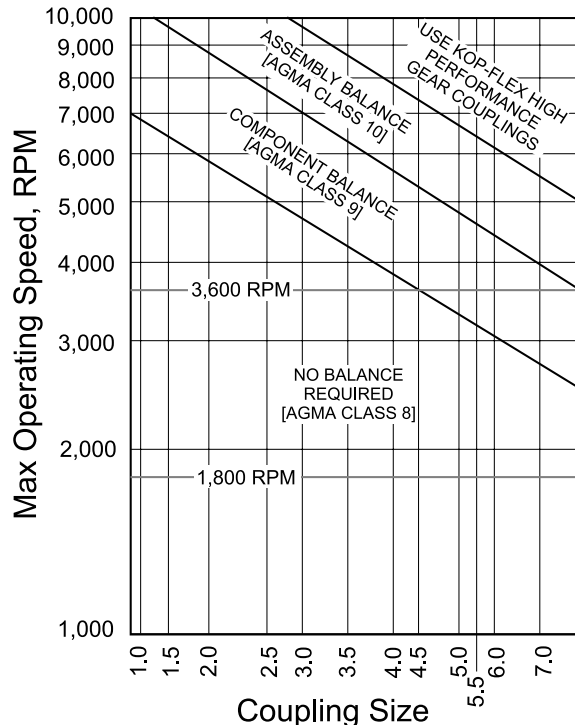
**WALDRON®** gear couplings are available component balanced only.

**Model B** gear couplings are not designed to be balanced.

These charts apply to sizes 1 through 7 only. Dynamic balance of size 8 through 30 must be considered on a case-by-case basis. Consult KOP-FLEX for assistance.

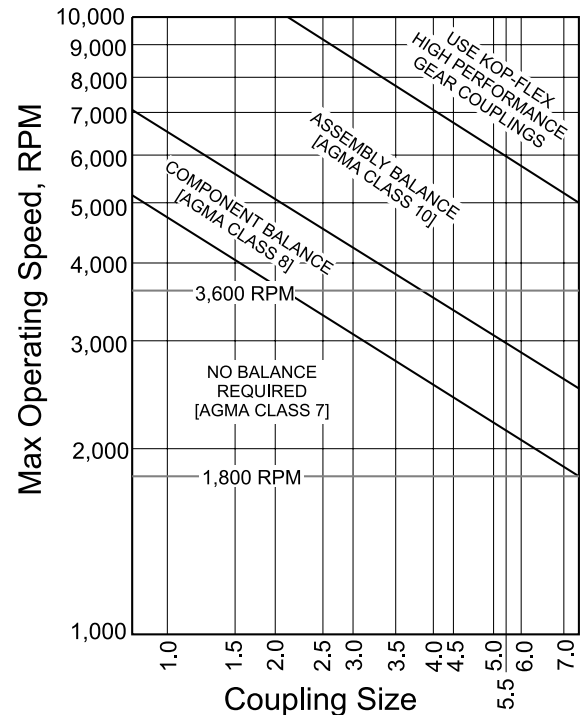
### Close Coupled Balancing Chart

Based on AGMA 9000-C90 for Average System Sensitivity



### Spacer Coupling Balancing Chart for 12" Shaft Separation

Based on AGMA 9000-C90 for Average System Sensitivity



### Full Flex Coupling Size 1 1/2-7

A conventional 4-bearing system has two bearings on the driving shaft and two bearings on the driven shaft. Both angular and offset shaft misalignment will be present to some degree and a full flex coupling is mandatory. The full flex coupling is the standard coupling having two gear ring sets, one set per half coupling. For selection procedure see page 133.

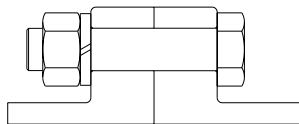


#### Coupling Greases

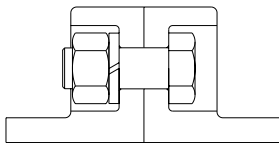
KOP-FLEX offers greases specifically designed for use in coupling applications. For proper lubrication and long service life, use KSG Standard Coupling Grease, or KHP High Performance Coupling Grease. See pages 204-206 for detailed specifications.

Coupling Size	Maximum Bore with Standard Keyway	Maximum Bore with Reduced Depth Keyway	Reduced Depth Keyway	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed (RPM)	Weight with Solid Hubs (lb.)	Dimensions				
									A	B	C	E	O
1 1/2	1 5/8	1 3/4	3/8 x 1/8	27	17000	34000	12000	16.5	6	4	1/8	1 15/16	2 3/16
2	2 1/8	2 1/4	1/2 x 3/16	50	31500	63000	9300	27.4	7	4 15/16	1/8	2 7/16	2 7/8
2 1/2	2 3/4	3	3/4 x 3/16	90	56700	113400	7900	48.0	8 3/8	6 3/16	3/16	3 1/32	3 5/8
3	3 1/8	3 3/8	7/8 x 1/4	160	101000	202000	6800	70.8	9 7/16	7 5/16	3/16	3 19/32	4 1/4
3 1/2	3 3/4	4	1 x 5/16	235	148000	296000	6000	113	11	8 1/2	1/4	4 3/16	5
4	4 1/4	4 1/2	1 x 3/8	375	236000	472000	5260	177	12 1/2	9 3/4	1/4	4 3/4	5 3/4
4 1/2	4 3/4	5 1/8	1 1/4 x 7/16	505	318000	636000	4770	231	13 5/8	10 15/16	5/16	5 5/16	6 1/2
5	5 1/2	5 7/8	1 1/2 x 7/16	700	441000	882000	4300	351	15 5/16	12 1/16	5/16	6 1/32	7 5/16
5 1/2*	5 7/8	6 3/8	1 1/2 x 1/2	920	580000	1160000	3880	435	16 3/4	13 13/16	5/16	6 29/32	8
6*	6 1/2	7	1 3/4 x 1/2	1205	759000	1518000	3600	538	18	14 13/16	5/16	7 13/32	8 13/16
7*	8	8 1/2	2 x 1/2	1840	1160000	2320000	3000	860	20 3/4	17 5/16	3/8	8 11/16	10 5/16

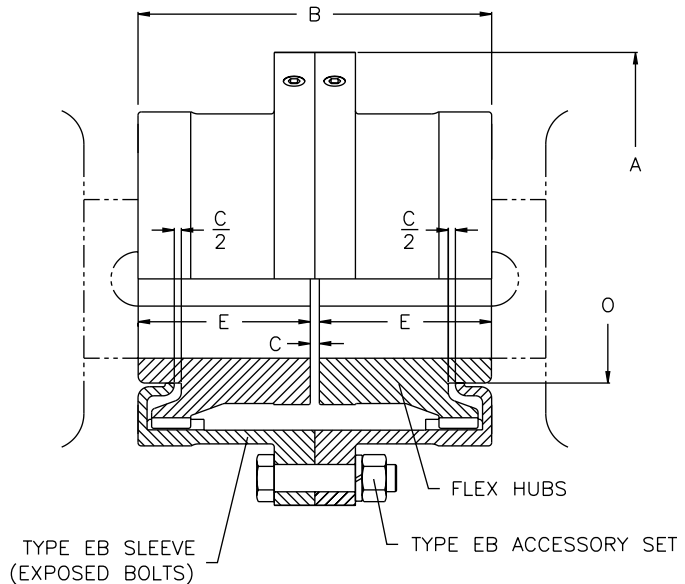
\* Sizes 5 1/2, 6 and 7 are only available with exposed bolt sleeves. Type EB exposed bolts are standard.



TYPE EB - EXPOSED BOLTS



TYPE SB - SHROUDED BOLTS



#### Fastener Data

Coupling Size	Type EB Exposed Bolt			Type SB Shrouded Bolt		
	Qty.	Size & Length	Bolt Circle	Qty.	Size & Length	Bolt Circle
1 1/2	8	3/8 x 2	4 13/16	8	3/8 x 1	4 13/16
2	6	1/2 x 2 1/2	5 7/8	10	3/8 x 1	5 13/16
2 1/2	6	5/8 x 2 3/4	7 1/8	10	1/2 x 1 5/16	7
3	8	5/8 x 2 3/4	8 1/8	12	1/2 x 1 5/16	8
3 1/2	8	3/4 x 3 3/8	9 1/2	12	5/8 x 1 5/8	9 9/32
4	8	3/4 x 3 3/8	11	14	5/8 x 1 5/8	10 5/8
4 1/2	10	3/4 x 3 3/8	12	14	5/8 x 1 5/8	11 3/4
5	8	7/8 x 4 1/4	13 1/2	14	3/4 x 2 1/8	13 3/16
5 1/2*	14	7/8 x 3 1/4	14 1/2	-	-	-
6*	14	7/8 x 3 1/4	15 3/4	-	-	-
7*	16	1 x 3 5/8	18 1/4	-	-	-

\* Sizes #5 1/2 and larger are available in exposed bolts only.

FAST'S® coupling sizes 8-30 feature an all-metal end ring which can be easily removed to inspect the hub and sleeve teeth without removing the hub from its shaft.

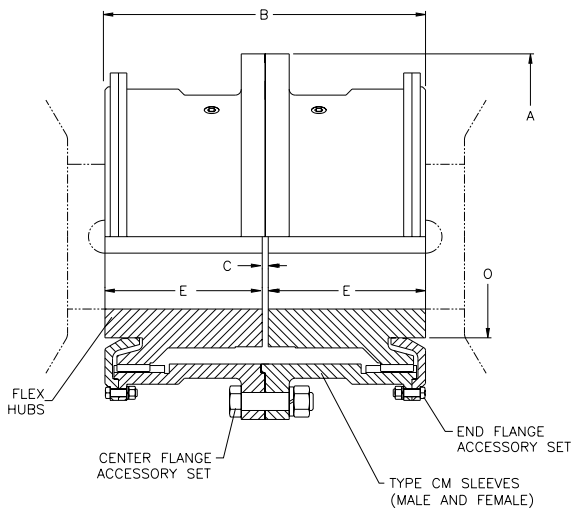
All end rings have gaskets and are bolted to the sleeves. Non-critical surfaces are as-cast, or as-forged. Sleeves have mating male and female rabbets at the center and end flange joints to simplify installation. The sleeves have two lube plugs in the body.

Standardized center flanges allow flex-half substitution regardless of design or vintage. All bolts are special with respect to body length, thread length, and bolt body tolerance.

**Sizes 8 - 30 are available with exposed bolts only.**



Coupling Size	Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in. x 1000)	Peak Torque Rating (lb.-in. x 1000)	Maximum Speed (RPM)	Weight with Solid Hubs (lb.)	Dimensions				
							A	B	C	E	O
8	8 3/4	2230	1404	2808	1750	1408	23 1/4	20	3/8	9 13/16	11 7/8
9	9 3/4	3170	1995	3990	1625	1898	26	22 1/4	1/2	10 7/8	13 3/8
10	11	4350	2744	5488	1500	2548	28	24 1/2	1/2	12	15 1/4
11	12	5780	3645	7290	1375	3342	30 1/2	26 3/4	1/2	13 1/8	16 7/8
12	13	7190	4532	9064	1250	4194	33	28 1/4	1/2	13 7/8	18 1/2
13	14 1/4	9030	5688	11376	1125	5112	35 3/4	30	3/4	14 5/8	20
14	15 1/2	11080	6982	13964	1000	6100	38	31 3/4	3/4	15 1/2	21 3/4
15	17	13470	8488	16976	875	7650	40 1/2	33 3/4	3/4	16 1/2	23 1/2
16	18	16100	10150	20300	750	8965	43	35 3/4	1	17 3/8	25
18	20 1/2	21100	13300	26600	500	11770	47 1/4	37	1	18	28 1/4
20	23	28800	18144	36288	400	16910	53 1/2	43 1/4	1	21 1/8	31 7/8
22	26	38100	24009	48018	300	22370	59	47	1	23	35 1/4
24	28	42400	26699	53398	200	28830	64 1/4	50 1/2	1	24 3/4	38 3/4
26	30	53000	33415	66830	200	35890	68 1/2	54	1	26 1/2	42 1/4
28	33	65900	41564	83128	200	42660	73 3/4	55 1/4	1	27 1/8	45 3/4
30	36	80300	50614	101228	200	49780	78	56 1/4	1	27 5/8	49 1/4



### Fastener Data

Coupling Size	Center Flange			End Ring		
	Quantity	Size & Length	Bolt Circle	Quantity (each)	Size & Length	Bolt Circle
8	16	1 1/8 x 4 1/8	20 3/4	10	1/2 x 2	19 3/8
9	18	1 1/4 x 4 1/2	23 1/4	12	5/8 x 2 3/16	21 3/4
10	18	1 3/8 x 5 3/8	25 1/4	12	5/8 x 2 3/16	23 7/8
11	18	1 1/2 x 5 7/8	27 1/2	12	5/8 x 2 3/16	26 1/16
12	18	1 1/2 x 6 1/8	30	12	3/4 x 2 9/16	28 5/16
13	18	1 5/8 x 6 3/8	32 1/4	12	3/4 x 2 9/16	30 1/2
14	18	1 3/4 x 6 5/8	34 1/2	14	3/4 x 2 9/16	32 5/8
15	20	1 3/4 x 6 5/8	36 3/4	14	7/8 x 2 7/8	35
16	20	2 x 7 3/8	39	14	7/8 x 2 7/8	37 1/8
18	22	2 x 7 3/8	43 1/4	14	7/8 x 2 7/8	41 3/8
20	22	2 1/4 x 7 5/8	48 3/4	16	1 x 3 5/8	46 1/4
22	22	2 1/2 x 8 1/8	53 1/2	16	1 x 3 5/8	50 3/4
24	22	2 3/4 x 8 7/8	58 1/4	16	1 1/8 x 4 1/8	55
26	24	2 3/4 x 8 7/8	62 1/2	18	1 1/8 x 4 1/8	59 1/4
28	22	3 x 9 5/8	67 1/4	16	1 1/4 x 4 1/4	63 11/16
30	24	3 x 9 5/8	71 1/2	18	1 1/4 x 4 1/4	68 3/16



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### Coupling Type EB (Exposed Bolts) Part Numbers

Coupling Size	Full Flex Coupling			Fastener Set (Includes Gasket)		Sleeve		Flex Hub		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1 1/2	1 1/2F EB FF	19	1 1/2F EB FF FB	1 1/2 EB FS	1	1 1/2F EB SLEEVE	6	1 1/2F FHUB	3	1 1/2F FHUB FB
2	2F EB FF	30	2F EB FF FB	2 EB FS	1	2F EB SLEEVE	8	2F FHUB	7	2F FHUB FB
2 1/2	2 1/2F EB FF	52	2 1/2F EB FF FB	2 1/2 EB FS	2	2 1/2F EB SLEEVE	14	2 1/2F FHUB	12	2 1/2F FHUB FB
3	3F EB FF	76	3F EB FF FB	3 EB FS	3	3F EB SLEEVE	17	3F FHUB	20	3F FHUB FB
3 1/2	3 1/2F EB FF	117	3 1/2F EB FF FB	3 1/2 EB FS	5	3 1/2F EB SLEEVE	28	3 1/2F FHUB	28	3 1/2F FHUB FB
4	4F EB FF	180	4F EB FF FB	4 EB FS	5	4F EB SLEEVE	41	4F FHUB	47	4F FHUB FB
4 1/2	4 1/2F EB FF	244	4 1/2F EB FF FB	4 1/2 EB FS	7	4 1/2F EB SLEEVE	53	4 1/2F FHUB	66	4 1/2F FHUB FB
5	5F EB FF	361	5F EB FF FB	5 EB FS	9	5F EB SLEEVE	80	5F FHUB	96	5F FHUB FB
5 1/2	5 1/2F EB FF	422	5 1/2F EB FF FB	5 1/2 EB FS	14	5 1/2F EB SLEEVE	89	5 1/2F FHUB	115	5 1/2F FHUB
6	6F EB FF	494	6F EB FF FB	6 EB FS	14	6F EB SLEEVE	100	6F FHUB	140	6F FHUB
7	7F EB FF	822	7F EB FF FB	7 EB FS	22	7F EB SLEEVE	160	7F FHUB	240	7F FHUB

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances with interference fit bores. Clearance fit bores are available on request and include one setscrew over keyway.

### Coupling Type SB (Shrouded Bolts) Part Numbers

Coupling Size	Full Flex Coupling			Fastener Set (Includes Gasket)		Sleeve		Flex Hub		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1 1/2	1 1/2F SB FF	19	1 1/2F SB FF FB	1 1/2 SB FS	1	1 1/2F SB SLEEVE	6	1 1/2F FHUB	3	1 1/2F FHUB FB
2	2F SB FF	30	2F SB FF FB	2 SB FS	1	2F SB SLEEVE	8	2F FHUB	7	2F FHUB FB
2 1/2	2 1/2F SB FF	52	2 1/2F SB FF FB	2 1/2 SB FS	2	2 1/2F SB SLEEVE	13	2 1/2F FHUB	12	2 1/2F FHUB FB
3	3F SB FF	76	3F SB FF FB	3 SB FS	2	3F SB SLEEVE	15	3F FHUB	20	3F FHUB FB
3 1/2	3 1/2F SB FF	117	3 1/2F SB FF FB	3 1/2 SB FS	4	3 1/2F SB SLEEVE	26	3 1/2F FHUB	28	3 1/2F FHUB FB
4	4F SB FF	180	4F SB FF FB	4 SB FS	4	4F SB SLEEVE	37	4F FHUB	47	4F FHUB FB
4 1/2	4 1/2F SB FF	244	4 1/2F SB FF FB	4 1/2 SB FS	4	4 1/2F SB SLEEVE	50	4 1/2F FHUB	66	4 1/2F FHUB FB
5	5F SB FF	361	5F SB FF FB	5 SB FS	7	5F SB SLEEVE	72	5F FHUB	96	5F FHUB FB

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances with interference fit bores. Clearance fit bores are available on request and include one setscrew over keyway.

### Coupling Type (Exposed Bolts) Part Numbers

Coupling Size	Full Flex	Male Half w/Access	Female Half w/Access	Hub	Male Sleeve	Female Sleeve	End Ring	Center Flange Fastener Set (includes gasket)	End Ring Fastener Set (includes gasket)
8	8F EB FF	8F EB MH	8F EB FH	8F FHUB	8F EB MSLEEVE	8F EB FSLEEVE	8F ERING	8 EB FS	8 ERFS
9	9F EB FF	9F EB MH	9F EB FH	9F FHUB	9F EB MSLEEVE	9F EB FSLEEVE	9F ERING	9 EB FS	9 ERFS
10	10F EB FF	10F EB MH	10F EB FH	10F FHUB	10F EB MSLEEVE	10F EB FSLEEVE	10F ERING	10 EB FS	10 ERFS
11	11F EB FF	11F EB MH	11F EB FH	11F FHUB	11F EB MSLEEVE	11F EB FSLEEVE	11F ERING	11 EB FS	11 ERFS
12	12F EB FF	12F EB MH	12F EB FH	12F FHUB	12F EB MSLEEVE	12F EB FSLEEVE	12F ERING	12 EB FS	12 ERFS
13	13F EB FF	13F EB MH	13F EB FH	13F FHUB	13F EB MSLEEVE	13F EB FSLEEVE	13F ERING	13 EB FS	13 ERFS
14	14F EB FF	14F EB MH	14F EB FH	14F FHUB	14F EB MSLEEVE	14F EB FSLEEVE	14F ERING	14 EB FS	14 ERFS
15	15F EB FF	15F EB MH	15F EB FH	15F FHUB	15F EB MSLEEVE	15F EB FSLEEVE	15F ERING	15 EB FS	15 ERFS
16	16F EB FF	16F EB MH	16F EB FH	16F FHUB	16F EB MSLEEVE	16F EB FSLEEVE	16F ERING	16 EB FS	16 ERFS
18	18F EB FF	18F EB MH	18F EB FH	18F FHUB	18F EB MSLEEVE	18F EB FSLEEVE	18F ERING	18 EB FS	18 ERFS
20	20F EB FF	20F EB MH	20F EB FH	20F FHUB	20F EB MSLEEVE	20F EB FSLEEVE	20F ERING	20 EB FS	20 ERFS
22	22F EB FF	22F EB MH	22F EB FH	22F FHUB	22F EB MSLEEVE	22F EB FSLEEVE	22F ERING	22 EB FS	22 ERFS
24	24F EB FF	24F EB MH	24F EB FH	24F FHUB	24F EB MSLEEVE	24F EB FSLEEVE	24F ERING	24 EB FS	24 ERFS
26	26F EB FF	26F EB MH	26F EB FH	26F FHUB	26F EB MSLEEVE	26F EB FSLEEVE	26F ERING	26 EB FS	26 ERFS
28	28F EB FF	28F EB MH	28F EB FH	28F FHUB	28F EB MSLEEVE	28F EB FSLEEVE	28F ERING	28 EB FS	28 ERFS
30	30F EB FF	30F EB MH	30F EB FH	30F FHUB	30F EB MSLEEVE	30F EB FSLEEVE	30F ERING	30 EB FS	30 ERFS



### Spacer Coupling Size 1 1/2 - 7

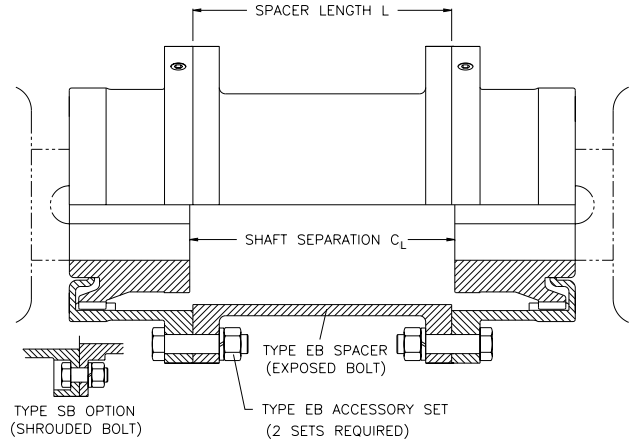
#### Standard Spacer Couplings

Full-flex spacer couplings are used for 4 bearing installations with extended shaft separations. Tabulated below are spacers for industry standard shaft separations,  $C_L$ .

