Deltaflex Coupling Design

Lovejoy offers maximum misalignment capacity with the Deltaflex coupling!

The Deltaflex coupling is the real solution to installation, misalignment, and performance problems. Conventional couplings—even when carefully aligned to the manufacturer's specifications—cannot match the low level of vibration, moment of inertia, and additional cushion for future misalignment of a visually aligned Deltaflex coupling.

In addition, the Deltaflex coupling gives longer life to equipment shaft bearings. That means longer operating time and reduced maintenance cost. The Deltaflex can handle greater shaft misalignment without generating heavy reaction loads on the equipment shaft bearings.

A properly applied and installed Deltaflex coupling offers more equipment protection compared to conventional couplings. Other benefits of the Deltaflex coupling include:

- Maximum misalignment capabilities, with negligible reactionary load, for longer equipment bearing life. (see illustrations A, B and C).
- Operates as smoothly when misaligned as when perfectly aligned.
- No lubrication and no maintenance required.
- Equipment can be visually aligned. No special tools are required, which saves on installation time and cost.
- Eliminates premature equipment bearing and seal failure resulting from misalignment forces. This means greater equipment productivity.
- Torsionally stiff coupling with no backlash means it is capable of high speed applications, within catalog ratings.
- Provides long-term performance and economy.
- Available in 5 basic sizes, from 10HP to 900HP.
- Standard all-metal and stainless steel versions are both available from stock.
- Many configurations are available, including shaft-to-shaft, spacer, floating shaft, and special assemblies.

TYPE 1 DELTAFLEX COUPLING

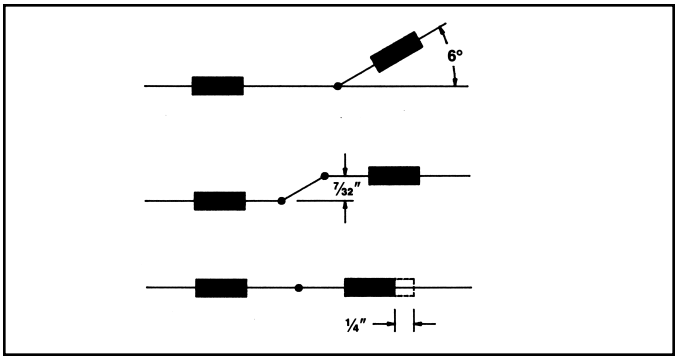


ILLUSTRATION A
MISALIGNMENT CAPABILITY (SIZE 60 ILLUSTRATED)

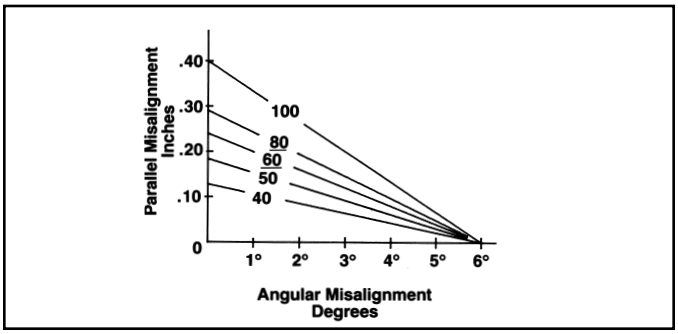


ILLUSTRATION B
STANDARD SERIES

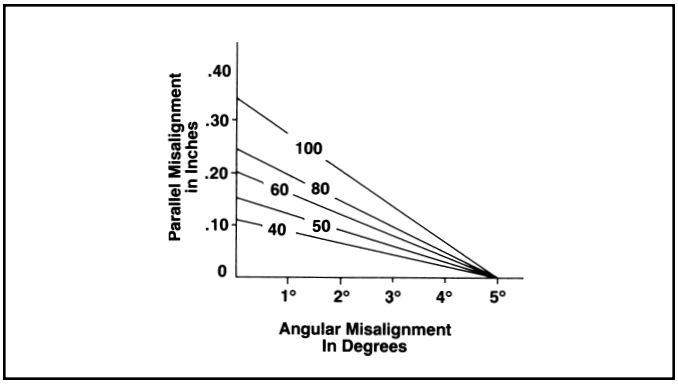


ILLUSTRATION C
HT SERIES

Note: **1.** Illustrations B and C assume no axial displacement.

SP

Deltaflex Coupling Design

As graphs A and B clearly illustrate, radial load placed on the shaft bearings of the connected equipment by conventional couplings can substantially reduce bearing life and induce detrimental vibration. If the misaligned coupling creates a radial load—as can be the case with conventional couplings—then nearly 75% of B-10 bearing design life is sacrificed. By using the Deltaflex coupling, B-10 life remains close to 100% of design life, even at maximum misalignment.

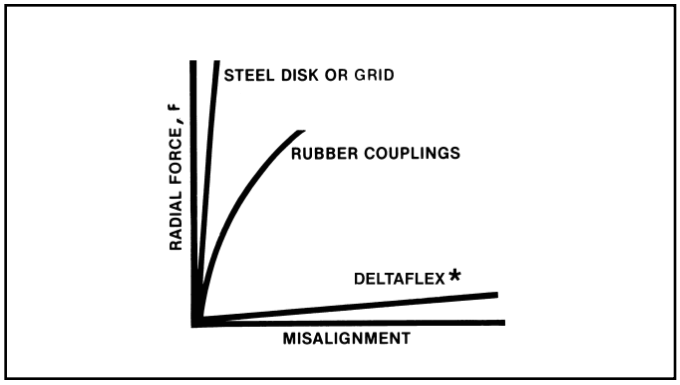
Because the Deltaflex coupling is designed for infinite fatigue life at maximum angular misalignment—at rated torque—inadvertent misalignment caused by temperature expansion, equipment frame flexing, foundation movement, environment, etc. will not shorten the life of the coupling or life of the connected equipment.

