HOW TO SELECT A FLEXIBLE JAW COUPLING

The selection process for determining the proper jaw coupling size and elastomer requires using the charts shown on the following pages. There are three components to be selected, two hubs and one elastomer. When the shaft size of the driver and driver of the application are of the same diameter, the hubs selected will be the same. When shaft diameters differ, hubs selected will differ accordingly.

Information necessary before a coupling can be selected:
HP (or KW) and RPM or Torque of driver
Shaft sizes of driver and driven equipment and corresponding keyways
Application description
Environmental conditions (i.e. extreme temperature, corrosive conditions, space limitations)

List of charts provided for Selection

Chart 1 - Application Service Factors
Chart 2 - Spider Performance Data
Chart 3 - Coupling Nominal Rated Torque
Formulas: Nominal Torque= in-lb $= \frac{(HP \times 63025)}{RPM}$

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

Design Torque=Nominal Torque x Application Service Factor

Steps in Selecting a Jaw Coupling

Step 1: Determine the Nominal Torque of your application by using the following formula:
Nominal Torque= in-lb $= \frac{(HP \times 63025)}{RPM}$

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

Step 2: Using the Application Service Factors Chart 1 select the service factor which best corresponds to your application.

Step 3: Calculate the Design Torque of your application by multiplying the Nominal Torque calculated in Step 1 by the application Service Factor determined in Step 2.
Design Torque=Nominal Torque x Application Service Factor

Step 4: Using the Spider Performance Data Chart 2, select the elastomer material which best corresponds to your application.

Step 5: Using the coupling Nominal Rated Torque Chart 3, locate the appropriate elastomer material column for the elastomer selected in Step 4.

Scan down this column to the first entry where the Torque Value in the appropriate column is greater than or equal to the Design Torque calculated in Step 3.

Once this value is located, refer to the corresponding coupling size in the first column of the Coupling Nominal Rated Torque Chart 3.

Refer to the maximum RPM value for this elastomer torque capability to ensure that the application requirements are met. If the requirement is not satisfied at this point, another type of coupling may be required for the application. Please consult our engineers.

Step 6: Compare the application driver/driven shaft sizes to the maximum bore size available on the coupling selected. If coupling bore size is not large enough for the shaft diameter, select the next largest coupling that will accommodate the drive/driven shaft diameters. Refer to Chart 3.

Step 7: Using the item Number Selection Charts, find the appropriate Bore and keyway sizes required and locate the item number.

Selection Example
A coupling is needed to connect a 20HP standard electric motor rated at 1800 RPM to a rotary pump. The shaft sizes of the electric motor (driver) is 2.0 inches and the pump (driven) is 1.75 inches. There are no special environmental conditions and the general operating temperature is normal room temperature, 72°F. Less than 1° of misalignment is expected.

Step 1: Determi = $\frac{(HP \times 63025)}{RPM}$ orque:
Nominal Torque = $\frac{(20 \times 63025)}{180}$
= 700.28 in-lb

Step 2: Using the Application Service Factor Chart 1, select the service factor which best correspond's to your application. The application Service Factor for an electric motor with standard torque driving a rotary pump is 1.25. The value of 1.25 is found under the application category Pumps, Rotary, column: Electric Motor w/Standard Torque in Chart 1.

Step 3: Calcul = Nominal Torque x Application Service Factor
Design Torque = 700.28 x 1.25
= 875.35 in-lb

Step 4: Using the Elastomer Performance Data Chart 2, select the elastomer material which best corresponds to your application. Since there are not special environmental conditions, the operating temperature is 72°F and less than 1° of angular misalignment is required, the NBR elastomer material is selected.

Step 5: Using the Coupling Nominal Rated Torque Chart 3, the NBR elastomer column is used to determine the proper coupling size. Scanning down the NBR column, the first entry to accommodate the Design Torque value of 875.35 in-lb is the size L150 with a nominal torque rating of 1,240 in-lb. Referring to the maximum RPM of 1800 on the electric motor of the application does not exceed the 5000 RPM maximum allowed for the L150 size coupling with an NBR elastomer.