Type EB exposed bolt spacers and Type SB shrouded bolt spacers for standard shaft separations are normally in stock. Other lengths are manufactured to order.

Spacer length,  $L$ , is calculated by subtracting the standard full-flex, close coupled gap,  $C$ , from the shaft separation,  $C_L$ .

$$L = C_L - C \quad (\text{full-flex, close coupled})$$



#### Spacer Part Numbers

Stock Spacer Part Numbers  
Type SB (Shrouded Bolts)

Coupling Size	Shaft Separation							
	3 1/2"		4 3/8"		5"		7"	
	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.
1 1/2	1 1/2 SB SPR350	6	1 1/2 SB SPR438	7	1 1/2 SB SPR500	8		
2	2 SB SPR350	8	2 SB SPR438	9	2 SB SPR500	10	2 SB SPR700	12
2 1/2					2 1/2 SB SPR500	14	2 1/2 SB SPR700	17
3					3 SB SPR500	17	3 SB SPR700	20
3 1/2					3 1/2 SB SPR500	27		

Stock Spacer Part Numbers  
Type EB (Exposed Bolts)

Coupling Size	Shaft Separation			
	5"		7"	
	Part No.	Wt.	Part No.	Wt.
1 1/2	1 1/2 EB SPR500	8		
2	2 EB SPR500	10	2 EB SPR700	12
2 1/2	2 1/2 EB SPR500	14		
3	3 EB SPR500	17		

Note: Spacer part number references the shaft separation, not the actual length of the spacer.

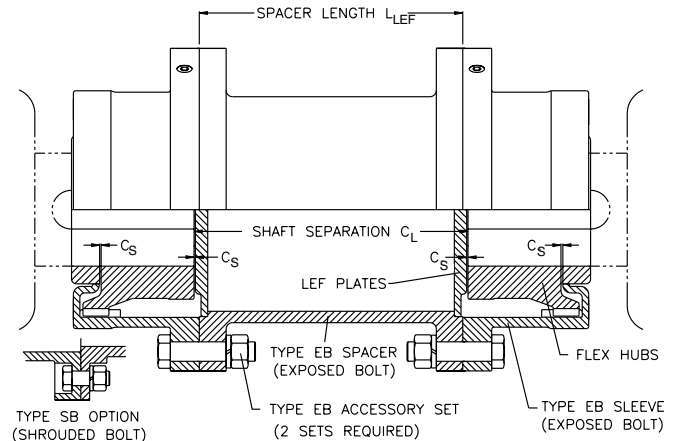
#### LEF Spacer Couplings

Limited End Float (LEF) spacer couplings are used for sleeve bearing motor applications with extended shaft separations. LEF spacers are supplied with steel LEF plates installed in each end.

Spacer length,  $L_{LEF}$ , is calculated by subtracting the LEF full-flex, close coupled gap,  $C_{LEF}$ , from the shaft separation,  $C_L$ .

$$L_{LEF} = C_L - C_{LEF} \quad (\text{full-flex, close coupled})$$

LEF spacers are shorter than standard spacers for a given shaft separation, and are manufactured to order.

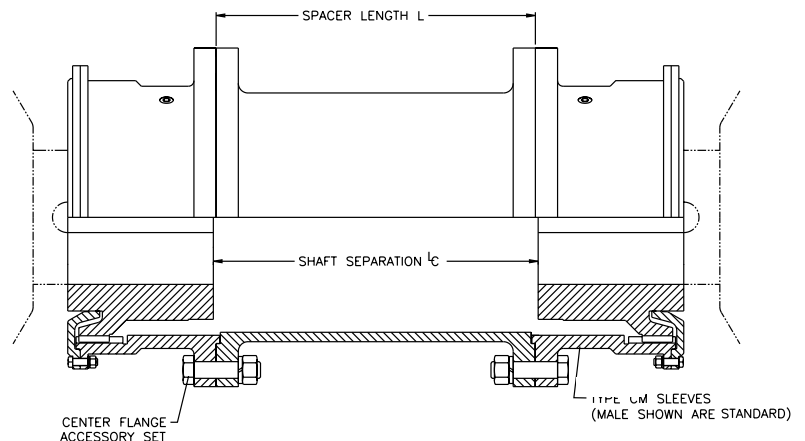


Note: Refer to Form 1900-62 for more information on limited end float applications.

Couplings sizes 8 - 30 are also available as spacer couplings for extended shaft separations. These sizes are available in exposed bolt only.

Spacers for coupling sizes 4 - 30 are non-stock and are manufactured to order. LEF spacer couplings are also manufactured to order.

### Spacer Couplings Size 8-30

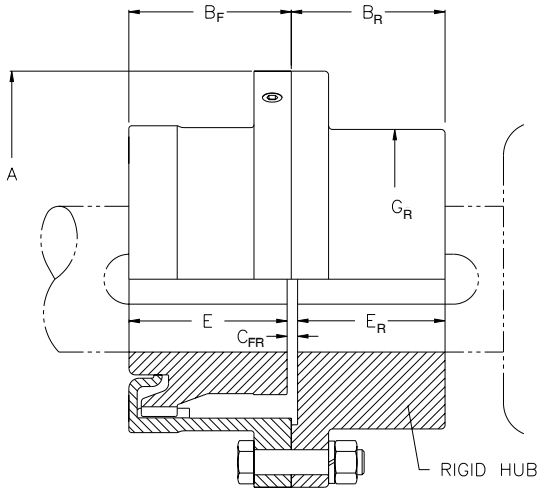


#### Coupling Greases

KOP-FLEX offers greases specifically designed for use in coupling applications. For proper lubrication and long service life, use KSG Standard Coupling Grease, or KHP High Performance Coupling Grease. See pages 204-206 for detailed specifications.

## Flex Rigid and Floating Shaft Couplings Size 1 1/2 - 7

When driving and driven shafts are widely separated, an unsupported or floating shaft is used to span the gap. The two couplings required at each end of that shaft consist of one half of a standard coupling bolted to a Rigid Hub, each unit called a Flex-Rigid Coupling. Usually, the rigid hubs are mounted on the driving and driven shafts so that the flex halves on the floating shaft may be replaced without disturbing the connected equipment.



Coupling Type EB (Exposed Bolts) Part Numbers

Coupling Size	Flex Rigid Coupling			Rigid Hub <sup>②</sup>		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1 1/2	1 1/2F EB FR	19	1 1/2F EB FR FB	1 1/2 EB RHUB	9	1 1/2 EB RHUB FB
2	2F EB FR	31	2F EB FR FB	2EB RHUB	15	2EB RHUB FB
2 1/2	2 1/2F EB FR	55	2 1/2F EB FR FB	2 1/2EB RHUB	27	2 1/2EB RHUB FB
3	3F EB FR	83	3F EB FR FB	3EB RHUB	40	3EB RHUB FB
3 1/2	3 1/2F EB FR	126	3 1/2F EB FR FB	3 1/2EB RHUB	65	3 1/2EB RHUB FB
4	4F EB FR	184	4F EB FR FB	4EB RHUB	90	4EB RHUB FB
4 1/2	4 1/2F EB FR	252	4 1/2F EB FR FB	4 1/2EB RHUB	124	4 1/2EB RHUB FB
5	5F EB FR	371	5F EB FR FB	5EB RHUB	119	5EB RHUB FB
5 1/2	5 1/2F EB FR	418	5 1/2F EB FR FB	5 1/2EB RHUB	200	5 1/2EB RHUB FB
6	6F EB FR	504	6F EB FR FB	6EB RHUB	250	6EB RHUB FB
7	7F EB FR	792	7F EB FR FB	7EB RHUB	370	7EB RHUB FB

Coupling Type SB (Shrouded Bolts) Part Numbers

Coupling Size	Flex Rigid Coupling			Rigid Hub <sup>②</sup>		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1 1/2	1 1/2F SB FR	19	1 1/2F SB FR FB	1 1/2 SB RHUB	9	1 1/2 SB RHUB FB
2	2F SB FR	31	2F SB FR FB	2SB RHUB	15	2SB RHUB FB
2 1/2	2 1/2F SB FR	55	2 1/2F SB FR FB	2 1/2SB RHUB	27	2 1/2SB RHUB FB
3	3F SB FR	83	3F SB FR FB	3SB RHUB	40	3SB RHUB FB
3 1/2	3 1/2F SB FR	126	3 1/2F SB FR FB	3 1/2SB RHUB	65	3 1/2SB RHUB FB
4	4F SB FR	184	4F SB FR FB	4SB RHUB	90	4SB RHUB FB
4 1/2	4 1/2F SB FR	252	4 1/2F SB FR FB	4 1/2SB RHUB	124	4 1/2SB RHUB FB
5	5F SB FR	371	5F SB FR FB	5SB RHUB	119	5SB RHUB FB

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances.

② Rigid hubs are furnished less fasteners.

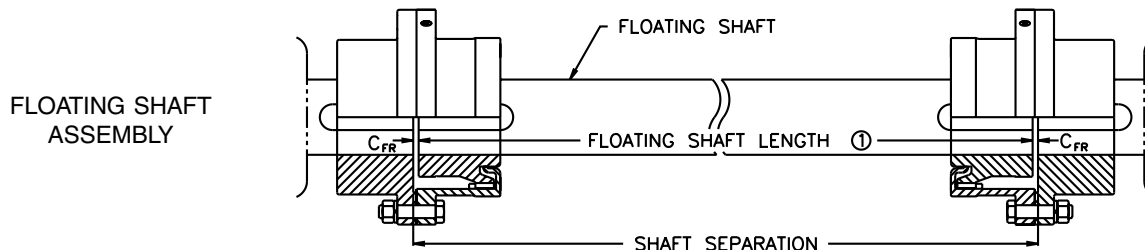
### Flex-Rigid Coupling Data

Coupling Size	Maximum Bore with Standard Keyway		Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed (RPM) <sup>②</sup>	Dimensions						
	Flex	Rigid					A	B <sub>F</sub>	B <sub>R</sub>	C <sub>FR</sub> <sup>①</sup>	E	E <sub>R</sub>	G <sub>R</sub>
1 1/2	1 5/8	2 11/16	27	17000	34000	12000	6	2	1 15/16	5/32	1 15/16	1 27/32	3 13/16
2	2 1/8	3 3/8	50	31500	63000	9300	7	2 15/32	2 3/8	5/32	2 7/16	2 9/32	4 13/16
2 1/2	2 3/4	4	90	56700	113400	7900	8 3/8	3 9/32	3	3/16	3 1/32	2 29/32	5 3/4
3	3 1/8	4 3/4	160	101000	202000	6800	9 7/16	3 21/32	3 9/16	3/16	3 19/32	3 15/32	6 3/4
3 1/2	3 3/4	5 1/2	235	148000	296000	6000	11	4 1/4	4 1/8	7/32	4 3/16	4 1/32	7 3/4
4	4 1/4	6 3/8	375	236000	472000	5260	12 1/2	4 7/8	4 5/8	5/16	4 3/4	4 7/16	9
4 1/2	4 3/4	7 1/4	505	318000	636000	4770	13 5/8	5 15/32	5 1/4	11/32	5 5/16	5 1/16	10 1/8
5	5 1/2	8 1/2	700	441000	882000	4300	15 5/16	6 1/32	5 7/8	11/32	6 1/32	5 11/16	11 3/8
5 1/2*	5 7/8	8	920	580000	1160000	3880	16 3/4	6 29/32	7 5/32	11/32	6 29/32	6 31/32	10 3/4
6*	6 1/2	8 3/4	1205	759000	1518000	3600	18	7 13/32	7 21/32	11/32	7 13/32	7 15/32	11 1/2
7*	8	10	1840	1160000	2320000	3000	20 3/4	8 21/32	9	7/16	8 11/16	8 3/4	13 3/8

\* Sizes 5 1/2, 6 and 7 are only available with exposed bolts. Type EB exposed bolts are standard.

① Floating shaft length is equal to the shaft separation minus 2 times the C<sub>FR</sub> dimension.

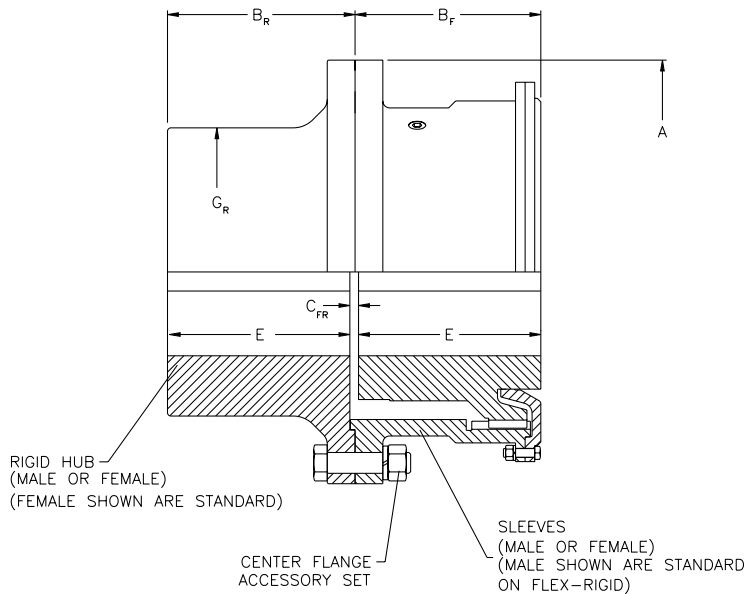
② Max. speed is based on flange stress limits and does not consider lateral critical speed considerations for floating shaft applications.



**Ordering Instructions:** When ordering floating shaft couplings, be sure to include hp and rpm, shaft separation, and equipment shaft sizes. Applications with very large shaft separations and/or high speeds may require tubular floating shafts due to lateral critical speed concerns.

**Important:** Care must be exercised in proper selection of any shaft coupling. The Users must assure themselves that the design of the shaft to coupling hub connection is adequate for the duty intended.

## Flex Rigid and Floating Shaft Couplings Size 8 - 30



Coupling Type EB  
(Exposed Bolts) Part Numbers

Coupling Size	Flex Rigid w/Access	Male Rigid	Female Rigid
8	8F EB FR	8F EB MRHUB	8F EB FRHUB
9	9F EB FR	9F EB MRHUB	9F EB FRHUB
10	10F EB FR	10F EB MRHUB	10F EB FRHUB
11	11F EB FR	11F EB MRHUB	11F EB FRHUB
12	12F EB FR	12F EB MRHUB	12F EB FRHUB
13	13F EB FR	13F EB MRHUB	13F EB FRHUB
14	14F EB FR	14F EB MRHUB	14F EB FRHUB
15	15F EB FR	15F EB MRHUB	15F EB FRHUB
16	16F EB FR	16F EB MRHUB	16F EB FRHUB
18	18F EB FR	18F EB MRHUB	18F EB FRHUB
20	20F EB FR	20F EB MRHUB	20F EB FRHUB
22	22F EB FR	22F EB MRHUB	22F EB FRHUB
24	24F EB FR	24F EB MRHUB	24F EB FRHUB
26	26F EB FR	26F EB MRHUB	26F EB FRHUB
28	28F EB FR	28F EB MRHUB	28F EB FRHUB
30	30F EB FR	30F EB MRHUB	30F EB FRHUB

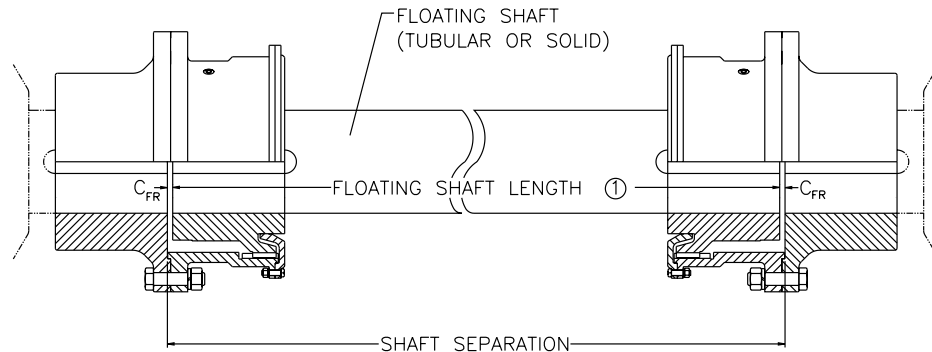
Coupling Size	Maximum Bore with Standard Key		Rating HP / 100 RPM	Torque Rating (lb.-in. x 1000)	Peak Torque Rating (lb.-in. x 1000)	Maximum Speed (RPM) ②	Weight with Solid Hubs (lb.)	Dimensions					
	Flex	Rigid						A	B <sub>F</sub>	B <sub>R</sub>	C <sub>FR</sub> ①	E	G <sub>R</sub>
8	8 3/4	11	2230	1404	2808	1750	1306	23 1/4	10	10 1/8	1/2	9 13/16	15 1/4
9	9 3/4	12 3/4	3170	1995	3990	1625	1795	26	11 1/8	11 3/16	9/16	10 7/8	17 1/4
10	11	13 1/2	4350	2744	5488	1500	2404	28	12 1/4	12 3/8	5/8	12	19
11	12	15	5780	3645	7290	1375	3151	30 1/2	13 3/8	13 1/2	5/8	13 1/8	20 3/4
12	13	16 1/4	7190	4532	9064	1250	3947	33	14 1/8	14 1/4	5/8	13 7/8	22 5/8
13	14 1/4	18	9030	5688	11376	1125	4866	35 3/4	15	15	3/4	14 5/8	24 5/8
14	15 1/2	19	11080	6982	13964	1000	5800	38	15 7/8	15 7/8	3/4	15 1/2	26 1/4
15	17	20 1/2	13470	8488	16976	875	7155	40 1/2	16 7/8	16 7/8	3/4	16 1/2	28
16	18	22	16100	10150	20300	750	8430	43	17 7/8	17 7/8	1	17 3/8	29 3/4
18	20 1/2	25	21100	13300	26600	500	11130	47 1/4	18 1/2	18 1/2	1	18	34
20	23	26	28800	18144	36288	400	15625	53 1/2	21 5/8	21 5/8	1	21 1/8	36
22	26	27	38100	24009	48018	300	20065	59	23 1/2	23 5/8	1 1/8	23	38
24	28	28	42400	26699	53398	200	25450	64 1/4	25 1/4	25 3/8	1 1/8	24 3/4	40
26	30	29	53000	33415	66830	200	31100	68 1/2	27	27 1/8	1 1/8	26 1/2	42
28	33	30	65900	41564	83128	200	36550	73 3/4	27 5/8	27 3/4	1 1/8	27 1/8	44
30	36	36	80300	50614	101228	200	43780	78	28 1/8	28 1/4	1 1/8	27 5/8	50

NOTE: Couplings are only available with exposed bolts.

① Floating shaft length is equal to the shaft separation, minus 2 times the C<sub>FR</sub> dimension.

② Max. speed is based on flange stress limits and does not consider lateral critical speed considerations for floating shaft applications.

FLOATING SHAFT ASSEMBLY

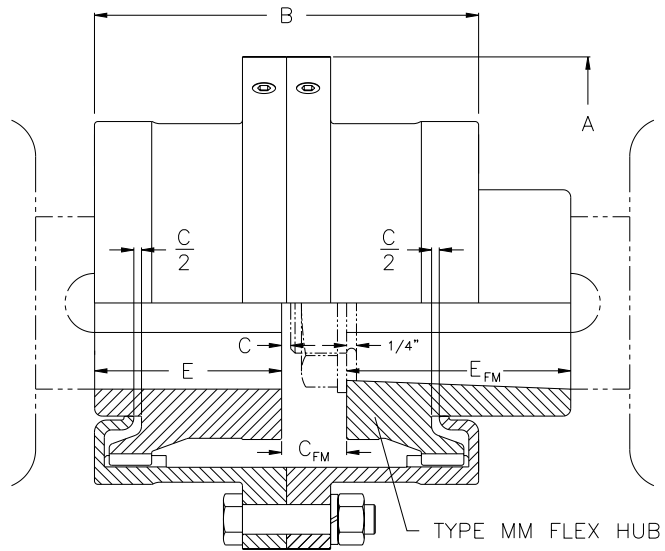


**Ordering Instructions:** When ordering floating shaft couplings, be sure to include hp and rpm, shaft separation, and equipment shaft sizes. Applications with very large shaft separations and/or high speeds may require tubular floating shafts due to lateral critical speed concerns.

**Important:** Care must be exercised in proper selection of any shaft coupling. The Users must assure themselves that the design of the shaft to coupling hub connection is adequate for the duty intended.

The FAST'S® Mill Motor Coupling is designed for use on AISE and other mill motors having tapered shafts with locknuts, and are used primarily in the metals industry. This design is also commonly used on other types of equipment which use tapered shafts with locknuts, such as turbines, pumps, and compressors.