*Patented Design Concept****

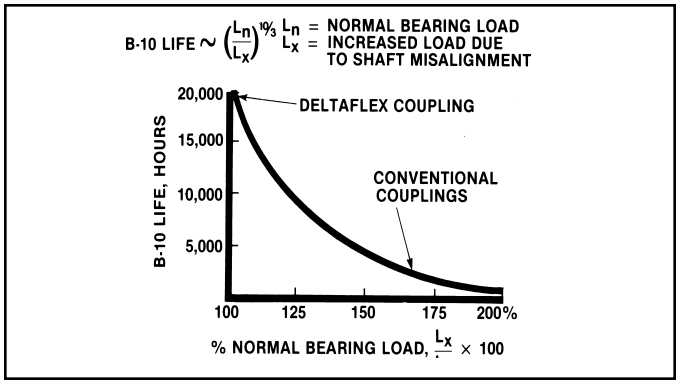
The concept of the Deltaflex coupling and its misalignment capabilities can be illustrated best when compared to conventional coupling design (see Graphs C and D). Most conventional couplings' torque and misalignment capabilities are dependent upon a single flexing member. Soft elastomers are limited by the compressive or tensile strengths of the material. Misalignment is a function and limitation of the material properties and method of connection to the hubs.

While other all-metal flexible couplings share the advantage of high torque transmission and better temperature and corrosion resistance, they are typically limited to less than $^1/_2$ degree angular with less than 0.005 inch parallel misalignment. Approaching or exceeding these limits will exert undesired radial loads and vibration on the connected equipment.

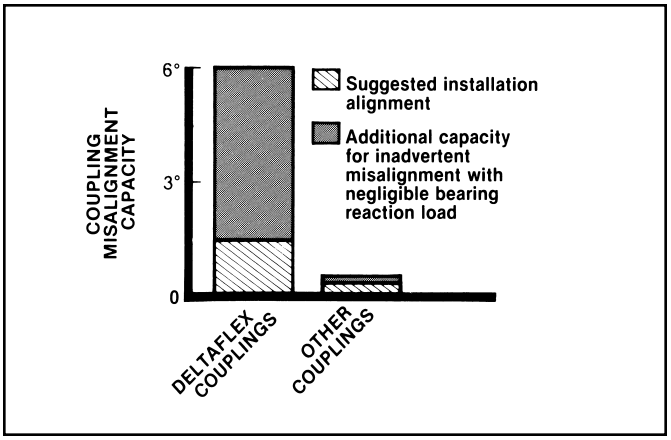
*** U.S. Patent Number: 4033144.



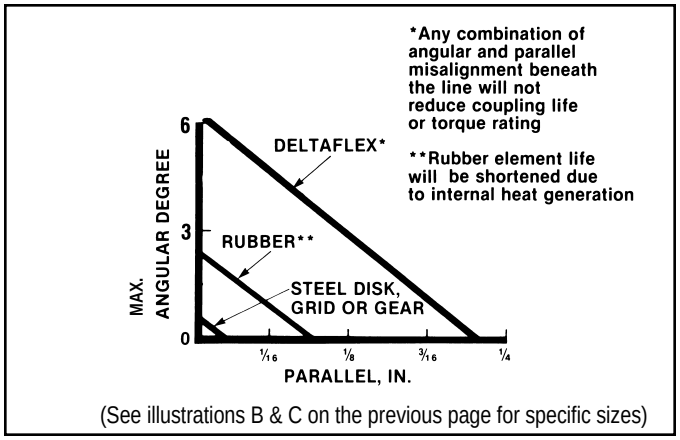
GRAPH A



GRAPH B



GRAPH C



(See illustrations B & C on the previous page for specific sizes)

GRAPH D

SP

Deltaflex Coupling Design

The Deltaflex Difference

In contrast to most conventional coupling designs (see illustration D), the patented Deltaflex coupling is typically arranged in this manner: a hub, a flex-link at each end of a torque sleeve, and a hub (see illustration E). While most conventional coupling designs use a central flexing element, the Deltaflex uses two, making it a double engaging coupling. The patented concept, along with the method of connecting the hubs to the flexible links, permits the tremendous misalignment capabilities without exerting harmful radial loads.

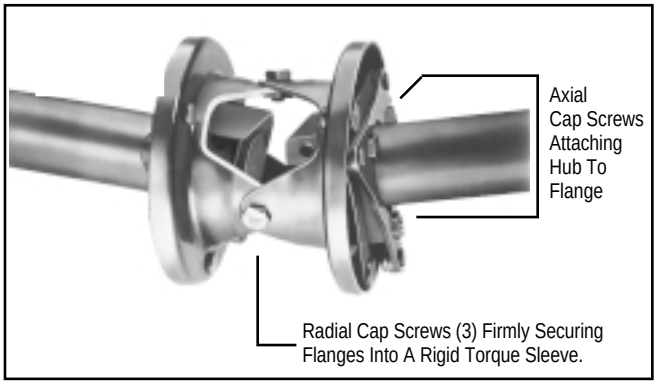
The Deltaflex coupling consists of four major components: two delta hubs, an inner flange, and an outer flange. The flex-links, as well as the delta mounting plates, are integral to each flange and are factory assembled. The hub is field-assembled to the flange with three axial cap screws. The two flanges are fastened together radially as the two coupling halves are joined to make a complete coupling.

In understanding the design of the Deltaflex it is important to note that the inner and outer flanges, once firmly fastened together with three cap screws, become a rigid "torque sleeve." The flex links at each end of the torque sleeve accommodate the misalignment generated by the equipment shaft hubs.

Typical Deltaflex Applications

Use Deltaflex couplings to simplify installation and minimize fabrication costs of structural frames. With the large misalignment capability of Deltaflex, extremely close tolerances will be unnecessary. Typical applications include: compressors, pumps, fans, mixers (vertical and horizontal), turbine drives, wind tunnels, and single bearing generator drives. Some other applications include:

1. Drive-Line—Connecting long shaft lines with Deltaflex takes advantage of angular and parallel misalignment capabilities. Permits ease of installation and reduces radial bearing loads to a minimum.
2. Indexing Table or Work Positioning Drive—Takes advantage of zero backlash, instant response and constant velocity. Coupling may be between drive motor and gear reduction or on output side of reducer.
3. Cooling Tower Drive—The Deltaflex floating shaft coupling permits greater ease of installation with its generous axial misalignment capabilities. Also available in stainless steel.