Step 6: Compare the application driver/driven shaft size to the maximum bore available in the coupling selected. The electric motor (driver) of this application has a shaft size of 2.0 inches and the pump (driven) has a shaft size of 1.75 inches. The L150 coupling has a maximum bore less than the driver shaft size. Continuing down the Maximum Bore column, in Chart 3, the L190 size is found to have a maximum bore size 2.125 and is able to accommodate the driver/driven shaft sizes. Therefore the proper coupling size for the application is a L190 coupling with an NBR elastomer.

Step 7: Using the item number Selection charts, locate the appropriate item numbers. The L Type Coupling Elastomer Chart, and the L Type Coupling Inch Hubs Chart, provides easy reference to the item numbers.

Locate the L Type Coupling Inch Hubs Elastomer Chart.

The elastomer is selected by scanning down the type column and locating the NBR (Solid) entry. Read across to the L190 column and locate the item number 12274.

Locate the L Type coupling Inch Hubs selection chart.

The first bore size to be located is for the 2 inch shaft on the electric motor. Scan down the Bore/Keyway column to the 2 inch bore entry. Read across to the L190 column to locate item number of 12303.

The second bore size is located for the 1.75 inch shaft on the pump. Scan down the Bore/Keyway column to the 1 3/4 inch bore entry. Read across to the L190 column to locate the item number of 12299.

FLEXIBLE SHAFT COUPLINGS

Flexible Jaw Coupling - Chart 1

	Service Factors				
	Electric Motor w/ Standard Torque	Electric Motor w/ High Torque	Steam Turbines & Engines w/4 or more cyl.	Reciprocating Engines	
				1-Cyl	2-Cyl
Agitators	1.00	1.25	1.00	1.7	1.3
Band Resaw (lumber)	1.50	1.75	1.50	2.2	1.8
Barge Haul Puller	2.00	2.25	2.00	2.7	2.3
Beaters	1.50	1.75	1.50	2.2	1.8
Blowers					
Centrifugal	1.00	1.25	1.00	1.7	1.3
Lobe, Vane	1.25	1.50	1.25	2.0	1.6
Bottling Machinery	1.25	1.50	1.25	2.0	1.6
Brew Kettles (distilling)	1.25	1.50	1.25	2.0	1.6
Can Filling Machinery	1.00	1.25	1.00	1.7	1.3
Car Dumpers	2.50	2.75	2.50	3.2	2.8
Car Pullers	1.50	1.75	1.50	2.2	1.8
Card Machine	1.75	2.00	1.75	2.5	2.0
Chiller (oil)	1.50	2.00	1.25	2.0	2.0
Compressors					
Centrifugal	1.00	1.25	1.00	1.7	1.3
Screw, Lobe	1.25	1.50	1.25	2.0	1.6
Reciprocating	See Note				
Conveyors, Uniformly Fed					
Assembly, Belt Screw	1.00	1.25	1.00	1.7	1.3
Bucket, Sawdust	1.25	1.50	1.25	2.0	1.6
Live Roll, Shaker, Reciprocating	3.00	3.25	3.00	3.7	3.3
Conveyors, Not Uniformly Fed					
Assembly, Belt, Oven, Screw	1.20	1.45	1.20	1.9	1.5
Reciprocating	2.50	2.75	2.50	3.2	2.8
Shaker	3.00	3.25	3.00	3.7	3.3
Cookers-Brewing, Distilling					
Food	1.25	1.50	1.25	2.0	1.6
Cranes and Hoist	2.00	2.75	2.00	2.7	2.3
Crushers-Cane (Sugar, Stone, or Ore)	3.00	3.25	3.00	3.7	3.3
Dredges					
Cable Reels	2.00	2.25	2.00	2.7	2.3
Conveyors, Pumps					
Maneuvering Winches	1.50	1.75	1.50	2.2	1.8
Cutter Head Drives	2.50	2.75	2.50	3.2	2.8
Dynamometer	1.50	1.75	1.50	2.2	1.8
Evaporators	1.00	1.25	1.00	1.7	1.3
Fans					
Centrifugal	1.00	1.25	1.00	1.7	1.3
Cooling Towers	2.00	2.25	2.00	2.7	2.3
Forced Draft, Propeller	1.50	1.75	1.50	2.2	1.8
Induced Draft w/dampener control	2.00	2.25	2.00	2.7	2.3
Induced Draft w/o damper control	1.25	1.50	1.25	2.0	1.6
Feeders					
Belt, Screw	1.00	1.25	1.00	1.7	1.3
Reciprocating	2.50	2.75	2.50	3.2	2.8
Filter, press-oil	1.50	1.75	1.50	2.2	1.8
Generators					
Not Welding	1.00	1.25	1.00	1.7	1.3
Welding	2.00	2.25	2.00	2.7	2.3
Hoist	1.50	1.75	1.50	2.2	1.8
Hammermills	2.00	2.25	2.00	2.7	2.3
Kilns	1.50	1.75	1.50	2.2	1.8
Laundry Washers-Reversing	2.00	2.25	2.00	2.7	2.3
Lumber Machinery					
Barkers, Edger Feeder, Live Roll	2.00	2.25	2.00	2.7	2.3
Planer, Slab Conveyor	2.00	2.25	2.00	2.7	2.3

