ALTRA INDUSTRIAL MOTION

# Huco Dynatork Flexible Couplings





Huco® Dynatork

*An Altra Industrial Motion Company*

# Huco Dynatork offers a wide variety of couplings for precision industrial and commercial applications worldwide.



Selecting the right shaft coupling can be the difference between a drive system that provides the required dynamic response and one that is catastrophic. The application constraints lead engineers towards products that have different levels of torsional stiffness, vibration dampening, backlash, and low bearing loads. Huco can respond quickly with a wide variety of couplings such as general purpose, beam style, and precision couplings suitable for highly reliable applications.

## Precision Couplings

Flex B Bellows, Flex K Large Bellows and Flex M Disc type couplings are ideal for use in high-end servo drives, pulse generators, scanners, X-Y positioning slides, high speed dynamometers, measuring instruments, robots, and machine tools.





## Beam Couplings

Step Beam, Single Beam, Three Beam, and Six Beam couplings are available for use in stepper and servo drives, encoders, tachometers, small pumps, motors and drives and light-duty power transmission applications.








## General Purpose Couplings

Oldham couplings are designed for use in stepper drives and most applications including positioning slides, pumps, actuators, etc. Uni-Lat models are ideal for encoder, resolver, tachometers, potentiometer drives, as well as small positioning slides, dosing pumps, and general light drives. Flex P units can be utilized in light power drives, pumps and small generators.










## Friction Clutches

Vari-Tork™ friction clutches allow slippage when the torque being transmitted reaches a pre-determined threshold. Used in all types of small drives to help protect personnel and equipment.








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## Product Overview

| Stainless Steel Bellows type | Nickel Bellows type | Membrane type | Multi-Beam type | Single-Beam type |
|---|---|---|---|---|
| **Flex B**<br><br><br>**Flex K**<br> | **Flex Ni**<br><br> | **Flex M**<br>Single-stage<br><br>Short two-stage<br><br>Long two-stage<br> | **Multi-Beam**<br>6-Beam<br><br><br>Material Options:<br>Aluminium<br>Stainless Steel<br>Acetal | **Single-Beam**<br><br>Material Options:<br>Aluminium<br>Stainless Steel |
| **General description** | | | | |
| Precision couplings with excellent kinematic properties. The 3 types offer differing combinations of stiffness, radial compensation and axial motion. | Precision couplings with excellent kinematic properties. The 3 types offer differing combinations of stiffness, radial compensation and axial motion. | Precision couplings with excellent kinematic properties. Dynamically balanced construction. Single-stage versions make up into 'whirl' free Cardans. The 2-stage versions offer short envelopes and low bearing loads respectively. | General purpose single piece couplings Single stage (3-beam) Two stage (6-beam) Material options for moisture and corrosion resistance. | More flexible than Multi-Beam but less torsional rigidity. |
| **Where to use** | | | | |
| High-end servo drives, pulse generators, scanners, positioning slides, metering valves, etc. | High-end servo drives, pulse generators, scanners, positioning slides, metering valves, etc. | High-end servo drives, pulse generators, scanners, positioning slides, high speed dynamometers, unsupported drive shafts, etc. | Stepper and servo drives, encoders, general purpose light duty power transmission applications. | Stepper drives, encoders, general purpose light duty power transmission applications. |
| **Speeds** | | | | |
| Flex B up to 5000 rpm in standard form. Flex K up to 15000 rpm. | Up to 5000 rpm in standard form. | Up to 5000 rpm in standard form. Up to 30000 rpm in balanced form. | Up to 5000 rpm in standard form. Up to 30000 rpm in balanced form. | Up to 5000 rpm in standard form. Up to 30000 rpm in balanced form. |
| **Peak torque largest size lbs.-in (Nm)** | | | | |
| 4425 (500) | 110.6 (12.5) | 885 (100) | 1239 (140) | 266 (30) |
| **Standard bores in. (mm)** | | | | |
| 1/8"-2 1/2" (3 to 65) | 1/8"-3/4" (3 to 20) | 1/8"-1 1/4" (3 to 38) | 1/8"-1 1/4" (1 to 38) | 1/8"-3/4" (3 to 26) |
| **Temperature range °F (°C)** | | | | |
| –40° to +250°F (–40° to +120°C) | –40° to +250°F (–40° to +120°C) | –40° to +250°F (–40° to +120°C) | –40° to +290°F (–40° to +140°) | –40° to +290°F (–40° to +140°) |
| **Electrically isolating** | | | | |
| No, unless used with insulating bore adaptors | No, unless used with insulating bore adaptors | No, unless used with insulating bore adaptors | Aluminium } No<br>Stainless Steel } Acetal Yes | Aluminium } No<br>Stainless Steel } Acetal Yes |
| **Connection** | | | | |
| Clamp, Set Screw or Spiggot | Clamp or Set Screw | Clamp or Set Screw | Clamp or set screw | Clamp or Set Screw |
| **Page 9 - 15** | **Page 16 - 17** | **Page 18 - 21** | **Page 29 - 38** | **Page 40 - 41** |

# Product Overview

| Step-Beam type | Sliding Disc type | Universal / Lateral type | Double Loop type | Jaw Coupling | Universal Joints & Teleshafts | Friction Clutches | Bevel Gearboxes |
|---|---|---|---|---|---|---|---|
| **Step-Beam**<br><br>Material Options:<br>Nylon | **Oldham**<br>Blind bored<br><br>Thru' bored<br><br>Thru' bored<br><br>Material Options:<br>Aluminium<br>Stainless Steel<br>Brass | **Uni-Lat**<br><br> | **Flex-P**<br><br><br> | **Flex-G**<br> | **Huco-Pol**<br>Single joints<br><br>Double joints<br><br>Teleshafts<br> | **Vari-Tork, Polyclutch**<br>Basic clutch<br><br>Basic clutch + Oldham coupling<br> | **L-Box**<br> |
| **General description** | | | | | | | |
| Unique coupling design gives excellent combination of radial flexibility with torsional stiffness. | General purpose, robust, easy to use 3-part couplings with replaceable wear elements. Generous radial compensation and pull-apart / re-engage facility for blind assemblies. | Unique, general purpose light duty couplings with generous angular and radial misalignment compensation. Resist axial motion, can anchor unrestricted shafts and perform light push/pull duties. | Exceptional flexibility in all three directions, radial, angular and axial. | High torque capacity and high speed are available from this naturally balanced coupling. | Light duty plastic universal joints and extensible drive shafts (teleshafts). Low mass, corrosion resistant, ideal where conventional steel joints would be under-utilized. | Small, user-adjustable torque limiters for concentric or in-line mounting. Operate by friction using interleaved clutch plates. | Small 90° drives encased in molded housings providing electrical isolation between shafts and mounting surface. The L-Box is rated for intermittent use. |
| **Where to use** | | | | | | | |
| Encoders, tachogenerators, small pumps, motors and drives. | Stepper drives for most applications including positioning slides, pumps, actuators, etc. | Encoder, resolver, tacho, potentiometer drives. Small positioning slides, dosing pumps, & light drives generally. | Light power drives, pumps and small generators. | Light power drives where misalignment is small. | Intermittent applications in business machines, instrumentation, lab equipment, analytical apparatus, etc., where steel joints would be under-utilized. | Friction clutches interrupt rotation when the load being transmitted reaches a pre-determined threshold. Used in all kinds of small drives to help protect personnel and equipment. | L-box offers a compact means to route drives thru' 90°. |
| **Speeds** | | | | | | | |
| Up to 10000 rpm. | Up to 3000 rpm. | Up to 3000 rpm. | Up to 3000 rpm. | Up to 40,000 rpm. | Up to 1000 rpm. | Up to 1000 rpm slipping speed. | Up to 1000 rpm. |
| **Peak torque largest size lbs.-in (Nm)** | | | | | | | |
| 221 (25) | 389 (44) | 106 (12) | 159 (18) | 1177 (133) | 95 (10.7) | 531 (60) | 6 (0.68) |
| **Standard bores in. (mm)** | | | | | | | |
| 1/8"-1/2" (3 to 12.7) | 1/8"-1" (2 to 30) | 1/8"-3/4" (3 to 22) | 1/8"-5/8" (3 to 16) | 1/8"-5/8" (3 to 16) | 1/8"-3/4" (3 to 20) | 1/4"-1 1/4" (6 to 32) | 5/32" (4) |
| **Temperature range** | | | | | | | |
| –20 to +300°F (–20 to +150°C) | –20 to +140°F (–20 to +60°) | –20 to +140°F (–20 to +60°) | –40 to +210°C (–40 to +100°) | –40 to +180°F (–40 to +80°) | –20 to +140°F (–20 to +60°) | –10 to +180°F (when operating) (–10 to +80°) (when operating) | –20 to +140°F (–20 to +60) |
| **Electrically isolating** | | | | | | | |
| Yes | Yes | Yes | Yes | Yes | Yes | No | *See General Description above* |
| **Connection** | | | | | | | |
| Clamp or Set Screw | Clamp or Set Screw | Clamp or Set Screw | Set Screw | Clamp or Set Screw | Set Screw, Bonding, or Cross-Pinning | Clamp or Set Screw | N/A |
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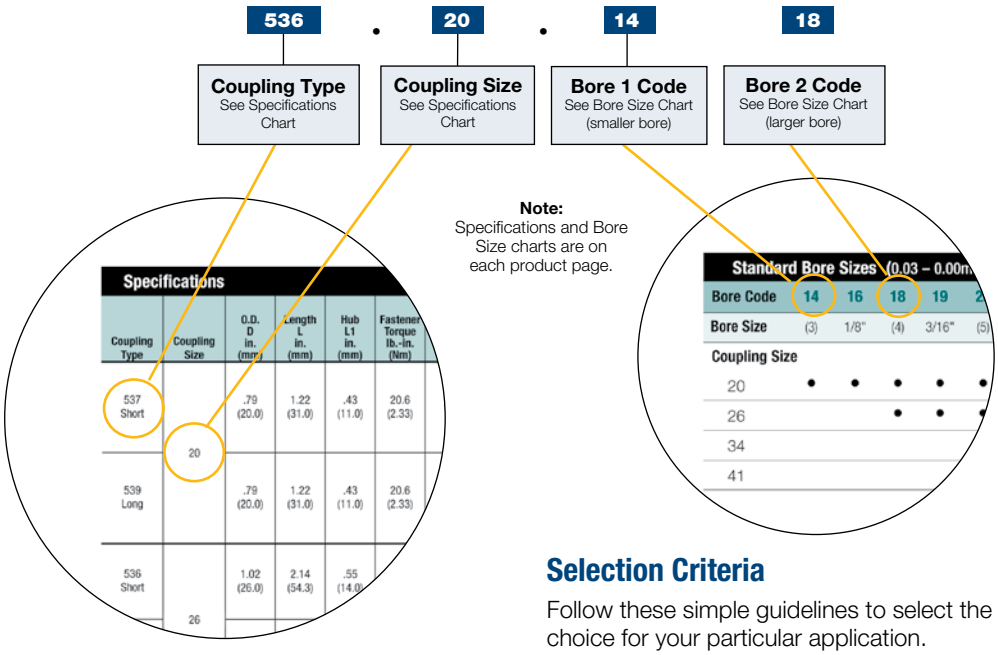
# Selecting Flexible Couplings

Building an Ordering Part Number is fast and easy using the Specifications and Bore Size charts on each product page. Simply select the coupling type, coupling size and two bore sizes you require (always place smaller bore first). Always include (.) in Part Number.

Ordering Number System **Example: 536.20.1418**




The following key factors should always be considered when specifying flexible shaft couplings:

- Torsional Stiffness
- Backlash
- Torque
- Life
- Shaft Attachment Type
- Misalignment Requirements

## Service Factors

- Torque capacity values shown in the coupling specification charts assume uniform load conditions at a constant speed with no misalignment or axial displacement. See page 48 to provide adequate service factors.
- The torque capacity of flexible couplings will reduce when acceleration is present (eg: stop/start or reverse conditions).
- The more severe the acceleration, the greater reduction in torque capacity.
- The more severe the misalignment, the greater reduction in torque capacity.
- Sliding couplings (Oldham and UniLat) are subject to a wear rate dependant on the number of cycles completed and environmental factors.

## Selection Criteria

Follow these simple guidelines to select the optimal coupling choice for your particular application.

- Does the coupling provide adequate misalignment protection?
- Can it transmit the required torque?
- Can it sustain the required rotational speed?
- Will it fit in the available space envelope?
- Can it operate at the designated ambient temperature?
- Will it provide the torsional stiffness required for positional accuracy?
- Does it provide electrical isolation between the shafts?
- Will it provide the required life expectancy?
- Is axial motion or axial stiffness required?

| Load | | | | | |
|---|---|---|---|---|---|
| | Steady State | Stop/Start | Reversing | Shock | Shock & Reversing |
| Huco Flex B | 1.5 | 2.0 | 2.0 | 3.0 | 4.0 |
| Huco Flex K | 1.5 | 2.0 | 2.0 | 3.0 | 4.0 |
| Huco Flex M | 1.5 | 2.0 | 2.0 | 3.0 | 4.0 |
| Huco Flex Ni | 1.0 | 2.0 | 2.0 | 3.0 | 4.0 |
| Huco Flex P | 1.0 | 1.5 | 1.5 | 3.0 | 4.0 |
| Huco Flex G | 1.0 | 2.0 | 4.0 | 4.0 | 4.0 |
| Huco MultiBeam | 1.0 | 1.5 | 2.0 | (Note 1) | (Note 1) |
| Huco S-Beam | 1.0 | 1.5 | 2.0 | (Note 1) | (Note 1) |
| Huco TorqLink | 1.0 | 1.5 | 2.0 | (Note 1) | (Note 1) |
| **Duty (Hours/Day)** | | | | | |
| | <1 | 1-2 | 3-5 | 6-12 | >12 |
| Huco Oldham | 1.0 | 2.0 | 4.0 | 6.0 | 8.0 |
| Huco Flex-B | 1.0 | 1.5 | 2.0 | 3.0 | 4.0 |
| Uni-Lat | 1.0 | 1.5 | 2.0 | 3.0 | 4.0 |

* Note 1 - Not recommended in these conditions.

| Round & Keywayed Bore Details & Codes | | | | | | |
|---|---|---|---|---|---|---|
| Metric mm | Inch fraction | Inch decimal | Round bore code | Metric keys key size w x h | Inch keys key size w x h | Keywayed bore code |
| 1 | – | 0.0394 | **08** | – | – | – |
| 1.5 | – | 0.0591 | **09** | | | |
| 1.588 | 1/16 | 0.0625 | **10** | – | – | – |
| 2 | – | 0.0787 | **11** | – | – | – |
| 2.286 | – | 0.0900 | **12** | – | – | – |
| 2.382 | 3/32 | 0.0938 | **13** | – | – | – |
| 3 | – | 0.1181 | **14** | – | – | – |
| 3.048 | – | 0.1200 | **15** | – | – | – |
| 3.175 | 1/8 | 0.1250 | **16** | – | – | – |
| *3.969 | 5/32 | 0.1563 | **–** | – | – | – |
| 4 | – | 0.1575 | **18** | – | – | – |
| 4.763 | 3/16 | 0.1875 | **19** | – | – | – |
| 5 | – | 0.1969 | **20** | – | – | – |
| 5.556 | 7/32 | 0.2188 | **21** | – | – | – |
| 6 | – | 0.2362 | **22** | – | – | – |
| 6.096 | – | 0.2400 | **23** | – | – | – |
| 6.350 | 1/4 | 0.2500 | **24** | – | – | – |
| 7 | – | 0.2756 | **25** | 2 x 2 | – | P25 |
| 7.144 | 9/32 | 0.2813 | **26** | – | – | – |
| 7.938 | 5/16 | 0.3125 | **27** | – | 1/8 x 1/8 | R27 |
| 8 | – | 0.3150 | **28** | 2 x 2 | – | P28 |
| 8.731 | 11/32 | 0.3438 | **29** | – | 1/8 x 1/8 | R29 |
| 9 | – | 0.3543 | **30** | 3 x 3 | – | P30 |
| 9.525 | 3/8 | 0.3750 | **31** | – | 1/8 x 1/8 | R31 |
| 10 | – | 0.3937 | **32** | 3 x 3 | – | P32 |
| 11 | – | 0.4331 | **33** | 4 x 4 | – | P33 |
| 11.113 | 7/16 | 0.4375 | **34** | – | 1/8 x 1/8 | R34 |
| 12 | – | 0.4724 | **35** | 4 x 4 | – | P35 |
| 12.700 | 1/2 | 0.5000 | **36** | – | 1/8 x 1/8 | R36 |
| 13 | – | 0.5118 | **37** | 5 x 5 | – | P37 |
| 14 | – | 0.5512 | **38** | 5 x 5 | – | P38 |
| 14.288 | 9/16 | 0.5625 | **39** | – | 3/16 x 3/16 | R39 |
| 15 | – | 0.5906 | **40** | 5 x 5 | – | P40 |
| 15.875 | 5/8 | 0.6250 | **41** | – | 3/16 x 3/16 | R41 |
| 16 | – | 0.6299 | **42** | 5 x 5 | – | P42 |
| 17 | – | 0.6693 | **43** | 5 x 5 | – | P43 |
| 17.463 | 11/16 | 0.6875 | **44** | – | 3/16 x 3/16 | R44 |
| 18 | – | 0.7087 | **45** | 6 x 6 | – | P45 |
| 19 | – | 0.7480 | **46** | 6 x 6 | – | P46 |
| 19.050 | 3/4 | 0.7500 | **47** | – | 3/16 x 3/16 | R47 |
| 20 | – | 0.7874 | **48** | 6 x 6 | – | P48 |
| 22 | – | 0.8661 | **49** | 6 x 6 | – | P49 |
| 22.225 | 7/8 | 0.8750 | **50** | – | 1/4 x 1/4 | R50 |
| 24 | – | 0.9449 | **51** | 8 x 7 | – | P51 |
| 25 | – | 0.9843 | **52** | 8 x 7 | – | P52 |
| 25.400 | 1 | 1.0000 | **53** | – | 1/4 x 1/4 | R53 |
| 28 | – | 1.1024 | **54** | 8 x 7 | – | P54 |
| 28.575 | 1-1/8 | 1.1250 | **55** | – | 5/16 x 1/4 | R55 |
| 30 | – | 1.1811 | **56** | 8 x 7 | – | P56 |
| 31.750 | 1-1/4 | 1.2500 | **57** | – | 5/16 x 1/4 | R57 |

* Not manufactured. Nearest alternative 4mm.

| Round & Keywayed Bore Details & Codes Cont. | | | | | | |
|---|---|---|---|---|---|---|
| Metric mm | Inch fraction | Inch decimal | Round bore code | Metric keys key size w x h | Inch keys key size w x h | Keywayed bore code |
| 32 | – | 1.2598 | **58** | 10 x 8 | – | P58 |
| 34.925 | 1-3/8 | 1.3750 | **59** | – | 3/8 x 1/4 | R59 |
| 35 | – | 1.3780 | **60** | 10 x 8 | – | P60 |
| 38 | – | 1.4961 | **61** | 10 x 8 | – | P61 |
| 38.10 | 1-1/2 | 1.5000 | **62** | Specify on Order | | |
| 40 | – | 1.5748 | **63** | | | |
| 41.28 | 1-5/8 | 1.6250 | **64** | | | |
| 42 | – | 1.6535 | **65** | Specify on Order | | |
| 44.45 | 1-3/4 | 1.7500 | **66** | | | |
| 45 | – | 1.7717 | **67** | | | |
| 47.63 | 1-7/8 | 1.8750 | **68** | Specify on Order | | |
| 48 | – | 1.8898 | **69** | | | |
| 50 | – | 1.9685 | **70** | | | |
| 50.80 | 2 | 2.0000 | **71** | Specify on Order | | |
| 53.98 | 2-1/8 | 2.1250 | **72** | | | |
| 55 | – | 2.1654 | **73** | | | |
| 57.15 | 2-1/4 | 2.2500 | **74** | Specify on Order | | |
| 60 | – | 2.3622 | **75** | | | |
| 60.33 | 2-3/8 | 2.3750 | **76** | | | |
| 63.50 | 2-1/2 | 2.5000 | **77** | Specify on Order | | |
| 65 | – | 2.5591 | **78** | | | |
| 73.03 | 2-7/8 | 2.8750 | **79** | Specify on Order | | |
| 75 | – | 2.9528 | **80** | | | |

## Specifying a Keywayed Bore

To specify a keywayed bore, prefix the 2-digit bore code number with a “P” for metric keyways or an “R” for an inch keyway.