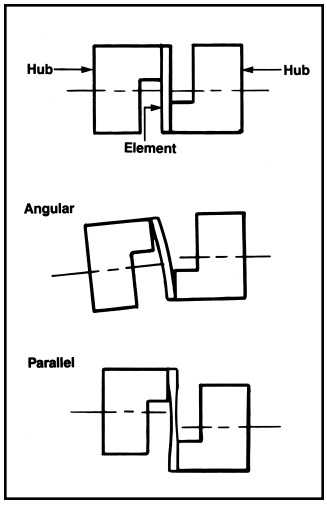


ILLUSTRATION D
CONVENTIONAL COUPLING

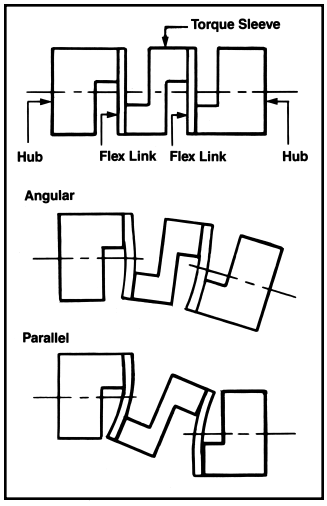
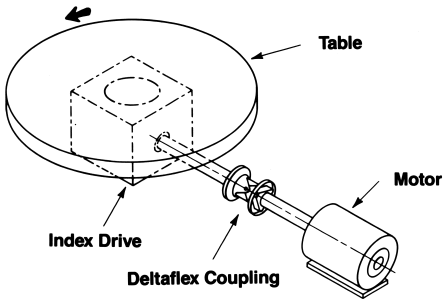
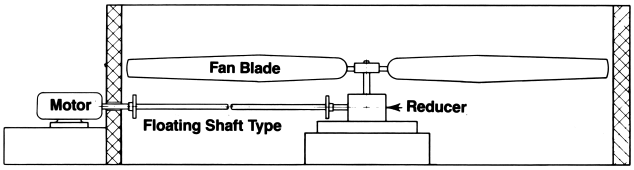


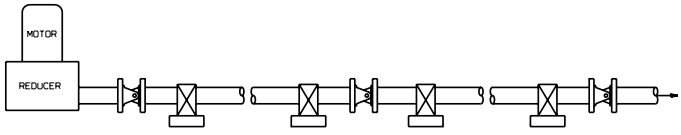
ILLUSTRATION E
DELTAFLEX COUPLING



INDEXING TABLE



COOLING TOWER DRIVE



DRIVE-LINE

SP

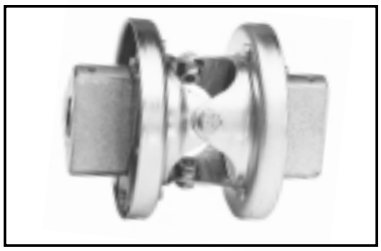
Deltaflex Coupling Types

The unique design, misalignment capability and simple installation methods make Deltaflex easily adaptable to special applications. Contact Lovejoy Engineering for assistance.

Type 1
Shaft to Shaft—Hubs Mounted Internally
This is the standard arrangement for most shaft to shaft applications. There are five basic coupling sizes in all types, each with a Standard and a High Torque (HT) Series. Both the Standard and the HT Series are dimensionally interchangeable.


TYPE 1 ARRANGEMENT

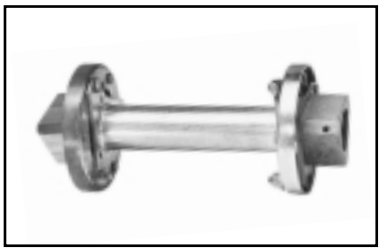
Type 2
Shaft to Shaft—Hubs Mounted Externally
This arrangement is similar to Type 1 in that all components are the same, except the delta hubs are mounted outside the flanges.


TYPE 2 ARRANGEMENT

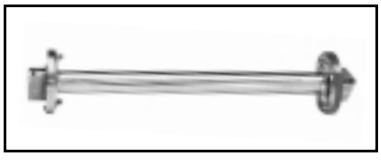
Type 2A
Shaft to Shaft—One Hub Mounted Externally, One Hub Mounted Internally
One hub mounted on the inside of the flange and one hub mounted on the outside.


TYPE 2A ARRANGEMENT

Type 3
Spacer Type
This arrangement is specifically designed for the pump industry. It is available in a variety of industry standard shaft separations. The shaft center spacer drops out to facilitate easier maintenance of pump parts without disturbing the alignment of pump and motor.


TYPE 3 ARRANGEMENT

Type 4
Floating Shaft Type
Type 4 coupling components are the same as Type 3, except that the floating shaft design uses a longer spacer tube to span distances up to 12 feet. Deltaflex floating shaft couplings are light weight, dynamically balanced (as required) and corrosion resistant, which makes them ideal for applications in cooling towers and petrochemical service.


TYPE 4 ARRANGEMENT

Deltaflex Coupling Selection

Step 1: Determine the proper service factor (SF) for the application. This may involve 2 steps:

A. Driven equipment service factor (SFa): Select the proper service factor from Chart 1 on page SP-8. If the application is not listed in Chart 1, use Chart 2.

B. When using Chart 1, add the following service factors (SFb) to the values in Chart 1 as required. Add 0.5 for above average torque load variations or start/stop conditions of not more than once per hour. Add 1.0 for reversing loads, start/stop conditions more than once per hour, severe torque load variations or high inertia starting conditions.

The additional service factor is added to the Chart 1 service factors to obtain the total service factor.

$$SF = SFa + SFb$$

Step 2: Calculate the equivalent HP/100 RPM.

$$HP/100\ RPM = \frac{HP^* \times 100 \times SF}{RPM^*}$$

***** HP and RPM of prime mover.

Step 3: Select the Deltaflex size.

***Method 1*:** From the coupling selection data (Chart 3 on page SP-9) select the smallest coupling which is rated equal to or higher than the calculated HP/100 RPM.