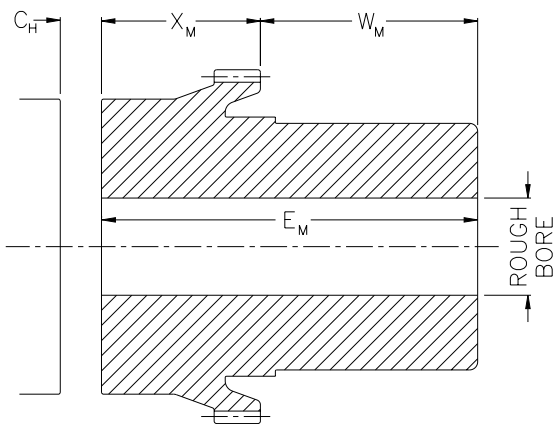
The standard "composite" mill motor hub is a semi-finished hub which can be modified and bored to fit a variety of AISE mill motor frames. Note that one size of coupling will fit several motor frames; conversely, several sizes may fit a single motor frame. See page 133 for proper coupling selection.



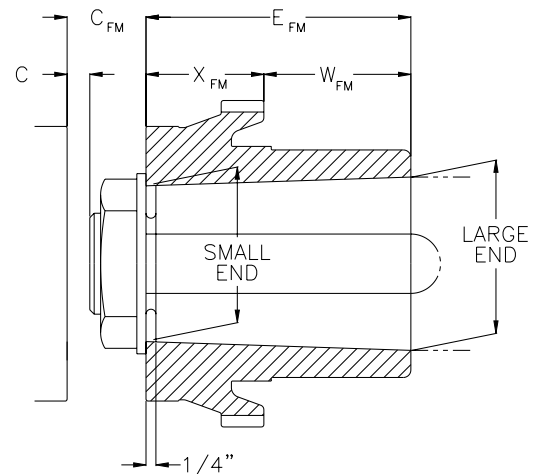
Coupling Size	Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed (RPM)	Weight with Solid Hubs (lb.)	Dimensions		
							A	B	E
1 1/2	1 5/8	27	17000	34000	12000	18.4	6	4	1 15/16
2	2 1/8	50	31500	63000	9300	30.5	7	4 15/16	2 7/16
2 1/2	2 3/4	90	56700	113400	7900	53.0	8 3/8	6 3/16	3 1/32
3	3 1/8	160	101000	202000	6800	76.8	9 7/16	7 5/16	3 19/32
3 1/2	3 3/4	235	148000	296000	6000	123	11	8 1/2	4 3/16
4	4 1/4	375	236000	472000	5260	184	12 1/2	9 3/4	4 3/4
4 1/2	4 3/4	505	318000	636000	4770	242	13 5/8	10 15/16	5 5/16
5	5 1/2	700	441000	882000	4300	365	15 5/16	12 1/16	6 1/32
5 1/2*	5 7/8	920	580000	1160000	3880	434	16 3/4	13 13/16	6 29/32
6*	6 1/2	1205	759000	1518000	3600	562	18	14 13/16	7 13/32
7*	8	1840	1160000	2320000	3000	862	20 3/4	17 5/16	8 11/16

See next page for additional dimensions.

\* Sizes 5 1/2, 6 and 7 are only available with exposed bolts. Type EB exposed bolts are standard.



MILL MOTOR COMPOSITE HUB  
ROUGH BORED



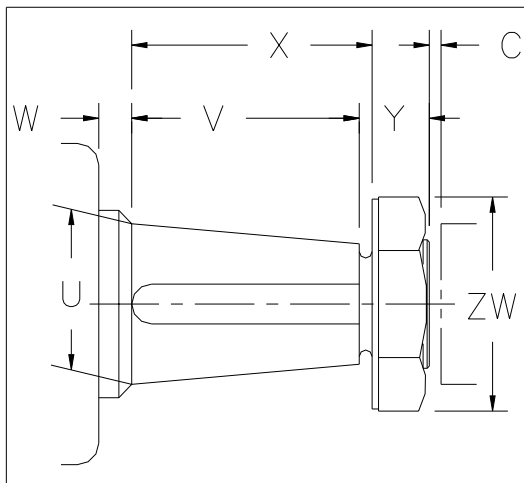
MILL MOTOR COMPOSITE HUB  
FINISH BORED



Visit [www.kopflex.com](http://www.kopflex.com)

Type MM Coupling Size	For: WISE Motor Frame Sizes	Rough Bored Composite Hub Dimensions & Part Numbers					Finish Bored Composite Hub For WISE Mill Motors Dimensions & Part Numbers									
		Dimensions				Part Number	Dimensions					Bore Dia.		Keyway	Part Number	
		C <sub>H</sub>	E <sub>M</sub>	X <sub>M</sub>	W <sub>M</sub>		C	C <sub>FM</sub>	E <sub>FM</sub>	X <sub>FM</sub>	W <sub>FM</sub>	Large End	Small End			
1 1/2	802	9/16	3 9/16	1 5/16	2 1/4	1 1/2F MMHUB	1/8	1 1/16		13/16	2 3/16			1/2 X 1/8	1 1/2F MMHUB02	
2	602 AC1	3/4	4 7/16	1 9/16	2 7/8	2F MMHUB	1/8	1 1/16	3	1 1/4	1 3/4	1.749	1.437	1/2 X 1/4	2F MMHUB02	
2 1/2	AC2	13/16	4 9/16	2 3/32	2 15/32	2 1/2F MMHUB	3/16	1 1/8		1 25/32	1 7/32				2 1/2F MMHUB02	
3	AC4	1 1/16	5 1/8	2 13/32	2 23/32	3F MMHUB	3/16	1 1/8		2 11/32	21/32				3F MMHUB02	
2	803	3/4	4 7/16	1 9/16	2 7/8	2F MMHUB	1/8	1 1/8		1 3/16	2 5/16				2F MMHUB0304	
2 1/2	804	13/16	4 9/16	2 3/32	2 15/32	2 1/2F MMHUB	3/16	1 3/16	3 1/2	1 23/32	1 25/32	1.999	1.634	1/2 X 1/4	2 1/2F MMHUB0304	
3	603	1 1/16	5 1/8	2 13/32	2 23/32	3F MMHUB	3/16	1 3/16		2 9/32	1 7/32				3F MMHUB0304	
3 1/2	604	1 1/8	5 3/4	2 15/16	2 13/16	3 1/2F MMHUB	1/4	1 1/4		2 13/16	11/16				3 1/2F MMHUB0304	
2 1/2	806	13/16	4 9/16	2 3/32	2 15/32	2 1/2F MMHUB	3/16	1 5/16		1 19/32	2 13/32				2 1/2F MMHUB06	
3	606	1 1/16	5 1/8	2 13/32	2 23/32	3F MMHUB	3/16	1 5/16	4	2 5/32	1 27/32	2.499	2.082	1/2 X 1/4	3F MMHUB06	
3 1/2	AC8	1 1/8	5 3/4	2 15/16	2 13/16	3 1/2F MMHUB	1/4	1 3/8		2 11/16	1 5/16				3 1/2F MMHUB06	
4	AC12	1 1/8	6 3/8	3 1/2	2 7/8	4F MMHUB	1/4	1 3/8		3 1/4	3/4				4F MMHUB06	
3	806	1 1/16	5 1/8	2 13/32	2 23/32	3F MMHUB	3/16	1 7/16		2 1/32	2 15/32				3F MMHUB08	
3 1/2	608	1 1/8	5 3/4	2 15/16	2 13/16	3 1/2F MMHUB	1/4	1 1/2	4 1/2	2 9/16	1 15/16	2.999	2.530	3/4 X 1/4	3 1/2F MMHUB08	
4		1 1/8	6 3/8	3 1/2	2 7/8	4F MMHUB	1/4	1 1/2		3 1/8	1 3/8				4F MMHUB08	
3	810	1 1/16	5 1/8	2 13/32	2 23/32	3F MMHUB	3/16	1 9/16		1 29/32	2 19/32				3F MMHUB10	
3 1/2	610	1 1/8	5 3/4	2 15/16	2 13/16	3 1/2F MMHUB	1/4	1 5/8	4 1/2	2 7/16	2 1/16	3.249	2.780	3/4 X 1/4	3 1/2F MMHUB10	
4	AC18	1 1/8	6 3/8	3 1/2	2 7/8	4F MMHUB	1/4	1 5/8		3	1 1/2				4F MMHUB10	
4 1/2		1 5/8	6 7/16	3 19/32	2 27/32	4 1/2F MMHUB	5/16	1 11/16		3 17/32	31/32				4 1/2F MMHUB10	
3 1/2	812	1 1/8	5 3/4	2 15/16	2 13/16	3 1/2F MMHUB	1/4	1 3/4		2 5/16	2 11/16				3 1/2F MMHUB12	
4	612	1 1/8	6 3/8	3 1/2	2 7/8	4F MMHUB	1/4	1 3/4	5	2 7/8	2 1/8	3.623	3.102	3/4 X 1/4	4F MMHUB12	
4 1/2	AC25	1 5/8	6 7/16	3 19/32	2 27/32	4 1/2F MMHUB	5/16	1 13/16		3 13/32	1 19/32				4 1/2F MMHUB12	
5	AC30	1 5/8	6	4 5/32	1 27/32	5F MMHUB	5/16	1 13/16		3 31/32	1 1/32				5F MMHUB12	
4	814	1 1/8	6 3/8	3 1/2	2 7/8	4F MMHUB	1/4	1 7/8		2 3/4	2 1/4				4F MMHUB14	
4 1/2	614	1 5/8	6 7/16	3 19/32	2 27/32	4 1/2F MMHUB	5/16	1 15/16	5	3 9/32	1 23/32	4.248	3.727	1 X 3/8	4 1/2F MMHUB14	
5	AC50	1 5/8	6	4 5/32	1 27/32	5F MMHUB	5/16	1 15/16		3 27/32	1 5/32				5F MMHUB14	
4 1/2	816	1 5/8	6 7/16	3 19/32	2 27/32	4 1/2F MMHUB	5/16	2 1/16		4 5/32	2 11/32				4 1/2F MMHUB16	
5	616	1 5/8	6	4 5/32	1 27/32	5F MMHUB	5/16	2 1/16	5 1/2	3 23/32	1 25/32	4.623	4.050	1 1/4 X 3/8	5F MMHUB16	
5 1/2		1 5/8	8 5/16	4 23/32	3 19/32	5 1/2F MMHUB	5/16	2 1/16		3 5/8	1 7/32				5 1/2F MMHUB16	
4 1/2	818	1 5/8	6 7/16	3 19/32	2 27/32	4 1/2F MMHUB	5/16	1 5/8		3 19/32	2 13/32				4 1/2F MMHUB18	
5	618	1 5/8	6	4 5/32	1 27/32	5F MMHUB	5/16	1 5/8	6	4 5/32	1 27/32	4.998	4.373	1 1/4 X 1/2	5F MMHUB18	
5 1/2		1 5/8	8 5/16	4 23/32	3 19/32	5 1/2F MMHUB	5/16	1 5/8		4 23/32	1 9/32				5 1/2F MMHUB18	
5 1/2	620	1 5/8	8 5/16	4 23/32	3 19/32	5 1/2F MMHUB	5/16	2 1/16	6 3/4	4 9/32	2 15/32	5.873	5.170	1 1/2 X 3/4	5 1/2F MMHUB20	
6		2 1/16	9 7/8	4 27/32	5 1/32	6F MMHUB	5/16	2 1/16		4 27/32	1 29/32				6F MMHUB20	
6	622	2 1/16	9 7/8	4 27/32	5 1/32	6F MMHUB	5/16	2 11/16	7 1/4	4 7/32	3 1/32	6.247	5.492	1 1/2 X 3/4	6F MMHUB22	
7		2 3/4	9 1/4	5 5/16	3 15/16	7F MMHUB	3/8	2 3/4		5 5/16	1 15/16				7F MMHUB22	
6	624	2 1/16	9 7/8	4 27/32	5 1/32	6F MMHUB	5/16	2 11/16	9 1/4	4 7/32	5 1/32	6.997	6.034	1 1/2 X 1/2	6F MMHUB24	
7		2 3/4	9 1/4	5 5/16	3 15/16	7F MMHUB	3/8	2 3/4		5 5/16	3 15/16			1 1/2 X 3/4	7F MMHUB24	

\*ALL KEYWAYS SHOWN ARE PARALLEL TO THE TAPER. TAPER IS 1 1/4 INCH PER FOOT ON DIAMETER.



#### IV. TAPERED BORES For Tapered Shafts, with or without locknut, determine applicable WISE Mill Motor frame or give data below:

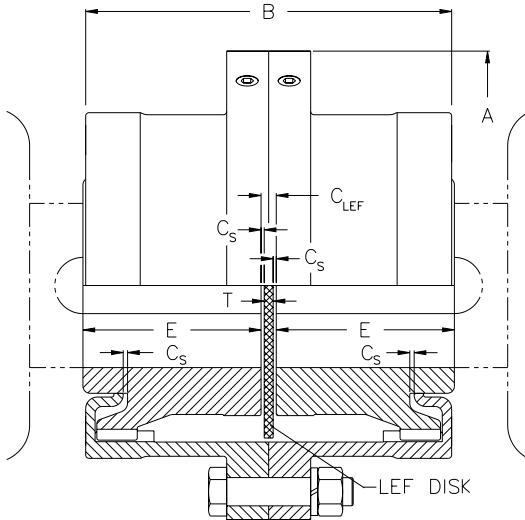
1. U Major diameter.
2. V Length of tapered portion of shaft.
3. X Length to face of lockwasher.
4. Y Length of threaded projection.
5. ZW Locknut diameter across corners.
6. W Clearance to bearing housing.
7. Taper (inches on diameter per foot of length).
8. Keyway width and depth.
9. Whether keyway is parallel to shaft or to taper.
10. C Shaft separation if machines are in place.

## Limited End Float Coupling Size 1 1/2 - 7

For sleeve bearing motor applications, a FAST'S® standard full flex coupling is supplied with an LEF disc to limit the axial float of the motor rotor, and protect the motor bearings at start-up and shut-down. The hub separation,  $C_{LEF}$  is larger than for a standard full flex, and the phenolic LEF disc is placed between the hubs at assembly, limiting the float of the motor rotor to the total LEF value shown.

The equipment should be installed with the proper hub separation,  $C_{LEF}$ , when the motor rotor is located on magnetic center.

The LEF disc part numbers are listed below. See page 136 for the standard full flex part numbers.



Coupling Size	Total LEF	Dimensions						LEF Disc <sup>①</sup>	
		A	B	C <sub>S</sub>	C <sub>LEF</sub> (Hub Sep.)	E	T (Disc Width)	Part No.	Wt.
1 1/2	1/8	6	4	1/32	3/16	1 15/16	1/8	1 1/2F LEFD	1
2	1/8	7	4 15/16	1/32	3/16	2 7/16	1/8	2F LEFD	1
2 1/2	3/16	8 3/8	6 3/16	3/64	9/32	3 1/32	3/16	2 1/2F LEFD	1
3	3/16	9 7/16	7 5/16	3/64	9/32	3 19/32	3/16	3F LEFD	1
3 1/2	3/16	11	8 1/2	3/64	13/32	4 3/16	5/16	3 1/2F LEFD	1
4	3/16	12 1/2	9 3/4	3/64	13/32	4 3/4	5/16	4F LEFD	2
4 1/2	3/16	13 5/8	10 15/16	3/64	17/32	5 5/16	7/16	4 1/2F LEFD	2
5	3/16	15 5/16	12 1/16	3/64	17/32	6 1/32	7/16	5F LEFD	2
5 1/2*	3/16	16 3/4	13 13/16	3/64	17/32	6 29/32	7/16	5 1/2F LEFD	2
6*	3/16	18	14 13/16	3/64	17/32	7 13/32	7/16	6F LEFD	2
7*	3/16	20 3/4	17 5/16	3/64	21/32	8 11/16	9/16	7F LEFD	2

\* Sizes 5 1/2, 6 and 7 are only available with exposed bolts. Type EB exposed bolts are standard.

① LEF Discs are used only in close coupled applications. One disc is required per coupling. Note: For ratings and max. bores refer to page 134.

Note: Spacer part number references the shaft separation, not the actual length of the spacer.

### Coupling Greases

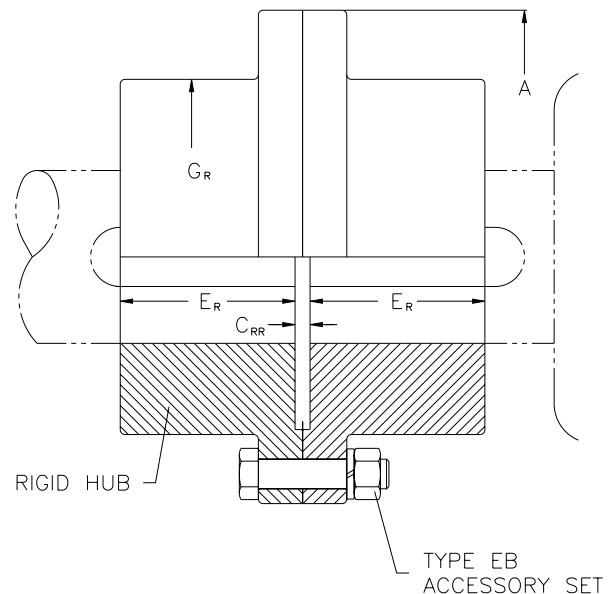
KOP-FLEX offers greases specifically designed for use in coupling applications. For proper lubrication and long service life, use KSG Standard Coupling Grease, or KHP High Performance Coupling Grease. See pages 204-206 for detailed specifications.

A rigid-rigid coupling is offered for applications where neither angular or offset misalignment are present. Vertical and cantilevered applications should be referred to engineering for review.

One complete coupling is comprised of (2) rigid hubs and (1) set of accessories. A gasket is not used between the flanges.

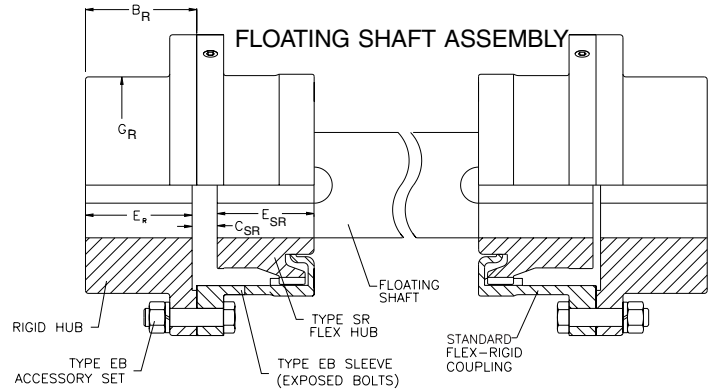
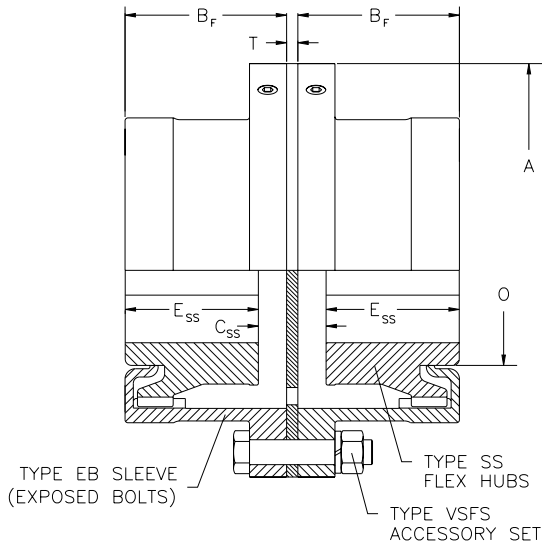
## Rigid-Rigid Coupling Size 1-7

Coupling Size	Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Dimensions			
					A	C <sub>RR</sub>	E <sub>R</sub>	G <sub>R</sub>
1	2 1/4	12	7500	15000	4 9/16	3/16	1 9/16	3
1 1/2	2 11/16	27	17000	34000	6	3/16	1 27/32	3 13/16
2	3 3/8	50	31500	63000	7	3/16	2 9/32	4 13/16
2 1/2	4	90	56700	113400	8 3/8	3/16	2 29/32	5 3/4
3	4 3/4	160	101000	202000	9 7/16	3/16	3 15/32	6 3/4
3 1/2	5 1/2	235	148000	296000	11	3/16	4 1/32	7 3/4
4	6 3/8	375	236000	472000	12 1/2	3/8	4 7/16	9
4 1/2	7 1/4	505	318000	636000	13 5/8	3/8	5 1/16	10 1/8
5	8 1/2	700	441000	882000	15 5/16	3/8	5 11/16	11 3/8
5 1/2	8	920	580000	1160000	16 3/4	3/8	6 31/32	10 3/4
6	8 3/4	1205	759000	1518000	18	3/8	7 15/32	11 1/2
7	10	1840	1160000	2320000	20 3/4	1/2	8 3/4	13 3/8



### Short Slide Coupling

The FAST'S® Short Slide coupling is designed for drive systems that require greater end float or slide than a conventional application, providing two to three times the slide of a standard coupling. The coupling uses standard EB sleeves with flex hubs modified for more end float, along with a stop plate designed to maximize the total slide by equalizing the slide in each half. Spacer couplings, floating shaft arrangements, and most coupling types can be supplied with a Short Slide flex half in one or both flex half couplings.