Examples:

### Metric: 538.34.**P**28**P**28

In this example both bores have a keyway.

### Inch: 538.34.24**R**36

In this example only the second bore will have a keyway.

Standard keyways are machined to two specifications:

- Bore Codes prefixed with a “P” denote a metric keyway conforming to ISO 773/774 (BS 4235 Pt. 1).
- Bore Codes prefixed with a “R” denote an inch keyway conforming to BS 46 Pt. 1.

# Installing Couplings

## Flexible Coupling Types

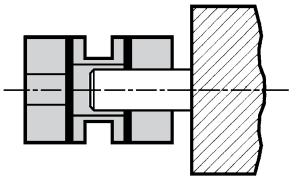
### General instructions

1. Ensure that shafts are free of burrs, damage, or foreign matter, and can penetrate the bores.

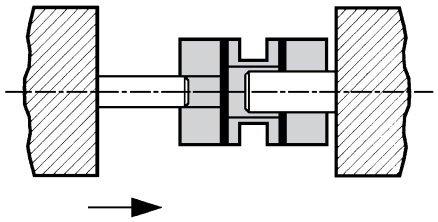
2. Install the coupling by holding the shaft and the related hub, rotating it back and forth as you progress it along the shaft.

3. Do not apply any forces that cause extension, compression or lateral displacement of the coupling beyond its permissible offsets.

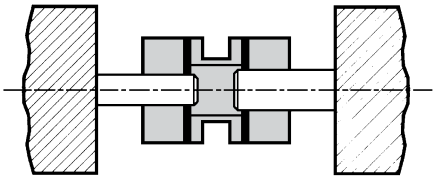
### Normal installation



a) Position and secure the larger of the 2 shafts (if different) and progress the coupling onto it.



b) Progress the second shaft into the bore, taking care not to lever either shaft against the inner wall of the spacer.



c) Progress the coupling along the shafts to a position midway between the shaft terminations. Rotate the coupling to ensure it is not binding and is in its natural state, ie., neither extended nor compressed.

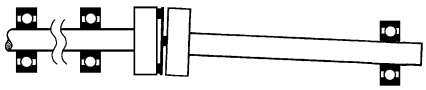
d) Align the second shaft with the first using a straight edge and feeler gauges or a dial indicator.

e) Secure the second shaft and re-check alignment. Final alignment must be within the permissible offsets.

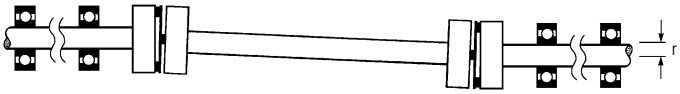
f) Secure one hub, tightening each screw alternately. Repeat for the second hub.

### When to use single & two-stage couplings

**Single-stage**



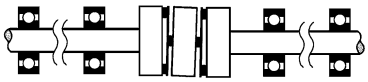
Example 1. With partially supported (1 bearing) shafts.




Example 2. With unsupported intermediate shafts.

Single-stage couplings are radially supportive and function as supplementary bearings. They are used when the connected shaft lacks a full complement of bearings.

**Two-stage**



Two-stage couplings are radially compliant and are used when both shafts are fully supported by bearings.

**CAUTION**

These are precision high couplings that have a limited range of permissible flexure. They can be damaged through careless handling. Avoid gratuitous flexure in any direction.

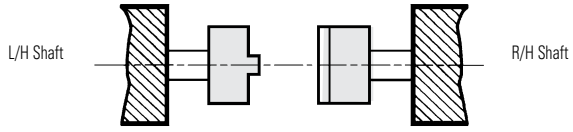
No axial forces are permitted across the membranes when fitting Huco-Flex M couplings. Keyways with interference fits are not recommended.

Bellows couplings are more tolerant of axial motion, but flexure beyond the permissible limits should be avoided.

Note: Bellows couplings do not provide the same level of radial support as Flex M when used with partially or wholly unsupported shafts. When essential for reasons of greater axial motion, use the 3-convolution type for these purposes.

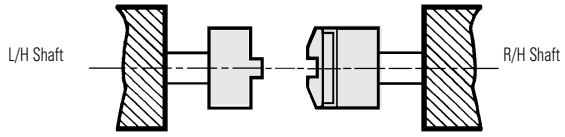
# Sliding Disc type (Oldham)

## Blind hub

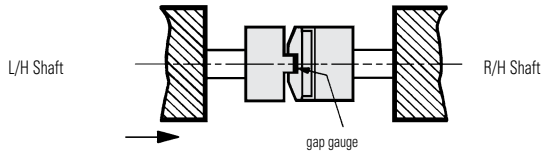



a) Slide hubs on to both shafts until fully seated and tighten screws.

b) Position and secure R/H shaft.




c) Seat disc fully on R/H hub.




d) Place a gap gauge flat against the bottom of the exposed slot in the disc and push the L/H hub into full engagement by manipulating the L/H shaft.

e) Align shafts within the permissible offsets and secure L/H shaft.

f) Check alignment and correct if necessary.

g) Remove gap gauge.

To fit a new disc, withdraw L/H shaft complete with hub and remove old disc. Repeat steps c) to g).

## Gap gauges for all hub types

| Coupling size | | Gap gauge |
|---|---|---|
| | 06, 09 & 13 | 0.002 (0.05) |
| | 19 & 25 | 0.004 (0.10) |
| | 33 & 41 | 0.006 (0.15) |
| | 50 & 57 | 0.008 (0.20) |

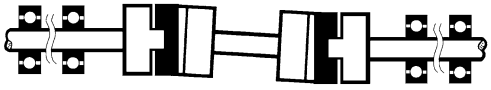
Clearances are set to allow for thermal shaft growth and / or end-float. Gaps may be increased, but total shaft movement should not exceed the values shown under *Axial Compensation* in the Performance Table.

## Radial support

Shafts must be fully supported by 2 bearings and have minimal overhang. Oldham couplings cannot be used in pairs.

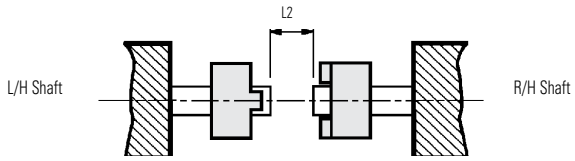


right



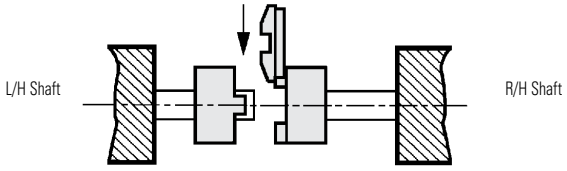
wrong

## Thro' hub



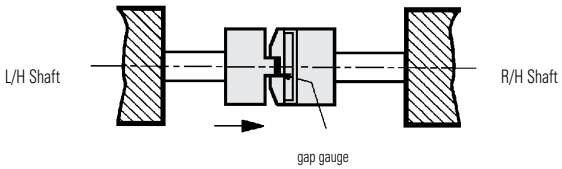

a) Slide hubs on to both shafts.

b) Align shafts to within the permissible offsets and position to leave *minimum* gap 2 between terminations. Secure both shafts, check alignment and correct if necessary.




c) Position R/H hub with inboard face flush with shaft termination and tighten screws.

d) Slide disc radially on to the tenons of the R/H hub. Ensure the disc is fully seated.




e) Place a gap gauge flat against the bottom of the exposed slot in the disc and push the L/H hub into full engagement.

f) Tighten fastening screws and remove gap gauge.

To fit a new disc, slacken the fastening screws on one hub and retract it along the shaft. Slide the old disc out radially and replace with the new. Repeat steps d) to f).

To retain shaft phasing, withdraw L/H shaft and repeat steps c) to g) as for Blind hub couplings.

Over-penetration of shafts can impair function of coupling with solid disc. Min shaft gap L2 must be observed. Specify thro' bored disc for near-butted shafts.

| Coupling size | 19 | 25 | 33 | 41 | 50 | 57 |
|---|---|---|---|---|---|---|
| L2 min | 0.28 (7.2) | 0.36 (9.2) | 0.47 (12.0) | 0.60 (15.3) | 0.72 (18.4) | 0.83 (21.2) |

## Clamp hubs

To improve clamp action, apply a little grease under the head of the clamp screw.

Note: It is important that installed couplings are not end-loaded. To help avoid this, thro' bored hubs are recommended for shafts which have fixed axial locations such as face-mounted motors.

# Installing Couplings

## Beam Type

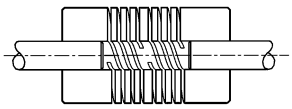
**Relief Under The Beams**

Most Multi-Beam couplings can be supplied with or without relief under the beams as shown in the diagrams below. When the drive or driven shafts extend under the beams relief is essential to ensure that the coupling remains flexible. Where non-relieved versions are used, shafts must not be allowed to penetrate under the beamed section of the coupling. Unless otherwise specified, relieved versions will be supplied.

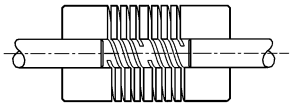
**Pilot Bores**

Couplings can be supplied 'pilot bored' for opening out by the customer. Pilot bores are plain drilled holes, which are not produced with the same accuracy as finished machined bores. The largest bore provided in a pilot bored product is that needed to make the coupling flexible and this will always be larger than the minimum possible bore size 'B1' shown in the bore tables. For sizes 13 to 25, the pilot bore is also larger than the 'B2' minimum shown in the bore tables. Further details are available on request.

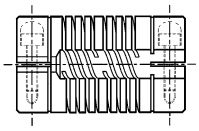
**Non-Relieved**



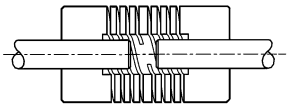
√



X



**Relieved**





# High Performance Couplings

- Stainless Steel Bellows
- Nickel Bellows
- Flexible Membrane (Disc)

**• Torsionally rigid design**
**• No moving parts**
**• All-metal construction**
**• Low inertia**

The operating principles of Flex B, Flex K, Flex Ni and Flex M offer the highest performance available with flexible couplings.

With excellent kinematic properties and torsional stiffness of a very high order, they are suitable for servo drives and satisfy the criteria for highly dynamic position and velocity control systems.

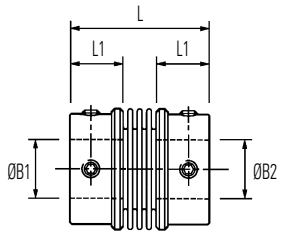
Bellows couplings have the greater torsional stiffness while Flex M have the more tolerant flexural system and feature dynamically balanced construction.



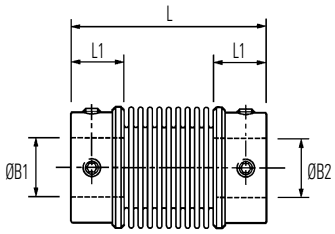
# Flex-B

## Stainless Steel Bellows Couplings

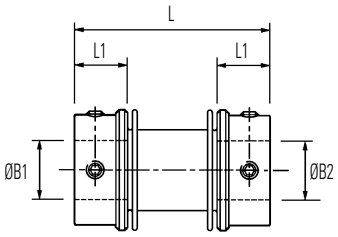
### Set screw hubs



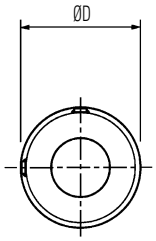

**Ref. 530**
Short type
for precisely aligned shafts




**Ref. 532**
Long type
for greater angular offsets
or axial motion

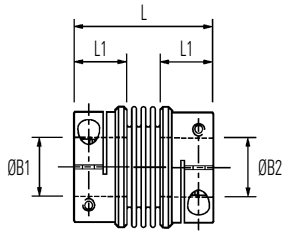



**Ref. 534**
Stretched type
for greater radial misalignment
and lower bearing loads

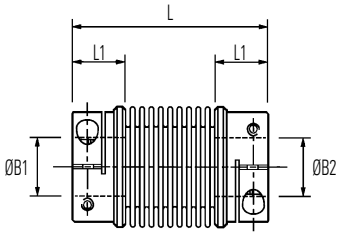



**Typical**

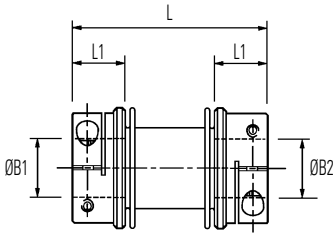
### Clamp hubs



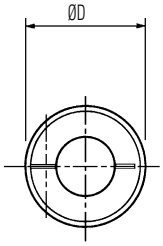

**Ref. 536**
Short type
for precisely aligned shafts




**Ref. 538**
Long type
for greater angular offsets
or axial motion




**Ref. 540**
Stretched type
for greater radial misalignment
and lower bearing loads




**Typical**

### Comparative properties

| Parameter | Short | Long | Stretched |
|---|---|---|---|
| Peak Torque | 2 | 1 | 3 |
| Torsional Stiffness | 3 | 1 | 2 |
| Angular Compensation | 2 | 3 | 1 |
| Axial Compensation | 2 | 3 | 1 |
| Radial Compensation | 1 | 3 | 2 |

The properties of the 3 types compared on a scale of 1 to 3.
3 = best.

### Materials & Finishes

**Hubs:** Al. Alloy 2014T6 and Clear anodised finish

**Bellows:** Spring quality stainless steel

**Joint assembly:** Copper C106, heat treated Zinc plate, clear passivate

**Fasteners:** Alloy steel, black oiled

### Temperature Range

-40ºF to + 248ºF

(–40°C to +120°C)

### What's Changed

Size 20 Clamp Hubs we have introduced Metric fastened version replacing the special 4-40 UNC screw types.

[Old product references 537.20/539.20 & 541.20]

# Stainless Steel Bellows Couplings

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | ① L in. (mm) | L1 in. (mm) | ØB1, ØB2 max in. (mm) | Fasteners | | | ③ Moment of inertia kgm2 x 10–8 | ③ Mass kg x 10–3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | COUPLING REF | | | ±1.0 | | | Screw | ② Torque lb-in. (Nm) | Wrench in. (mm) | | |
| 20 | 530.20 | – | .79 (20.0) | 1.22 (31.0) | .43 (11.0) | 0.31 (8) | M4 | 20 (2.27) | 0.08 (2) | 90 | 18 |
| | 532.20 | – | | 1.77 (45.2) | | | | | | 100 | 19 |
| | 534.20 | – | | 1.72 (43.6) | | | | | | 90 | 18 |
| | – | 536.20 | | 1.22 (31.0) | | | M2.5 | 11.6 (1.32) | 0.08 (2) | 90 | 16 |
| | – | 538.20 | | 1.78 (45.2) | | | | | | 100 | 18 |
| | – | 540.20 | | 1.72 (43.6) | | | | | | 90 | 17 |
| 26 | 530.26 | – | 1.02 (26.0) | 1.48 (37.5) | .55 (14.0) | 0.47 (12) | M5 | 40.9 (4.62) | 0.10 (2.5) | 350 | 35 |
| | 532.26 | – | | 2.14 (54.3) | | | | | | 400 | 39 |
| | 534.26 | – | | 2.09 (53.2) | | | | | | 370 | 34 |
| | – | 536.26 | | 1.48 (37.5) | | | M3 | 21.5 (2.43) | 0.10 (2.5) | 330 | 34 |
| | – | 538.26 | | 2.14 (54.3) | | | | | | 380 | 38 |
| | – | 540.26 | | 2.09 (53.2) | | | | | | 350 | 33 |
| 34 | 530.34 | – | 1.34 (34.0) | 1.57 (40.0) | .55 (14.0) | 0.63 (16) | M5 | 40.89 (4.62) | 0.10 (2.5) | 975 | 58 |
| | 532.34 | – | | 2.24 (57.0) | | | | | | 1128 | 65 |
| | 534.34 | – | | 2.23 (56.6) | | | | | | 988 | 59 |
| | – | 536.34 | | 1.57 (40.0) | | | M3 | 21.5 (2.43) | 0.10 (2.5) | 925 | 56 |
| | – | 538.34 | | 2.24 (57.0) | | | | | | 1078 | 63 |
| | – | 540.34 | | 2.23 (56.6) | | | | | | 938 | 57 |
| 41 | 530.41 | – | 1.61 (41.0) | 1.96 (49.7) | .71 (18.0) | 0.79 (20) | M6 | 67.3 (7.61) | 0.11 (3) | 2490 | 102 |
| | 532.41 | – | | 2.81 (71.4) | | | | | | 2740 | 110 |
| | 534.41 | – | | 2.78 (70.7) | | | | | | 2477 | 102 |
| | – | 536.41 | | 1.96 (49.7) | | | M4 | 50.0 (5.66) | 0.11 (3) | 2390 | 99 |
| | – | 538.41 | | 2.81 (71.4) | | | | | | 2660 | 107 |
| | – | 540.41 | | 2.78 (70.7) | | | | | | 2377 | 99 |

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

## PERFORMANCE

| Coupling Size | Ref. | ④ Peak torque lb-in. (Nm) | ⑤ Max compensation | | | ⑥ Flexural stiffness | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (± mm) | Torsional Nm / rad | Angular N / deg | Radial N / mm | Axial N / mm |
| 20 | 530 & 536 | 17.7 (2.0) | 2 | .002 (0.06) | 0.14 (0.35) | 315 | 1.03 | 115 | 17.7 |
| | 532 & 538 | 8.8 (1.0) | 6 | .020 (0.50) | .038 (1.00) | 170 | 0.33 | 6.7 | 7.8 |
| | 534 & 540 | 21.1 (2.5) | 1.3 | .007 (0.20) | .007 (0.20) | 225 | 0.33 | 8.2 | 7.1 |
| 26 | 530 & 536 | 28.3 (3.2) | 2 | .002 (0.06) | .014 (0.36) | 755 | 1.27 | 238 | 5.7 |
| | 532 & 538 | 14.2 (1.6) | 6 | .020 (0.50) | . 039 (1.00) | 380 | 0.39 | 8.2 | 3.3 |
| | 534 & 540 | 35.4 (4.0) | 1.3 | .007 (0.20) | .007 (0.20) | 615 | 1.52 | 14.6 | 6.4 |
| 34 | 530 & 536 | 66.4 (7.5) | 2.5 | .003 (0.10) | .024 (0.60) | 1740 | 1.34 | 227 | 6.6 |
| | 532 & 538 | 33.6 (3.8) | 8 | .039 (1.00) | .075 (1.90) | 915 | 0.62 | 12.7 | 3.8 |
| | 534 & 540 | 83.2 (9.4) | 1.5 | .012 (0.30) | .012 (0.30) | 1455 | 1.98 | 23.2 | 27.9 |
| 41 | 530 & 536 | 88.5 (10.0) | 2.5 | .006 (0.15) | .031 (0.80) | 2880 | 1.58 | 144 | 13.1 |
| | 532 & 538 | 44.3 (5.0) | 8 | .047 (1.20) | .098 (2.50) | 1310 | 0.52 | 9.3 | 3.8 |
| | 534 & 540 | 111 (12.5) | 1.8 | .016 (0.40) | .020 (0.50) | 2245 | 2.30 | 19.2 | 7.2 |

① Length of supported thro' bore. Shafts can near-butt.