***Method 2*:** For couplings driven by standard electric motors, you can multiply the HP of the motor by the service factor (SF) and then refer to the electric motor driven chart for selection.

Step 4: Determine the type of Deltaflex needed, e.g., Type 1, Type 2, etc.

Step 5: Check limiting conditions.

A. Check to be sure that the coupling's Peak Overload Torque Rating is sufficient to accommodate the maximum torque to be transmitted, such as the starting and stall torques of the motor, braking torques and cyclic peak torques, if any. If starting or braking cycles are frequent, the brake torque should be checked against the maximum continuous torque rating of the coupling.

$$T = Tp \times SF$$

T = Maximum torque transmitted
Tp = Brake torque, starting torque or peak torque
SF = Service Factor (determined previously)

B. Check the maximum hub bore. If bore size is too large, the next larger size Deltaflex can be specified.

C. Check other dimensions such as the limits on shaft separation, hub spacings, space required for the coupling, etc.

D. Check maximum speed. If operating speed exceeds 60% of listed maximum speed, the coupling should be dynamically balanced.

Step 6. Ordering Information

A. Quantity, size, style of couplings.

B. Bore and Keyway sizes.

C. Dynamic balancing specification, if required.

D. Additional non-standard data.

1) Custom mounting dimensions.

2) Between shaft ends (BE) dimension for spacer and floating shaft types.

3) Maximum operating speed for floating shaft couplings.

Selection Example:

A centrifugal fan requires 20 HP, 1,150 RPM motor, direct coupled from the motor to the fan. The motor frame is 286T (1.875″ shaft) and the fan shaft is 1.625″.

Step 1: Referring to Chart 1, the driven equipment service factor for a centrifugal fan is 1.5 = SFa. The load is uniform and the driver is smooth, therefore SFb is 0.

The total service factor SF is 1.5 + 0 = 1.5

Step 2:

$$HP/100\ RPM = \frac{20 \times 100 \times 1.5}{1{,}150} = 2.6\ HP/100\ RPM$$

Referring to Chart 3, under the column of HP/100RPM, the smallest coupling you can select is #50 which is rated for 3.0 HP/100 RPM.

NOTE: You can also find the coupling size by multiplying SF x 20:

SF x 20 = 1.5 x 20 = 30 HP

In Chart 3 for motor drives the coupling to select is, again, #50 under 1,150 RPM motors. The size is rated at 34 HP @ 1,150 RPM.

Step 3: In this case, the maximum bore for size #50 coupling is 1.875″; therefore, the selection size stands.

Step 4: Since this is a shaft-to-shaft application, you will be using the standard Deltaflex coupling Type 1. Determine if any other selection factors apply as described in steps 4 and 5 of the selection guide.

Floating Shaft Type Coupling Selection Example

Using the preceding data, assume that the shaft spacing from end of shaft to end of shaft is 36″. A floating shaft coupling is then required. The 36″ is specified as BE (Between Ends) = 36″.

Refer to the Type 3 and 4 Chart to find the overall length of the coupling; add dimension 2 x LTB to BE.

For a size #50 type 3, the overall length will be 36″ + 2 x 1.69 = 39.38. Note that the length of the spacer tube assembly will be 36″ - 2R = 36 - 1.62 = 34.38.

This is the amount of space, or dropout section, between the fixed portions of the coupling.

Deltaflex Coupling Service Factors

Chart 1 —Typical Service Factors Electric Motor and Turbine Driven Equipment

Agitators
- Liquids 2.0
- Variable Density 3.0

Blowers
- Centrifugal 1.5
- Lobe 2.0
- Vane 2.0

Car Dumpers 3.0
Car Pullers 2.0
Clay Working Machinery 2.5

Compressors
- Centrifugal 1.5
- Lobe, Vane, Screw 2.0
- Reciprocating—
  - Multi-cylinder ..... Not Recommended

Conveyors—Uniformly Loaded Or Fed 2.0
Conveyors—Heavy Duty
- **Not Uniformly Fed** 2.5

Conveyors—Vibratory 3.5
Cranes and Hoists ..... Not Recommended
Crushers 4.0

Extruders
- Plastic 2.0
- Metal 2.5

Fans
- Centrifugal 1.5
- Axial 1.5
- Mine Ventilation 3.5
- Cooling Towers 3.0
- Light Duty Blowers & Fans 1.5

Feeders
- Light Duty 1.5
- Heavy Duty 2.5

Food Industry
- Cereal Cooker 1.5
- Dough Mixer 2.5
- Meat Grinder 2.5
- Can Filling Machine 1.5
- Bottling 1.5

Generators
- Non-Welding 2.5
- Welding 4.0

Hammer Mills 4.0

Lumber Industry
- Barkers—Drum Type 4.0
- Edgar Feed 3.0
- Live Rolls 3.0
- Log Haul—Incline 3.0
- Log Haul—Well Type 3.0
- Planer Feed Chains 3.0
- Planer Floor Chains 3.0
- Planer Tilting Hoist 3.0
- Slab Conveyor 2.5
- Sorting Table 2.5
- Trimmer Feed 3.0

Machine Tools
- Bending Roll 3.0
- Punch Press—Gear Driven 3.0
- Tapping Machines 4.0
- Auxiliary Drives 2.5

Metal Mills
- Draw Bench—Carriage 3.5
- Draw Bench—Main Drive 3.5
- Forming Machines 3.5
- Slitters 3.0
- Table Conveyors
  - Non-Reversing 3.5
  - Reversing 4.0
- Wire Drawing & Flattening Machine 3.0
- Wire Winding Machine 3.0

Mills, Rotary Type
- Ball 3.5
- Cement Kilns 3.0
- Dryers & Coolers 3.0
- Kilns 3.0
- Pebble 3.0
- Rod 3.0
- Tumbling Barrels 3.0