Coupling Size*	Total Slide <sup>①</sup>		Dimensions										
	Full-Flex	Flex-Rigid	A	B <sub>F</sub>	B <sub>R</sub>	C <sub>SS</sub> <sup>①</sup> Hub & Shaft Separation		C <sub>SR</sub> <sup>①</sup> Hub & Shaft Separation		E <sub>SS</sub>	E <sub>SR</sub>	T	O
						Max.	Min.	Max.	Min.				
1 1/2	7/16	3/16	6	2	1 15/16	19/32	5/32	13/64	1/64	1 13/16	1 15/16	1/8	2 3/16
2	9/16	9/32	7	2 15/32	2 3/8	23/32	5/32	19/64	1/64	2 1/4	2 11/32	1/8	2 7/8
2 1/2	3/4	3/8	8 3/8	3 9/32	3	29/32	5/32	25/64	1/64	2 13/16	2 29/32	1/8	3 5/8
3	7/8	7/16	9 7/16	3 21/32	3 9/16	1 1/32	5/32	29/64	1/64	3 5/16	3 13/32	1/8	4 1/4
3 1/2	1	1/2	11	4 1/4	4 1/8	1 1/4	1/4	17/32	1/32	3 7/8	3 31/32	3/16	5
4	1 1/8	9/16	12 1/2	4 7/8	4 5/8	1 3/8	1/4	19/32	1/32	4 3/8	4 9/16	3/16	5 3/4
4 1/2	1 5/16	21/32	13 5/8	5 15/32	5 1/4	1 9/16	1/4	11/16	1/32	4 29/32	5 3/32	3/16	6 1/2
5	1 7/16	23/32	15 5/16	6 1/32	5 7/8	1 11/16	1/4	3/4	1/32	5 9/16	5 3/4	3/16	7 5/16
5 1/2	1 7/16	23/32	16 3/4	6 29/32	7 5/32	1 3/4	5/16	3/4	1/32	6 7/16	6 11/16	1/4	8
6	1 3/8	11/16	18	7 13/32	7 21/32	1 23/32	11/32	47/64	3/64	6 15/16	7 3/16	1/4	8 13/16
7	2 9/16	1 9/32	20 3/4	8 21/32	9	2 31/32	13/32	1 21/64	3/64	7 11/16	8	5/16	10 5/16

\* Exposed bolts are standard for all sizes.

① Values are based on using Type SS flex hubs in a full-flex coupling and Type SR flex hub in a flex-rigid assembly. For each Type SR flex hub substituted in a full-flex unit, total slide and C maximum are reduced by the amount of (E<sub>SR</sub>-E<sub>SS</sub>). Substitution of a Type SS flex hub in a flex-rigid coupling increases C<sub>FR</sub> maximum and C<sub>FR</sub> minimum by the amount of (E<sub>SR</sub>-E<sub>SS</sub>), but total slide cannot be increased without derating the coupling.

Note: For ratings, max. bores and additional dimensions, see page 138.

Coupling Size	Full Flex Coupling			Stop Plate		Fastener Set (Includes Gasket)		Short Slide Flex Hub (Full Flex)		Short Slide Flex Hub (Flex Rigid)	
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.	No Bore Part No.	Wt.
1 1/2	1 1/2F EB SSFF	18	1 1/2F EB SSFF FB	1 1/2 EB SP	1	1 1/2 EB VSFS	1	1 1/2F SSHUB	3	1 1/2F SRHUB	3
2	2F EB SSFF	28	2F EB SSFF FB	2 EB SP	2	2 EB VSFS	1	2F SSHUB	6	2F SRHUB	6
2 1/2	2 1/2F EB SSFF	50	2 1/2F EB SSFF FB	2 1/2 EB SP	2	2 1/2 EB VSFS	2	2 1/2F SSHUB	11	2 1/2F SRHUB	11
3	3F EB SSFF	74	3F EB SSFF FB	3 EB SP	3	3 EB VSFS	3	3F SSHUB	18	3F SRHUB	18
3 1/2	3 1/2F EB SSFF	110	3 1/2F EB SSFF FB	3 1/2 EB SP	4	3 1/2 EB VSFS	5	3 1/2F SSHUB	26	3 1/2F SRHUB	26
4	4F EB SSFF	170	4F EB SSFF FB	4 EB SP	7	4 EB VSFS	5	4F SSHUB	44	4F SRHUB	44
4 1/2	4 1/2F EB SSFF	230	4 1/2F EB SSFF FB	4 1/2 EB SP	10	4 1/2 EB VSFS	7	4 1/2F SSHUB	62	4 1/2F SRHUB	62
5	5F EB SSFF	350	5F EB SSFF FB	5 EB SP	12	5 EB VSFS	9	5F SSHUB	90	5F SRHUB	90
5 1/2	5 1/2F EB SSFF	400	5 1/2F EB SSFF FB	5 1/2 EB SP	15	5 1/2 EB VSFS	14	5 1/2F SSHUB	105	5 1/2F SRHUB	105
6	6F EB SSFF	470	6F EB SSFF FB	6 EB SP	19	6 EB VSFS	14	6F SSHUB	130	6F SRHUB	130
7	7F EB SSFF	790	7F EB SSFF FB	7 EB SP	25	7 EB VSFS	22	7F SSHUB	210	7F SRHUB	210

\* Exposed bolts are standard for all sizes. Shrouded bolts are available through size 5.

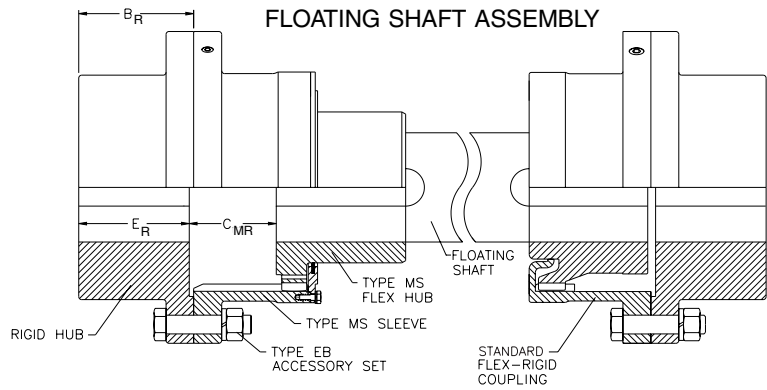
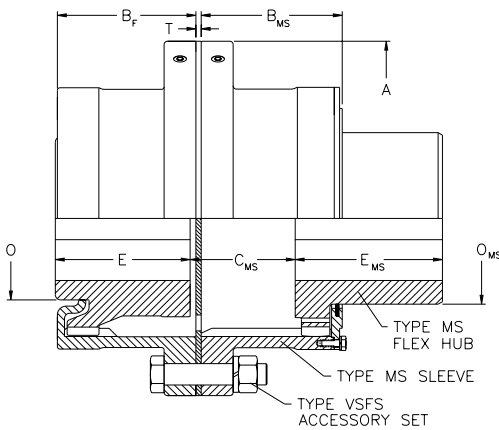
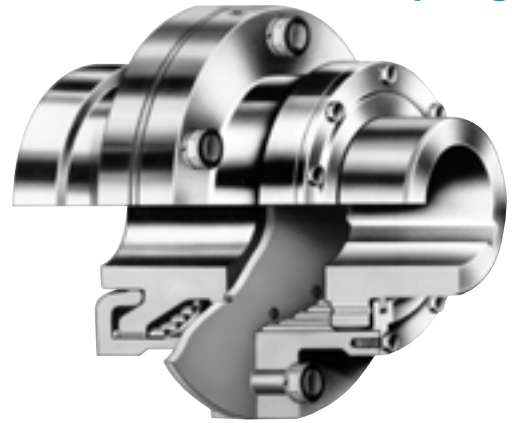
① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances with interference fit bores. Clearance fit bores are available on request and include one setscrew over keyway.

Note: For finish bored flex hubs, add FB and the bore size.

The FAST'S® Medium Slide coupling is designed for applications that require a large amount of slide, and is particularly suitable for disc refiners for the paper industry and bridge drives for overhead cranes.

For full-flex couplings, a Medium Slide half is used with either a FAST'S® or Series H flex half coupling and a stop plate. The Medium Slide flex hub has crowned tooth tips for piloting, and lube passage holes to minimize piston effect.

A Medium Slide half can be bolted to a FAST'S® Short Slide or a Series H Slide coupling half, with a stop plate, for increased slide capacity. Spacer couplings, floating shaft arrangements, and most coupling types can be supplied with one Medium Slide half coupling.



Coupling Size*	Total Slide		Maximum Bore with Standard Key	Dimensions										
	Full-Flex	Flex-Rigid	Type MS Flex Hub	A	B <sub>MS</sub>	C <sub>MS</sub> Hub and Shaft Separation		C <sub>MR</sub> Hub and Shaft Separation		E <sub>MS</sub>	G <sub>MS</sub>	T	O	O <sub>MS</sub>
						Max.	Min.	Max.	Min.					
1 1/2	1 37/64	1 9/16	1 5/8	6	2 11/32	1 47/64	5/32	1 37/64	1/64	2 1/2	4	1/8	2 3/16	2 5/16
2	1 61/64	1 15/16	2 1/8	7	2 27/32	2 7/64	5/32	1 61/64	1/64	3 1/32	5	1/8	2 7/8	3 1/32
2 1/2	2 33/64	2 7/16	2 3/4	8 3/8	3 17/32	2 43/64	5/32	2 29/64	1/64	3 23/32	5 15/16	1/8	3 5/8	3 7/8
3	3 1/64	2 15/16	3 1/4	9 7/16	4 5/32	3 11/64	5/32	2 61/64	1/64	4 5/16	6 15/16	1/8	4 1/4	4 19/32
3 1/2	3 7/32	3 7/64	3 3/4	11	4 15/32	3 15/32	1/4	3 9/64	1/32	4 11/16	7 29/32	3/16	5	5 11/32
4	3 29/64	3 7/16	4 1/4	12 1/2	4 31/32	3 45/64	1/4	3 15/32	1/32	5 3/16	9 1/4	3/16	5 3/4	6 1/16
4 1/2	4 1/64	3 15/16	5	13 5/8	5 19/32	4 17/64	1/4	3 31/32	1/32	5 13/16	10 3/8	3/16	6 1/2	7 5/32
5	4 29/64	4 3/8	5 1/2	15 5/16	6 5/32	4 45/64	1/4	4 13/32	1/32	6 3/8	11 9/16	3/16	7 5/16	7 3/4
5 1/2	4 25/32	4 49/64	6	16 3/4	6 11/16	5 3/32	5/16	4 51/64	1/32	7	12 7/8	1/4	8	8 3/4
6	5 7/64	5 1/8	6 1/2	18	7 3/8	5 29/64	11/32	5 11/64	3/64	7 1/2	13 7/8	1/4	8 13/16	9 5/16
7	6 3/64	6 1/16	8 1/8	20 3/4	8 9/16	6 29/64	13/32	6 7/64	3/64	8 11/16	16 1/4	5/16	10 5/16	11

\* Exposed bolts are standard for all sizes.

Note: For ratings, max. bores and additional dimensions, see page 138.

Coupling Size	Full Flex Coupling			Stop Plate		Medium Slide Sleeve Assembly		Fastener Set (Includes Gasket)		Medium Slide Flex Hub	
	No Bore Part No.	Wt.	Finish Bore Part No.	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.
1 1/2	1 1/2F EB MSFF	18	1 1/2F EB MSFF FB	1 1/2 EB SP	1	1 1/2F EB MSSLEEVE	10	1 1/2 EB VSFS	1	1 1/2F MSHUB	4
2	2F EB MSFF	30	2F EB MSFF FB	2 EB SP	2	2F EB MSSLEEVE	12	2 EB VSFS	1	2F MSHUB	8
2 1/2	2 1/2F EB MSFF	53	2 1/2F EB MSFF FB	2 1/2 EB SP	2	2 1/2F EB MSSLEEVE	18	2 1/2 EB VSFS	2	2 1/2F MSHUB	13
3	3F EB MSFF	78	3F EB MSFF FB	3 EB SP	3	3F EB MSSLEEVE	20	3 EB VSFS	3	3F MSHUB	21
3 1/2	3 1/2F EB MSFF	117	3 1/2F EB MSFF FB	3 1/2 EB SP	4	3 1/2F EB MSSLEEVE	33	3 1/2 EB VSFS	5	3 1/2F MSHUB	33
4	4F EB MSFF	170	4F EB MSFF FB	4 EB SP	7	4F EB MSSLEEVE	46	4 EB VSFS	5	4F MSHUB	50
4 1/2	4 1/2F EB MSFF	219	4 1/2F EB MSFF FB	4 1/2 EB SP	10	4 1/2F EB MSSLEEVE	60	4 1/2 EB VSFS	7	4 1/2F MSHUB	70
5	5F EB MSFF	337	5F EB MSFF FB	5 EB SP	12	5F EB MSSLEEVE	90	5 EB VSFS	9	5F MSHUB	100
5 1/2	5 1/2F EB MSFF	422	5 1/2F EB MSFF FB	5 1/2 EB SP	15	5 1/2F EB MSSLEEVE	100	5 1/2 EB VSFS	14	5 1/2F MSHUB	120
6	6F EB MSFF	526	6F EB MSFF FB	6 EB SP	19	6F EB MSSLEEVE	115	6 EB VSFS	14	6F MSHUB	150
7	7F EB MSFF	828	7F EB MSFF FB	7 EB SP	25	7F EB MSSLEEVE	174	7 EB VSFS	22	7F MSHUB	260

\* Exposed bolts are standard for all sizes.

⊙ All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances with interference fit bores. Clearance fit bores are available on request and include one setscrew over keyway.

Note: For finish bored flex hubs, add FB and the bore size.

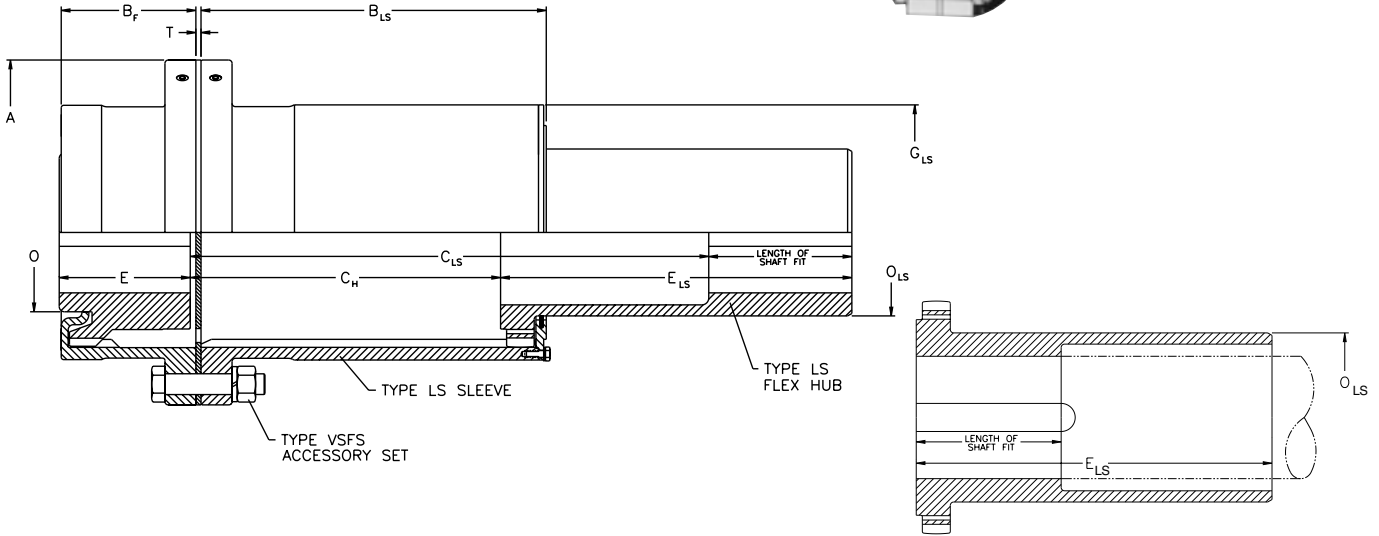
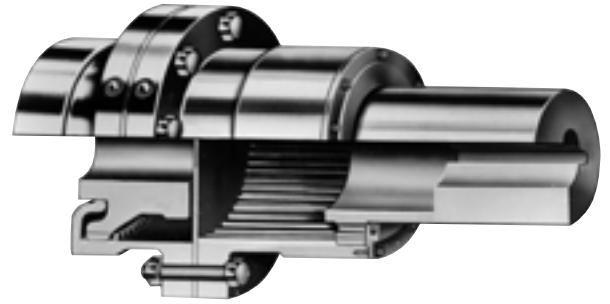


### Long Slide Coupling

The FAST'S® Long Slide coupling is designed for applications that require a very large amount of slide, and is used extensively in steel and aluminum rolling mills on coilers and similar applications.

The hub counterbore provides the same normal shaft fit length. For applications requiring minimal shaft separations, the counterbore is reversed to provide an equivalent inner end shaft fit.

The Long Slide half may be bolted to either a FAST'S® or Series "H" Flex half.



Coupling Size*	Total Slide <sup>①</sup>	Maximum Bore with Standard Key	Full-Flex Dimensions <sup>②</sup>										Length of Shaft Fit in Long Slide Hub			
			Full-Flex	Type LS Flex Hub	A	B <sub>LS</sub>	C <sub>LS</sub>		C <sub>H</sub>		E <sub>LS</sub>	G <sub>LS</sub>		T	O	O <sub>LS</sub>
							Shaft Separation Max.	Shaft Separation Min.	Shaft Separation Max.	Shaft Separation Min.						
1 1/2	5 1/2	1 5/8	6	6 17/64	9 37/64	4 5/64	5 21/32	5/32	6 27/64	4	1/8	2 3/16	2 5/16	2 1/2		
2	5 1/2	2 1/8	7	6 25/64	9 13/64	3 45/64	5 21/32	5/32	6 37/64	5	1/8	2 7/8	3 1/32	3 1/32		
2 1/2	8	2 3/4	8 3/8	9 1/64	13 41/64	5 41/64	8 5/32	5/32	9 13/64	5 15/16	1/8	3 5/8	3 7/8	3 23/32		
3	11	3 1/4	9 7/16	12 9/64	19 9/64	8 9/64	11 5/32	5/32	12 19/64	6 15/16	1/8	4 1/4	4 19/32	4 5/16		
3 1/2	11	3 3/4	11	12 1/4	19 1/32	8 1/32	11 1/4	1/4	12 15/32	7 29/32	3/16	5	5 11/32	4 11/16		
4	11	4 1/4	12 1/2	12 33/64	18 51/64	7 51/64	11 1/4	1/4	12 47/64	9 1/4	3/16	5 3/4	6 1/16	5 3/16		
4 1/2	11	5	13 5/8	12 37/64	18 15/64	7 15/64	11 1/4	1/4	12 51/64	10 3/8	3/16	6 1/2	7 5/32	5 13/16		
5	11	5 1/2	15 5/16	12 45/64	17 51/64	6 51/64	11 1/4	1/4	12 59/64	11 9/16	3/16	7 5/16	7 3/4	6 3/8		
5 1/2	10 1/2	6	16 3/4	12 13/32	16 17/32	6 1/32	10 13/16	5/16	12 23/32	12 7/8	1/4	8	8 3/4	7		
6	10 1/2	6 1/2	18	12 49/64	16 15/64	5 47/64	10 29/32	11/32	12 57/64	13 7/8	1/4	8 13/16	9 5/16	7 1/2		
7	10 1/2	8 1/8	20 3/4	13 1/64	15 23/64	4 55/64	10 29/32	13/32	13 9/64	16 1/4	5/16	10 5/16	11	8 11/16		

\* Exposed bolts are standard for all sizes.

① Using correct length of shaft fit in Type LS flex hub, and if the connected machines permit a hub separation range from C<sub>H</sub> maximum to C<sub>H</sub> minimum.

② For flex-rigid couplings, refer to KOP-FLEX.

Note: For ratings, max. bore and additional dimensions, see page 134.

Coupling Size	Full Flex Coupling			Stop Plate		Long Slide Sleeve Assembly		Fastener Set (Includes Gasket)		Long Slide Flex Hub	
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.
1 1/2	1 1/2F EB LSFF	24	1 1/2F EB LSFF FB	1 1/2 EB SP	1	1 1/2F EB LSSLEEVE	9	1 1/2 EB VSFS	1	1 1/2 LSHUB	6
2	2F EB LSFF	38	2F EB LSFF FB	2 EB SP	2	2F EB LSSLEEVE	12	2 EB VSFS	1	2F LSHUB	12
2 1/2	2 1/2F EB LSFF	69	2 1/2F EB LSFF FB	2 1/2 EB SP	2	2 1/2F EB LSSLEEVE	24	2 1/2 EB VSFS	2	2 1/2F LSHUB	20
3	3F EB LSFF	109	3F EB LSFF FB	3 EB SP	3	3F EB LSSLEEVE	29	3 EB VSFS	3	3F LSHUB	36
3 1/2	3 1/2F EB LSFF	157	3 1/2F EB LSFF FB	3 1/2 EB SP	4	3 1/2F EB LSSLEEVE	46	3 1/2 EB VSFS	5	3 1/2F LSHUB	40
4	4F EB LSFF	220	4F EB LSFF FB	4 EB SP	7	4F EB LSSLEEVE	62	4 EB VSFS	5	4F LSHUB	82
4 1/2	4 1/2F EB LSFF	278	4 1/2F EB LSFF FB	4 1/2 EB SP	10	4 1/2F EB LSSLEEVE	87	4 1/2 EB VSFS	7	4 1/2F LSHUB	104
5	5F EB LSFF	407	5F EB LSFF FB	5 EB SP	12	5F EB LSSLEEVE	138	5 EB VSFS	9	5F LSHUB	175
5 1/2	5 1/2F EB LSFF	504	5 1/2F EB LSFF FB	5 1/2 EB SP	15	5 1/2F EB LSSLEEVE	158	5 1/2 EB VSFS	14	5 1/2F LSHUB	198
6	6F EB LSFF	611	6F EB LSFF FB	6 EB SP	19	6F EB LSSLEEVE	187	6 EB VSFS	14	6F LSHUB	256
7	7F EB LSFF	913	7F EB LSFF FB	7 EB SP	25	7F EB LSSLEEVE	243	7 EB VSFS	22	7F LSHUB	402

\* Exposed bolts are standard for all sizes.