② Maximum recommended tightening torque.

③ Values apply with max bores.

④ **Peak torque**. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

⑤ Max. compensation values are mutually exclusive.

⑥ Torsional stiffness values apply at 50% peak torque with no misalignment, measured shaft-to-shaft with largest standard bores. **Note that in some vendors' catalogs the given torsional stiffness applied to the un-mounted bellows element only, an unrepresentative calculated value.**

## STANDARD BORES

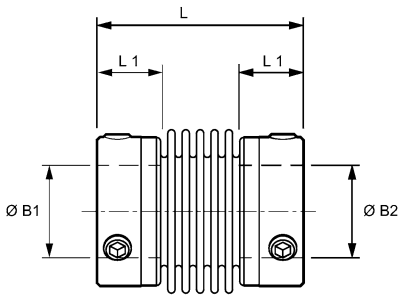
Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | (9) | 3/8" | (10) | (11) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | (18) | (19) | 3/4" | (20) |
| 20 | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | |
| 26 | | | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | |
| 34 | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| 41 | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **Bore ref.** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 30 | 31 | 32 | 33 | 35 | 36 | 38 | 40 | 41 | 42 | 45 | 46 | 47 | 48 |
| **Corresponding bore adaptor** | | | | | 251 | | 253 | 255 | | | 257 | | | 259 | | | | 260 | | | | 261 |

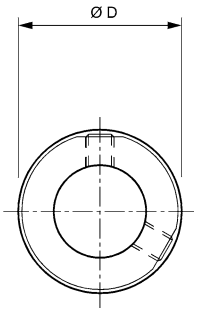
Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes. See *page 58* for details of metallic and electrically insulating adaptors.

## Stainless Steel Bellows Couplings

### Set screw hubs

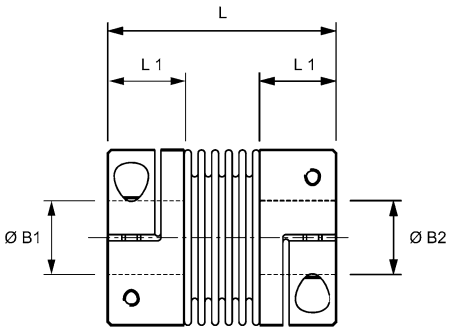



Ref. 550 & 551

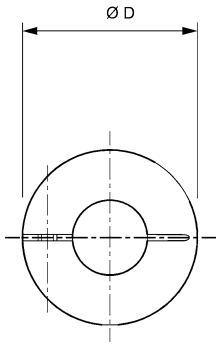



Typical

### Clamp hubs

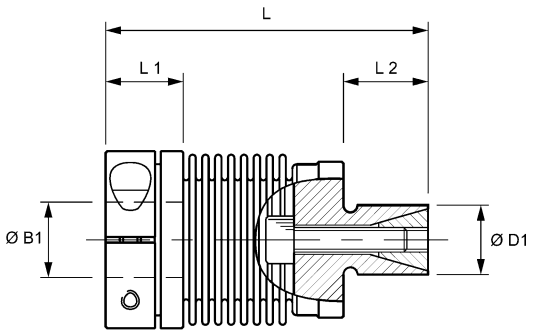



Ref. 554 & 555




Typical

### Spigot hub




Ref. 558 & 559

### Materials & Finishes

**Hubs:** Al. Alloy [Clamp hubs size 66 and larger - steel]

**Bellows:** Spring quality stainless steel

**Fasteners:** Alloy steel, black oiled

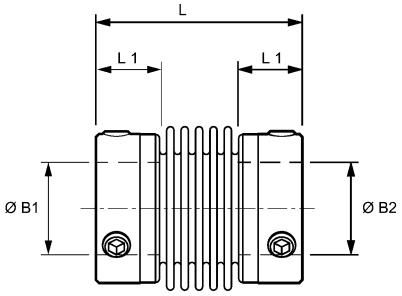
### Temperature Range

-30ºF to + 248ºF

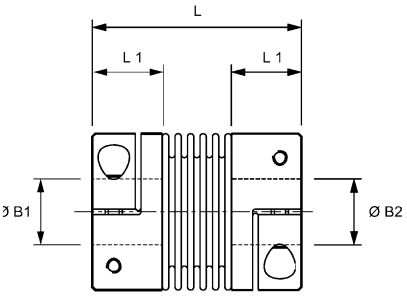
(-30°C to +120°C)

# Stainless Steel Bellows Couplings






Ref. 550 & 551




Ref. 554 & 555

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | L in. (mm) | L1 in. (mm) ① | ØB1, ØB2 Max in. (mm) | Fasteners | | | Moment of inertia kgm2 x10-8 ③ | Mass kgx10-3 ③ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Screw | Torque lb-in. (Nm) ② | Wrench in. (mm) | | |
| | COUPLING REF | | | | | | | | | | |
| 10 | 550.10 | - | 0.39 (10.0) | 0.91 (23.0) | 0.24 (6.0) | 0.16 (4.0) | M3 | 4.43 (0.5) | 0.06 (1.5) | 4 | 3 |
| | - | 554.10 | | 0.98 (25.0) | 0.28 (7.0) | | M1.6 | 0.89 (0.1) | | 5 | 2.6 |
| 16 | 550.16 | - | 0.59 (15.0) | 0.83 (21.0) | 0.25 (6.0) | 0.31 (8.0) | M3 | 4.43 (0.5) | 0.06 (1.5) | 17 | 4.1 |
| | 551.16 | - | | 0.98 (25.0) | | | | | | 19 | 4.6 |
| | - | 554.16 | 0.61 (15.5) | 0.91 (23.0) | 0.31 (8.0) | 0.28 (7.0) | M2 | 3.81 (.43) | | 30 | 7.6 |
| | - | 555.16 | | 1.02 (26.0) | | | | | | 33 | 7.9 |
| 20 | 550.20 | - | 0.75 (19.0) | 1.02 (26.0) | 0.31 (8.0) | 0.47 (12.0) | M4 | 13.3 (1.50) | 0.08 (2.0) | 51 | 5.3 |
| | 551.20 | - | | 1.18 (30.0) | | | | | | 65 | 7.3 |
| | - | 554.25 | 0.79 (20.0) | 1.02 (26.0) | 0.35 (9.0) | 0.39 (10.0) | M2.5 | 7.52 (.85) | | 75 | 9.5 |
| | - | 555.20 | | 1.22 (31.0) | | | | | | 88 | 11.5 |
| 25 | 550.25 | - | 0.94 (24.0) | 0.87 (22.0) | 0.25 (6.0) | 0.55 (14.0) | M4 | 13.3 (1.50) | 0.08 (2.0) | 80 | 6 |
| | 551.25 | | | 1.10 (28.0) | | | | | | 114 | 8 |
| | - | 554.25 | 0.98 (25.0) | 1.26 (32.0) | 0.43 (11.0) | 0.5 (12.7) | M3 | 17.7 (2) | 0.10 (2.5) | 225 | 17 |
| | - | 555.25 | | 1.65 (42.0) | | | | | | 275 | 22 |
| 33 | 550.33 | - | 1.26 (32.0) | 1.57 (40.0) | 0.47 (12.0) | 0.71 (18.0) | M6 | 26.6 (3.00) | 0.12 (3.0) | 613 | 29 |
| | 551.33 | - | | 1.89 (48.0) | | | | | | 723 | 35 |
| | - | 554.33 | 1.28 (32.5) | 1.61 (41.0) | 0.55 (14.0) | 0.63 (16.0) | M4 | 30.9 (3.50) | | 950 | 48 |
| | - | 555.33 | | 1.89 (48.0) | 0.61 (15.5) | | | | | 1036 | 51 |
| 41 | 550.41 | - | 1.57 (40.0) | 1.77 (45.0) | 0.47 (12.0) | 0.94 (24.0) | M6 | 26.6 (3.00) | 0.12 (3.0) | 1285 | 32 |
| | 551.41 | - | | 2.17 (55.0) | | | | | | 1885 | 51 |
| | - | 554.41 | 1.59 (40.5) | 1.89 (48.0) | 0.55 (14.0) | 0.87 (22.0) | M4 | 39.8 (4.50) | | 2150 | 59 |
| | - | 555.41 | | 2.24 (57.0) | | | | | | 2750 | 79 |

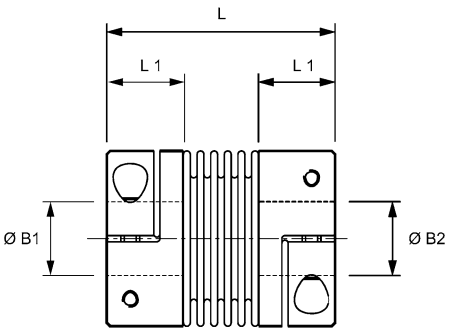
## PERFORMANCE

| Coupling Size | Ref. | Peak torque lb-in. (Nm) ④ | Max compensation ⑤ | | | Flexural Stiffness ⑥ | | |
|---|---|---|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (±mm) | Torsional Nm/rad | Radial N/mm | Axial N/mm |
| 10 | 550 & 554 | 0.89 (0.1) | 1.2 | .004 (.12) | 0.008 (.2) | 65 | 10 | 14 |
| 16 | 550 & 554 | 8.85 (1.0) | 1.0 | .003 (.10) | 0.008 (.2) | 510 | 74 | 27 |
| | 551 & 555 | | 1.5 | .006 (.15) | 0.01 (0.3) | 380 | 31 | 20 |
| 20 | 550 & 554 | 13.3 (1.5) | 1.5 | .003 (0.10) | 0.01 (0.3) | 750 | 59 | 15 |
| | 551 & 555 | | 2.0 | .006 (0.15) | 0.02 (0.4) | 700 | 20 | 9 |
| 25 | 550 & 554 | 17.7 (2.0) | 1.5 | .006 (0.15) | 0.01 (0.3) | 1500 | 67 | 12 |
| | 551 | | 1.5 | .008 (0.20) | 0.02 (0.4) | 1300 | 21 | 11 |
| | 555 | | 2.0 | .010 (0.25) | 0.02 (0.5) | 1050 | 11 | 9 |
| 33 | 550, 5554 & 555 | 39.83 (4.50) | 1.5 | .003 (0.10) | 0.01 (0.3) | 6500 | 168 | 32 |
| | 551 | | 2.0 | .008 (0.20) | 0.02 (0.5) | 4200 | 41 | 20 |
| 41 | 550 & 554 | 88.5 (10.0) | 1.5 | .006 (0.15) | 0.16 (0.4) | 8100 | 120 | 27 |
| | 551 & 555 | | 2.0 | .012 (0.30) | 0.02 (0.6) | 6800 | 29 | 17 |

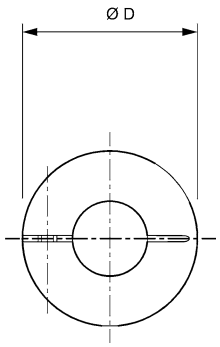
# Stainless Steel Bellows Couplings

## CLAMP HUBS






Ref. 554 & 555




Typical

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | L in. (mm) | L1 in. (mm) ① | ØB1, ØB2 Max in. (mm) | Fasteners | | | Moment of inertia kgm2 x10-8 ③ | Mass kgx10-3 ③ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Screw | Torque lb-in. (Nm) ② | Wrench in. (mm) | | |
| | COUPLING REF | | | | | | | | | | |
| 45 | - | 554.45 | 1.77 (45.0) | 2.48 (63.0) | 0.77 (19.5) | 1.00 (25.4) | M5 | 8.0 | 4.0 | 3560 | 54 |
| | - | 555.45 | | 2.78 (71.0) | | | | | | 4560 | 104 |
| 56 | - | 554.56 | 2.20 (56.0) | 2.56 (65.0) | 0.96 (24.5) | 1.18 (30.0) | M6 | 15.0 | 5.0 | 13930 | 215 |
| | - | 555.56 | | 2.87 (73.0) | | | | | | 14930 | 235 |
| 66 | - | 554.66 | 2.60 (66.0) | 3.11 (79.0) | 1.14 (29.0) | 1.26 (32.0) | M8 | 40.0 | 6.0 | 31360 | 390 |
| | - | 555.66 | | 3.50 (89.0) | | | | | | 34360 | 490 |
| 82 | - | 554.82 | 3.23 (82.0) | 3.58 (91.0) | 1.32 (33.5) | 1.65 (42.0) | M10 | 84.0 | 8.0 | 183930 | 1150 |
| | - | 555.82 | | 4.02 (102.0) | | | | | | 193930 | 1250 |
| 90 | - | 554.90 | 3.54 (90.0) | 3.98 (101.0) | 1.50 (38.0) | 1.77 (45.0) | M12 | 125.0 | 10.0 | 305980 | 1875 |
| | - | 555.90 | | 4.45 (113.0) | | | | | | 325980 | 1975 |
| 110 | - | 554.110 | 4.33 (110.0) | 4.133 (105.0) | 1.50 (38.0) | 2.36 (60.0) | M12 | 125.0 | 10.0 | 654095 | 2330 |
| | - | 555.110 | | 4.57 (116.0) | | | | | | 674095 | 2430 |
| 122 | - | 554.122 | 4.80 (122.0) | 4.41 (112.0) | 1.65 (42.0) | 2.56 (65.0) | M12 | 125.0 | 10.0 | 1124450 | 3540 |
| | - | 555.122 | | 4.84 (123.0) | | | | | | 1154450 | 3640 |

## PERFORMANCE

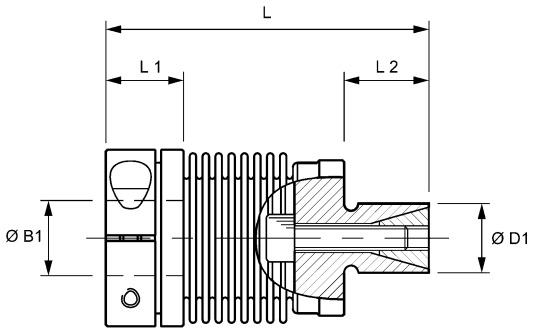
| Coupling Size | Ref. | Peak torque lb-in. (Nm) ④ | Max compensation ⑤ | | | Flexural Stiffness ⑥ | | |
|---|---|---|---|---|---|---|---|---|
| | | | Angular deg | Radial in (mm) | Axial in. (±mm) | Torsional Nm/mm | Radial N/mm | Axial N/mm |
| 45 | 554 | 159 (18) | 1.5 | .008 (0.20) | .020 (0.5) | 20000 | 790 | 100 |
| | 555 | | 2.0 | .010 (0.25) | .020 (0.5) | 15000 | 970 | 85 |
| 56 | 554 | 266 (30) | 1.5 | .006 (0.15) | .024 (0.6) | 38000 | 720 | 50 |
| | 555 | | 2.0 | .010 (0.25) | 0.04 (1.0) | 28000 | 225 | 28 |
| 66 | 554 | 531 (60) | 1.5 | .006 (0.15) | .024 (0.6) | 75000 | 1150 | 90 |
| | 555 | | 2.0 | .010 (0.25) | .040 (1.0) | 50000 | 340 | 50 |
| 82 | 554 | 1328 (150) | 1.5 | .008 (0.20) | .020 (0.5) | 155000 | 1200 | 145 |
| | 555 | | 2.0 | .010 (0.25) | .020 (0.5) | 105000 | 400 | 185 |
| 90 | 554 | 1770 (200) | 1.5 | .008 (0.20) | .020 (0.5) | 175000 | 2020 | 145 |
| | 555 | | 2.0 | .010 (0.25) | .031 (0.8) | 120000 | 595 | 82 |
| 110 | 554 | 2655 (300) | 1.5 | .008 (0.20) | .020 (0.5) | 502000 | 2500 | 280 |
| | 555 | | 2.0 | .010 (0.25) | .031 (0.8) | 285000 | 460 | 145 |
| 122 | 554 | 4425 (500) | 1.5 | .008 (0.20) | .020 (0.5) | 690000 | 6300 | 100 |
| | 555 | | 2.0 | .010 (0.25) | .040 (1.0) | 320000 | 1400 | 85 |

① Length of supported bore
② Maximum recommended tightening torque
③ Values apply with Max. Bores
④ Peak Torque. Select a size where Peak Torque exceeds the application torque x service factor (see page 4)
⑤ Max. compensation values are mutually exclusive
⑥ Torsional stiffness values apply at peak torque with no misalignment

# Stainless Steel Bellows Couplings

## SPIGOT HUB






**Ref. 558 & 559**

## DIMENSIONS & ORDER CODES

| Coupling Size | Spigot Hubs | ØD in. (mm) | L in. (mm) | L 1 ① in. (mm) | ØD1 in (mm) | L 2 in. (mm) | ØB1, ØB2 Max in. (mm) | Fasteners | | | Moment of inertia ③ kgm2 x10-8 | Mass ③ kgx10-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Screw B1/D1 | Torque ② lb-in. (Nm) | Wrench in. (mm) | | |
| 16 | 558.16 | 0.63 (16.0) | 1.18 (30.0) | 0.31 (8.0) | 0.31 (8.0) | 0.31 (8.0) | 0.28 (7.0) | M2/M3 | 3.80 (.43)<br>13.3 (1.50) | .060 (1.5)<br>0.10 (2.5) | 33 | 13.5 |
| | 559.16 | | 1.34 (34.0) | | | | | | | | 34 | 14 |
| 20 | 558.20 | 0.79 (20.0) | 1.46 (37.0) | 0.35 (9.0) | 0.39 (10.0) | 0.47 (12.0) | 0.39 (10.0) | M2.5/M4 | 7.52 (0.85)<br>26.6 (3.00) | 0.08 (2.0)<br>0.12 (3.0) | 108 | 25 |
| | 559.20 | | 1.61 (41.0) | | | | | | | | 118 | 27 |
| 25 | 558.25 | 0.98 (25.0) | 1.57 (40.0) | 0.43 (11.0) | 0.39 (10.0) | 0.47 (12.0) | 0.50 (12.7) | M3/M4 | 17.7 (2.0)<br>35.4 (4.0) | 0.10 (2.5)<br>0.12 (3.0) | 242 | 36 |
| | 559.25 | | 1.81 (46.0) | | | | | | | | 282 | 39.5 |
| 33 | 558.33 | 1.30 (33.0) | 2.05 (52.0) | 0.55 (14.0) | 0.55 (14.0) | .063 (16.0) | 0.63 (16.0) | M4/M5 | 30.98 (3.5)<br>57.5 (6.5) | 0.12 (3.0)<br>0.16 (4.0) | 956 | 79 |
| | 559.33 | | 2.36 (60.0) | | | | | | | | 1076 | 85 |
| 41 | 558.41 | 1.64 (41.0) | 2.40 (61.0) | 0.55 (14.0) | 0.63 (16.0) | 0.79 (20.0) | 0.87 (22.0) | M4/M6 | 39.8 (4.5)<br>97.4 (11.0) | 0.12 (3.0)<br>0.20 (5.0) | 2262 | 116 |
| | 559.41 | | 2.80 (71.0) | | | | | | | | 2832 | 135 |