Mixers
- Concrete Mixers 3.0
- Drum Type 3.0

Oil Industry
- Chillers 2.5
- Oil Well Pumping 3.0
- Rotary Kilns 3.0

Paper Mills
- Barker Auxiliaries, Hydraulic 4.0
- Barker Mechanical 4.0
- Barker Drum (Spur Gear Only) 4.0
- Beater & Pulper 3.0
- Bleacher 2.5
- Calenders 3.0
- Cylinders 3.0
- Dryers 3.0
- Jordans 3.0
- Log Haul 3.0
- Presses 3.0
- Suction Roll 3.0
- Washers and Thickeners 2.5
- Winders 3.0

Printing Presses 2.5

Pumps
- Centrifugal
  - General Duty (Liquid) 1.5
  - Boiler Feed 1.5
  - Slurry (Sewage, etc.) 2.5
  - Dredge 3.0
- Reciprocating .....
  - Double Acting ..... Not Recommended
  - Single Acting ..... Not Recommended
- Rotary—Gear, Lobe, Vane 2.0

Rubber Industry
- Mixer—Banbury 4.0
- Rubber Calender 3.0
- Rubber Mill (2 or more) 3.5
- Sheeter 3.0
- Tire Building Machines 3.5
- Tubers and Strainers 3.0

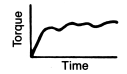
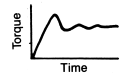
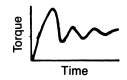
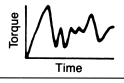
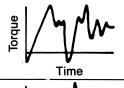
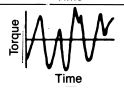
Screens
- Rotary—Stone or Gravel 2.5
- Traveling Water Intake 2.5
- Vibratory 3.5

Sewage Disposal Equipment 2.5

Textile Industry
- Batchers 2.5
- Calenders 3.0
- Card Machines 2.5
- Dry Cans 3.0
- Dryers 2.5
- Dyeing Machinery 2.5
- Looms 2.5
- Mangles 2.5
- Soapers 2.5
- Spinners 2.5

Windlass 3.0

Chart 2—Service Factors for Driven Equipment Load Classifications

Load Characteristics	Service Factors
 Relatively low inertia, smooth continuous torque load.	1.5
 Torque load varies during operation of the equipment.	2.0
 Above average torque load variations during operation of the equipment.	2.5
 Shock loads and above average torque load variations, or start/stop applications of up to once per hour.	3.0
 Heavy shock loads reversing or start/stop applications of more than once per hour or high inertia starting loads.	4.0
 Heavy reversing torque loads. NOT RECOMMENDED. BECAUSE OF LOAD CARRYING METHOD IN FLEXIBLE LINKS	•

Note: * indicates that torque load reversal can exist without reversing rotation and can be caused by overrunning the load with inertia or shifting of the load. Consult Lovejoy Engineering.

Deltaflex Coupling Ratings

Chart 3—HP and Torque Ratings

Size	Maximum Bore Delta Hub inch	Maximum Bore Delta Hub mm	Maximum Bore Round Hub inch	Maximum Bore Round Hub mm	Maximum Continuous Torque in-lbs	Maximum Continuous Torque Nm	Peak Overload Torque in-lbs	Peak Overload Torque Nm	HP/100 RPM	HP Rating[1] @Standard Motor RPM 875	1,150	1,750	3,500
40	1.38	35	1.63	42	750	84	1,125	127	1.2	10.5	13.8	21.0	42
40HT	1.38	35	1.63	42	1,260	142	1,890	213	2.0	17.5	23.0	35.0	70
50	1.88	50	2.25	58	1,900	214	2,850	322	3.0	26.2	34.0	52.4	105
50HT	1.88	50	2.25	58	2,835	320	4,235	478	4.5	39.0	52.0	78.0	156
60	2.50	66	3.00	81	4,100	463	6,150	695	6.5	57.0	75.0	114.0	228
60HT	2.50	66	3.00	81	6,000	678	9,000	1,017	9.5	83.0	109.0	166.0	332
80	3.38	93	4.00	110	9,500	1,073	14,250	1,610	15.0	131.0	173.0	262.0	524
80HT	3.38	93	4.00	110	15,000	1,695	22,500	2,542	23.8	208.0	274.0	416.0	832
100	4.25	114	5.00	136	22,900	2,587	34,500	3,898	36.3	317.0	418.0	634.0	1,268
100HT	4.25	114	5.00	136	33,000	3,728	49,500	5,593	52.4	458.0	603.0	916.0	1,832

Note: **1.** The HP ratings listed are for drives with a Service Factor of 1.0 (refer to Chart 1 for Service Factors). Further, the ratings are based on prime movers such as electric motors or turbines.

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

$$T(Torque) = \frac{HP \times 63{,}025}{RPM}$$

$$HP = \frac{T \times RPM}{63{,}025}$$

Internal Combustion Engines

Deltaflex couplings are not recommended for direct connection to internal combustion engine drives.

SP

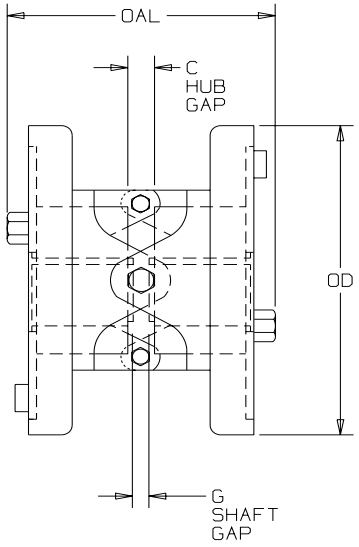
Deltaflex Coupling Data

Type 1

Shaft to Shaft—Hubs Mounted Internally

This is the standard arrangement for most shaft to shaft applications. There are five basic coupling sizes in all types, each with a Standard and a High Torque (HT) Series. Both the Standard and the HT Series are dimensionally interchangeable.

Type 1 features the standard inner and outer flanges and delta hubs, which are triangular in shape to accommodate the delta flex-link pattern. The standard flanges are stamped steel, while the flex links in all Deltaflex couplings are precipitation-hardened (PH 17-7) stainless steel. Delta hubs are ductile iron, zinc clear dichromate-plated and available from stock in a variety of bore sizes. Every Deltaflex hub is standard with two set screws at 120°. Hub to flange (axial) and flange to flange (radial) hardware is SAE Grade 5. Stainless steel flanges with standard ductile iron delta hubs are available from stock as an option. Delta style hubs are not available in stainless steel.