	Service Factors				
	Electric Motor w/ Standard Torque	Electric Motor w/ High Torque	Steam Turbines & Engines w/4 or more cyl.	Reciprocating Engines	
				1-Cyl	2-Cyl
Machine Tools					
Punch Press-Gear Driven,					
Plate Planer	2.00	2.25	2.00	2.7	2.3
Tapping Machinery, Bending Roll	2.00	2.25	2.00	2.7	2.3
Main Drive	1.50	1.75	1.50	2.2	1.8
Auxiliary Drives	1.00	1.25	1.00	1.7	1.3
Metal Forming Machines					
Draw Bench-carriage & Main Drive	2.00	2.25	2.00	2.7	2.3
Extruder, Forming Machine,					
Wire Drawing	2.00	2.25	2.00	2.7	2.3
Table Conveyors	2.50	2.75	2.50	3.2	2.8
Wire Winding, Coilers, Slitters	1.50	1.75	1.50	2.2	1.8
Mills, Rotary Type					
Ball, Kilns, Pebble, Rolling, Tube	2.00	2.25	2.00	2.7	2.3
Cement Kilns, Dryers, Coolers	2.00	2.25	2.00	2.7	2.3
Tumbling	1.50	1.75	1.50	2.2	1.8
Mixers					
Concrete, continuous	1.75	2.00	1.75	2.5	2.0
Muller	1.50	1.75	1.50	2.2	1.8
Paper Mills					
Agitator (mixers), Reel, Winder	1.20	1.45	1.20	1.9	1.5
Winder	1.20	1.45	1.20	1.9	1.5
Barker (mechanical), Log Haul					
Chipper	2.00	2.25	2.00	2.7	2.3
Barking Drum (spur gear)	2.50	2.75	2.50	3.2	2.8
Beater, Pulper, Jordans, Dresses	2.00	2.25	2.00	2.7	2.3
Calendars, Dryers, Washers,					
Thickener	1.50	1.75	1.50	2.2	1.8
Converting Machines, Conveyors	1.20	1.45	1.20	1.9	1.5
Printing Presses	1.50	1.75	1.50	1.7	1.3
Pug Mill	1.75	2.00	1.75	2.0	1.6
Pumps					
Centrifugal	1.00	1.25	1.00	1.7	1.3
Gear, Rotary, Vane	1.25	1.50	1.25	2.0	1.6
Reciprocating:					
1-Cyl. Single or Double Acting	2.00	2.25	2.00	2.7	2.3
2-Cyl. Single Acting	2.00	2.25	2.00	2.7	2.3
2-Cyl. Double Acting	1.75	2.00	1.75	2.5	2.0
3 or more Cyl.	1.50	1.75	1.50	2.2	1.8
Rubber Machinery					
Mixers	2.50	2.75	2.50	3.2	2.8
Rubber Calendar	2.00	2.25	2.00	2.7	2.3
Screens					
Air washing, Water	1.00	1.25	1.00	1.7	1.3
Rotary-stone or gravel, Dewatering	1.50	1.75	1.50	2.2	1.8
Vibrating	2.50	2.75	2.50	3.2	2.8
Grizzly	2.00	2.25	2.00	2.7	2.3
Shredders	1.50	1.75	1.50	2.2	1.8
Steering Gears	1.00	1.25	1.00	1.7	1.3
Stokers	1.00	1.25	1.00	1.7	1.3
Suction Roll (paper)	1.50	1.75	1.50	2.2	1.8
Textile Machinery					
Dryers, Dyeing Machinery, Mangle	1.20	1.45	1.20	2.0	1.6
Loom Spinner, Tenter Frames	1.50	1.75	1.50	2.2	1.8
Tumbling Barrels	1.75	2.00	1.75	2.5	2.0
Windlass	2.00	2.25	2.00	2.7	2.3
Woodworking Machine	1.00	1.25	1.00	1.7	1.3