## PERFORMANCE

| Coupling Size | Ref. | Peak Torque ④ lb-in. (Nm) | Max compensation ⑤ | | | Flexural Stiffness ⑥ | | |
|---|---|---|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (±mm) | Torsional Nm/rad | Radial N/mm | Axial N/mm |
| 16 | 558 | 8.8 (1.0) | 1.0 | .004 (0.10) | .008 (0.2) | 510 | 74 | 27 |
| | 559 | | 1.5 | .008 (0.20) | .012 (0.3) | 380 | 31 | 20 |
| 20 | 558 | 13.2 (1.5) | 1.5 | .004 (0.10) | .012 (0.3) | 750 | 59 | 15 |
| | 559 | | 2.0 | .008 (0.20) | .016 (0.4) | 700 | 20 | 9 |
| 25 | 558 | 17.7 (2.0) | 1.5 | .008 (0.20) | .012 (0.3) | 1500 | 87 | 12 |
| | 559 | | 1.5 | .008 (0.20) | .016 (0.4) | 1300 | 21 | 11 |
| 33 | 558 | 39.8 (4.5) | 1.5 | .004 (0.10) | .012 (0.3) | 6500 | 168 | 32 |
| | 559 | | 2.0 | .008 (0.20) | .020 (0.5) | 4200 | 41 | 20 |
| 41 | 558 | 88.5 (10.0) | 1.5 | .008 (0.20) | .016 (0.4) | 8100 | 120 | 27 |
| | 559 | | 2.0 | .012 (0.30) | .024 (0.6) | 6800 | 29 | 17 |

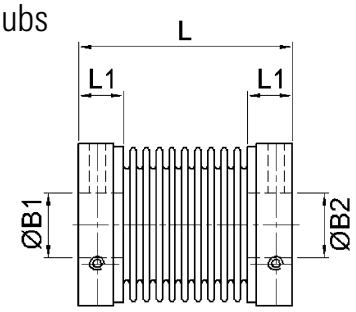
① Length of supported bore
② Maximum recommended tightening torque
③ Values apply with Max. Bores
④ Peak Torque. Select a size where Peak Torque exceeds the application torque x service factor (see page 4)
⑤ Max. compensation values are mutually exclusive
⑥ Torsional stiffness values apply at peak torque with no misalignment

# Flex-Ni

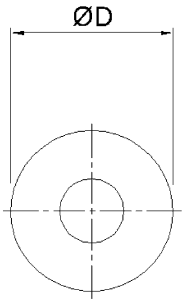
## Nickel Bellows Couplings

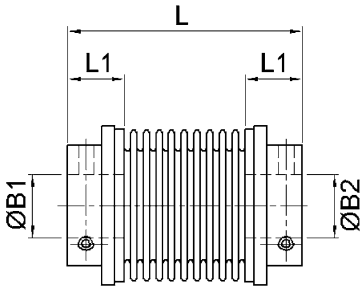


### Set Screw Hubs



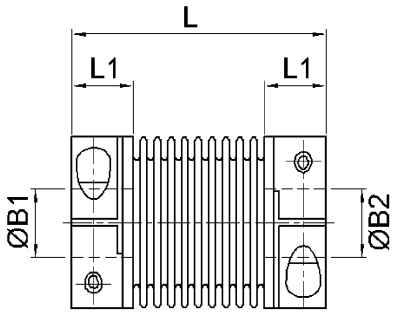

Ref. 321



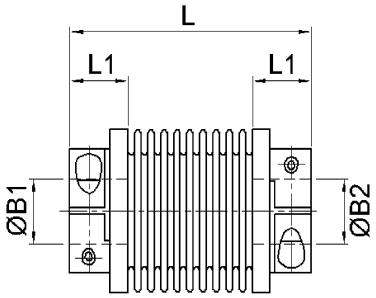




Ref. 321

### Clamp Hubs




Ref. 323




Ref. 323

The convolutions of Flex-Ni Couplings are formed by the electrolytic deposition of nickel. This produces stress-free convolutions with closely controlled wall thickness.

Nickel bellows couplings are characterized by their exceptional quality of rotational positional integrity. This is achieved through high torsional stiffness in a coupling that is still able to accommodate large amounts of lateral and angular misalignment due to low spring rates in these directions. These couplings are used primarily in instrumentation and similar sensitive applications.

### Materials & Finishes

**Hubs:** Aluminium Alloy

**Bellows:** Electrodeposited nickel

**Fasteners:** Alloy steel

### Temperature Range

-50ºF to + 248ºF

(-50°C to +120°C)

# Nickel Bellows Couplings

## DIMENSIONS & ORDER CODES

| Size | Number of convolutions | Order Code | | Dimensions | | | | | | Fasteners | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Set Screw Hub | Clamp Hub | O.D in. (mm) | O/A Length L in. (mm) | Max Shaft Depth L1 in. (mm) | Max Bores | Moment of Inertia kgm2 x 10-8 | Mass kg x 10-3 | Size | Torque lb-in. (Ncm) | A/F in. (mm) |
| 7 | 8 | 321.07 | - | 0.25 (6.35) | 0.55 (14) | 0.16 (4) | 3.175 | 1.3 | 1.5 | M2 | 3.63 (41) | .035 (0.9) |
| 12 | 14 | 321.12 | - | 0.47 (12) | 0.91 (23) | 0.24 (6) | 6.35 | 18.5 | 10 | M2.5 | 6.99 (79) | .051 (1.3) |
| 17 | 14 | 321.17 | - | 0.67 (17) | 1.22 (31) | 0.28 (7) | 10 | 36.2 | 8.5 | M3 | 11.68 (132) | .060 (1.5) |
| | | - | 323.17 | 0.64 (16.3) | 1.30 (33) | 0.31 (8) | 6.35 | 46.6 | 11.0 | M2 | 3.10 (35) | 0.60 (1.5) |
| 25 | 10 | 321.25 | - | 0.98 (25) | 1.30 (33) | 0.28 (7) | 12.7 | 161.0 | 19.5 | M3 | 11.68 (132) | 0.60 (1.5) |
| | | - | 323.25 | 0.98 (25) | 1.46 (37) | 0.35 (9) | 12.7 | 245.0 | 28.5 | M2.5 | 5.84 (66) | 0.08 (2.0) |
| 36 | 7 | 321.36 | - | 1.43 (36.3) | 1.67 (42.3) | 0.37 (9.5) | 19.05 | 601.0 | 39.0 | M6 | 45.14 (510) | 0.12 (3.0) |
| | | - | 323.36 | 1.43 (36.3) | 1.85 (46.9) | 0.46 (11.8) | 19.05 | 2960.0 | 85.0 | M4 | 23.19 (262) | 0.12 (3.0) |
| 50 | 11 | 321.50 | - | 2.00 (51) | 2.33 (59.3) | 0.41 (10.5) | 20 | 952.0 | 52.0 | M6 | 76.12 (860) | 0.12 (3.0) |
| | | - | 323.50 | 2.00 (51) | 2.44 (61.9) | 0.46 (11.8) | 20 | 3560.0 | 105.0 | M4 | 23.19 (262) | 0.12 (3.0) |

## PERFORMANCE

| Size | Peak Torque lb-in. (Ncm) | Wind up Arcs/Ncm | Max misalignment compensation | | | Nominal Spring Rates | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Angular Deg | Radial in. (mm) | Axial in. (mm) | Torsional (Nm/rad) | Angular (N/deg) | Radial (N/mm) | Axial (N/mm) |
| 7 | 0.434 (4.9) | 285 | 10 | .007 (0.19) | .026 (0.65) | 7 | <0.15 | 6.9 | 3.5 |
| 12 | 1.15 (13) | 75 | 15 | .021 (0.54) | .068 (1.72) | 27 | <0.15 | 4.2 | 2.2 |
| 17 | 4.42 (50) | 20 | 10 | .017 (0.43) | .070 (1.78) | 103 | 0.15 | 12.3 | 4.0 |
| 25 | 29.03 (328) | 4.0 | 8 | .018 (0.46) | .081 (2.07) | 515 | 0.41 | 38.1 | 11.2 |
| 36 | 81.25 (918) | 1.2 | 6 | .018 (0.46) | 0.13 (3.28) | 1719 | 0.32 | 87.8 | 20.2 |
| 50 | 143.7 (1624) | 0.6 | 9 | .044 (1.12) | 0.24 (6.1) | 3438 | <0.15 | 57.8 | 17.6 |

## AVAILABLE BORES

Sizes indicated in parenthesis are metric (mm).

| Size | Ø B1, B2 H8 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (16) | 3/4" | (20) |
| 7 | • | • | • | | | | | | | | | | | | |
| 12 | • | • | • | • | • | • | • | | | | | | | | |
| 17 | • | • | • | • | • | • | • | S | S | S | | | | | |
| 25 | | | | | | • | • | • | • | • | • | • | | | |
| 36 | | | | | | | | | | • | • | • | • | | |
| 50 | | | | | | | | | | | • | • | • | • | • |
| Bore Ref. | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 42 | 47 | 48 |

S = Setscrew only

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

# Flexible Membrane Couplings - Rivetted Series



## Materials & Finishes

**Hubs & spacer:** Al. Alloy 2014 T6 or 2011T8
Clear anodised finish

**Membranes:** Spring quality stainless steel
Heat treated

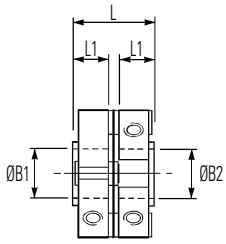
**Rivet assembly:** Brass rivets flanked by formed steel washers
Steel, zinc plate & colour passivate

**Fasteners:** Alloy steel, black oiled

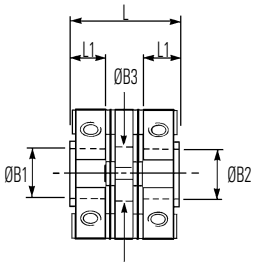
## Temperature Range

-40ºF to + 248ºF (-40°C to +120°C)

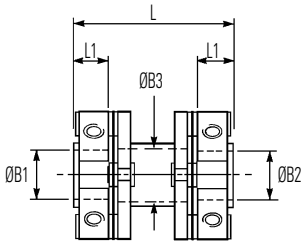
## Set screw hubs



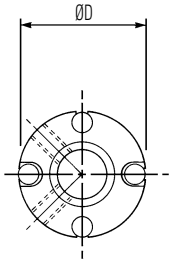

**Ref. 460**
for use in pairs or with floating shafts




**Ref. 464**
for precisely aligned shafts

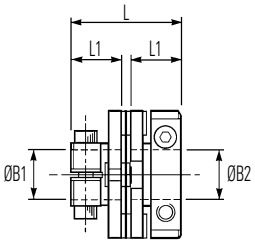



**Ref. 468**
for greater radial misalignment and lower bearing loads

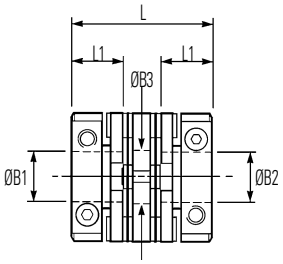



**Typical**

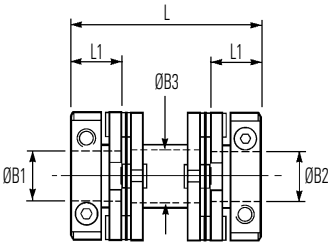
## Clamp hubs



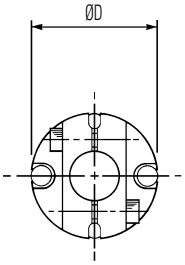

**Ref. 462**
for use in pairs or with floating shafts




**Ref. 466**
for precisely aligned shafts

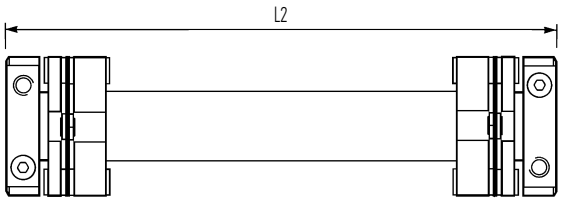



**Ref. 470**
for greater radial misalignment and lower bearing loads




**Typical**

## Drive shafts




Unless specified otherwise, drive shafts are supplied with set screw hubs inboard.

**Drive shafts are supplied to order.**

Please specify:

- Coupling size
- Hub style and bore diameter at each end
- Keyway details
- Overall length L2
- Minimum torsional stiffness, if critical
- Quantity

# Flexible Membrane Couplings - Rivetted Series

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | L in. (mm) | ①L1 in. (mm) | ØB1, ØB2 max in. (mm) | ②ØB3 in. (mm) | Fasteners | | | ④Moment of inertia kgm2 x 10–8 | ④Mass kg x 10–3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COUPLING REF | | | | | | | Screw | ③Torque lb-in. (Nm) | Wrench in. (mm) | | |
| 19 | 460.19 | – | 0.76 (19.2) | 0.51 (13.0) | 0.22 (5.6) | .25 (6.35) | N/A | M3 | 8.32 (0.94) | 0.06 (1.5) | 30 | 7 |
| | 464.19 | – | | 0.77 (19.6) | | | 0.29 (7.3) | | | | 50 | 10 |
| | 468.19 | – | | 1.07 (27.3) | | | | | | | 60 | 12 |
| | – | 462.19 | | 0.80 (20.2) | 0.36 (9.2) | | N/A | M2.5 | 11.6 (1.32) | 0.08 (2) | 40 | 9 |
| | – | 466.19 | | 1.06 (26.8) | | | 0.29 (7.3) | | | | 60 | 13 |
| | – | 470.19 | | 1.36 (34.5) | | | | | | | 60 | 14 |
| 26 | 460.26 | – | 1.00 (25.6) | 0.62 (15.8) | 0.27 (6.9) | 0.39 (10) | N/A | M4 | 20.0 (2.27) | 0.08 (2) | 120 | 15 |
| | 464.26 | – | | 0.88 (22.4) | | | 0.43 (11.0) | | | | 160 | 18 |
| | 468.26 | – | | 1.19 (30.1) | | | | | | | 200 | 23 |
| | – | 462.26 | | 0.86 (21.8) | 0.40 (10.0) | | N/A | M2.5 | 11.6 (1.32) | 0.08 (2) | 130 | 16 |
| | – | 466.26 | | 1.12 (28.4) | | | 0.43 (11.0) | | | | 160 | 20 |
| | – | 470.26 | | 1.42 (36.1) | | | | | | | 210 | 25 |
| 33 | 460.33 | – | 1.32 (33.5) | 0.89 (22.5) | 0.40 (10.0) | 0.50 (12.7) | N/A | M5 | 40.8 (4.62) | 0.10 (2.5) | 560 | 37 |
| | 464.33 | – | | 1.26 (32.1) | | | 0.56 (14.1) | | | | 800 | 52 |
| | 468.33 | – | | 1.69 (42.8) | | | | | | | 830 | 55 |
| | – | 462.33 | | 1.20 (30.5) | 0.55 (14.0) | | N/A | M3 | 21.5 (2.43) | 0.10 (2.5) | 520 | 37 |
| | – | 466.33 | | 1.58 (40.1) | | | 0.56 (14.1) | | | | 730 | 51 |
| | – | 470.33 | | 2.00 (50.8) | | | | | | | 760 | 55 |
| 41 | 460.41 | – | 1.63 (41.5) | 1.10 (27.1) | 0.47 (12.0) | 0.63 (16) | N/A | M6 | 67.4 (7.61) | 0.12 (3) | 1540 | 69 |
| | 464.41 | – | | 1.52 (38.5) | | | 0.69 (17.5) | | | | 2250 | 97 |
| | 468.41 | – | | 1.97 (50.1) | | | | | | | 2450 | 107 |
| | – | 462.41 | | 1.46 (37.1) | 0.67 (17.0 | | N/A | M4 | 50.1 (5.66) | 0.12 (3) | 1530 | 72 |
| | – | 466.41 | | 1.91 (48.5) | | | 0.69 (17.5) | | | | 2220 | 100 |
| | – | 470.41 | | 2.40 (60.1) | | | | | | | 2370 | 109 |

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

① Length of supported thro' bore.

② Clearance bore thro' spacer.

③ Maximum recommended tightening torque.

④ Values apply with max bores.

⑤ **Peak torque**. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

⑥ Max. compensation values are mutually exclusive.

⑦ Torsional stiffness values apply at 50% peak torque with no misalignment, measured shaft-to-shaft with largest standard bores.
**Note that in some vendors' catalogues the given torsional stiffness applies to the membrane stack only, giving rise to a greater value.**

## PERFORMANCE

| Coupling Size | Ref. | ⑤Peak torque lb-in. (Nm) | ⑦ Max compensation | | | ⑦ Flexural stiffness | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (±mm) | Torsional Nm / rad | Angular N / deg | Radial N / mm | Axial N / mm |
| 19 | 460 & 462 | 7.97 (0.9) | 2 | 0 (0) | .004 (0.1) | 220 | 0.4 | – | < 7 |
| | 464 & 466 | | 4 | .001 (0.2) | .001 (0.2) | 150 | 0.25 | 14 | |
| | 468 & 470 | | 4 | .016 (0.4) | .001 (0.2) | 145 | 0.3 | 4 | |
| 26 | 460 & 462 | 20.4 (2.3) | 2 | 0 (0) | .004 (0.1) | 585 | 0.75 | – | < 7 |
| | 464 & 466 | | 4 | .001 (0.2) | .001 (0.2) | 385 | 0.5 | 37 | |
| | 468 & 470 | | 4 | .016 (0.4) | .001 (0.2) | 400 | 0.4 | 7 | |
| 33 | 460 & 462 | 49.6 (5.6) | 1.5 | 0 (0) | .004 (0.1) | 1560 | 2 | – | < 8 |
| | 464 & 466 | | 3 | .001 (0.2) | .004 (0.1) | 935 | 1 | 48 | |
| | 468 & 470 | | 3 | .016 (0.4) | .001 (0.2) | 980 | 1.2 | 13 | |
| 41 | 460 & 462 | 100 (11.3) | 1 | 0 (0) | .004 (0.1) | 2710 | 4 | – | < 8 |
| | 464 & 466 | | 2 | .001 (0.2) | .001 (0.2) | 1980 | 2 | 100 | |
| | 468 & 470 | | 2 | .016 (0.4) | .001 (0.2) | 2020 | 2 | 25 | |

## STANDARD BORES

Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | (9) | 3/8" | (10) | (11) | (12) | 1/2" | (14) | (15) | 5/8" | (16) |
| 19 | • | • | • | • | • | • | • | | | | | | | | | | | |
| 26 | | | • | • | • | • | • | • | • | • | • | | | | | | | |
| 33 | | | | | | • | • | • | • | • | • | • | • | • | | | | |
| 41 | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • |
| **Bore ref.** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 30 | 31 | 32 | 33 | 35 | 36 | 38 | 40 | 41 | 42 |
| **Corresponding bore adaptor** | | | | | 251 | | 253 | 255 | | | 257 | | | 259 | | | | 260 |

Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes. See page 58 for details of metallic and electrically insulating adaptors.