Type 1 Shaft to Shaft—Hubs Mounted Internally Dimensional Data

Size	Bores Max. inch	mm	Min. RSB[1] inch	mm	OD inch	OAL inch	C inch	G inch	HP/100 RPM	Max. Cont. Torque in-lbs	Nm	Peak Overload Torque[2] in-lbs	Nm	Angular[3]	Parallel[3]	Axial Freedom[4]	WR² lbs-in²	Max. RPM
40	1.375	35	.44	12	4.38	3.56	0.31	0.12	1.2	750	84	1,125	127	6°	0.12	0.09	5.4	8,000
40HT	1.375	35	.44	12	4.38	3.56	0.34	0.12	2.0	1,260	142	1,890	213	5°	0.12	0.09	5.4	8,000
50	1.875	49	.44	12	6.18	4.88	0.68	0.18	3.0	1,900	214	2,850	322	6°	0.18	0.12	30.1	6,000
50HT	1.875	49	.44	12	6.18	4.88	0.72	0.18	4.5	2,835	320	4,235	478	5°	0.15	0.12	30.1	6,000
60	2.500	65	.75	20	7.25	6.00	1.18	0.18	6.5	4,100	463	6,150	695	6°	0.24	0.15	64.3	5,000
60HT	2.500	65	.75	20	7.25	6.00	1.25	0.18	9.5	6,000	678	9,000	1,017	5°	0.21	0.15	64.3	5,000
80	3.375	90	1.38	35	9.62	7.25	0.91	0.25	15.0	9,500	1,073	14,250	1,610	6°	0.29	0.18	297.0	4,000
80HT	3.375	90	1.38	35	9.62	7.25	1.00	0.25	23.8	15,000	1,692	22,500	2,542	5°	0.25	0.18	297.0	4,000
100	4.250	112	1.75	45	12.75	9.88	0.72	0.31	36.3	22,900	2,587	34,500	3,898	6°	0.40	0.25	884.0	3,000
100HT	4.250	112	1.75	45	12.75	9.88	0.78	0.31	52.4	33,000	3,728	49,500	5,593	5°	0.35	0.25	884.0	3,000

SP

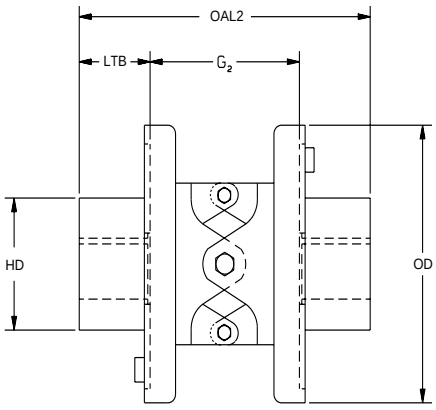
Notes:

1. RSB hubs are furnished with two set screws at 120°, no keyway.
2. Peak Overload Torque = Torque that can be applied for short periods, such as shock loads, start up, etc.
3. See illustrations B & C on page SP-3 for combined maximum misalignment.
4. Axial Freedom is provided only for the purpose of system expansion or due to temperature changes or shaft flotation (such as with sleeve bearing motors).
5. Balancing is not required below 60% of Maximum RPM.

Type 2

Shaft to Shaft—Hubs Mounted Externally

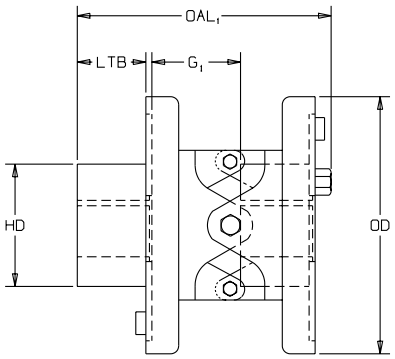
This arrangement is similar to Type 1 in that all components are the same, except the delta hubs are mounted outside the flanges. An optional version of the Type 2 uses round hubs mounted externally on both ends or on one end to accommodate larger bore requirements. Type 2 is available as a stock option with stainless steel flanges and stainless steel round hubs. Delta style hubs are not available in stainless steel. See next page for dimensions.



Deltaflex Coupling Data

Type 2A
Shaft to Shaft—One Hub Mounted Externally, One Hub Mounted Internally

One hub is mounted on the inside of the flange and one hub is mounted on the outside. Round hubs cannot be mounted on the inside of the coupling. Type 2A is available as a stock option with stainless steel flanges. The internal hub would be ductile iron, while the external hub would be a stainless steel round hub. Delta hubs are not available in stainless steel.



Type 2 and 2A Shaft to Shaft—Hub(s) Mounted Externally Dimensional Data

Size	Max. Bore Delta Hub inch	mm	Round Hub inch	mm	Min. Bore[1] Delta Hub inch	mm	OD inch	OAL1[2] inch	OAL2[2] inch	G1[3] inch	G2[3] inch	HD inch	LTB inch	HP/100 RPM	Max. Cont. Torque in-lbs	Nm	Peak Overload Torque in-lbs	Nm	Max. RPM
40	1.375	35	1.625	42	.44	12	4.38	4.56	5.56	1.62	2.88	2.56	1.34	1.2	750	84	1,125	127	8,000
40HT	1.375	35	1.625	42	.44	12	4.38	4.56	5.59	1.62	2.91	2.56	1.34	2.0	1,260	142	1,890	213	8,000
50	1.875	49	2.250	58	.44	12	6.18	6.12	7.38	2.38	4.03	3.56	1.68	3.0	1,900	214	2,850	322	6,000
50HT	1.875	49	2.250	58	.44	12	6.18	6.12	7.44	2.41	4.06	3.56	1.68	4.5	2,835	320	4,235	478	6,000
60	2.500	65	3.000	79	.75	20	7.25	7.50	9.06	3.09	5.00	4.50	2.03	6.5	4,100	463	6,250	695	5,000
60HT	2.500	65	3.000	79	.75	20	7.25	7.50	9.18	3.16	5.03	4.50	2.03	9.5	6,000	678	9,000	1,017	5,000
80	3.375	90	4.000	106	1.38	35	9.62	9.31	11.25	3.44	6.00	5.88	2.66	15.0	9,500	1,073	14,250	1,610	4,000
80HT	3.375	90	4.000	106	1.38	35	9.62	9.31	11.41	3.56	6.09	5.88	2.66	23.8	15,000	1,695	22,500	2,542	4,000
100	4.250	112	5.000	132	1.75	45	12.75	13.00	16.18	4.59	8.44	7.25	3.88	36.3	22,900	2,587	34,500	3,898	3,000
100HT	4.250	112	5.000	132	1.75	45	12.75	13.00	16.31	4.68	8.56	7.25	3.88	52.4	33,000	3,728	49,500	5,593	3,000