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances with interference fit bores. Clearance fit bores are available on request and include one setscrew over keyway.

Note: For finish bored flex hubs, add FB and the bore size.

## Cutout Types FCH, FCC, & FCCM

Parts of cutout couplings are commonly used on dual drives having an auxiliary prime mover, usually an engine or turbine, for emergency use. The changeover is performed at standstill by disengaging the coupling on the primary driver and engaging the coupling on the standby drive. With one cutout coupling, a unidirectional drive can be disconnected to permit partial system reversal. The first unit of a tandem drive can be similarly cut out.

The cutout sleeve contains a standard internal gear. When the cutout hub meshes with these gear teeth, the coupling is engaged. When the sleeve assembly is shifted axially these hub teeth disengage and the coupling is cut out. The shifter sleeve has long internal teeth which stay in mesh with the shifter hub regardless of axial position. A support ring on the shifter hub pilots on the ends of the mating sleeve teeth to rigidly position the sleeve assembly when cut out. The groove on the cutout hub permits clearance at the all-metal end ring for the cutout hub to rotate while the other components are idle. A unique all-metal hub seal contacts the shifter hub at all times.

Type FCH is designed for on-site manual shifting with both shafts idle. The shifter sleeve has two handlock screws located diametrically opposite in standard lube holes. As shifting to either the engaged or disengaged position is performed by hand, the sleeve flanges and the handlock screws must be readily accessible.

Type FCC is identical to the Type FCH with three exceptions. A Type SH Shifter Collar is furnished with the coupling, two Type FS lube plugs are substituted for the handlock screws in the Type SC shifter sleeve flange, and the words HAND LOCK are omitted. The manganese-bronze shifter collar is precision machined in two halves which are bolted together. Each half is provided with a pipe plug which permits substitution of commercial grease fittings. The replaceable trunnion pins are retained by spring pins. Suitable means

must be provided to position the shifter collar, support its weight, and secure it in both the engaged and disengaged positions of the sleeve assembly.

Type FCCM is an integrated coupling package engineered to provide these means for complete and safe hand operation by combining a Type CM Manual Shifter Mechanism with a Type FCC coupling. This mechanism consists of one or two base-mounted pedestals supporting a fabricated yoke which is actuated by a hand lever. Three sizes of pedestals permits flexibility in foundation design. The pedestal column provides additional height adjustment, which is then positively secured by a support spacer.

Two yoke arms operate the shifter collar. The hand lever may be mounted on either side and with the handle up or down. A detent pin secures the lock bar to the angle bracket, maintaining the coupling in its selected operating position. Sufficient space is provided to add a thru-hole for a padlock.

### MODIFICATIONS

As standard modifications to cutout couplings are limited, all special requirements should be referred to KOP-FLEX.

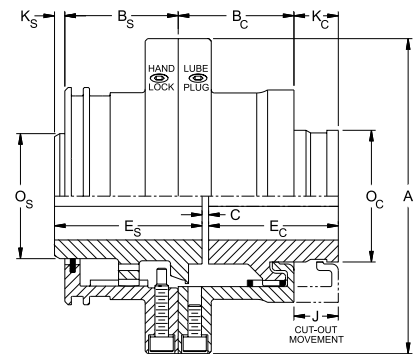
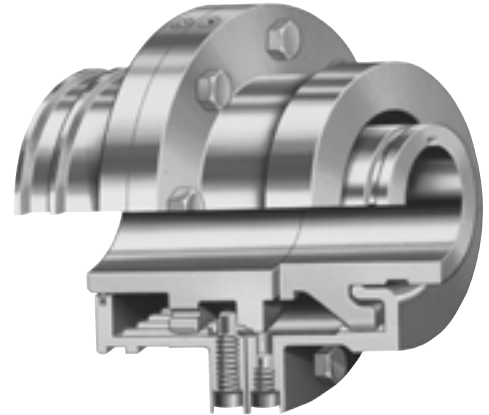
Clearance fits with setscrews are not available.

Limited end float, extra keyways, and taper bores can be provided.

For mounting on AISE mill motors, or on other tapered shafts with locknuts, equivalent Types MCH, MCC and MCCM are available.

For increased shaft separation using a spacer or floating shaft, cutout couplings require special support consideration.

To facilitate remeshing within the cutout half, the outer end of each hub tooth and the inner end of each sleeve tooth can be pointed.

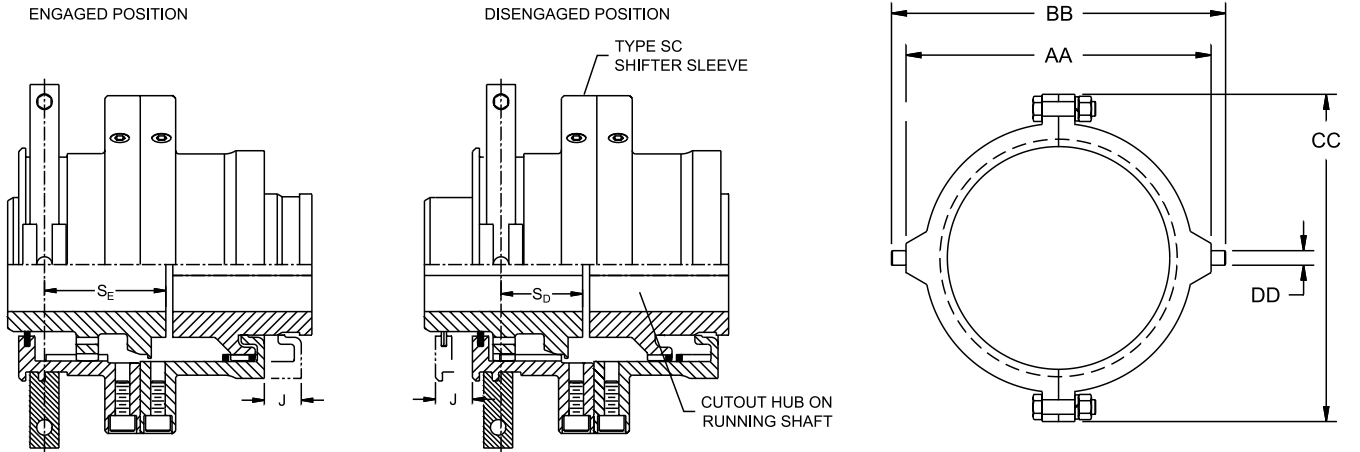


**Type FCH Cut-Out Coupling**

Coupling Size	Maximum Bore with Standard Key		Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed (RPM)	Dimensions (inches)										
	Shifter Hub	Cut-out Hub					A	B <sub>c</sub>	B <sub>s</sub>	C	E <sub>c</sub>	E <sub>s</sub>	J	K <sub>c</sub>	K <sub>s</sub>	O <sub>c</sub>	O <sub>s</sub>
1 1/2	1 5/8	1 1/2	27	17000	34000	12000	6	2 3/32	2 3/32	1/8	2 7/32	2 23/32	11/16	11/16	3/16	2 11/64	2 5/16
2	2 1/8	2	50	31500	63000	9300	7	2 19/32	2 19/32	1/8	2 25/32	3 11/32	7/8	7/8	3/16	2 55/64	3 1/32
2 1/2	2 3/4	2 1/2	90	56700	113400	7900	8 3/8	3 7/32	3 7/32	3/16	3 13/32	4 7/32	1 1/8	1 1/8	1/4	3 19/32	3 7/8
3	3 1/4	3	160	101000	202000	6800	9 7/16	3 27/32	3 27/32	3/16	4 1/32	5 1/32	1 5/16	1 5/16	1/4	4 3/16	4 19/32
3 1/2	3 3/4	3 1/2	235	148000	296000	6000	11	4 7/16	4 17/32	1/4	4 3/4	5 29/32	1 9/16	1 9/16	3/8	4 7/8	5 11/32
4	4 1/4	4	375	236000	472000	5260	12 1/2	5 1/16	5 1/16	1/4	5 5/16	6 3/4	1 3/4	1 3/4	7/16	5 19/32	6 1/16
4 1/2	5	4 1/2	505	318000	636000	4770	13 5/8	5 11/16	5 11/16	5/16	5 13/16	7 3/4	2	2	1/2	6 3/8	7 5/32
5	5 1/2	5	700	441000	882000	4300	15 5/16	6 5/16	6 1/4	5/16	6 1/8	8 3/8	2 3/16	1 23/32	17/32	7 5/32	7 3/4
5 1/2	6	5 1/2	920	580000	1160000	3880	16 3/4	6 15/16	6 11/16	5/16	6 29/32	9 15/32	2 7/16	2 7/16	5/8	7 13/16	8 3/4
6	6 1/2	6	1205	759000	1518000	3600	18	7 7/16	7 3/8	5/16	7 13/32	10 9/32	2 9/16	2 9/16	5/8	8 5/8	9 5/16
7	8 1/8	7	1840	1160000	2320000	3000	20 3/4	8 11/16	8 9/16	3/8	8 11/16	12 3/16	3 3/8	3 3/8	5/8	10 3/16	11

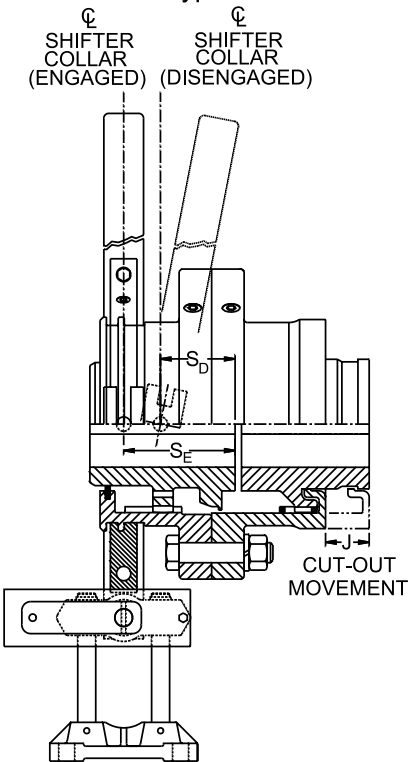
\* Exposed bolts are standard for all sizes.

### Type SH Shifter Collar & Type CM Manual Shifter Mechanism

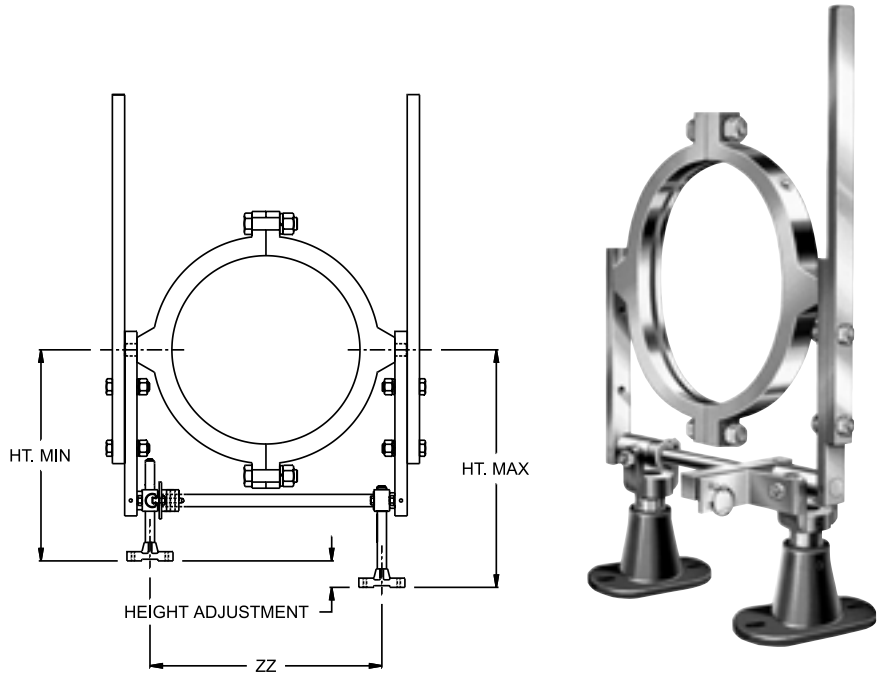


TYPE SH SHIFTER COLLAR

Type FCC Cutout Coupling



Type FCCM Cut-Out Coupling



Type CM Manual Shifter Mechanism

Coupling Size	Center Line of Shifter Collar		Shifter Collar Dimensions			
	SE Engaged	SD Disengaged	AA +0 - 1/16	BB	CC	DD ±.0005
1 1/2	2 3/32	1 13/32	6	7	6 1/4	0.250
2	2 1/2	1 5/8	7	8	7 3/8	0.375
2 1/2	3 3/16	2 1/16	8 1/2	9 3/4	8 3/4	0.500
3	3 15/16	2 5/8	9 1/2	10 3/4	10	0.500
3 1/2	4 7/32	2 21/32	11	12 1/4	11 3/8	0.625
4	4 27/32	3 3/32	12 1/2	13 3/4	12 3/8	0.625
4 1/2	5 5/8	3 5/8	13 1/2	15	14 1/2	0.750
5	6 7/32	4 1/32	15 1/2	17	16	0.750
5 1/2	6 29/32	4 15/32	17	18 3/4	18	0.875
6	7 15/32	4 29/32	18 1/4	20	19 1/4	0.875
7	8 13/16	5 7/16	21	23	22 1/2	1.000

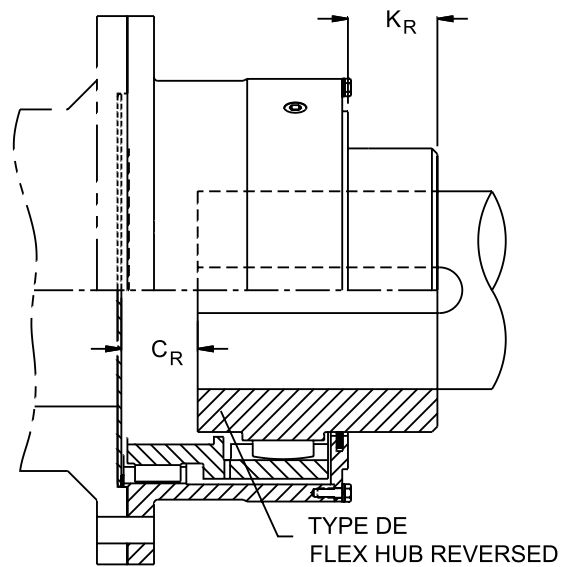
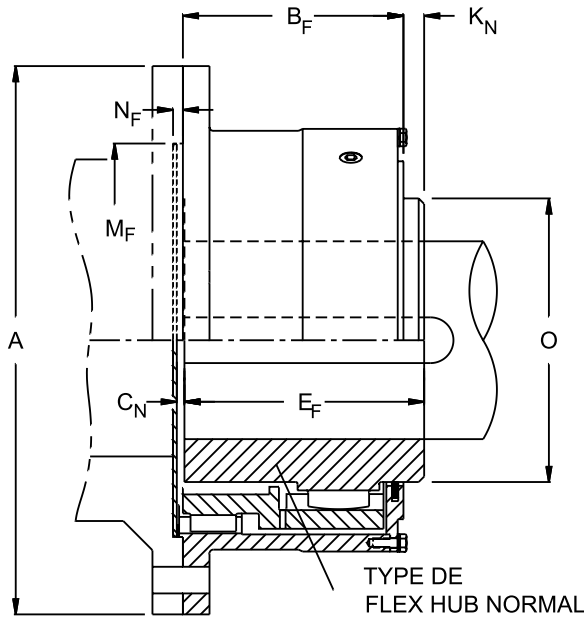
① Pedestal sizes PS, PM, or PT are used with coupling sizes #1 1/2 - #5. Pedestal sizes PU, PV, or PW are used with coupling sizes #5 1/2 - #7.

### Double Engagement (Type DE)

Type DE couplings feature double engagement gearing, using an inner sleeve having both internal and external teeth, in a single flanged sleeve. It can be bolted to any rotating flywheel, shaft, drum, etc. to connect either a driving or driven machine with shaft extension, eliminating the need for a stub shaft with a conventional gear coupling. All DE couplings can be used in a vertical application. Hubs are reversible and can be cut off to accommodate AISE mill motors or equivalent tapered shafts with locknuts.

The 'DE' coupling has some unique features:

- Reduces cost by eliminating a part - stub shaft used on conventional couplings;
- Reduces weight and inertia ( $WR^2$ );
- Bolted end ring design simplifies installation, removal, inspection and maintenance;
- Saves space and lowers installation cost.

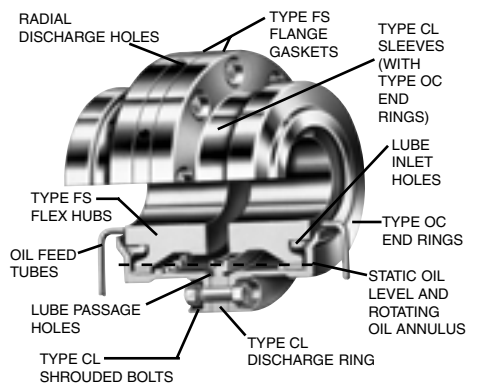
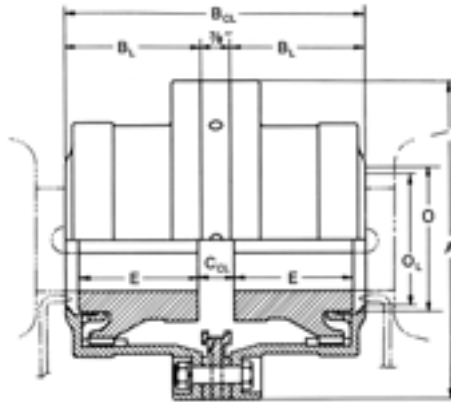


Coupling Size	Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Max Speed (RPM)	Dimensions (inches)										Counterbore Required in Connecting Part	
						A	B <sub>F</sub>	C <sub>N</sub>	C <sub>R</sub>		E <sub>F</sub>	K <sub>N</sub>	K <sub>R</sub>		O	M <sub>F</sub>	N <sub>F</sub>
									Min.	Max.			Min.	Max.			
																	+0.002 -0.000
1 1/2	1 5/8	27	17000	34000	12000	6	2 7/32	3/16	3/8	17/32	2 15/32	9/32	15/32	5/8	2 5/16	3.561	0.293
2	2 1/8	50	31500	63000	9300	7	2 23/32	3/16	21/32	7/8	3	5/16	25/32	1	3 1/32	4.561	0.293
2 1/2	2 3/4	90	56700	113400	7900	8 3/8	3 13/32	3/16	13/6	1 1/8	3 3/4	3/8	7/8	1 5/16	3 7/8	5.436	0.293
3	3 1/4	160	101000	202000	6800	9 7/16	4 1/32	3/16	27/32	1 9/16	4 7/16	7/16	1 3/32	1 13/16	4 19/32	6.436	0.293
3 1/2	3 3/4	235	148000	296000	6000	11	4 3/8	3/16	1 3/32	1 11/32	4 27/32	1/2	1 13/32	1 21/32	5 11/32	7.374	0.293
4	4 1/4	375	236000	472000	5260	12 1/2	4 27/32	7/32	1 11/32	1 9/16	5 11/32	17/32	1 21/32	1 7/8	6 1/16	8.749	0.324
4 1/2	5	505	318000	636000	4770	13 5/8	5 15/32	7/32	1 7/16	1 25/32	6 3/16	3/4	1 31/32	2 5/16	7 5/32	9.749	0.324
5	5 1/2	700	441000	882000	4300	15 5/16	6 1/32	7/32	1 25/32	2 15/32	6 5/8	5/8	2 3/16	2 7/8	7 3/4	10.749	0.324
5 1/2	6	920	580000	1160000	3880	16 3/4	6 9/16	1/4	1 23/32	2 7/16	7 5/16	13/16	2 9/32	3	8 3/4	11.911	0.324
6	6 1/2	1205	759000	1518000	3600	18	7 1/4	1/4	1 7/8	2 1/2	7 7/8	11/16	2 5/16	2 15/16	9 5/16	12.916	0.324
7	8 1/8	1840	1160000	2320000	3000	20 3/4	8 15/32	1/4	2 7/32	3 9/16	9 1/16	21/32	2 5/8	3 31/32	11	14.947	0.324

### Continuous Lube Type FSCL

Oil is force-fed continuously from an external system through nozzles in outlet pipes that are positioned near the oil collector lips. The scavenging-type lube dam in the discharge ring minimizes sludge accumulation and assures an adequate depth of oil to keep the teeth submerged during rotation. The supply system should provide a clean, cool mineral-base oil with minimum viscosity of 40 SSU at 210° F in the volume indicated. A 5 micron filter in the oil circuit will keep solids to a minimum safe particle size. To collect the oil discharge and to exclude contaminants, a tight housing must be provided. The dam permits intermittent lubrication, and even safe operation for a period if the oil supply fails, as long as rotation continues. The Type CL discharge ring increases shaft separation by 7/8 inch for all sizes. If additional separation is required, a Type DS discharge spacer can be substituted.

Continuously lubricated couplings are often preferred for high-speed systems requiring dynamically-balanced rotating components. Refer to KHP-00 catalog or visit [www.kop-flex.com](http://www.kop-flex.com).