# Flexible Membrane Couplings - Bolted Series



## Materials & Finishes

**Hubs & spacer:** Al. Alloy 2014A T6
Clear anodised finish

**Membranes:** Spring quality stainless steel
Heat treated

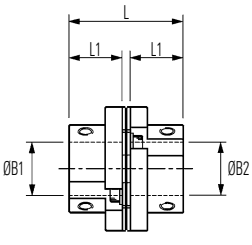
**Bolt assembly:** Bolt, alloy steel, black oiled finish
Bush assembly, steel, zinc plate & black chromate
Safety washer, carbon steel, black/brown oiled finish

**Fasteners:** Alloy steel, black oiled

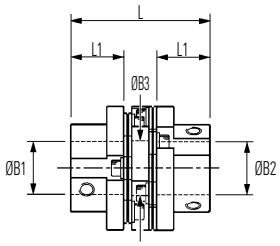
## Temperature Range

-40°F to + 248°F (-40°C to +120°C)

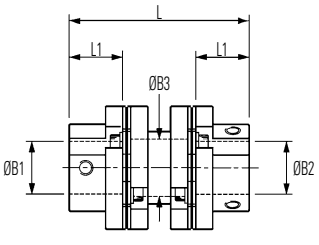
## Set screw hubs



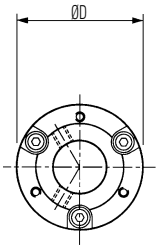

**Ref. 660**
for use in pairs or with floating shafts




**Ref. 664**
for precisely aligned shafts

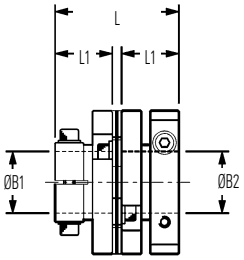



**Ref. 668**
for greater radial misalignment and lower bearing loads

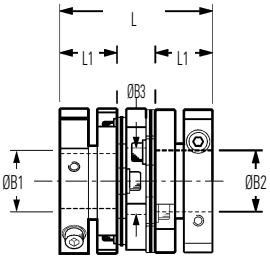



**Typical**

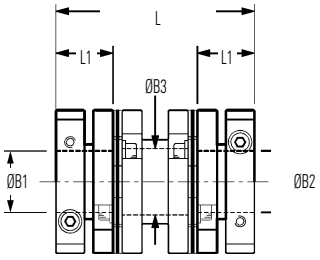
## Clamp hubs



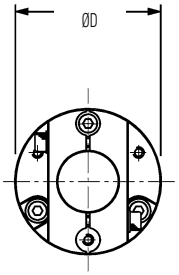

**Ref. 662**
for use in pairs or with floating shafts




**Ref. 666**
for precisely aligned shafts



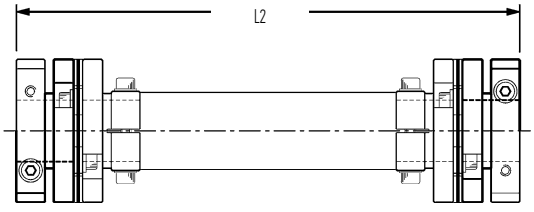

**Ref. 670**
for greater radial misalignment and lower bearing loads




**Typical**

## Drive shafts

Unless specified otherwise, drive shafts are supplied with set screw hubs inboard and/or bonded to link shaft.




**Drive shafts are supplied to order.**

Please specify: • Coupling size • Hub style and bore diameter at each end • Keyway details • Overall length L2 • Minimum torsional stiffness, if critical • Quantity

# Flexible Membrane Couplings - Bolted Series

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | L in. (mm) | L1 ① in. (mm) | ØB1, ØB2 max in. (mm) | ② ØB3 in. (mm) | Fasteners Screw | Fasteners ③ Torque lb.-in. (Nm) | Fasteners Wrench in. (mm) | ④ Moment of inertia kgm2 x 10–8 | ④ Mass kg x 10–3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COUPLING REF | | | | | | | | | | | |
| 41 | 660.41 | – | 1.63 (41.5) | 1.45 (36.9) | 0.67 (17.1) | 0.63 (16) | N/A | M6 | 67.3 (7.60) | 0.12 (3) | 1160 | 63 |
| | 664.41 | – | | 1.89 (47.9) | | | 0.66 (16.8) | | | | 1680 | 90 |
| | 668.41 | – | | 2.35 (59.7) | | | 0.69 (17.5) | | | | 1790 | 101 |
| | – | 662.41 | | 1.45 (36.9) | | | N/A | M4 | 50.1 (5.66) | 0.12 (3) | 1400 | 74 |
| | – | 666.41 | | 1.89 (47.9) | | | 0.66 (16.8) | | | | 2010 | 101 |
| | – | 670.41 | | 2.35 (59.7) | | | 0.69 (17.5) | | | | 2250 | 112 |
| 52 | 660.52 | – | 2.05 (52.0) | 1.74 (44.2) | 0.79 (20.0) | 0.79 (20) | N/A | M6 | 0.86 (7.60) | 0.12 (3) | 3740 | 124 |
| | 664.52 | – | | 2.17 (55.0) | | | 0.87 (22.0) | | | | 5490 | 168 |
| | 668.52 | – | | 2.85 (72.4) | | | | | | | 6840 | 208 |
| | – | 662.52 | | 1.97 (50.0) | 0.90 (22.9) | | N/A | M5 | 101 (11.4) | 0.16 (4) | 5660 | 164 |
| | – | 666.52 | | 2.39 (60.8) | | | 0.87 (22.0) | | | | 7470 | 208 |
| | – | 670.52 | | 3.07 (78.1) | | | | | | | 8870 | 247 |
| 66 | 660.66 | – | 2.60 (66.0) | 2.38 (60.4) | 1.10 (28.0) | 1.10 (28) | N/A | M8 | 162 (18.3) | 0.16 (4) | 13370 | 272 |
| | 664.66 | – | | 2.90 (73.6) | | | 1.13 (28.7) | | | | 18040 | 360 |
| | 668.66 | – | | 3.73 (94.7) | | | 1.19 (30.2) | | | | 23400 | 447 |
| | – | 662.66 | | 2.22 (56.4) | 1.02 (26.0) | | N/A | M5 | 101 (11.4) | 0.16 (4) | 14200 | 269 |
| | – | 666.66 | | 2.74 (69.6) | | | 1.13 (28.7) | | | | 19300 | 357 |
| | – | 670.66 | | 3.57 (90.7) | | | 1.19 (30.2) | | | | 24320 | 444 |
| 76 | – | 662.76 | 2.99 (76.0) | 3.20 (81.2) | 1.50 (38.0) | 1.50 (38) | N/A | M8 | 354 (40.0) | 0.24 (6) | 45658 | 529 |
| | – | 670.76 | | 4.98 (126.4) | | | 1.54 (39) | | | | 69823 | 804 |

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

## PERFORMANCE

| Coupling Size | Ref. | ⑤ Peak torque lb.-in. (Nm) | ⑥ Max compensation Angular deg | Radial in. (mm) | Axial in. (± mm) | ⑦ Flexural stiffness Torsional Nm / rad x 103 | Angular N / deg | Radial N / mm | Axial N / mm |
|---|---|---|---|---|---|---|---|---|---|
| 41 | 660 & 662 | 0.44 (11.3) | 1 | 0 (0) | .004 (0.1) | 4.0 | 3.7 | – | < 8 |
| | 664 & 666 | | 2 | .001 (0.2) | .001 (0.2) | 2.8 | 1.6 | 97 | |
| | 668 & 670 | | 2 | .016 (0.4) | .001 (0.2) | 2.6 | 1.6 | 23 | |
| 52 | 660 & 662 | 1.18 (30) | 1 | 0 (0) | .004 (0.1) | 7.5 | 10.0 | – | < 9 |
| | 664 & 666 | | 2 | .001 (0.2) | .001 (0.2) | 4.8 | 5.0 | 313 | |
| | 668 & 670 | | 2 | .016 (0.4) | .001 (0.2) | 4.8 | 5.0 | 57 | |
| 66 | 660 & 662 | 2.36 (60) | 1 | 0 (0) | .004 (0.1) | 19.0 | 84.0 | – | < 9 |
| | 664 & 666 | | 2 | .001 (0.2) | .001 (0.2) | 12.0 | 23.0 | 379 | |
| | 668 & 670 | | 2 | .016 (0.4) | .001 (0.2) | 12.0 | 23.0 | 93 | |
| 76 | 662 | 3.94 (100) | 0.5 | 0 (0) | .004 (0.1) | 45.7 | - | 178 | < 9 |
| | 670 | | 1 | .016 (0.4) | .001 (0.2) | 31 | 134 | 110 | |

① Length of supported thro' bore.

② Clearance bore thro' spacer.

③ Maximum recommended tightening torque.

④ Values apply with max bores.

⑤ **Peak torque**. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

⑥ Max. compensation values are mutually exclusive.

⑦ Torsional stiffness values apply at 50% peak torque with no misalignment, measured shaft-to-shaft with largest standard bores.
**Note that in some vendors' catalogues the given torsional stiffness applies to the membrane stack only, giving rise to a greater value.**

*Note that the drawings on the facing page represent Size 66 & 76 which employ 6-bolt membrane Sizes 41 & 52 employ 4-bolts*

## STANDARD BORES[8]

Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/4" | (8) | (9) | 3/8" | (10) | (11) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | 1" | (28) |
| **41** | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | |
| 52 | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| 66 | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 76 | MANUFACTURED TO ORDER ONLY. PLEASE ENQUIRE | | | | | | | | | | | | | | | | | | | |
| **Bore ref.** | 24 | 28 | 30 | 31 | 32 | 33 | 35 | 36 | 38 | 40 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 53 | 54 |
| **Corresponding bore adaptor** | 253 | 255 | | | 257 | | | 259 | | | | 260 | | | | 261 | | | 262 | 263 |

Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes.
See *page 58* for details of metallic and electrically insulating adaptors.



# General Purpose Motion Control Couplings

- Sliding Disc (Oldham)
- Universal Lateral (Uni-Lat)

- **Backlash-free up to $10^8$ turns**
- **Can tolerate large misalignments**
- **Slight damping characteristics**
- **Flex-free mechanical action - non-progressive bearing loads**
- **Non-magnetic (with special screws)**
- **Electrically isolating**
- **Low inertia**

Uni-Lats are widely used for pulse generator drives while Oldhams are very popular for stepper driven positioning stages.

A unique property of Uni-Lats is resistance to axial motion. This makes them suitable for light push/pull duties and for anchoring axially unrestricted shafts.




Oldhams are 3-part couplings consisting of 2 hubs + 1 torque disc. The hubs determine the method of installation and shaft attachment, the discs determine the quality of motion.

The 4 hub styles and 2 disc materials that comprise the range are fully interchangeable within each of the 9 sizes available. To take advantage of this flexibility, hubs and discs are specified and supplied separately.

The discs are the sacrificial elements and are replaceable at low cost in the event of wear or breakage.

# Lateral Offset Couplings



## What's New?

Based on requests we have extended our ranges of Thro' hubs.

Aluminium range now includes a size 13 Set Screw version.

Stainless Steel range has also been extended to include a size 13 and 19 hub

## What's Changed?

Size 19 Aluminium Clamp Hubs we have indroduced a metric version replacing the especial 4-40 UNC screw. [Old product reference 235.19]

Size 33, we have dropped the old long tenon version from the catalog, this will still be available to special order.

[Old product references 230.33.00/243.33/245.33/236.33/454H33 & 456H33]

## General Performance Criteria

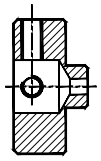
### Temperature Range

-20ºF to +140ºF (–20°C to +60°C)

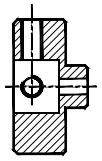
### Maximum Rotational Speed

3000 rev/min

① **Blind hubs:** Length of parallel bore ±0.2. Bores may terminate in 118° incl. angle or flat bottomed.
**Thro' hubs:** Max permissible hub penetration.



**118º Included Angle**



**Flat Bottomed**

② **Blind hubs:** Nominal distance between unchamfered shafts bottomed out to L1.
**Thro' hubs:** Nominal distance between shafts with standard (unbored) disc.

③ Maximum recommended tightening torque.

④ Values apply to complete couplings with max bores.

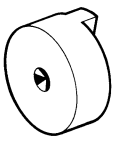
⑤ **Peak torque**. Select a size where Peak Torque exceeds the application torque x service factor.

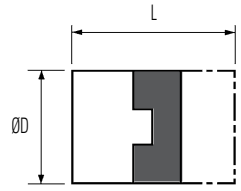
⑥ Couplings can provide up to (ØD x 0.1) radial compensation in extreme cases.
Observe given values for maximum backlash-free life.
Axial compensation is set on installation.
Electrical isolation between shafts > 3kV.

⑦ Values apply at 50% peak torque with no misalignment, measured shaft-to-shaft with largest standard bores.

⑧ Thro' hubs can be provided with keyways.

## Blank hubs






User-adaptable for special needs, e.g. fitting within tubes. Blank hubs are supplied centred with no provision for fastening. External dimensions identical with blind hubs.

| Coupling size | Complete hub ref. | ØD | L |
|---|---|---|---|
| 06 | 231.06.00 | 0.25 (6.4) | 0.50 (12.7) |
| 09 | 231.09.00 | 0.37 (9.5) | 0.50 (12.7) |
| 13 | 231.13.00 | 0.50 (12.7) | 0.63 (15.9) |
| 19 | 231.19.00 | 0.75 (19.1) | 0.87 (22.0) |
| 25 | 231.25.00 | 1.00 (25.4) | 1.12 (28.4) |
| 33 | 231.33.00 | 1.31 (33.3) | 1.65 (42.0) |
| 41 | 231.41.00 | 1.63 (41.3) | 2.00 (50.8) |

## Standard discs (larger sizes are webbed)



Acetal – High torsional stiffness, good bearing properties, long backlash-free life.

Nylon 11 – Resilient, isolates noise & vibration. Performance approximately 25% that of acetal disc.

## Thro' bored discs

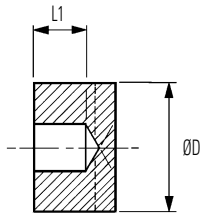


Thro' bored discs allow shafts to near-butt, standard thro' hole diameter = ØD x 0.5. To order, add suffix 'T' to order code, eg., **236.25T**

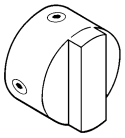
Other thro' hole diameters are manufactured to order. Specify the disc ref. and thro' hole diameter. This should equal the larger shaft diameter + 2 x max radial error.

*Note that thro' bored discs reduce torsional stiffness.*

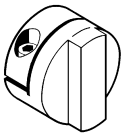
# Brass / Aluminium Blind Hubs



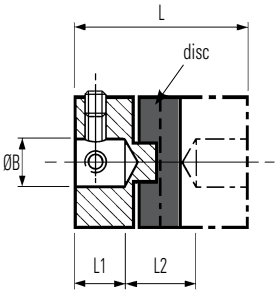

Controlled bore depth L1 provides a register when pre-assembling hubs to shafts



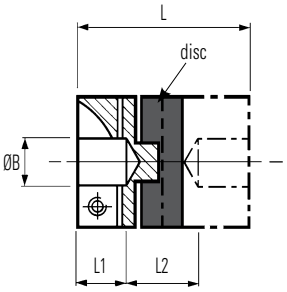
Set screw style



Clamp style




**Refs. 232**
Set screw style




**Refs. 234**
Clamp style

## DIMENSIONS & ORDER CODES

| Coupling Type and Size | | Hub Ref | | Dimensions | | | | | | | Fasteners | | | Disc Ref | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Set Screw Style | Clamp Style | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | ② L2 in. (mm) | ØB1 Max in. (mm) | ④ Moment of Inertia kgm2 x10-8 | ④ Mass kg x10-3 | Size | ③ Torque lb.-in (Nm) | Wrench in. (mm) | Acetal (black) Std. | Nylon 11 (Natural) |
| Blind Hubs | 06 | 232.06 | - | .25 (6.4) | 0.5 (12.7) | 0.15 (3.8) | 0.20 (5.1) | 0.13 (3.18) | 6 | 2.5 | M3 | 8.32 (0.94) | 0.06 (1.5) | 236.06 | 238.06 |
| | 09 | 232.09 | - | .37 (9.50 | 0.5 (12.7) | 0.15 (3.8) | 0.20 (5.1) | 0.20 (5) | 18 | 4 | M3 | 8.32 (0.94) | 0.06 (1.5) | 236.09 | 238.09 |
| | 13 | 232.13 | - | 0.5 (12.7) | 0.63 (15.9) | 0.17 (4.3) | 0.29 (7.3) | 0.25 (6.35) | 26 | 11 | M3 | 8.32 (0.94) | 0.06 (1.5) | 236.13 | 238.13 |
| | 19 | 232.19<br>- | -<br>234.19 | .75 (19.1) | 0.87 (22.0) | 0.25 (6.3) | 0.37 (9.4) | 0.31 (8) | 67 | 12 | M3<br>M2.5 | 8.32 (0.94)<br>11.6 (1.32) | 0.06 (1.5)<br>0.08 (2.0) | 236.19 | 238.19 |
| | 25 | 232.25<br>- | -<br>234.25 | 1.0 (25.4) | .98 (28.4) | 0.34 (8.6) | 0.44 (11.2) | 0.47 (12) | 252 | 31 | M4<br>M3 | 20.1 (2.27)<br>21.5 (2.43) | 0.08 (2.0)<br>0.10 (2.5) | 236.25 | 238.25 |
| | 33 | 232.33<br>- | -<br>234.33 | 1.31 (3.3) | 1.65 (42.0) | 0.51 (13.0) | 0.63 (16.0) | 0.63 (16) | 1074 | 72 | M5<br>M4 | 40.9 (4.62)<br>20.6 (2.33) | 0.06 (1.5)<br>0.08 (2.0) | 836.33 | 838.33 |
| | 41 | 232.41<br>- | -<br>234.41 | 1.62 (41.3) | 2. 0 (50.8) | 0.66 (16.7) | 0.69 (17.4) | 0.79 (20) | 3327 | 148 | M5<br>M4 | 40.1 (4.62)<br>50.1 (5.66) | 0.10 (2.5)<br>0.12 (3.0) | 236.41 | 238.41 |

## PERFORMANCE (AT 20°C WITH STANDARD ACETAL DISC)

| Coupling Size | ⑤ Peak torque lbs.-in. (Nm) | ⑥ Max compensation @ 3000 rpm | | | ⑦ Torsional | | Static break torque lbs.-in. (Nm) |
|---|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Axial in. (± mm) | Rate deg / Nm | Stiffness Nm / rad | |
| 06 | 0.53 (0.06) | 0.5 | .004 (0.1) | .002 (0.05) | 5.7 | 10 | 6.2 (0.7) |
| 09 | 1.90n (0.21) | | .004 (0.1) | .002 (0.05) | 1.9 | 30 | 17.8 (2) |
| 13 | 4.43 (0.5) | | .004 (0.1) | .002 (0.05) | 0.88 | 65 | 35.4 (4) |
| 19 | 15.0 (1.7) | | .008 (0.2) | .004 (0.1) | 0.50 | 115 | 70.1 (8) |
| 25 | 35.4 (4) | | .008 (0.2) | .004 (0.1) | 0.28 | 205 | 115 (13) |
| 33 | 79.7 (9) | | .008 (0.2) | .006 (0.15) | 0.093 | 615 | 469 (53) |
| 41 | 151 (17) | | .01 (0.25) | .006 (0.15) | 0.048 | 1200 | 504 (57) |

## Materials & Finishes

**Hubs sizes 06 to 13 :** Brass BS 2874 CZ121
**Hub sizes 19 to 41:** Al Alloy 2014 16
**Fasteners:** Alloy steel, black oiled
**Blind & black hubs:** Irridite NCP finish

**IMPORTANT**

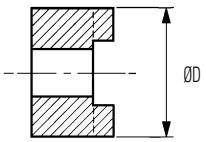
Load capacity depends on application conditions:
***see page 4*** for details