Notes:
1. Min. bore hubs are furnished with two set screws at 120°, no keyway.
2. OAL1 is overall length with one hub mounted externally; OAL2 is with both hubs mounted externally.
3. G1 is hub gap with one hub mounted externally; G2 is with both hubs mounted externally.
4. For misalignment capabilities, see illustrations B and C on page SP-3, or Type 1 data on previous page. See page SP-9 for Performance Data.

Type 3
Spacer Type

This arrangement is specifically designed for the pump industry and is available in a variety of industry standard shaft separations. The shaft center spacer drops out to facilitate easier maintenance of pump parts without disturbing the alignment of pump and motor. Spacer type couplings utilize either standard delta hubs or optional round hubs. The center member of the Deltaflex is captured by the construction of the spacer flanges for greater safety. Standard spacer drop out lengths are available to accommodate shaft separations of 3.50, 4.38, 5, 7, 10, 12 and 15 inches. Special spacer lengths and stainless steel spacer couplings are available as an option.

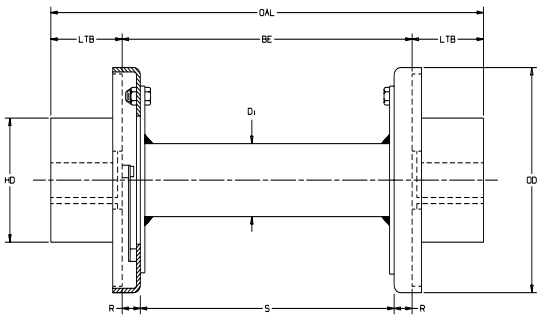
Type 4
Floating Shaft Type

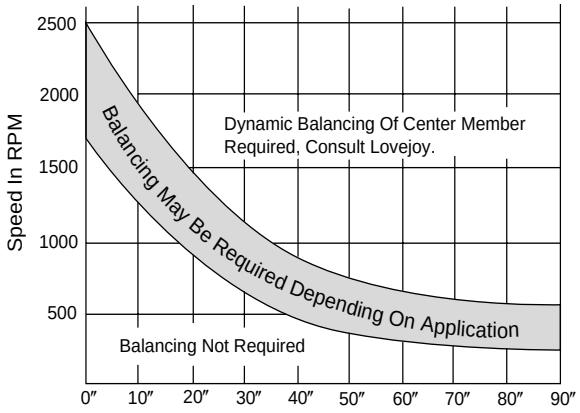
The Type 4 coupling components are identical to Type 3, except the floating shaft design uses a longer spacer tube to span distances up to 12 feet. Deltaflex floating shaft couplings are lightweight, dynamically balanced (as required) and corrosion resistant. The center member of the Deltaflex is captured by the construction of the spacer flanges for greater safety. Floating shaft couplings are also available in stainless steel.
See next page for dimensions.

Floating Shaft Coupling Maximum Parallel Misalignment

Size	Dimensions in Inches at Max. Span @ RPM 1,750
40	2.50
40HT	2.00
50	3.00
50HT	2.50
60	3.25
60HT	3.00
80	4.00
80HT	3.50
100	4.25
100HT	4.00

Deltaflex Coupling Data





Floating Shaft Couplings Balancing Requirements

Type 3 and 4—Spacer and Floating Shaft Dimensional Data

BE < 18" = Spacer coupling (Type 3); BE ≥ 18" = Floating Shaft coupling (Type 4)

Size	Max. Bore Delta Hub inch	mm	Round Hub inch	mm	Min. Bore[1] Delta Hub inch	mm	OD inch	HD inch	LTB[4] inch	D inch	R inch	S[3] inch	HP/100 RPM	Max. Cont Torque in-lbs	Nm	Peak Overload Torque in-lbs	Nm
40	1.375	35	1.625	42	.44	12	4.38	2.56	1.34	1.50	0.50	See	1.2	750	84	1,125	127
40HT	1.375	35	1.625	42	.44	12	4.38	2.56	1.34	1.50	0.50	Chart	2.0	1,260	142	1,890	213
50	1.875	49	2.250	58	.44	12	6.18	3.56	1.68	2.00	0.81	for	3.0	1,900	214	2,850	322
50HT	1.875	49	2.250	58	.44	12	6.18	3.56	1.68	2.00	0.81	Type 3	4.5	2,835	320	4,235	478
60	2.500	65	3.000	79	.75	20	7.25	4.50	2.03	2.62	0.94	Below	6.5	4,100	463	6,250	695
60HT	2.500	65	3.000	79	.75	20	7.25	4.50	2.03	2.62	0.94		9.5	6,000	678	9,000	1,017
80	3.375	90	4.000	106	1.38	35	9.62	5.88	2.66	3.50	1.00		15.0	9,500	1,073	14,250	1,610
80HT	3.375	90	4.000	106	1.38	35	9.62	5.88	2.66	3.50	1.00		23.8	15,000	1,695	22,500	2,542
100	4.250	112	5.000	132	1.75	45	12.75	7.25	3.88	4.38	1.25		36.3	22,900	2,587	34,500	3,898
100HT	4.250	112	5.000	132	1.75	45	12.75	7.25	3.88	4.38	1.25		52.4	33,000	3,728	49,500	5,593