Coupling Size	Maximum Bore with Standard Key † Flex	Maximum Bore with Standard Keyway † Hubs	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Dimensions (inches)										Oil Flow <sup>Ⓞ</sup> Min. GPM Per Flex-Half
					A	B <sub>CL</sub>	B <sub>L</sub>	B <sub>OC</sub>	C <sub>CL</sub>	C <sub>OC</sub>	E	O	O <sub>L</sub>		
1 1/2	1 5/8	3/8 x 3/16	27	17000	6	5 1/4	2 3/16	4 3/8	1	1/8	1 15/16	2 3/16	2	.25	
2	2 1/8	1/2 x 1/4	50	31500	7	6 3/8	2 3/4	5 1/2	1	1/8	2 7/16	2 7/8	2 5/8	.50	
2 1/2	2 3/4	5/8 x 3/8	90	56700	8 3/8	7 5/8	3 3/8	6 3/4	1 1/16	3/16	3 1/32	3 5/8	3 1/4	.50	
3	3 1/8	3/4 x 3/8	160	101000	9 7/16	9	4 1/16	8 1/8	1 1/16	3/16	3 19/32	4 1/4	3 7/8	.75	
3 1/2	3 3/4	7/8 x 7/16	235	148000	11	10 1/4	4 11/16	9 3/8	1 1/8	1/4	4 3/16	5	4 1/2	.75	
4	4 1/4	1 x 1/2	375	236000	12 1/2	11 5/8	5 3/8	10 3/4	1 1/8	1/4	4 3/4	5 3/4	5	1.0	
4 1/2	4 3/4	1 1/4 x 5/8	505	318000	13 5/8	12 7/8	6	12	1 3/16	5/16	5 5/16	6 1/2	6	1.0	
5	5 1/2	1 1/4 x 5/8	700	441000	15 5/16	14 3/8	6 3/4	13 1/2	1 3/16	5/16	6 1/32	7 5/16	6 1/2	1.5	
5 1/2 *	5 7/8	1 1/2 x 3/4	920	580000	16 3/4	15 3/4	7 7/16	14 7/8	1 3/16	5/16	6 29/32	8	8 13/16*	1.5	
6 *	6 1/2	1 1/2 x 3/4	1205	759000	18	16 3/4	7 15/16	15 7/8	1 3/16	5/16	7 13/32	8 13/16	9 7/8*	2.0	
7 *	8	2 x 3/4	1840	1160000	20 3/4	19 1/4	9 3/16	18 3/8	1 1/4	3/8	8 11/16	10 5/16	11 3/4*	2.0	

\* Type CL sleeves with exposed bolts only. "O<sub>L</sub>" is larger than "O" in these sizes. Type CL sleeves with shrouded bolts only are standard for sizes #1 1/2 - #5.

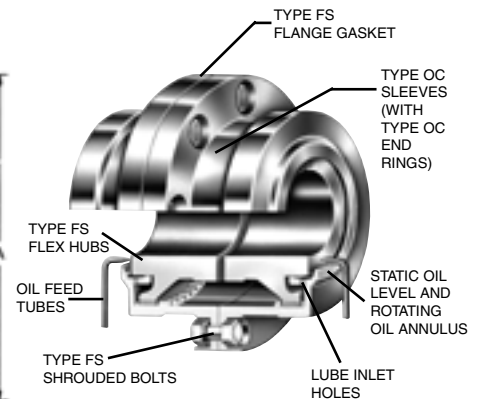
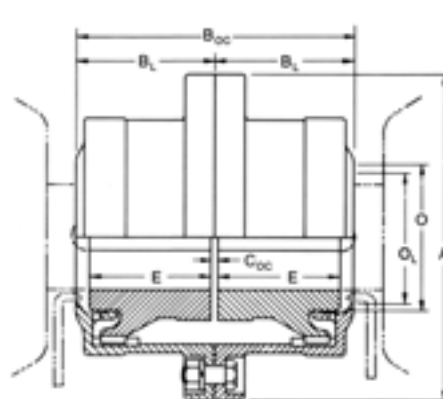
† For bore and keyway limits, maximum interference fits, miscellaneous application data, flange details, etc., contact KOP-FLEX.

Ⓞ For Type FSCL and speeds up to 5000 RPM maximum. For higher speeds refer to KHP-00 Catalog or visit [www.kop-flex.com](http://www.kop-flex.com).

## FAST'S® Gear Couplings

### Oil Collector Type FSOC

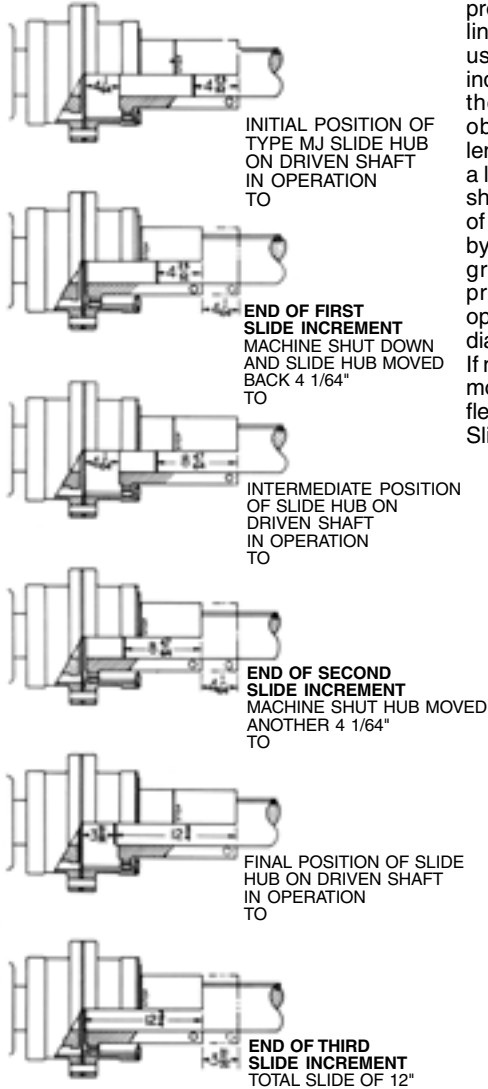
Some industrial applications demand continuous operation for periods longer than a reasonable maintenance interval and relubrication during rotation is mandatory. Manual or automatic squirting of additional oil against the hub end will restore the correct depth of the rotating annulus. Type OC oil collector end rings permit a very deep annulus as shown. Excess oil will be rejected over the collector lips so a protective shroud should envelope the coupling during lubrication. If there is a possibility of lubricant contamination by any foreign matter, the shroud should be a tight housing. Oil collector couplings should be lubricated with a standard mineral base oil having a viscosity of 150 SSU minimum to 1000 SSU maximum at 210° F. Oil collector flex-halves can be used with Type FS rigid hubs and with standard spacers.



Dimensions are tabulated above

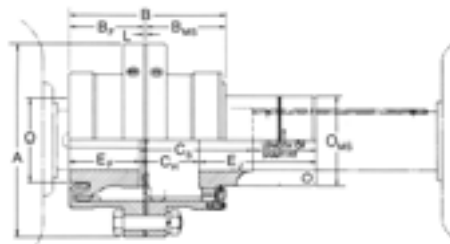
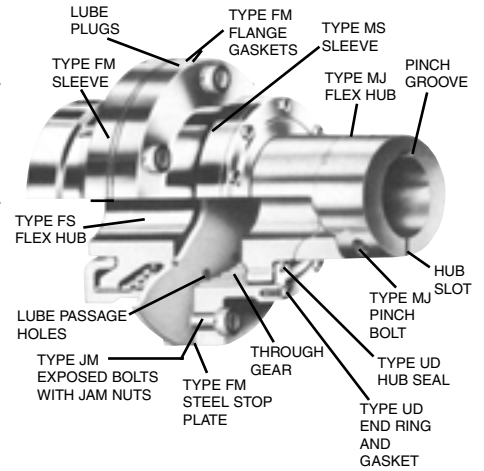
## Medium Slide Jordan Type JMS

A Size # 4 1/2 coupling illustrates the three positions of its Type MJ flex hub on a shaft:

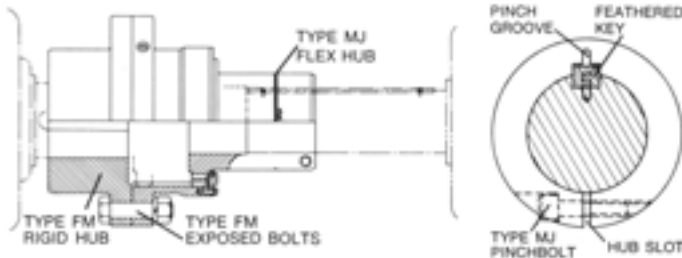


The first telescoping gear-type couplings were designed for conical refiners to provide extra slide for plug adjustment and liner wear. These Jordan machines, still used extensively in the pulp and paper industry, require about two to three times the amount of total slide that can be obtained with a coupling of standard length, such as the Type FMS. A slip fit and a long feathered key, secured in the refiner shaft keyway, permits manual positioning of the slide hub. It is clamped to the shaft by the tangential pinch-bolt. The pinch groove assures positive clamping by providing the desired metal thickness opposite the hub slot irrespective of bore diameter or keyway depth.

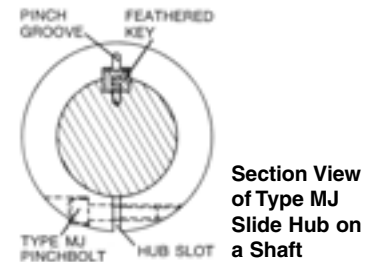
If machine operation cannot be suspended momentarily for repositioning the Type MJ flex hub on its shaft, the Type FLS Long Slide coupling is used.



Type JMS Full-Flex



Type JMS Flex-Rigid



Section View of Type MJ Slide Hub on a Shaft

Coupling Size	Total Slide <sup>Ⓞ</sup>	Slide Increments <sup>Ⓞ</sup>			Maximum Bore with Standard Key † Flex	Maximum Bore with Standard Keyway † Hubs	Maximum Bore with Standard Key † Flex	Maximum Bore with Standard Keyway † Hubs	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Full-Flex Dimensions <sup>Ⓞ</sup>						Length of Shaft Fit in Type MJ Slide Hub
		1st	2nd	3rd							A	C <sub>H</sub>		C <sub>S</sub>		E <sub>J</sub>	
												Max.	Min.	Max.	Min.		
1 1/2	3 5/32	1 37/64	1 37/64	-	1 5/8	3/8 x 3/16	1 1/2	3/8 x 3/16	27	17000	6	1 47/64	5/32	3 5/16	5/32	3 21/64	1 3/4
2	3 29/32	1 61/64	1 61/64	-	2 1/8	1/2 x 1/4	2	1/2 x 1/4	50	31500	7	2 7/64	5/32	4 1/16	5/32	4 13/64	2 1/4
2 1/2	4 3/16	2 33/64	1 43/64	-	2 3/4	5/8 x 5/16	2 1/2	5/8 x 5/16	90	56700	8 3/8	2 43/64	5/32	4 11/32	5/32	4 27/64	2 3/4
3	5 9/16	3 1/64	2 35/64	-	3 1/8	3/4 x 3/8	3	3/4 x 3/8	160	101000	9 7/16	3 11/64	5/32	5 23/32	5/32	5 51/64	3 1/4
3 1/2	7	3 7/22	3 7/32	9/16	3 3/4	7/8 x 7/16	3 1/2	7/8 x 7/16	235	148000	11	3 15/32	1/4	7 1/4	1/4	7 17/32	3 3/4
4	9 7/8	3 29/64	3 29/64	2 31/32	4 1/4	1 x 1/2	4	1 x 1/2	375	236000	12 1/2	3 45/64	1/4	10 1/8	1/4	10 43/64	4 1/4
4 1/2	12	4 1/64	4 1/64	3 31/32	4 3/4	1 1/4 x 5/8	4 5/8	1 1/4 x 5/8	505	318000	13 5/8	4 17/64	1/4	12 1/4	1/4	12 45/64	4 23/32
5	12 1/32	4 29/64	4 29/64	3 1/8	5 1/2	1 1/4 x 5/8	5 1/4	1 1/4 x 5/8	700	441000	15 5/16	4 45/64	1/4	12 9/32	1/4	12 53/64	5 1/4
5 1/2	12 1/32	4 25/64	4 25/32	2 15/32	5 7/8	1 1/2 x 3/4	6	1 1/2 x 3/4	920	580000	16 3/4	5 3/32	5/16	12 11/32	5/16	12 1/2	5 1/4
6	15 21/64	5 7/64	5 7/64	5 7/64	6 1/2	1 1/2 x 3/4	6 1/2	1 1/2 x 3/4	1205	759000	18	5 29/64	11/32	15 43/64	11/32	16 15/32	6 1/4
7	18 9/64	6 3/64	6 3/64	6 3/64	8	2 x 3/4	8	2 x 3/4	1840	1160000	20 3/4	6 29/64	13/32	18 35/64	13/32	19 11/32	7 1/4

\* Exposed bolts are standard for all sizes.

† Bore and keyways shown for Type MJ hub are recommended maximums due to pinchbolt limitations.

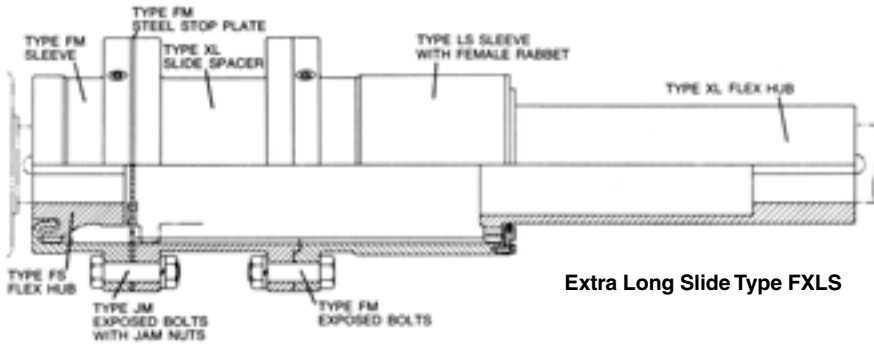
For Type FS hub bore and keyway limits, and for maximum interference fit, miscellaneous application data, flange details, etc., refer to KOP-FLEX.

Ⓞ Using correct length of shaft fit in Type MJ flex hub, and if the connected machines permit a shaft separation range from CS maximum to CS minimum.

Ⓞ Other dimensions, including flex-rigid couplings, are the same as for the Type FMS shown in table on opposite page.

Ⓞ For flex-rigid couplings, refer to KOP-FLEX.

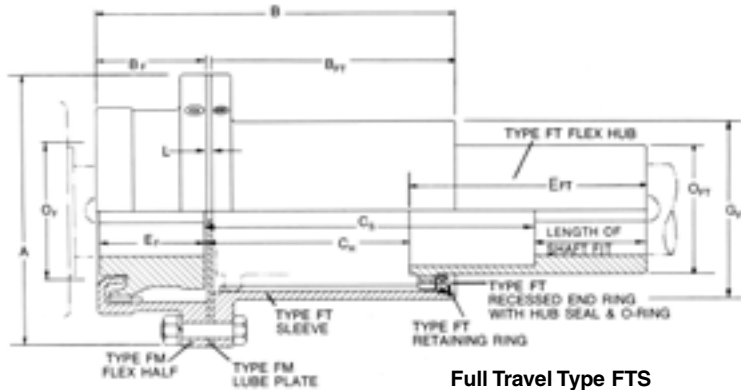
### Extra Long Slide Type FXLS



Extra Long Slide Type FXLS

Type FXLS is an Extra Long Slide coupling for even longer axial movement. One or more spacers with internal through-gear teeth are inserted between the two flex-halves. A dowel pin in each flange connection assures correct assembly with all sleeve teeth in line. The total length of the slide sleeve requires a corresponding increase in length of its flex hub.

### Full - Travel Type FTS



Full Travel Type FTS

The Type FTS Full-Travel coupling is a combination design with one size of flex hub for 11 inches of slide. The sleeve body is the same for all sizes. Its flange is machined to mate with a Size 4, 4 1/2, or 5 Type FM flex-half. As the two sets of gear teeth have different pitch diameters, a lube plate (stop plate without lube passage holes) is included. The removable end ring with its floating hub seal is recessed in the outer end of the sleeve and is secured by a retaining ring. A neoprene O-ring seals the assembly.

The Type FT flex hub is available with a reverse counterbore for an inner end shaft fit.

### Combination Slide Types

Type FSS, FMS, JMS, FLS, and FXLS flex-halves of the same size can be combined for more shaft separation but not for any additional TOTAL SLIDE without de-rating speed, load, and misalignment capabilities. Spacer couplings, floating shaft arrangements, and most exposed bolt coupling types can incorporate a slide feature using one or two slide flex-halves.

### Intermediate Slide Types

If conditions restrict the length of the sleeve assembly or the slide hub, or both, a special Intermediate Slide coupling is used. Medium Slide and Long Slide sleeves can be cut off at the outer end and remachined to receive the end ring assembly. The slide flex hub can be standard length or cut off to meet conditions. A Type MS flex hub can be substituted for a Type LS flex hub with the slide capability of the Medium Slide coupling and increased shaft separation. Intermediate Slide flex-rigid couplings are also available.

Coupling Size *	Total Slide ①	Max. Bore with Std. Key †	Max. Bore with Std. Keyway †	Max. Bore with Reduced Keyway Depth †	† Max. Keyway	Max. Inter. Fit	Rating HP / 100 RPM	Torque Rating (lb.-in.)
	Full-Flex	Type FT Flex Hub						
4	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	180	113900
4 1/2	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	200	126000
5	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	200	126000

Coupling Size *	Total Slide ①	Max. Bore with Std. Key †	Max. Bore with Std. Keyway †	Max. Bore with Reduced Keyway Depth †	† Max. Keyway	Max. Inter. Fit	Rating HP / 100 RPM	Torque Rating (lb.-in.)
	Full-Flex	Type FT Flex Hub						
4	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	180	113900
4 1/2	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	200	126000
5	11	5	1 1/4 x 5/8	5 1/2	1 1/4 x 3/8	.0035	200	126000

\* Exposed bolts are standard for all sizes.

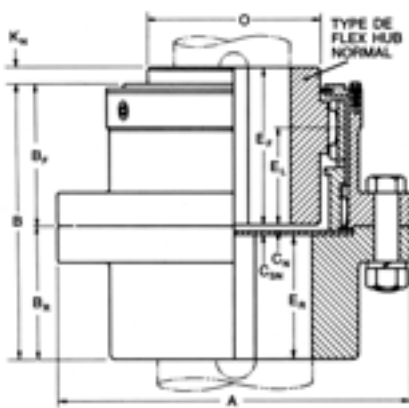
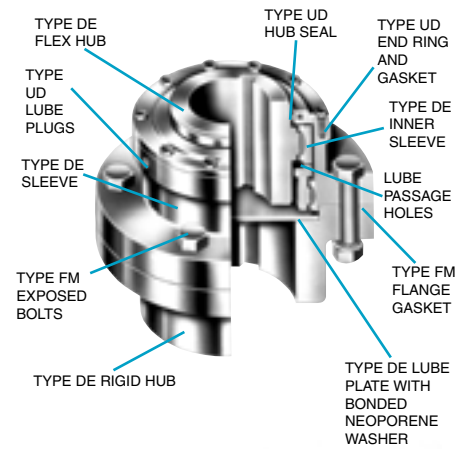
① Using correct length of shaft fit in Type FT flex hub, and if the connected machines permit a hub separation range from C<sub>H</sub> maximum to C<sub>H</sub> minimum.

② For flex-rigid couplings, refer to KOP-FLEX.

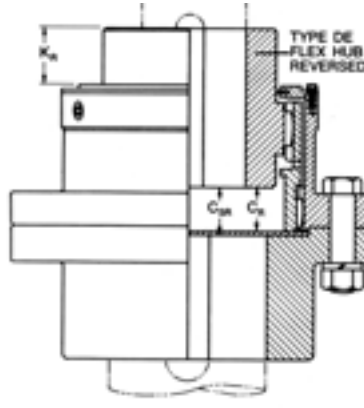
### Types VDE & VDM

Adding a Type DE rigid hub to the Type DE double-engagement-half makes a superior coupling for vertical or tilted operation. As it can be filled with lubricant, maintenance intervals may be longer. The rigid hub is counterbored to receive the male rabbet and the lube plate with bonded neoprene washer, which functions as a thrust plate and lubricant seal. The flex hub is reversible for more end float or slide, to permit axial adjustment of either machine, or for more shaft separation.

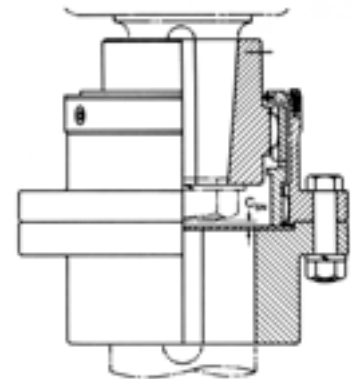
Type VDM couplings utilize the same components but are for tapered shafts with locknuts, such as on AISE mill motors. The inner and/or outer end of the flex hub is cut off as required before finish boring. Hub dimensions, shaft separation, and total slide capability may be affected. Applicable motor frames are shown on page 141.