## STANDARD BORES FOR ALL TYPES

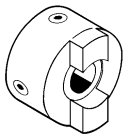
Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | (30) |
| 06 | • | • | • | | | | | | | | | | | | | | | | | | | | | |
| 09 | | • | • | • | • | • | | | | | | | | | | | | | | | | | | |
| 13 | | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |
| 19 | | | | • | • | • | • | • | • | | | | | | | | | | | | | | | |
| 25 | | | | | | | • | • | • | • | • | • | | | | | | | | | | | | |
| 33 | | | | | | | | | • | • | • | • | • | • | • | • | • | | | | | | | |
| 41 | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 56 |

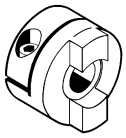
# Aluminium Thro' Hubs



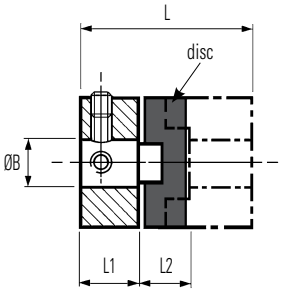

Thro' bores allow disc replacement without disturbing shaft alignment



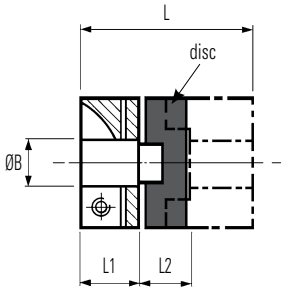
Set screw style



Clamp style




**Refs. 450**
Set screw style




**Refs. 452**
Clamp style

## DIMENSIONS & ORDER CODES

| Coupling Type and Size | | Hub Ref | | Dimensions | | | | | | | Fasteners | | | Disc Ref | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Set Screw Style | Clamp Style | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | ② L2 in. (mm) | ØB1 Max in. (mm) | ④ Moment of Inertia kgm2 x10-8 | ④ Mass kg x10-3 | Size | ③ Torque lb.-in (Nm) | Wrench in. (mm) | Acetal (black) Std. | Nylon 11 (Natural) |
| Thro' Hubs | 13 | 450H13 | - | 0.5 (12.7) | 0.63 (15.9) | 0.21 (5.5) | 0.08 (1.7) | 0.25 (6.35) | 20 | 10 | M3 | 8.32 (0.94) | 0.06 (1.5) | 236.13 | 238.13 |
| | 19 | 450H19<br>- | -<br>452H19 | .75 (19.1) | 1.02 (26.0) | 0.37 (9.4) | 0.28 (7.2) | 0.31 (8) | 59 | 13 | M5<br>M2.5 | 40.1 (4.62)<br>11.6 (1.32) | 0.10 (2.5)<br>0.08 (2.0) | 236.19 | 238.19 |
| | 25 | 450H25<br>- | -<br>452H25 | 1.0 (25.4) | 1.28 (32.4) | 0.46 (11.6) | 0.36 (9.2) | 0.47 (12) | 252 | 31 | M5<br>M3 | 40.9 (4.62)<br>21.5 (2.43) | 0.10 (2.5)<br>0.10 (2.5) | 236.25 | 238.25 |
| | 33 | 450H33<br>- | -<br>452H33 | 1.31 (33.3) | 1.65 (42.0) | 0.59 (15.0) | 0.47 (12.0) | 0.63 (16) | 1080 | 67 | M6<br>M4 | 67.4 (7.61)<br>50.1 (5.66) | 0.12 (3.0)<br>0.12 (3.0) | 836.33 | 838.33 |
| | 41 | 450H41<br>- | -<br>452H41 | 1.62 (41.3) | 2.0 (50.8) | 0.70 (17.8) | 0.60 (15.3) | 0.79 (20) | 3177 | 142 | M6<br>M4 | 67.4 (7.61)<br>50.1 (5.66) | 0.12 (3.0)<br>0.12 (3.0) | 236.41 | 238.41 |
| | 50 | 450H50<br>- | -<br>452H50 | 1.97 (50.0) | 2.35 (59.6) | 0.81 (20.6) | 0.72 (18.4) | 1.0 (25.4) | 7550 | 208 | M8<br>M5 | 162 (18.36)<br>101 (11.40) | 0.16 (4.0)<br>0.16 (4.0) | 236.50 | - |
| | 57 | 450H57<br>- | -<br>452H57 | 2.25 (57.1) | 3.07 (78.0) | 1.12 (28.4) | 0.83 (21.2) | 1.18 (30) | 12410 | 361 | M8<br>M6 | 162 (18.36)<br>171 (19.34) | 0.16 (4.0)<br>0.20 (5.0) | 236.57 | - |

## PERFORMANCE (AT 20°C WITH STANDARD ACETAL DISC)

| Coupling Size | ⑤ Peak torque lbs.-in. (Nm) | ⑥ Max compensation @ 3000 rpm | | | ⑦ Torsional | | Static break torque lbs.-in. (Nm) |
|---|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Axial in. (± mm) | Rate deg / Nm | Stiffness Nm / rad | |
| 13 | 4.43 (0.5) | 0.5 | .004 (0.1) | .002 (0.05) | 0.88 | 65 | 35.4 (4) |
| 19 | 15.0 (1.7) | | .008 (0.2) | .004 (0.1) | 0.50 | 115 | 70.1 (8) |
| 25 | 35.4 (4) | | .008 (0.2) | .004 (0.1) | 0.28 | 205 | 115 (13) |
| 33 | 79.7 (9) | | .008 (0.2) | .006 (0.15) | 0.093 | 615 | 469 (53) |
| 41 | 151 (17) | | .01 (0.25) | .006 (0.15) | 0.048 | 1200 | 504 (57) |
| 50 | 266 (30) | | .01 (0.25) | .008 (0.2) | 0.042 | 1375 | 841 (95) |
| 57 | 389 (44) | | .01 (0.25) | .008 (0.2) | 0.022 | 2610 | 1328 (150) |

## Materials Finishes

**Hub sizes 13 to 57 :** Al Alloy 2014A 16

**Fasteners:** Alloy steel, black oiled

**Hubs:** Clear anodised finish

**IMPORTANT**

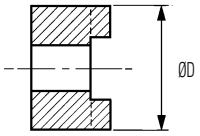
Load capacity depends on application conditions:
***see page 4*** for details

## STANDARD BORES®FOR ALL TYPES

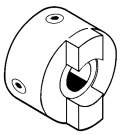
Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | (30) |
| 13 | | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |
| 19 | | | | • | • | • | • | • | • | | | | | | | | | | | | | | | |
| 25 | | | | | | | • | • | • | • | • | • | | | | | | | | | | | | |
| 33 | | | | | | | | | • | • | • | • | • | • | • | • | • | | | | | | | |
| 41 | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| 50 | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| 57 | | | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **Bore ref.** | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 56 |

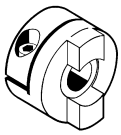
# Stainless Steel Thro' Hubs



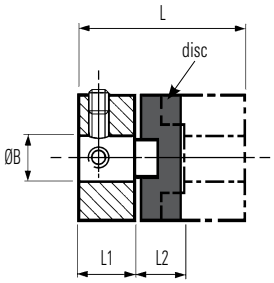

Thro' bores allow disc replacement without disturbing shaft alignment



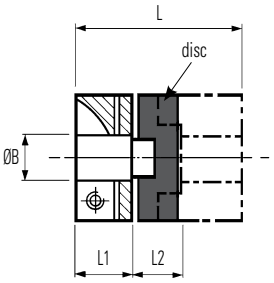
Set screw style



Clamp style




**Ref. 850**
Set screw style




**Ref. 852**
Clamp style

## DIMENSIONS & ORDER CODES

| Size | Hub Ref | | Dimensions | | | | | | | Fasteners | | | Disc Ref | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Set Screw Style | Clamp Style | ØD in. (mm) | L in. (mm) | L1 in. (mm) | L2 in. (mm) | ØB1 Max in. (mm) | Moment of Inertia kgm2 x10-8 | Mass kg x10-3 | Size | Torque lbs.-in. (Nm) | A/F in. (mm) | Acetal (black) Std. | Nylon 11 (Nat) |
| 13 | 850.13 | - | 0.5 (12.7) | 0.63 (15.9) | 0.21 (5.5) | 0.08 (1.7) | 0.25 (6.35) | 26 | 14 | M3 | 2.83 (0.32) | 0.06 (1.5) | 236.13 | 238.13 |
| 19 | 850.19<br>- | -<br>852.19 | 0.75 (19.1) | 1.02 (26.0) | 0.37 (9.4) | 0.28 (7.2) | 0.31 (8.0) | 220 | 45 | M4<br>M2.5 | 9.3 (1.05)<br>6.0 (0.68) | 0.08 (2.0)<br>0.08 (2.0) | 236.19 | 238.19 |
| 25 | 850.25<br>- | -<br>852.25 | 1.0 (25.4) | 1.28 (32.4) | 0.46 (11.6) | 0.36 (9.2) | 0.47 (12.0) | 587 | 76 | M5<br>M3 | 18.6 (2.1)<br>10.6 (1.2) | 0.10 (2.5)<br>0.10 (2.5) | 236.25 | 238.25 |
| 33 | 850.33<br>- | -<br>852.33 | 1.31 (33.3) | 1.65 (42.0) | 0.60 (15.0) | 0.36 (12.0) | 0.63 (16.0) | 2091 | 165 | M6<br>M4 | 33.6 (3.8)<br>25.7 (2.9) | 0.12 (3.0)<br>0.12 (3.0) | 836.33 | 838.33 |
| 41 | 850.41<br>- | -<br>852.41 | 1.63 (41.3) | 2.0 (50.8) | 0.70 (17.8) | 0.6 (15.3) | 0.79 (20.0) | 6822 | 305 | M6<br>M5 | 33.6 (3.8)<br>52.2 (5.9) | 0.12 (3.0)<br>0.16 (4.0) | 236.41 | 238.41 |
| 50 | 850.50<br>- | -<br>852.50 | 1.97 (50.0) | 2.35 (59.6) | 0.81 (20.6) | 0.81 (20.6) | 1.0 (25.4) | 17368 | 510 | M8<br>M6 | 79.7 (9.0)<br>86.7 (9.8) | 0.16 (4.0)<br>0.20 (5.0) | 236.50 | N/A |

## PERFORMANCE (AT 20°C WITH STANDARD ACETAL DISC)

| Coupling Size | ⑤ Peak torque lbs.-in. (Nm) | ⑥ Max compensation @ 3000 rpm | | | ⑦ Torsional | | Static break torque lbs.-in. (Nm) |
|---|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Axial in. (± mm) | Rate deg / Nm | Stiffness Nm / rad | |
| 13 | 4.43 (0.5) | 0.5 | .004 (0.1) | .002 (0.05) | 0.88 | 65 | 35.4 (4) |
| 19 | 15.0 (1.7) | | .008 (0.2) | .004 (0.1) | 0.50 | 115 | 70.1 (8) |
| 25 | 35.4 (4) | | .008 (0.2) | .004 (0.1) | 0.28 | 205 | 115 (13) |
| 33 | 79.7 (9) | | .008 (0.2) | .006 (0.15) | 0.093 | 615 | 469 (53) |
| 41 | 151 (17) | | .01 (0.25) | .006 (0.15) | 0.048 | 1200 | 504 (57) |
| 50 | 266 (30) | | .01 (0.25) | .008 (0.2) | 0.042 | 1375 | 841 (95) |

## Materials Finishes

**Hubs:** Stainless Steel 303 S31 - Natural Finish

**Fasteners:** Stainless Steel

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

## STANDARD BORES® FOR ALL TYPES

Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | (30) |
| 13 | | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |
| 19 | | | | • | • | • | • | • | • | | | | | | | | | | | | | | | |
| 25 | | | | | | | • | • | • | • | • | • | | | | | | | | | | | | |
| 33 | | | | | | | | | • | • | • | • | • | • | • | • | • | | | | | | | |
| 41 | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| 50 | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| **Bore ref.** | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 56 |

# Universal / Lateral Offset Couplings



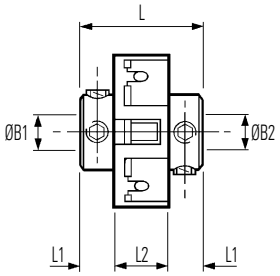

## Materials & Finishes

| | |
|---|---|
| **Hub sizes 18 & 27:** | Brass BS 2874 CZ121 |
| **Hub sizes 34, 41 & 70:** | Al. Alloy 2014 T6<br>Irridite NCP |
| **Fasteners:** | Alloy steel, black oiled |
| **Clamp rings (sizes 18 & 27):** | Al. Alloy 2014 T6<br>Irridite NCP |
| **Torque rings, all sizes:** | Acetal (black) |

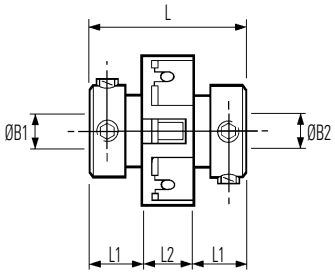
## Temperature Range

-20ºF to +140ºF (–20°C to +60°C)

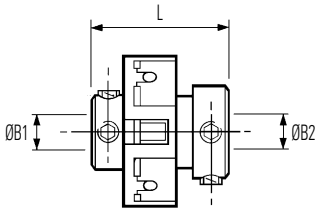
## Set screw hubs




**Ref. 201**
Small bores



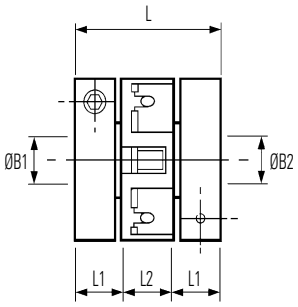

**Ref. 203**
Large bores



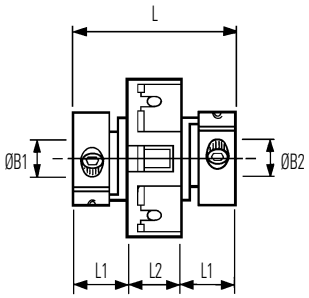

**Ref. 221** (not listed in main table).
Combines large & small bores.
See explanatory note on facing page

| Coupling ref. 221 | |
|---|---|
| Size | L in. (mm) |
| 18 | 0.66 (16.7) |
| 27 | 0.88 (22.3) |
| 34 | 1.10 (28.0) |
| 41 | 1.31 (33.3) |

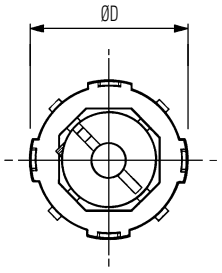
## Clamp hubs




**Ref. 207**
Collet hub & ring clamp

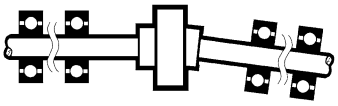



**Ref. 205**
Integral leaf clamp



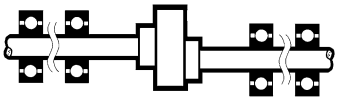

Typical

## Installation



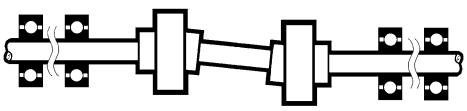
**right**

Up to 10° angular offset,
depending on type



**right**

Up to 1mm radial offset for
extreme misalignments



**wrong**

Standard Uni-Lats cannot be used in pairs.
Special versions are available for use in this mode.
Please enquire.

# Universal / Lateral Offset Couplings

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Hubs | Clamp Hubs | ØD in. (mm) | L in. (mm) | ①L1 in. (mm) | ②L2 in. (mm) | ØB1, ØB2 max in. (mm) | Fasteners | | | ④Moment of inertia kgm2 x 10–8 | ④Mass kg x 10–3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COUPLING REF | | | | | | | Screw | ③Torque lb.-in. (Nm) | Wrench in. (mm) | | |
| 18 | 201.18 | – | .71 (18.0) | .56 (14.2) | .18 (4.6) | 0.20 (5.1) | 0.20 (5) | M3 | 8.32 (0.94) | 0.06 (1.5) | 20 | 7 |
| | 203.18 | – | | .75 (19.1) | 0.28 (7.0) | | 0.25 (6.35) | | | | | |
| | – | 207.18 ‡ 218 | 0.75 (19.1) | | | | | M2.5 | 11.6 (1.32) | 0.08 (2.0) | 55 | 11 |
| 27 | 201.27 | – | 1.10 (28.0) | .75 (19.1) | 0.24 (6.1) | 0.27 (6.9) | 0.31 (8) | M3 | 8.32 (0.94) | 0.06 (1.5) | 91 | 16 |
| | 203.27 | – | | 1.0 (25.4) | 0.37 (9.3) | | 0.39 (10) | | | | | |
| | – | 207.27 ‡ 218 | | | | | | M3 | 21.5 (2.43) | 0.10 (2.5) | 220 | 26 |
| 34 | 201.34 | – | 1.33 (33.7) | .99 (25.2) | 0.32 (8.1) | 0.35 (8.9) | 0.38 (10) | M4 | 20.1 (2.27) | .08 (2.0) | 165 | 17 |
| | 203.34 | – | | 1.21 (30.7) | 0.43 (10.9) | | 0.5 (12.7) | | | | | |
| | – | 205.34 | | | | | 0.38 (10) | M2.5 | 11.6 (1.32) | | 183 | 20 |
| 41 | 201.41 | – | 1.63 (41.4) | 1.12 (28.4) | 0.34 (8.6) | 0.44 (11.2) | 0.5 (12.7) | M4 | 20.1 (2.27) | .08 (2.0) | 476 | 30 |
| | 203.41 | – | | 1.5 (38.1) | 0.53 (13.5) | | 0.63 (16) | M5 | 40.9 (4.62) | 0.10 (2.5) | | |
| | – | 205.41 | | | | | 0.5 (12.7) | M4 | 50.1 (5.66) | 0.12 (3.0) | 550 | 40 |
| 70 | 203.70 | – | 1.14 (69.0) | 2.91 (74.0) | 1.12 (28.5) | 0.67 (17.0) | 0.87 (22) | M6 | 67 (7.60) | 0.12 (3.0) | 7315 | 189 |
| | – | 205.70 | | | | | 0.87 (22) | M6 | 170 (19.3) | 0.20 (5.0) | 7315 | 189 |

① Length of supported thro' bore. Shafts must not penetrate beyond L1 when in operation.

② Nominal distance between shafts inserted to L1.

③ Maximum recommended tightening torque.

④ Values apply with max bores.

⑤ *Peak torque.* Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

⑥ Couplings can provide up to 1mm radial and 10° angular compensation (5° for ref. 207) when required. Observe given values for maximum backlash-free life. Electrical isolation between shafts > 3kV for all models when offset ≤5°.

⑦ Values apply at 50% peak torque with no misalignment, measured shaft-to-shaft with largest standard bores.

‡ *Ref. 207 only.* Insert both bore codes in place of ‡.

## PERFORMANCE AT 20°C

| Coupling Size | ⑤ Peak torque lb.-in. (Nm) | ⑥ Max compensation @ 3000 rpm | | ⑦ Torsional | | Axial | | Static break torque lb.-in. (Nm) |
|---|---|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Rate deg / Nm | Stiffness Nm / rad | Max loading ±N | Stiffness N / mm | |
| 18 | 2.66 (0.3) | 2 | .008 (0.2) | 2.3 | 25 | 19 | 155 | 7.97 (0.9) |
| 27 | 15.1 (1.7) | | .008 (0.2) | 0.6 | 92 | 31 | 350 | 44.3 (5.0) |
| 34 | 22.1 (2.5) | | .010 (0.25) | 0.4 | 146 | 34 | 300 | 66.4 (7.5) |
| 41 | 31.0 (3.5) | | .010 (0.25) | 0.19 | 299 | 39 | 250 | 92.9 (10.5) |
| 70 | 106 (12.)0 | | .010 (0.25) | 0.19 | 1300 | 75 | 540 | 602 (68) |

*Coupling ref. 221*

By specifying ref. 221 (not listed in tables, see diagram facing page) you can combine the bores coded for ref. 201 with those coded for ref. 203,

eg., 221.27.2432 specifies Size 27 with Ø6.35 x 10 bores.