Notes:
1. Minimum bore hubs are furnished with 2 set screws at 120°, no keyway.
2. BE is the distance between the ends of equipment shafts—please supply this dimension when placing orders, BE = OAL-2 (LTB), BE = S + 2 (R)
3. S is the Spacer drop out or floating shaft length, S = BE-2(R).
4. LTB is the length through the hub bore. OAL is the overall length, OAL = BE + 2(LTB)

SP

Type 3
Standard Spacer Drop Out Assemblies Dimensional Data

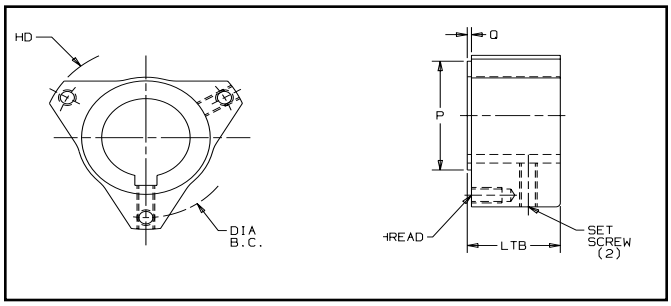
Size	BE inch	BE mm	S inch	S mm	OAL inch	OAL mm
40/40HT	3.50	88.90	2.50	63.50	6.16	156.37
	4.38	111.13	3.38	85.73	7.03	178.59
	5.00	127.00	4.00	101.60	7.66	194.47
50/50HT	4.38	111.13	2.75	69.85	7.72	196.06
	5.00	127.00	3.38	85.73	8.34	211.93
	7.00	177.80	5.38	136.52	10.34	262.73
60/60HT	5.00	127.00	3.12	81.66	9.06	230.19
	7.00	177.80	5.12	130.18	11.06	280.99
	10.00	254.00	8.12	206.25	14.06	357.19
80/80HT	10.00	254.00	8.16	207.17	15.31	388.94
	12.00	304.80	10.16	257.97	17.31	439.74
100/100HT	12.00	304.80	9.50	241.30	19.75	501.65
	15.00	381.00	12.50	317.50	22.75	577.85

Type 4
Floating Shaft Coupling Maximum Span – Inch

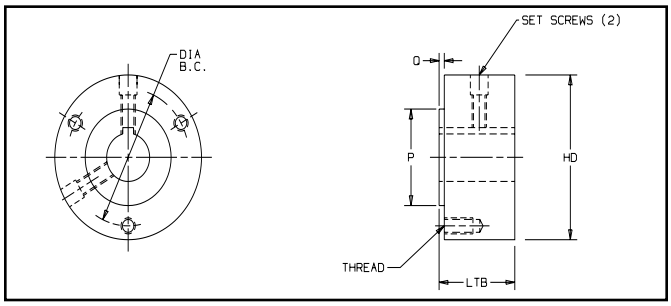
Size	Max. Span - BE 1,750 RPM	1,150 RPM	875 RPM
40/40HT	60	76	88
50/50HT	70	88	102
60/60HT	80	100	114
80/80HT	94	115	140
100/100HT	104	120	150

Note: Consult Lovejoy Engineering for other RPM/Span applications.

Deltaflex Coupling Data



DELTA HUB



ROUND HUB

Delta Hub and Round Hub Dimensional Data

Size	Max. Bore Delta Hub inch	Max. Bore Delta Hub mm	Max. Bore Round Hub inch	Max. Bore Round Hub mm	Min. Bore Delta Hub inch	Min. Bore Delta Hub mm	HD inch	LTB inch	BC inch	Q inch	P inch	Axial Cap Screw Tap TH	Set Screw
40/40HT	1.375	35	1.625	42	0.4375	12	2.56	1.34	2.12	0.09	1.498/1.500	1/4-20 x .62	1/4-20
50/50HT	1.875	49	2.250	58	0.4375	12	3.56	1.68	3.08	0.09	1.998/2.000	5/16-18 x .75	1/4-20*
60/60HT	2.500	65	3.00	79	0.750	20	4.50	2.03	3.88	0.12	2.623/2.625	3/8-16 x .88	3/8-16
80/80HT	3.375	90	4.00	106	1.375	35	5.88	2.66	5.12	0.12	3.498/3.500	1/2-13 x 1.00	1/2-13
100/100HT	4.250	112	5.00	132	1.750	45	7.25	3.88	6.32	0.12	4.373/4.375	5/8-11 x 1.50	1/2-13

Notes: **1.** * indicates in some bore sizes the tap is 5/16-18.

2. Maximum Bores are provided with standard keyway. RSB hubs do not have a keyway. Both Delta hubs and Round hubs are provided with two set screws at 120°.

Deltaflex Standard Bore Availability Chart

Size	0.4375	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000
40/40HT	D	S	S	S	S	S	S	S	R	R	N/A	N/A	N/A
50/50HT	D	S	S	S	S	S	S	S	S	S	S	S	R
60/60HT	N/A	N/A	D	S	S	S	S	S	S	S	S	S	S
80/80HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D	N/A	S	S	S	S
100/100HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D	S	S

Size	2.125	2.250	2.375	2.500	2.625	2.750	2.875	3.000	3.125	3.250	3.375	3.500
40/40HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50/50HT	R	R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60/60HT	S	S	S	S	R	R	R	R	N/A	N/A	N/A	N/A
80/80HT	S	S	S	S	S	S	S	S	S	S	S	S
100/100HT	S	S	S	S	S	S	S	S	S	S	S	S

Size	3.625	3.750	3.875	4.000	4.125	4.250	4.375	4.500	4.625	4.750	4.875	5.000
40/40HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50/50HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60/60HT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
80/80HT	R	R	R	R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100/100HT	S	S	S	S	S	S	R	R	R	R	R	R

Notes: **1.** S indicates Standard hub, finished bores available from stock, two set screws @ 120° and standard keyway.

2. R indicates Round hub, finished bores available from stock, two set screws @ 120° and standard keyway.

3. D indicates Delta hubs, rough stock bores available from stock, two set screws @ 120°, no keyway.

4. N/A indicates not available