Type VDE



Type VDE



Type VDM

Coupling Size *	Maximum Bore with Standard Key †		Maximum Bore with Standard Keyway †		Rating HP / 100 RPM	Torque Rating (lb.-in.)	Dimensions ①			
	Flex Hubs		Rigid Hubs				A	B	B <sub>F</sub>	B <sub>R</sub>
1 1/2	1 5/8	3/8 x 3/16	2 5/8	5/8 x 5/16	17000	34000	6	4 5/32	2 7/32	1 15/16
2	2 1/8	1/2 x 1/4	3 1/4	3/4 x 3/8	31500	63000	7	5 3/32	2 23/32	2 3/8
2 1/2	2 3/4	5/8 x 5/16	4	1 x 1/2	56700	113400	8 3/8	6 13/32	3 13/32	3
3	3 1/4	3/4 x 3/8	4 3/4	1 1/4 x 5/8	101000	202000	9 7/16	7 19/32	4 1/32	3 9/16
3 1/2	3 3/4	7/8 x 7/16	5 1/2	1 1/4 x 5/8	148000	296000	11	8 1/2	4 3/8	4 1/8
4	4 1/4	1 x 1/2	6 1/4	1 1/2 x 3/4	236000	472000	12 1/2	9 15/32	4 27/32	4 5/8
4 1/2	5	1 1/4 x 5/8	7 1/4	1 3/4 x 3/4	318000	636000	13 5/8	10 23/32	5 15/32	5 1/4
5	5 1/2	1 1/4 x 5/8	8 1/2	2 x 3/4	441000	882000	15 5/16	11 29/32	6 1/32	5 7/8
5 1/2	6	1 1/2 x 5/8	8	2 x 3/4	580000	1160000	16 3/4	13 23/32	6 9/16	7 5/32
6	6 1/2	1 1/2 x 3/4	8 3/4	2 x 3/4	759000	1518000	18	14 29/32	7 1/4	7 21/32
7	8 1/8	2 x 3/4	10	2 1/2 x 7/8	1160000	2320000	20 3/4	17 15/32	8 15/32	9

Coupling Size *	Dimensions ①												Total Slide with Flex Hub Reversed	
	C <sub>N</sub>	C <sub>R</sub>		C <sub>SN</sub>	C <sub>SR</sub>		E <sub>F</sub>	E <sub>L</sub>	E <sub>R</sub>	K <sub>N</sub>	K <sub>R</sub>			O
		Min.	Max.		Min.	Max.					Min.	Max.		
1 1/2	3/16	3/8	17/32	5/16	1/2	21/32	2 15/32	1 13/32	1 21/32	9/32	15/32	5/8	2 5/16	5/32
2	3/16	21/32	7/8	5/16	25/32	1	3	1 27/32	2 3/32	5/16	25/32	1	3 1/32	7/32
2 1/2	3/16	13/16	11/8	5/16	15/16	1 1/4	3 3/4	2 11/32	2 23/32	3/8	7/8	1 5/16	3 7/8	5/16
3	3/16	27/32	1 9/16	5/16	31/32	1 11/16	4 7/16	2 29/32	3 9/32	7/16	1 3/32	1 13/16	4 19/32	23/32
3 1/2	3/16	1 3/32	1 11/32	5/16	1 7/32	1 15/32	4 27/32	3	3 27/32	1/2	1 13/32	1 21/32	5 11/32	1/4
4	7/32	1 11/32	1 9/16	11/32	1 15/32	1 11/16	5 11/32	3 11/32	4 5/16	17/32	1 21/32	1 7/8	6 1/16	7/32
4 1/2	7/32	1 7/16	1 25/32	11/32	1 9/16	1 29/32	6 3/16	3 7/8	4 15/16	3/4	1 31/32	2 5/16	7 5/32	11/32
5	7/32	1 25/32	2 15/32	11/32	1 29/32	2 19/32	6 5/8	4 7/16	5 9/16	5/8	2 3/16	2 7/8	7 3/4	11/16
5 1/2	1/4	1 25/32	2 7/16	3/8	1 27/32	2 9/16	7 5/16	4 3/4	6 27/32	13/16	2 9/32	3	8 3/4	25/32
6	1/4	1 7/8	2 1/2	3/8	2	2 5/8	7 7/8	5 1/16	7 11/32	11/16	2 5/16	2 15/16	9 5/16	5/8
7	1/4	2 7/32	3 9/16	3/8	2 11/32	3 11/16	9 1/16	6 3/16	8 11/16	21/32	2 5/8	3 31/32	11	1 11/32

\* Exposed bolts are standard for all sizes.

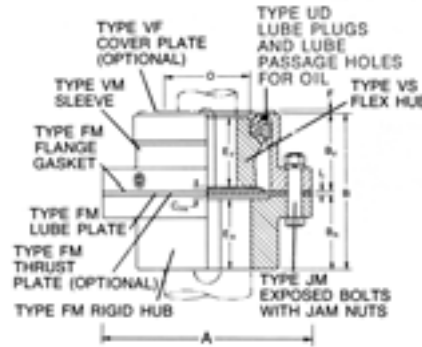
† For bores and keyway limits, maximum interference fit, miscellaneous application data, flange details, etc. consult KOP-FLEX.

① Type VDM dimensions are the same as for Type DMW on page 155. See Type DM and Type DMW for dimensions when flex hub is mounted on an AISE tapered shaft with locknut.



Vertical and tilted shafts on numerous machine drives such as agitators have a three-bearing system requiring a vertical single-engagement coupling. The Type VSE utilizes Type FM standard components which are modified to provide two pipe plugs and lube passage holes for filling with oil.

A Type FM vertical thrust plate can be substituted for the lube plate if the top shaft must be supported by the bottom shaft. The lube plate may be omitted if the keyways in the rigid hub and bottom shaft are caulked to prevent loss of lubricant. A Type VF cover plate should be added if operation is in an environment where dust, scale, or liquid can impinge directly on the outer end of the flex hub. Other variations include substitution of a Type FM flex hub or a Type MM rigid hub for a tapered shaft with locknut.



If grease only is to be used, a Type FM sleeve and Types FS or FM flex hubs can be substituted.

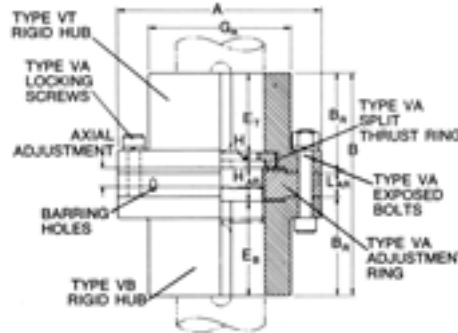
Fastening a lube plate or a vertical thrust plate to the flex-half with countersunk flathead capscrews permits unbolting without loss of lubricant.

The flex-half can be flange-mounted directly to a shaft or to a top plate on a vertical drive.

Coupling Size	Maximum Bore with Standard Key † Flex Hubs	Maximum Bore with Standard Keyway † Flex Hubs	Maximum Bore with Standard Key † Rigid Hubs	Maximum Bore with Standard Keyway † Rigid Hubs	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Dimensions (inches)									
							A	B	B <sub>F</sub>	B <sub>R</sub>	C <sub>FR</sub>	E <sub>F</sub>	E <sub>R</sub>	F	L	O
1 1/2	1 5/8	3/8 x 3/16	2 5/8	5/8 x 5/16	17000	34000	6	4 5/32	2 3/32	1 15/16	9/32	1 15/16	1 27/32	1/8	1/8	2 3/16
2	2 1/8	1/2 x 1/4	3 1/4	3/4 x 3/8	31500	63000	7	5 3/32	2 19/32	2 3/8	9/32	2 7/16	2 9/32	1/8	1/8	2 7/8
2 1/2	2 3/4	5/8 x 3/8	4	1 x 1/2	56700	113400	8 3/8	6 11/32	3 7/32	3	5/16	3 1/32	2 29/32	1/8	1/8	3 5/8
3	3 1/8	3/4 x 3/8	4 3/4	1 1/4 x 5/8	101000	202000	9 7/16	7 17/32	3 27/32	3 9/16	5/16	3 19/32	3 15/32	1/8	1/8	4 1/4
3 1/2	3 3/4	7/8 x 7/16	5 1/2	1 1/4 x 5/8	148000	296000	11	8 3/4	4 7/16	4 1/8	13/32	4 3/16	4 1/32	3/16	3/16	5
4	4 1/4	1 x 1/2	6 1/4	1 1/2 x 3/4	236000	472000	12 1/2	9 7/8	5 1/16	4 5/8	1/2	4 3/4	4 7/16	3/16	3/16	5 3/4
4 1/2	4 3/4	1 1/4 x 5/8	7 1/4	1 3/4 x 3/4	318000	636000	13 5/8	11 1/8	5 11/16	5 1/4	17/32	5 5/16	5 1/16	3/16	3/16	6 1/2
5	5 1/2	1 1/4 x 5/8	8 1/2	2 x 3/4	441000	882000	15 5/16	12 3/8	6 5/16	5 7/8	17/32	6 1/32	5 11/16	3/16	3/16	7 5/16
5 1/2	5 7/8	1 1/2 x 3/4	8	2 x 3/4	580000	1160000	16 3/4	14 11/32	6 15/16	7 5/32	21/32	6 29/32	6 29/32	1/4	1/4	8
6	6 1/2	1 1/2 x 3/4	8 3/4	2 x 3/4	759000	1518000	18	15 11/32	7 7/16	7 21/32	21/32	7 13/32	7 13/32	1/4	1/4	8 13/16
7	8	2 x 3/4	10	2 1/2 x 7/8	1160000	2320000	20 3/4	18 3/16	8 11/16	9	13/16	8 11/16	8 11/16	5/16	5/16	10 5/16

† For bores and keyway limits, maximum interference fit, miscellaneous application data, etc. consult KOP-FLEX.

Some designs of vertical pumps require a full-rigid coupling for the shaft connection. An adjustment ring is threaded to mate with the threaded end of the pump shaft, and then fastened to the top rigid by locking screws. Barring the top shaft, using the holes in the adjustment ring, permits accurate axial positioning of the pump impeller. Flange bolts complete the connection.



## Vertical Adjustable Rigid Type VAR

Clearance fits are required. Keys must be retained in the keyways. As dimensions of the split thrust ring groove in the top shaft varies, the counterbore and split thrust ring can be changed to suit.

Coupling Size *	Maximum Bore with Square Key Rigid Hubs	Maximum Bore with Square Keyway Rigid Hubs	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Axial Thrust Rating at Max. Bore (lb.)	Axial Adjustment of Shaft Max.	Dimensions (inches)										Standard Rough Bore
							A	B	B <sub>R</sub>	E <sub>B</sub>	E <sub>T</sub>	G <sub>R</sub>	H	H <sub>AR</sub>	L <sub>AR</sub>		
1	1 1/2	3/8 x 3/16	5.6	3530	5650	3/8	3 1/2	4 3/8	1 7/8	1 3/4	1 1/2	2 1/4	1/4	7/8	5/8	1/2	
1 1/2	2	1/2 x 1/4	13.0	8190	11000	1/2	4 1/4	5 5/8	2 7/16	2 5/16	1 15/16	2 7/8	3/8	1	3/4	1	
2	2 3/8	5/8 x 8/16	22.0	13860	17500	5/8	5	6 1/2	2 13/16	2 11/16	2 3/16	3 7/16	1/2	1 1/8	7/8	1 1/2	
2 1/2	2 13/16	11/16 x 11/32	36.0	22680	21500	5/8	6	8	3 9/16	3 7/16	2 13/16	4	5/8	1 1/8	7/8	2	
3	3 7/16	7/8 x 7/16	65.8	41450	26000	5/8	7	9	4	3 7/8	3 1/4	4 7/8	5/8	1 1/4	1	2 1/2	
3 1/2	4 1/8	1 x 1/2	114	71820	38900	3/4	8 3/8	10 3/4	4 7/8	4 3/4	4 1/8	5 7/8	5/8	1 1/4	1	3	
4	4 3/4	1 1/4 x 5/8	173	108990	46000	3/4	9 7/16	11 3/8	5 1/8	5	4 3/8	6 7/8	5/8	1 3/8	1 1/8	3 1/2	
4 1/2	5 1/2	1 3/8 x 11/16	270	170100	52000	3/4	11	13 3/4	6 1/4	6 1/8	5 3/8	7 7/8	3/4	1 1/2	1 1/4	4	
5	6 5/8	1 5/8 x 13/16	472	297360	88000	3/4	12 1/2	16	7 3/8	7 1/4	6 1/2	9 3/8	3/4	1 1/2	1 1/4	4	
5 1/2	7 3/8	1 7/8 x 15/16	650	409500	124000	3/4	13 5/8	17 5/8	8 3/16	8	7	10 1/2	1	1 5/8	1 1/4	4	
6	8 1/4	2 x 1	915	576450	170000	3/4	15 5/16	20 1/8	9 7/16	9 1/4	8 1/4	11 3/4	1	1 5/8	1 1/4	4	

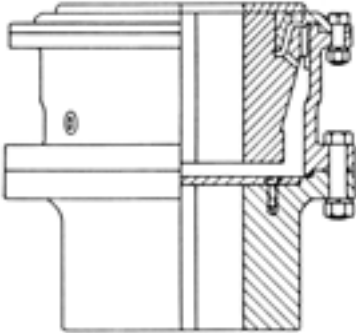
\* Exposed bolts are standard for all sizes.

① Based on hub keyway bearing stress of 17000 PSI. For a smaller bore or key size the maximum load rating is reduced. Refer to KOP-FLEX.

② For maximum speeds, weights, WR<sup>2</sup> and center flange details refer to KOP-FLEX.

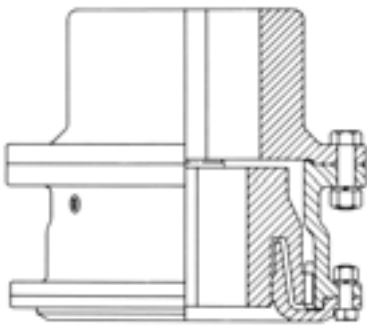
## Vertical Single-Engagement Type CVSE

Typical flex-rigids for vertical operation use standard components. Lube plugs in the end ring and lube relief holes behind the teeth provide for rapid filling. A cover plate on top minimizes collection of abrasives at the end ring pilot and possible contamination of the lubricant. Two Type CVSE units are commonly used in floating shaft arrangements.



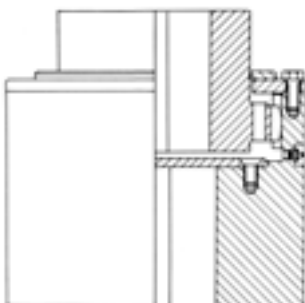
## Vertical Inverted Single-Engagement

When a flex-half is at the lower end, the flex hub and end ring are modified to provide more static lube capacity. A thrust button must be added if the upper shaft is to be supported.



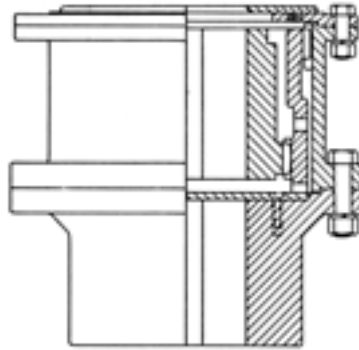
## Vertical Flangeless Single-Engagement

Weight and  $WR^2$  are minimized. Flangeless single-engagement or double-engagement designs may be preferable for rapidly reversing drives or cyclic operation. An O-ring hub seal can be added when direct impingement of a lube contaminant is likely.



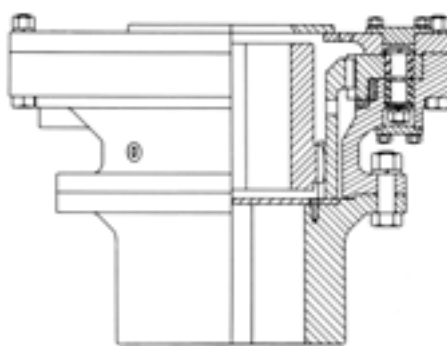
## Vertical Double-Engagement Type CVDE

Can be used in virtually any drive where both angular and offset misalignment capability is required. A thrust button or thrust projection can be added to the lube plate for support of the upper shaft.



## Vertical Shear Pin Double-Engagement

This unique coupling combines the features of FAST'S® typical shear pin design and a double-engagement flex-half for a vertical overload release requirement.

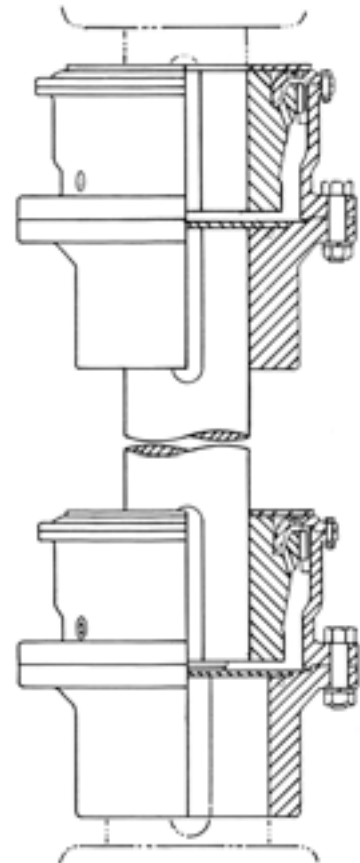


## Vertical Types

For connecting shafts in a vertical or tilted attitude, these designs are lubricant-filled for reliable performance. Lube plates prevent loss along the bottom keyways. Type CVSE single-engagement, and Type CVM floating shaft arrangements are typical designs using standard components. Numerous other flanged and flangeless vertical couplings, including high-misalignment vertical spindles, are modified or custom designed for special requirements.

## Vertical Floating Shafts Type CVM

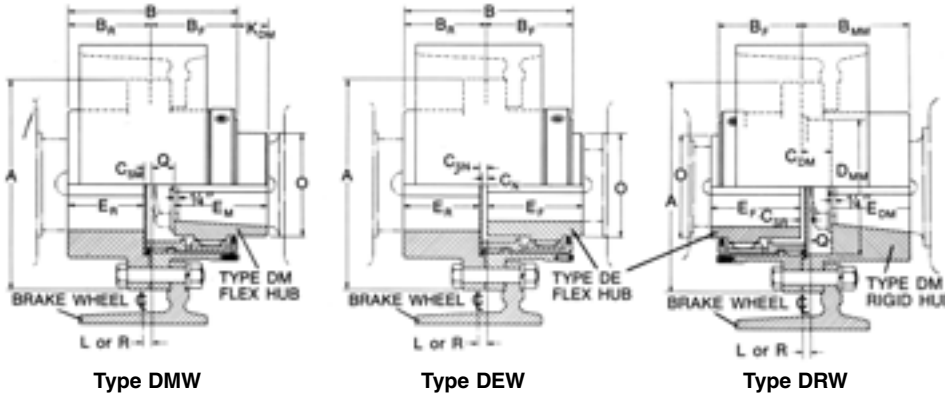
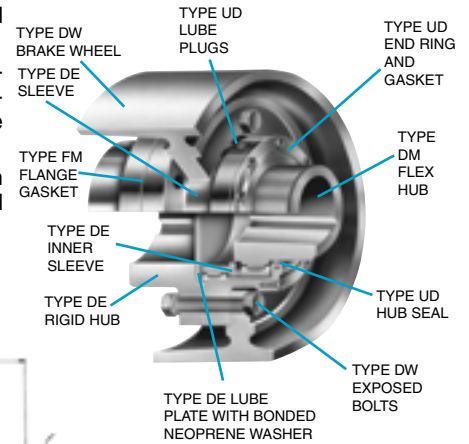
Most vertical arrangements have two standard Type CVSE units mounted on the floating shaft, but several other combinations of single-engagement designs are possible. The normal top-to-bottom sequence is flex-rigid with a thrust provision in the lower unit to support the center section.



Visit [www.kopflex.com](http://www.kopflex.com)

FAST'S® Brake Wheel couplings permit a choice of applying the braking effort directly to the load or to the driving motor. The brake wheel can be mounted on that coupling in the drive system which is closest to the load. Standardized dimensions, less WR2, versatility of mounting positions, replaceable brake wheels, reduced maintenance, and lower replacement costs are features of these units. Types DE and DM flex-halves with a bolted-on end ring facilitate installation and maintenance.

All Brake Wheel couplings can be used without modification for vertical operation. Wheels are machined from Grade 80-60-.03 ductile iron to conform to ASTM-A-339-55 and most mill crane specifications. Grade GA Meehanite is a substitute material. A brake wheel position is measured from the centerline of the wheel face to the end of the driving shaft.