NOTE: Applications involving reciprocating engines and reciprocating driven devices are subject to critical rotational speeds which may damage the coupling and/or connected equipment. Contact engineering with specific requirements.

Dimensions and specifications are subject to change without notice. Not all items are Made-To-Stock, contact us for availability.

02/15

FLEXIBLE SHAFT COUPLINGS

Flexible Jaw Coupling - Chart 2							
		Misalignment					
Characteristics	Temperature Range	Angular Degree	Parallel Inch	Shore Hardness	Dampening Capacity	Chemical Resistance	Color
SOX(NBR) Rubber - Nitrile Butadiene (Buna N) Rubber is a flexible elastomer material that is oil resistant resembles natural rubber in resilience and elasticity. Good resistance to oil. Standard elastomer. (Also applies to SXB Cushions.)	-40° to +212°F -40° to +100°C	1°	.015	80A	High	Good	Black
URETHANE - Urethane has greater torque capability than NBR (1.5 times) and provides less dampening effect. Good resistance to oil and chemicals	-30° to +160°F -34° to +71°C	1°	.015	55D L050-L095 40D L099-L225	Low	Very Good	Blue
HYTREL - Hytrel is a flexible elastomer designed for high torque and high temperature operations. Has an excellent resistance to oil and chemicals. Not recommended for cyclic or start/stop applications	-60° to +250°F -51° to +121°C	1/2°	.015	55D	Low	Excellent	Tan

NOTE: NBR standard shore hardness is 80A±5A-except L035=60A. Other softer or harder designs are available in NBR material, consult engineering

Flexible Jaw Coupling - Chart 3								
	Maximum Bore		SOX (NBR) Torque		Spider Material Urethane Torque		Hytrel Torque	
Size	inch	mm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
L050	.625	16	26.3	3.0	39	4.5	50	5.6
L070	.750	19	43.2	4.9	65	7.3	114	12.9
L075	.875	22	90.0	10.2	135	15.3	227	25.6
L090	1.000	25	144.0	16.3	216	24.4	401	45.3
L095	1.125	28	194.0	21.9	291	32.9	561	63.4
L099	1.188	30	318.0	35.9	477	53.9	792	89.5
L100	1.375	35	417.0	47.1	626	70.7	1134	128.0
L110	1.625	42	792.0	89.5	1188	134.0	2268	256.0
L150	1.875	48	1240.0	140.0	1660	210.0	3708	419.0
L190	2.125	55	1726.0	195.0	2592	293.0	4680	529.0
L225	2.625	65	2340.0	264.0	3510	397.0	6228	704.0
L276	2.875	73	4716.0	533.0	N/A	N/A	N/A	N/A

NOTE: N/A indicates not available.

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003/23