**IMPORTANT**

Load capacity depends on application conditions: ***see page 4*** for details

## STANDARD BORES

Sizes indicated in parenthesis are metric (mm).

| Coupling | | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| size | ref. | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | 5/16" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (18) |
| 18 | 201.18 | • | • | • | • | • | | | | | | | | | | | | | | | |
| | 203.18 | | | | | | • | • | | | | | | | | | | | | | |
| | 207.18 | • | • | • | • | • | • | • | | | | | | | | | | | | | |
| 27 | 201.27 | • | • | • | • | • | • | • | • | • | | | | | | | | | | | |
| | 203.27 | | | | | | | | | | • | • | | | | | | | | | |
| | 207.27 | | | | | • | • | • | | • | • | • | | | | | | | | | |
| 34 | 201.34 | | | | | | • | • | | • | • | • | | | | | | | | | |
| | 203.34 | | | | | | | | | | | | • | • | | | | | | | |
| | 205.34 | | | | | | • | • | • | • | • | • | | | | | | | | | |
| 41 | 201.41 | | | | | | • | • | | • | • | • | • | • | | | | | | | |
| | 203.41 | | | | | | | | | | | | | | • | • | • | | | | |
| | 205.41 | | | | | | • | • | | • | • | • | • | • | | | | | | | |
| 70 | 203.70 | | | | | | | | | | | | • | • | • | • | • | • | • | • | • |
| | 205.70 | | | | | | | | | | | | • | • | • | • | • | • | • | • | • |
| Bore ref. | | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 27 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 |
| Corresponding bore adaptor | | | | | | 251 | | 253 | | 254* 255 | | 257 | | 259 | | | 260 | | | | 261 |

Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes. See page 58 for details.

**Note that adaptor 254 is dedicated to coupling ref. 201.27. Use adaptor 255 for all other 8mm diameters.*



# Beam Couplings

- Multi-Beam
- Single-Beam
- Step-Beam

- **Torsionally rigid design**
- **Zero backlash**
- **No moving parts**
- **Single beam simple coupling compatible with industry standard types**
- **3-Beam single stage for increased torsional stiffness**
- **6-Beam two stage for torsional stiffness and increased radial compliance**
- **Step Beam for low inertia, electrical isolation, low cost**

Beam couplings will readily accommodate any combination of axial motion, angular and parallel misalignment.

The 3 start helical-cut design provides higher torque capability and reduced wind-up compared with single beam versions.

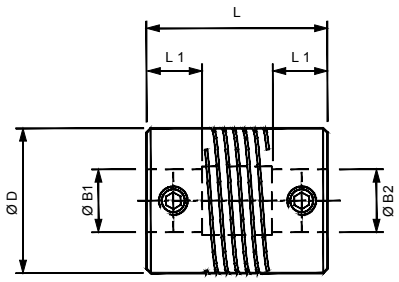
Multi-Beam is available in three standard materials: stainless steel, aluminium and acetal, for shaft diameters from 1mm to 38mm.



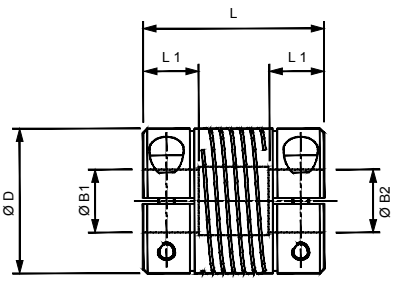
# Multi-Beam

## Stainless Steel Multi-Helix Flexible 3 Beam Couplings

### Set Screw Hubs




### Clamp Hubs




### Materials & Finishes

**Couplings:** Stainless Steel 303 S31

**Fasteners:** Stainless Steel

### Temperature Range

-40°F to +284°F

(–40°C to +140°C)

## 3-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters Min B1 | Min B2 | Max B1 & B2 | Mass kgx10-3 | Fasteners Set Screw | Cap Screw | Torque lbs.-in. (Nm) | Wrench in. (mm) | ② Angular Offset Deg. | ② Parallel Offset mm | Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | | | | | | | | | | | | |
| Relieved | 6 | 720.06 | – | .25 (6.4) | 0.5 (12.7) | .13 (3.2) | 1.0 | 2.0 | 3.0 | 1.93 | M2 | – | 0.71 (0.08) | .035 (0.9) | 3 | .003 (.07) | 1.53 | 3.98 (0.45) |
| | 9 | 720.09 | – | .37 (9.5) | .56 (14.2) | .18 (4.5) | 2.0 | 3.0 | 3.18 | 5.85 | M2.5 | - | 2.04 (0.23) | .051 (1.3) | 3 | .004 (0.1) | 16 | 4.43 (0.50) |
| | | – | 721.09 | | | | | | | | - | M1.6 | 1.33 (0.15) | .059 (1.5) | | | | |
| | 13 | 720.13 | – | 0.5 (12.7) | .75 (19.1) | .24 (6.0) | 3.0 | 4.0 | 5.0 | 13.7 | M3 | - | 2.83 (0.32) | .059 (1.5) | 5 | .005 (.127) | 54 | 8.85 (1.0) |
| | | – | 721.13 | | | | | | | | - | M2 | 2.66 (0.30) | .059 (1.5) | | | | |
| | 16 | 720.16 | – | .63 (15.9) | .80 (20.3) | .26 (6.5) | 3.0 | 4.0 | 6.35 | 22.9 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5 | .005 (.127) | 81 | 15.9 (1.80) |
| | | – | 721.16 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 19 | 720.19 | – | .75 (19.1) | .90 (22.9) | .26 (6.5) | 4.0 | 4.76 | 8.0 | 35.9 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5 | .005 (.127) | 143 | 23.9 (2.70) |
| | | – | 721.19 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 25 | 720.25 | – | 1.0 (25.4) | 1.25 (31.8) | .35 (9.0) | 5.0 | 6.0 | 10 | 92.2 | M5 | - | 18.6 (2.10) | .098 (2.5) | 5 | .005 (.127) | 175 | 53.1 (6.0) |
| | | – | 721.25 | | | | | | | | - | M3 | 10.6 (1.20) | .098 (2.5) | | | | |
| | 32 | 720.32 | – | 1.25 (31.8) | 1.75 (44.5) | .47 (12.0) | 6.0 | 8.0 | 14 | 194 | M6 | - | 33.2 (3.75) | 0.12 (3.0) | 5 | .005 (.127) | 378 | 88.5 (10.0) |
| | | – | 721.32 | | | | | | | | - | M4 | 25.2 (2.85) | 0.12 (3.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

## BORE SIZES 3-BEAM COUPLINGS

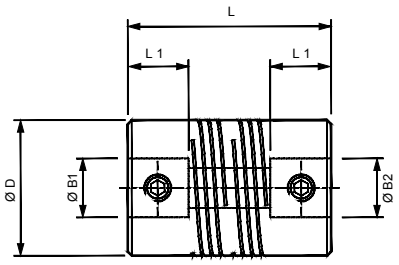
Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) |
| 6 | ○ | ● | ● | | | | | | | | | | | | |
| 9 | | ○ | ● | ● | | | | | | | | | | | |
| 13 | | | ○ | ○ | ● | ● | ● | | | | | | | | |
| 16 | | | ○ | ○ | ● | ● | ● | ● | ● | | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | ● | | | | | |
| 25 | | | | | | | ○ | ● | ● | ● | ● | ● | | | |
| 32 | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● |
| Bore ref. | 8 | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 |

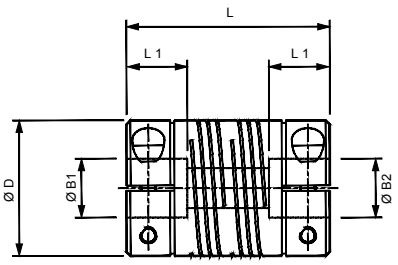
○ B1 only ● B1 & B2

# Stainless Steel Multi-Helix Flexible 6 Beam Couplings Non-Relieved

## Set Screw Hubs




## Clamp Hubs




## Materials & Finishes

**Couplings:** Stainless Steel 303 S31

**Fasteners:** Stainless Steel

## Temperature Range

-40ºF to +284ºF

(–40°C to +140°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style / COUPLING REF | Clamp Type / COUPLING REF | ØD in. (mm) | L in. (mm) | L1 in. (mm) | Bore Diameters Min B1 | Bore Diameters Min B2 | Bore Diameters Max B1 & B2 | Mass kgx10-3 | Fasteners Set Screw | Fasteners Cap Screw | Fasteners Torque lbs.-in. (Nm) | Fasteners Wrench in. (mm) | Angular Offset Deg. | Parallel Offset mm | Torsional Stiffness Nm/rad | Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 09 | 702.09 | – | 0.4 (9.5) | 0.77 (19.6) | 0.21 (5.3) | 2.0 | 4.0 | 4.76 | 7.0 | M2.5 | - | 2.04 (0.23) | 0.51 (1.3) | 3.0 | .002 (0.12) | 5.4 | 13.3 (1.5) |
| | | – | 703.09 | | | | | | | | - | M1.6 | 1.33 (0.15) | 0.59 (1.5) | | | | |
| | 13 | 702.13 | – | 0.5 (12.7) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 5.0 | 6.35 | 17.0 | M3 | - | 2.83 (0.32) | 0.59 (1.5) | 5.0 | .007 (0.17) | 25 | 26.6 (3.0) |
| | | – | 703.13 | | | | | | | | - | M2 | 2.66 (0.30) | 0.59 (1.5) | | | | |
| | 16 | 702.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 6.0 | 8.0 | 28.0 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .008 (0.2) | 45 | 44.2 (5.0) |
| | | – | 703.16 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 19 | 702.19 | – | 0.75 (19.1) | 1.10 (28.0) | 0.26 (6.5) | 4.76 | 6.35 | 10.0 | 44.0 | M4 | - | 9.29 (1.05) | .079 (2.0) | 7.0 | 0.01 (0.25) | 72 | 70.8 (8.0) |
| | | – | 703.19 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 25 | 702.25 | – | 1.00 (25.4) | 1.50 (38.1) | 0.43 (11.0) | 5.0 | 8.0 | 12.7 | 109 | M5 | - | 18.6 (2.10) | .098 (2.5) | 7.0 | .015 (0.38) | 170 | 141.6 (16.0) |
| | | – | 703.25 | | | | | | | | - | M3 | 10.6 (1.20) | .098 (2.5) | | | | |
| | 32 | 702.32 | – | 1.25 (31.8) | 2.25 (57.2) | 0.63 (16.0) | 8.0 | 10.0 | 19.0 | 262 | M6 | - | 33.2 (3.75) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 364 | 221.3 (25.0) |
| | | – | 703.32 | | | | | | 16.0 | | - | M4 | 25.2 (2.85) | 0.12 (3.0) | | | | |
| | 38 | 702.38 | – | 1.50 (38.1) | 2.63 (66.7) | 0.71 (18.0) | 8.0 | 12.0 | 22.0 | 443 | M6 | - | 33.2 (3.75) | 0.12 (3.0) | 7.0 | .024 (0.6) | 634 | 318.6 (36.0) |
| | | – | 703.38 | | | | | | 19.0 | | - | M5 | 51.8 (5.85) | 0.16 (4.0) | | | | |
| | 44 | 702.44 | – | 1.75 (44.5) | 3.00 (76.2) | 0.79 (20.0) | 9.0 | 14.0 | 25.0 | 687 | M6 | - | 33.2 (3.75) | 0.11 (3.0) | 7.0 | .031 (0.8) | 945 | 424.8 (48.0) |
| | | – | 703.44 | | | | | | 22.0 | | - | M5 | 51.3 (5.80) | 0.16 (4.0) | | | | |
| | 51 | 702.51 | – | 2.00 (50.8) | 3.75 (95.3) | 0.98 (25.0) | 10.0 | 16.0 | 28.0 | 1116 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | 0.35 (0.9) | 1305 | 646.1 (73.0) |
| | | – | 703.51 | | | | | | 26.0 | | - | M6 | 86.3 (9.75) | 0.20 (5.0) | | | | |
| | 57 | 702.57 | – | 2.25 (57.2) | 5.12 (130) | 1.26 (32.0) | 10.0 | 20.0 | 32.0 | 1944 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | .037 (0.95) | 1755 | 902.8 (102.0) |
| | | – | 703.57 | | | | | | 30.0 | | - | M6 | 86.3 (9.75) | 0.20 (5.0) | | | | |
| | 64 | 702.64 | – | 2.5 (63.5) | 5.91 (150) | 1.5 (38.0) | 12.0 | 25.0 | 38.0 | 3234 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | 0.39 (1.0) | 2340 | 1,239.0 (140.0) |
| | | – | 703.64 | | | | | | 36.0 | | - | M8 | 212 (24.0) | 0.24 (6.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

## BORE SIZES 6-BEAM COUPLINGS, NON-RELIEVED

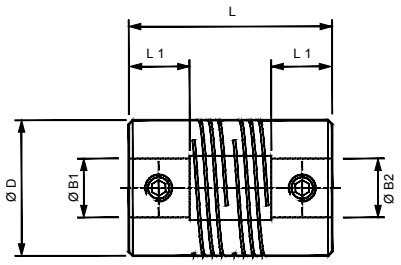
○ B1 only ● B1 & B2 Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8″ | (4) | 3/16″ | (5) | (6) | 1/4″ | (8) | 3/8″ | (10) | (12) | 1/2″ | (14) | 5/8″ | (16) | (18) | (19) | 3/4″ | (20) | (24) | (25) | 1″ | (28) | (30) | 1 1/4″ | (32) |
| 9 | ○ | ○ | ○ | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | ○ | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| 16 | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | ○ | ○ | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| 25 | | | | | | ○ | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | |
| 32 | | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | | | | | | | | | | | |
| 38 | | | | | | | | | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 44 | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 51 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 57 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| 64 | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 53 | 54 | 56 | 57 | 58 |

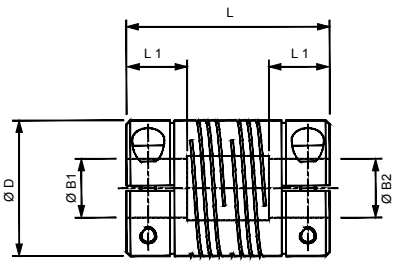
# Multi-Beam

## Stainless Steel Multi-Helix Flexible 6 Beam Couplings

### Set Screw Hubs




### Clamp Hubs




### Materials & Finishes

**Couplings:** Stainless Steel 303 S31

**Fasteners:** Stainless Steel

### Temperature Range

-40ºF to +284ºF

(–40°C to +140°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters Min B1 | Bore Diameters Min B2 | Bore Diameters Max B1 & B2 | Mass kgx10-3 | Fasteners Set Screw | Fasteners Cap Screw | Fasteners Torque lbs.-in. (Nm) | Fasteners Wrench in. (mm) | ② Angular Offset Deg. | ② Parallel Offset mm | ④ Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | | | | | | | | | | | | |
| Relieved | 09 | 722.09 | – | 0.4 (9.5) | 0.77 (19.6) | 0.21 (5.3) | 2.0 | 3.0 | 4.76 | 6.5 | M2.5 | - | 1.77 (0.2) | 0.51 (1.3) | 3.0 | .002 (0.12) | 3.2 | 797 (0.9) |
| | | – | 723.09 | | | | | | | | - | M1.6 | 1.33 (0.15) | 0.59 (1.5) | | | | |
| | 13 | 722.13 | – | 0.5 (12.7) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 4.0 | 6.35 | 15.0 | M3 | - | 2.83 (0.32) | 0.59 (1.5) | 5.0 | .007 (0.17) | 15.0 | 16.82 (1.9) |
| | | – | 723.13 | | | | | | | | - | M2 | 2.66 (0.30) | 0.59 (1.5) | | | | |
| | 16 | 722.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 4.0 | 8 | 24.0 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .008 (0.2) | 27.0 | 30.09 (3.4) |
| | | – | 723.16 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 19 | 722.19 | – | 0.75 (19.1) | 1.10 (28.0) | 0.26 (6.5) | 4.76 | 5.0 | 10 | 37.0 | M4 | - | 9.29 (1.05) | .079 (2.0) | 7.0 | 0.01 (0.25) | 43.0 | 42.48 (4.8) |
| | | – | 723.19 | | | | | | | | - | M2.5 | 6.02 (0.68) | .079 (2.0) | | | | |
| | 25 | 722.25 | – | 1.00 (25.4) | 1.50 (38.1) | 0.43 (11.0) | 5.0 | 6.0 | 12.7 | 99.0 | M5 | - | 18.59 (2.10) | .098 (2.5) | 7.0 | .015 (0.38) | 102 | 88.5 (10.0) |
| | | – | 723.25 | | | | | | | | - | M3 | 10.6 (1.20) | .098 (2.5) | | | | |
| | 32 | 722.32 | – | 1.25 (31.8) | 2.25 (57.2) | 0.63 (16.0) | 8.0 | 9.53 | 19.0 | 236 | M6 | - | 33.2 (3.75) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 218 | 115.1 (13.0) |
| | | – | 723.32 | | | | | | 16.0 | | - | M4 | 51.8 (5.85) | 0.12 (3.0) | | | | |
| | 38 | 722.38 | – | 1.50 (38.1) | 2.63 (66.7) | 0.71 (18.0) | 8.0 | 12.0 | 22.0 | 400 | M6 | - | 33.2 (3.75) | 0.12 (3.0) | 7.0 | .024 (0.6) | 380 | 117.0 (20.0) |
| | | – | 723.38 | | | | | | 19.0 | | - | M5 | 51.8 (5.85) | 0.16 (4.0) | | | | |
| | 44 | 722.44 | – | 1.75 (44.5) | 3.00 (76.2) | 0.79 (20.0) | 9.0 | 14.0 | 25.0 | 523 | M6 | - | 33.2 (3.75) | 0.11 (3.0) | 7.0 | .031 (0.8) | 567 | 239.0 (27.0) |
| | | – | 723.44 | | | | | | 22.0 | | - | M5 | 51.3 (5.80) | 0.16 (4.0) | | | | |
| | 51 | 722.51 | – | 2.00 (50.8) | 3.75 (95.3) | 0.98 (25.0) | 10.0 | 16.0 | 28.0 | 996 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | 0.35 (0.9) | 783 | 327.5 (37.0) |
| | | – | 723.51 | | | | | | 26.0 | | - | M6 | 86.3 (9.75) | 0.20 (5.0) | | | | |
| | 57 | 722.57 | – | 2.25 (57.2) | 5.12 (130) | 1.26 (32.0) | 10.0 | 20.0 | 32.0 | 1708 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | .037 (0.95) | 1053 | 442.5 (50.0) |
| | | – | 723.57 | | | | | | 30.0 | | - | M6 | 86.3 (9.75) | 0.20 (5.0) | | | | |
| | 64 | 722.64 | – | 2.5 (63.5) | 5.91 (150) | 1.5 (38.0) | 12.0 | 25.0 | 38.0 | 2300 | M8 | - | 80.0 (9.00) | 0.16 (4.0) | 7.0 | 0.39 (1.0) | 1400 | 757.3 (65.0) |
| | | – | 723.64 | | | | | | 36.0 | | - | M8 | 212 (24.0) | 0.24 (6.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

④ Torsional Stiffness values based on maximum bores, for smaller bore combinations the values are nearer the non-relieved type.