Coupling Size	DW Brake Wheel ①	Standard ②	Range ③	Maximum Bore with Standard Key †		Maximum Bore with Standard Keyway †		Rating HP / 100 RPM	Torque Rating (lb.-in.)	Dimensions ④				
				Flex Hubs		Rigid Hubs				A All	B DMW, DEW	B_F All	B_MM DMW	B_R
				C_DM	C_MM	C_DM	C_MM							
1 1/2	3 1/4 x 8	802	802 - 804	1 5/8	3/8 x 3/16	2 5/8	5/8 x 5/16	27	17000	6	4 5/32	2 7/32	4 1/32	1 15/16
2	3 3/4 x 10	803 - 804	802 - 806	2 1/8	1/2 x 1/4	3 1/4	3/4 x 3/8	50	31500	7	5 3/32	2 23/32	4 19/32	2 3/8
2 1/2	5 3/4 x 13	806	802 - 810	2 3/4	5/8 x 5/16	4	1 x 1/2	90	56700	8 3/8	6 13/32	3 13/32	5 7/32	3
3	5 3/4 x 13 6 3/4 x 16	808 810	802 - 812	3 1/4	3/4 x 3/8	4 3/4	1 1/4 x 5/8	160	101000	9 7/16	7 19/32	4 1/32	5 27/32	3 9/16
													5 31/32	
3 1/2	8 3/4 x 19	812	803 - 814	3 3/4	7/8 x 7/16	5 1/2	1 1/4 x 5/8	235	148000	11	8 1/2	4 3/8	6 19/32	4 1/8
4	8 3/4 x 19 11 1/4 x 23	814 816	806 - 816	4 1/4	1 x 1/2	6 1/4	1 1/2 x 3/4	375	236000	12 1/2	9 15/32	4 27/32	6 13/16	4 5/8
													7 7/16	
4 1/2	11 1/4 x 23 14 1/4 x 30	818 620	810 - 620 812 - 622	5 5 1/2	1 1/4 x 5/8 1 1/4 x 5/8	7 1/4 8 1/2	1 3/4 x 3/4 2 x 3/4	505 700	318000 441000	13 5/8 15 5/16	10 23/32 11 29/32	5 15/32 6 1/32	7 1/2	5 1/4 5 7/8
													8 11/16	

Coupling Size	Dimensions ④															Brake Wheel Only ⑤	
	C_DM	C_MM	C_N	C_R	C_SM	C_SN	C_SR	D_MM	E_DM	E_F	E_M	E_R	K_DM	O	Q	Net Weight	WR²
1 1/2	1 5/16	1 1/32	3/16	3/32	5/16	5/16	5/16	3	2 23/32	2 15/32	1 7/8	1 21/32	5/8	2 5/16	15/16	10	126
2	1 3/8	1 3/32	3/16	3/32	5/16	5/16	5/16	4	3 7/32	3	2 11/16	2 3/22	1	3 1/32	1	17	341
2 1/2	1 1/2	1 7/32	3/16	3/32	3/8	5/16	3/8	5	3 23/32	3 3/4	3 1/2	2 23/32	1 5/16	3 7/8	1 1/8	38	1279
3	1 5/8 1 3/4	1 11/32 1 15/32	3/16	3/32	3/8	5/16	3/8	6	4 7/32	4 7/16	4 7/16 4 5/16	3 9/32	1 3/4 1 3/8	4 19/32	1 1/4 1 3/8	36 75	1258 3882
3 1/2	1 29/32	1 19/32	3/16	3/32	7/16	5/16	7/16	7	4 11/16	4 27/32	4 3/8	3 27/32	1 1/2	5 11/32	1 1/2	148	10438
4	2 1/32 2 5/32	1 13/16 1 15/16	7/32	3/16	7/16	11/32	7/16	8	4 25/32 5 9/32	5 11/32	4 31/32 4 27/32	4 5/16	1 5/8 1 3/4	6 1/16	1 5/8 1 3/4	145 289	40398 34770
4 1/2	1 27/32	1 1/2	7/32	3/16	1/2	11/32	1/2	9	5 21/32	6 3/16	6	4 15/16	1 5/16	7 5/32	1 5/16	283	34574
5	2 4/32	1 15/16	7/32	3/16	1/2	11/32	1/2	10	6 15/22	6 5/8	6 1/2	5 9/16	1 3/4	7 3/4	1 3/4	520	88475

\* Exposed bolts are standard for all sizes.

† For bores and keyway limits, maximum interference fit, miscellaneous application data, flange details, etc., contact KOP-FLEX.

① AISE standard dimensions for face width and wheel diameter. For standard location of C<sub>L</sub> brake wheel and alternate positions and for any special brake wheel mounted on any coupling size, contact KOP-FLEX.

② These frame sizes permit exact AISE standard location for the brake wheel C<sub>L</sub> using Type DMW and mounting A. Contact KOP-FLEX.

③ For dimensions not shown, contact KOP-FLEX.

④ For weight and WR2 of couplings and sets of accessories contact KOP-FLEX.

**Light-To-Medium Duty Applications** are handled readily by the FAST'S® Model B coupling line, sizes #1 through #3 1/2. All Model B couplings are designed for 1/2° static angular misalignment per flex half.

**The Distinguishing Feature** of the FAST'S® Model B coupling is its **all-metal end ring** design in a configuration that is smaller in size and lighter in weight than the FAST'S® Coupling — while maintaining the same maximum bore capacities.

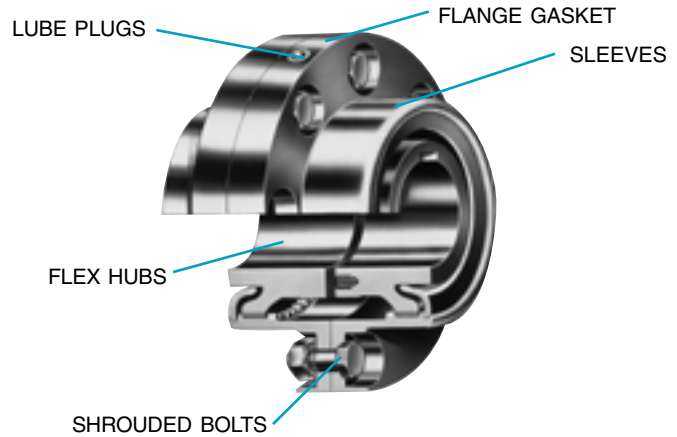
### Application

The FAST'S® Model B coupling can be used to directly connect any two shaft ends from 1/2 inch to over 4 inches in diameter on centrifugal pumps, small compressors, blowers, conveyor drives, fan drives, and all other similar medium-duty, moderate-speed applications. Model B couplings are not dynamically balanced.

### Description

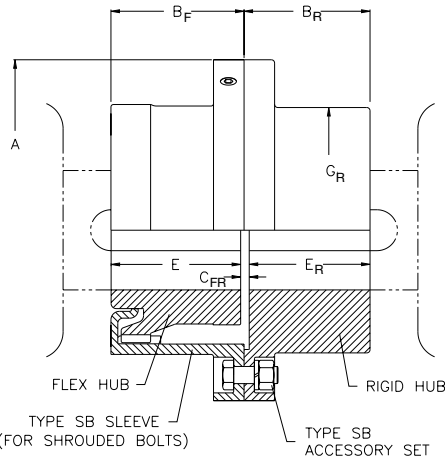
Model B couplings are manufactured from the same materials and to the same quality standards as the larger, heavier FAST'S® type.

The Model B end ring provides a permanent seal and permits a compact design. Each sleeve has a Type UD lube plug permitting assembly at 180° apart to facilitate lubrication.



When properly installed and lubricated the Model B coupling should require little maintenance. Under most conditions the lubricant reservoir is adequate to allow continuous operation for a year or more.

All flange bolt holes are precision drilled to assure flange piloting and interchangeability. Model B bolts are special with respect to body length, thread length, and bolt body tolerance.



## Flex Rigid and Floating Shaft Couplings

### Coupling Type SB (Shrouded Bolts) Part Numbers

Coupling Size	Flex Rigid Coupling				Rigid Hub <sup>②</sup>			
	No Bore		Finish Bore <sup>①</sup> Part No.	No Bore		Finish Bore <sup>①</sup> Part No.		
	Part No.	Wt.		Part No.	Wt.			
1	1B SB FR	6	1B SB FR FB	1B SB RHUB	3	1B SB RHUB FB		
1 1/2	1 1/2B SB FR	12	1 1/2B SB FR FB	1 1/2B SB RHUB	6	1 1/2B SB RHUB FB		
2	2B SB FR	20	2B SB FR FB	2B SB RHUB	9	2B SB RHUB FB		
2 1/2	2 1/2B SB FR	32	2 1/2B SB FR FB	2 1/2B SB RHUB	15	2 1/2B SB RHUB FB		
3	3B SB FR	57	3B SB FR FB	3B SB RHUB	28	3B SB RHUB FB		
3 1/2	3 1/2B SB FR	85	3 1/2B SB FR FB	3 1/2B SB RHUB	42	3 1/2B SB RHUB FB		

### Coupling Type EB (Exposed Bolts) Part Numbers

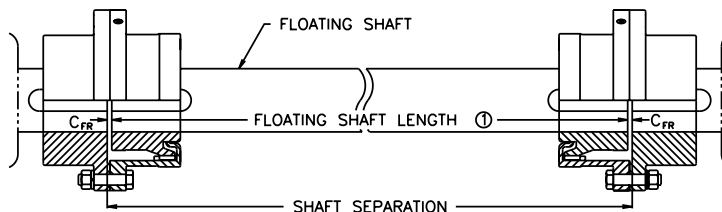
Coupling Size	Flex Rigid Coupling				Rigid Hub <sup>②</sup>			
	No Bore		Finish Bore <sup>①</sup> Part No.	No Bore		Finish Bore <sup>①</sup> Part No.		
	Part No.	Wt.		Part No.	Wt.			
1	1B EB FR	6	1B EB FR FB	1B EB RHUB	3	1B EB RHUB FB		
1 1/2	1 1/2 EB FR	12	1 1/2 EB FR FB	1 1/2 EB RHUB	6	1 1/2 EB RHUB FB		
2	2B EB FR	20	2B EB FR FB	2B EB RHUB	9	2B EB RHUB FB		
2 1/2	2 1/2 EB FR	32	2 1/2 EB FR FB	2 1/2 EB RHUB	15	2 1/2 EB RHUB FB		
3	3B EB FR	57	3B EB FR FB	3B EB RHUB	28	3B EB RHUB FB		
3 1/2	3 1/2 EB FR	85	3 1/2 EB FR FB	3 1/2 EB RHUB	42	3 1/2 EB RHUB FB		

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances.

② Rigid hubs are furnished less fasteners.

Coupling Size	Rigid Hub Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed (RPM)	Weight with Solid Hubs (lb.)	Dimensions						
							A	B <sub>F</sub>	B <sub>R</sub>	C <sub>FR</sub>	E	E <sub>R</sub>	G <sub>R</sub>
1	2	10.5	6600	13200	14500	6	4	1 5/16	1 5/16	1/8	1 1/4	1 1/4	2 23/32
1 1/2	2 3/8	18.5	11500	23000	12000	12	5	1 3/4	1 3/4	1/8	1 11/16	1 11/16	3 5/16
2	2 5/8	36.5	23000	46000	9300	18	6	2 5/32	1 15/16	5/32	2 3/32	1 27/32	3 3/4
2 1/2	3 1/4	62	39000	78000	7900	30	7	2 5/8	2 3/8	5/32	2 9/16	2 9/32	4 3/4
3	4	110	69300	138600	6800	55	8 3/8	3 1/4	3	3/16	3 5/32	2 29/32	5 3/4
3 1/2	4 3/4	186	117200	234400	6000	84	9 7/16	3 7/8	3 9/16	3/16	3 25/32	3 15/32	6 3/4

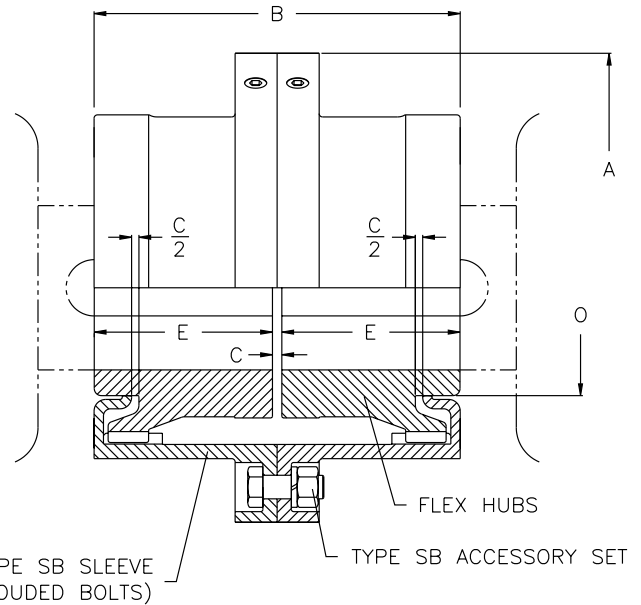
FLOATING SHAFT ASSEMBLY



FLOATING SHAFT ASSEMBLY

**Ordering Instructions:** When ordering floating shaft couplings, be sure to include hp and rpm, shaft separation, and equipment shaft sizes. Applications with very large shaft separations and/or high speeds may require tubular floating shafts due to lateral critical speed concerns.

A conventional 4-bearing system has two bearings on the driving shaft and two bearings on the driven shaft. Both angular and offset shaft misalignment will be present to some degree and a full flex coupling is mandatory. The full flex coupling is the standard coupling having two gear ring sets, one set per half coupling. For selection procedure see page 133.



#### Coupling Greases

KOP-FLEX offers greases specifically designed for use in coupling applications. For proper lubrication and long service life, use KSG Standard Coupling Grease, or KHP High Performance Coupling Grease. See pages 204-206 for detailed specifications.

Coupling Size	Maximum Bore with Standard Key	Rating HP / 100 RPM	Torque Rating (lb.-in.)	Peak Torque Rating (lb.-in.)	Maximum Speed RPM	Weight with Solid Hubs (lb.)	Dimensions					Shrouded Bolt* and Exposed Bolt	
							A	B	C	E	O	Bolt Circle	Number & Size.
1	1 1/8	10.5	6600	13200	14500	5.5	4	2 5/8	1/8	1 1/4	1 9/16	3 5/16	6 — 1/4
1 1/2	1 5/8	18.5	11500	23000	12000	11	5	3 1/2	1/8	1 11/16	2 3/16	4 3/32	6 — 5/16
2	2 1/8	36.5	23000	46000	9300	19	6	4 5/16	1/8	2 3/32	2 7/8	5	6 — 3/8
2 1/2	2 3/4	62	39000	78000	7900	31	7	5 1/4	1/8	2 9/16	3 11/16	6	6 — 3/8
3	3 1/8	110	69300	138600	6800	57	8 3/8	6 1/2	3/16	3 5/32	4 1/4	7 3/16	8 — 1/2
3 1/2	3 3/4	186	117200	234400	6000	81	9 7/16	7 3/4	3/16	3 25/32	5	8 1/4	10 — 1/2

\* Shrouded and exposed bolts are identical except for length.

#### Coupling Type SB (Shrouded Bolts) Part Numbers

Coupling Size	Full Flex Coupling			Fastener Set (Includes Gasket)		Sleeve		Flex Hub		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1	1B SB FF	7	1B SB FF FB	1B SB FS	1	1B SB SLEEVE	2	1B FHUB	1	1B FHUB FB
1 1/2	1 1/2B SB FF	12	1 1/2B SB FF FB	1 1/2B SB FS	1	1 1/2B SB SLEEVE	3	1 1/2B FHUB	3	1 1/2B FHUB FB
2	2B SB FF	21	2B SB FF FB	2B SB FS	1	2B SB SLEEVE	5	2B FHUB	5	2B FHUB FB
2 1/2	2 1/2B SB FF	33	2 1/2B SB FF FB	2 1/2B SB FS	1	2 1/2B SB SLEEVE	7	2 1/2B FHUB	9	2 1/2B FHUB FB
3	3B SB FF	55	3B SB FF FB	3B SB FS	2	3B SB SLEEVE	12	3B FHUB	16	3B FHUB FB
3 1/2	3 1/2B SB FF	84	3 1/2B SB FF FB	3 1/2B SB FS	2	3 1/2B SB SLEEVE	16	3 1/2B FHUB	25	3 1/2B FHUB FB

#### Coupling Type EB (Exposed Bolts) Part Numbers

Coupling Size	Full Flex Coupling			Fastener Set (Includes Gasket)		Sleeve		Flex Hub		
	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.	Part No.	Wt.	Part No.	Wt.	No Bore Part No.	Wt.	Finish Bore <sup>①</sup> Part No.
1	1B EB FF	7	1B EB FF FB	1B EB FS	1	1B EB SLEEVE	2	1B FHUB	1	1B FHUB FB
1 1/2	1 1/2B EB FF	12	1 1/2B EB FF FB	1 1/2B EB FS	1	1 1/2B EB SLEEVE	3	1 1/2B FHUB	3	1 1/2B FHUB FB
2	2B EB FF	21	2B EB FF FB	2B EB FS	1	2B EB SLEEVE	5	2B FHUB	5	2B FHUB FB
2 1/2	2 1/2B EB FF	33	2 1/2B EB FF FB	2 1/2B EB FS	1	2 1/2B EB SLEEVE	7	2 1/2B FHUB	9	2 1/2B FHUB FB
3	3B EB FF	55	3B EB FF FB	3B EB FS	2	3B EB SLEEVE	12	3B FHUB	16	3B FHUB FB
3 1/2	3 1/2B EB FF	84	3 1/2B EB FF FB	3 1/2B EB FS	2	3 1/2B EB SLEEVE	16	3 1/2B FHUB	25	3 1/2B FHUB FB

① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances. Each clearance bore includes one setscrew over keyway.

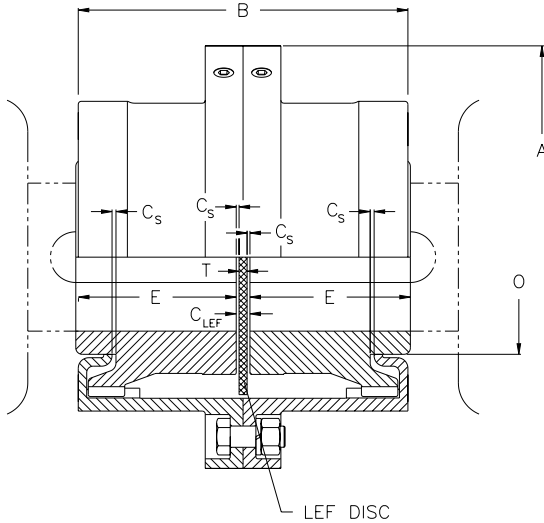
**Important:** Care must be exercised in proper selection of any shaft coupling. The Users must assure themselves that the design of the shaft to coupling hub connection is adequate for the duty intended.

### Limited End Float Coupling

For sleeve bearing motor applications, a FAST'S® Model B full flex coupling is supplied with an LEF disc to limit the axial float of the motor rotor, and protect the motor bearings at start-up and shut-down. The hub separation,  $C_{LEF}$  is larger than for a standard full flex, and the phenolic LEF disc is placed between the hubs at assembly, limiting the float of the motor rotor to the total LEF value shown.

The equipment should be installed with the proper hub separation,  $C_{LEF}$ , when the motor rotor is located on magnetic center.

The LEF disc part numbers are listed below. See page 157 for the standard full flex part numbers.



Coupling Size	Total LEF	Maximum Bore with Standard Key	Dimensions						LEF Disc <sup>②</sup>	
			A	B	C <sub>s</sub>	C <sub>LEF</sub> (Hub Sep.)	E	T (Disc Width)	Part No.	Wt.
1	1/8	1 1/8	4	2 5/8	1/32	3/16	1 1/4	1/8	1B LEFD	1
1 1/2	1/8	1 5/8	5	3 1/2	1/32	3/16	1 11/16	1/8	1 1/2B LEFD	1
2	1/8	2 1/8	6	4 5/16	1/32	3/16	2 3/32	1/8	2B LEFD	1
2 1/2	1/8	2 3/4	7	5 1/4	1/32	3/16	2 9/16	1/8	2 1/2B LEFD	1
3	3/16	3 1/8	8 3/8	6 1/2	3/64	9/32	3 5/32	3/16	3B LEFD	1
3 1/2	3/16	3 3/4	9 7/16	7 3/4	3/64	9/32	3 25/32	3/16	3 1/2B LEFD	1

- ① All finish bores and keyways per AGMA 9002-A86 commercial standard tolerances. Each clearance bore includes one setscrew over keyway.
- ② LEF Discs are used only in close coupled applications. One disc is required per coupling.

### Spacer Coupling

#### Standard Spacer Couplings

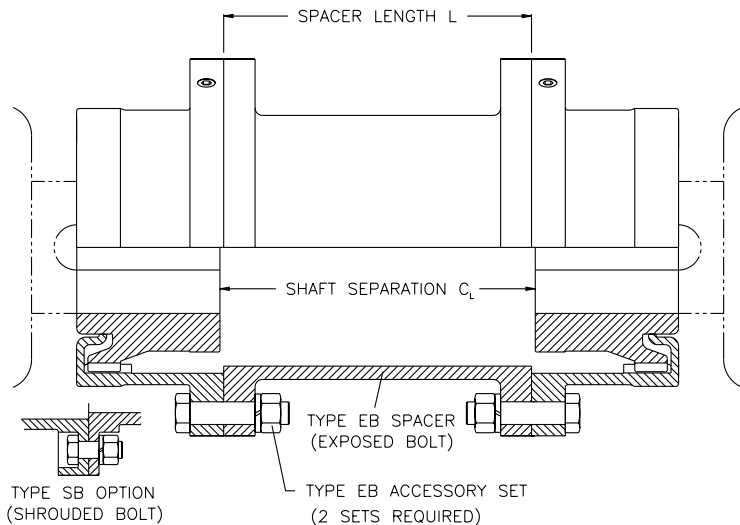
Full-flex spacer couplings are used for 4 bearing installations with extended shaft separations. Tabulated here are spacers for industry standard shaft separations,  $C_L$ .

Type SB shrouded bolt spacers for standard shaft separations are normally in stock. Type EB spacers and other lengths are manufactured to order.

Spacer length,  $L$ , is calculated by subtracting the standard full-flex, close coupled gap,  $C$ , from the shaft separation,  $C_L$ .

$$L = C_L - C \quad (\text{full-flex, close coupled})$$

LEF spacer couplings are available, but are non-stock.



#### Stock Spacer Part Numbers

##### Type SB (Shrouded Bolts)

Coupling Size	Shaft Separation									
	3 1/2"		4 3/8"		5"		7"		10"	
	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.	Part No.	Wt.
1	1B SB SPR350	3	—	—	—	—	—	—	—	—
1 1/2	1 1/2B SB SPR350	4	1 1/2B SB SPR438	4	1 1/2B SB SPR500	5	—	—	—	—
2	2B SB SPR350	6	2B SB SPR438	7	2B SB SPR500	7	2B SB SPR700	9	—	—
2 1/2	—	—	—	—	2 1/2B SB SPR500	9	2 1/2B SB SPR700	11	—	—
3	—	—	—	—	3B SB SPR500	13	3B SB SPR700	16	—	—
3 1/2	—	—	—	—	—	—	3 1/2B SB SPR700	19	3 1/2B SB SPR1000	24