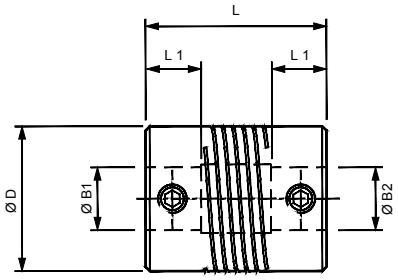
## BORE SIZES 6-BEAM COUPLINGS, RELIEVED

○ B1 only ● B1 & B2 Sizes indicated in parenthesis are metric (mm).

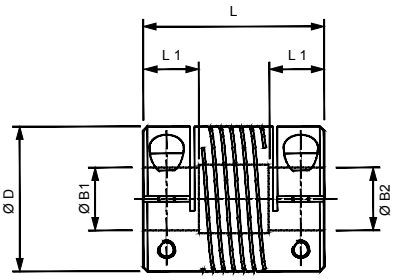
| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | 1" | (28) | (30) | 1 1/4" | (32) | | |
| 9 | ○ | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | |
| 16 | | ○ | ○ | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | |
| 38 | | | | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | |
| 44 | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 51 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 57 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 64 | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | | |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 53 | 54 | 56 | 57 | 58 | | |

# Aluminium Multi-Helix Flexible 3 Beam Couplings

## Set Screw Hubs




## Clamp Hubs




## Materials & Finishes

**Couplings:** Aluminium L168 or better

**Fasteners:** Alloy steel, black oiled

## Temperature Range

-40ºF to +284ºF

(–40°C to +120°C)

## 3-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters | | | Mass kgx10-3 | Fasteners | | | | ② Angular Offset Deg. | ② Parallel Offset mm | Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | Min B1 | Min B2 | Max B1 & B2 | | Set Screw | Cap Screw | Torque lbs.-in. (Nm) | Wrench in. (mm) | | | | |
| Relieved | 6 | 724.06 | – | .25 (6.4) | 0.5 (12.7) | .13 (3.2) | 1.0 | 2.0 | 3.0 | 0.7 | M2 | – | 1.77 (0.2) | .035 (0.9) | 3.0 | .003 (.07) | 1.53 | 354 (0.40) |
| | 9 | 724.09 | – | .37 (9.5) | .56 (14.2) | .18 (4.5) | 2.0 | 3.0 | 3.18 | 2.2 | M2.5 | - | 4.87 (0.55) | .051 (1.3) | 3.0 | .004 (0.1) | 5.4 | 354.02 (0.40) |
| | | – | 725.09 | | | | | | | | - | M1.6 | | .059 (1.5) | | | | |
| | 13 | 724.13 | – | 0.5 (12.7) | .75 (19.1) | .24 (6.0) | 3.0 | 4.0 | 5.0 | 5.0 | M3 | - | 8.0 (0.90) | .059 (1.5) | 5.0 | .005 (.127) | 28.0 | 796.57 (0.90) |
| | | – | 725.13 | | | | | | | | - | M2 | | .059 (1.5) | | | | |
| | 16 | 724.16 | – | .63 (15.9) | .80 (20.3) | .26 (6.5) | 3.0 | 4.0 | 6.35 | 8.2 | M4 | - | 19.5 (2.2) | .079 (2.0) | 5.0 | .005 (.127) | 38.0 | 13.28 (1.50) |
| | | – | 725.16 | | | | | | | | - | M2.5 | | .079 (2.0) | | | | |
| | 19 | 724.19 | – | .75 (19.1) | .90 (22.9) | .26 (6.5) | 4.0 | 4.76 | 8.0 | 12.8 | M4 | - | 19.5 (2.2) | .079 (2.0) | 5.0 | .005 (.127) | 65.0 | 22.13 (2.50) |
| | | – | 725.19 | | | | | | | | - | M2.5 | | .079 (2.0) | | | | |
| | 25 | 724.25 | – | 1.0 (25.4) | 1.25 (31.8) | .35 (9.0) | 5.0 | 6.0 | 10 | 32.6 | M5 | - | 40.7 (4.6) | .098 (2.5) | 5.0 | .005 (.127) | 121 | 35.4 (4.0) |
| | | – | 725.25 | | | | | | | | - | M3 | | .098 (2.5) | | | | |
| | 32 | 724.32 | – | 1.25 (31.8) | 1.75 (44.5) | .47 (12.0) | 6.0 | 8.0 | 14 | 70 | M6 | - | 67.3 (7.6) | 0.12 (3.0) | 5.0 | .005 (.127) | 238 | 53.1 (8.0) |
| | | – | 725.32 | | | | | | | | - | M4 | | 0.12 (3.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

## BORE SIZES 3-BEAM COUPLINGS

Sizes indicated in parenthesis are metric (mm).

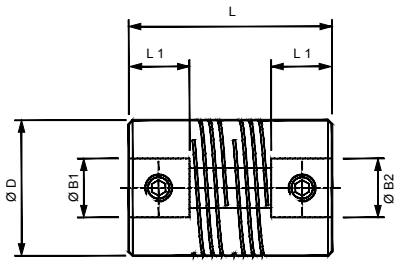
| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) |
| 6 | ○ | ● | ● | | | | | | | | | | | | |
| 9 | | ○ | ● | ● | | | | | | | | | | | |
| 13 | | | ○ | ○ | ● | ● | ● | | | | | | | | |
| 16 | | | ○ | ○ | ● | ● | ● | ● | ● | | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | ● | | | | | |
| 25 | | | | | | | ○ | ● | ● | ● | ● | ● | | | |
| 32 | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● |
| Bore ref. | 8 | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 |

○ B1 only ● B1 & B2

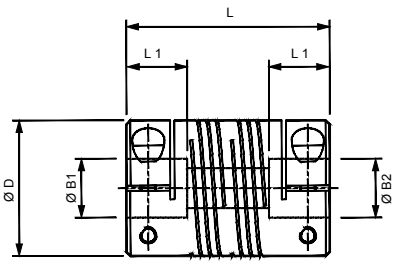
# Multi-Beam

## Aluminium Multi-Helix Flexible 6 Beam Couplings Non-Relieved

### Set Screw Hubs




### Clamp Hubs




### Materials & Finishes

**Couplings:** Aluminium L168 or better

**Fasteners:** Alloy steel, black oiled

### Temperature Range

-40°F to +284°F

(–40°C to +120°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters | | | Mass kgx10-3 | Fasteners | | | | ② Angular Offset Deg. | ② Parallel Offset mm | Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | Min B1 | Min B2 | Max B1 & B2 | | Set Screw | Cap Screw | Torque lbs.-in. (Nm) | Wrench in. (mm) | | | | |
| Non-Relieved | 09 | 706.09 | – | 0.4 (9.5) | 0.77 (19.6) | 0.21 (5.3) | 2.0 | 4.0 | 4.76 | 2.85 | M2.5 | - | 4.87 (0.55) | 0.51 (1.3) | 3.0 | .002 (0.12) | 1.8 | 8.85 (1.0) |
| | | – | 707.09 | | | | | | | | - | M1.6 | 2.60 (0.29) | 0.59 (1.5) | | | | |
| | 13 | 706.13 | – | 0.5 (12.7) | .09 (22.9) | 0.26 (6.5) | 3.0 | 5.0 | 6.35 | 5.5 | M3 | - | 8.0 (0.90) | 0.59 (1.5) | 5.0 | .007 (0.17) | 14.0 | 17.7 (2.0) |
| | | – | 707.13 | | | | | | | | - | M2 | 5.84 (0.66) | 0.59 (1.5) | | | | |
| | 16 | 706.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 6.0 | 8 | 9,8 | M4 | - | 22.1 (2.5) | .098 (2.5) | 5.0 | .008 (0.2) | 27.0 | 30.09 (3.4) |
| | | – | 707.16 | | | | | | | | - | M2.5 | 11.5 (1.3) | .079 (2.0) | | | | |
| | 19 | 706.19 | – | 0.75 (19.1) | 1.04 (26.5) | 0.26 (6.5) | 4.76 | 6.35 | 10 | 14.0 | M4 | - | 22.1 (2.5) | .098 (2.5) | 7.0 | 0.01 (0.25) | 46.0 | 46.9 (5.3) |
| | | – | 707.19 | | | | | | | | - | M2.5 | 11.5 (1.3) | .079 (2.0) | | | | |
| | 25 | 706.25 | – | 1.00 (25.4) | 1.50 (38.1) | 0.43 (11.0) | 5.0 | 8.0 | 12.7 | 38.0 | M5 | - | 40.7 (4.6) | .098 (2.5) | 7.0 | .015 (0.38) | 108 | 88.5 (10.0) |
| | | – | 707.25 | | | | | | | | - | M3 | 21.2 (2.4) | .098 (2.5) | | | | |
| | 32 | 706.32 | – | 1.25 (31.8) | 2.25 (57.2) | 0.63 (16.0) | 8.0 | 9.53 | 19.0 | 92.0 | M6 | - | 67.3 (7.6) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 225 | 132.8 (15.0) |
| | | – | 707.32 | | | | | | 16.0 | | - | M4 | 49.6 (5.6) | 0.12 (3.0) | | | | |
| | 38 | 706.38 | – | 1.50 (38.1) | 2.63 (66.7) | 0.71 (18.0) | 8.0 | 12.0 | 22.0 | 154 | M6 | - | 67.3 (7.6) | 0.12 (3.0) | 7.0 | .024 (0.6) | 315 | 194.7 (22.0) |
| | | – | 707.38 | | | | | | 19.0 | | - | M5 | 97.4 (11.0) | 0.16 (4.0) | | | | |
| | 44 | 706.44 | – | 1.75 (44.5) | 3.00 (76.2) | 0.79 (20.0) | 9.0 | 14.0 | 25.0 | 239 | M6 | - | 67.3 (7.6) | 0.11 (3.0) | 7.0 | .031 (0.8) | 459 | 265.5 (30.0) |
| | | – | 707.44 | | | | | | 22.0 | | - | M5 | 97.4 (11.0) | 0.16 (4.0) | | | | |
| | 51 | 706.51 | – | 2.00 (50.8) | 3.75 (95.3) | 0.98 (25.0) | 10.0 | 16.0 | 28.0 | 389 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | 0.35 (0.9) | 666 | 354 (40.0) |
| | | – | 707.51 | | | | | | 26.0 | | - | M6 | 168 (19) | 0.20 (5.0) | | | | |
| | 57 | 706.57 | – | 2.25 (57.2) | 5.12 (130) | 1.26 (32.0) | 10.0 | 20.0 | 32.0 | 674 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | .037 (0.95) | 918 | 486.8 (55.0) |
| | | – | 707.57 | | | | | | 30.0 | | - | M6 | 168 (19) | 0.20 (5.0) | | | | |
| | 64 | 706.64 | – | 2.5 (63.5) | 5.91 (150) | 1.5 (38.0) | 12.0 | 25.0 | 38.0 | 1118 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | 0.39 (1.0) | 1125 | 663.8 (75.0) |
| | | – | 707.64 | | | | | | 36.0 | | - | M8 | 407 (46) | 0.24 (6.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

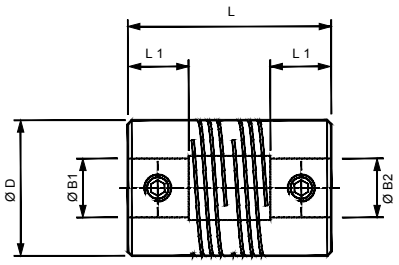
## BORE SIZES 6-BEAM COUPLINGS, NON-RELIEVED

○ B1 only ● B1 & B2 Sizes indicated in parenthesis are metric (mm).

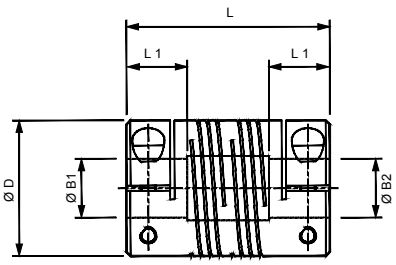
| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | 1" | (28) | (30) | 1 1/4" | (32) | | |
| 9 | ○ | ○ | ○ | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | ○ | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | |
| 16 | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | ○ | ○ | ○ | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | ○ | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | |
| 38 | | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | |
| 44 | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 51 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 57 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 64 | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | | |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 53 | 54 | 56 | 57 | 58 | | |

# Aluminium Multi-Helix Flexible 6 Beam Couplings

## Set Screw Hubs




## Clamp Hubs




## Materials & Finishes

**Couplings:** Aluminium L168 or better

**Fasteners:** Alloy steel, black oiled

## Temperature Range

-40ºF to +284ºF

(–40°C to +120°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style / Clamp Type | | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters | | | Mass kgx10-3 | Fasteners | | | | ② Angular Offset Deg. | ② Parallel Offset mm | ④ Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | Min B1 | Min B2 | Max B1 & B2 | | Set Screw | Cap Screw | Torque lbs.-in. (Nm) | Wrench in. (mm) | | | | |
| Relieved | 09 | 726.09 | – | 0.4 (9.5) | 0.77 (19.6) | 0.21 (5.3) | 2.0 | 3.0 | 4.76 | 2.5 | M2.5 | - | 4.87 (0.55) | 0.51 (1.3) | 3.0 | .002 (0.12) | 0.9 | 5.31 (0.6) |
| | | – | 727.09 | | | | | | | | - | M1.6 | 2.60 (0.29) | 0.59 (1.50 | | | | |
| | 13 | 726.13 | – | 0.5 (12.7) | .09 (22.9) | 0.26 (6.5) | 3.0 | 4.0 | 6.35 | 5.0 | M3 | - | 8.0 (0.90) | 0.59 (1.5) | 5.0 | .007 (0.17) | 7.0 | 11.5 (1.3) |
| | | – | 727.13 | | | | | | | | - | M2 | 5.84 (0.66) | 0.59 (1.5) | | | | |
| | 16 | 726.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 4.0 | 8 | 8.6 | M4 | - | 19.5 (2.2) | 0.59 (1.5) | 5.0 | .008 (0.2) | 13.5 | 17.7 (2.0) |
| | | – | 727.16 | | | | | | | | - | M2.5 | 11.5 (1.3) | .079 (2.0) | | | | |
| | 19 | 726.19 | – | 0.75 (19.1) | 1.04 (26.5) | 0.26 (6.5) | 4.76 | 5.0 | 10 | 12.4 | M4 | - | 19.5 (2.2) | .098 (2.5) | 7.0 | 0.01 (0.25) | 23.0 | 26.6 (3.0) |
| | | – | 727.19 | | | | | | | | - | M2.5 | 11.5 (1.3) | .079 (2.0) | | | | |
| | 25 | 726.25 | – | 1.00 (25.4) | 1.50 (38.1) | 0.43 (11.0) | 5.0 | 6.0 | 12.7 | 35.0 | M5 | - | 40.7 (4.6) | .098 (2.5) | 7.0 | .015 (0.38) | 54 | 44.25 (5.0) |
| | | – | 727.25 | | | | | | | | - | M3 | 21.2 (2.4) | .098 (2.5) | | | | |
| | 32 | 726.32 | – | 1.25 (31.8) | 2.25 (57.2) | 0.63 (16.0) | 8.0 | 9.53 | 19.0 | 84.0 | M6 | - | 67.3 (7.6) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 112 | 61.96 (7.0) |
| | | – | 727.32 | | | | | | 16.0 | | - | M4 | 49.6 (5.6) | 0.12 (3.0) | | | | |
| | 38 | 726.38 | – | 1.50 (38.1) | 2.63 (66.7) | 0.71 (18.0) | 8.0 | 12.0 | 22.0 | 140 | M6 | - | 67.3 (7.6) | 0.12 (3.0) | 7.0 | .024 (0.6) | 157 | 97.36 (11.0) |
| | | – | 727.38 | | | | | | 19.0 | | - | M5 | 97.4 (11.0) | 0.16 (4.0) | | | | |
| | 44 | 726.44 | – | 1.75 (44.5) | 3.00 (76.2) | 0.79 (20.0) | 9.0 | 14.0 | 25.0 | 218 | M6 | - | 67.3 (7.6) | 0.11 (3.0) | 7.0 | .031 (0.8) | 229 | 132.7 (15.0) |
| | | – | 727.44 | | | | | | 22.0 | | - | M5 | 97.4 (11.0) | 0.16 (4.0) | | | | |
| | 51 | 726.51 | – | 2.00 (50.8) | 3.75 (95.3) | 0.98 (25.0) | 10.0 | 16.0 | 28.0 | 348 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | 0.35 (0.9) | 333 | 177.0 (20.0) |
| | | – | 727.51 | | | | | | 26.0 | | - | M6 | 168 (19) | 0.20 (5.0) | | | | |
| | 57 | 726.57 | – | 2.25 (57.2) | 5.12 (130) | 1.26 (32.0) | 10.0 | 20.0 | 32.0 | 593 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | .037 (0.95) | 459 | 247.8 (28.0) |
| | | – | 727.57 | | | | | | 30.0 | | - | M6 | 168 (19) | 0.20 (5.0) | | | | |
| | 64 | 726.64 | – | 2.5 (63.5) | 5.91 (150) | 1.5 (38.0) | 12.0 | 25.0 | 38.0 | 1198 | M8 | - | 159 (18) | 0.16 (4.0) | 7.0 | 0.39 (1.0) | 560 | 336.6 (38.0) |
| | | – | 727.64 | | | | | | 36.0 | | - | M8 | 407 (46) | 0.24 (6.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

④ Torsional Stiffness values based on maximum bores, for smaller bore combinations the values are nearer the non-relieved type.

## BORE SIZES 6-BEAM COUPLINGS, RELIEVED

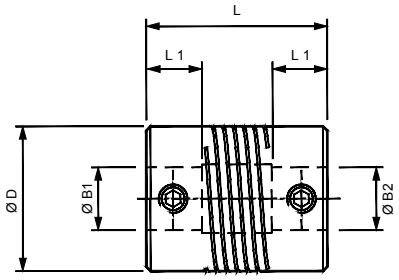
○ B1 only ● B1 & B2 Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (20) | (24) | (25) | 1" | (28) | (30) | 1 1/4" | (32) |
| 9 | ○ | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| 16 | | ○ | ○ | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| 25 | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | |
| 32 | | | | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | |
| 38 | | | | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 44 | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 51 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 57 | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| 64 | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 | 51 | 52 | 53 | 54 | 56 | 57 | 58 |

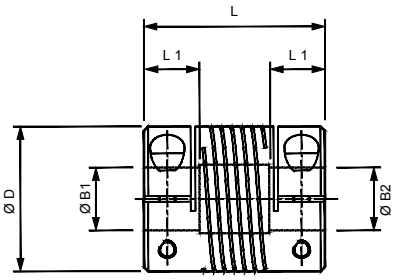
# Multi-Beam

## Acetal Multi-Helix Flexible 3 Beam Couplings

### Set Screw Hubs




### Clamp Hubs




### Materials & Finishes

**Couplings:** Acetal (natural)
**Fasteners:** Stainless Steel

### Temperature Range

-20ºF to +140ºF

(–20°C to +60°C)

## 3-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters Min B1 | Bore Diameters Min B2 | Bore Diameters Max B1 & B2 | Mass kgx10-3 | Fasteners Set Screw | Fasteners Cap Screw | Fasteners Torque lbs.-in. (Nm) | Fasteners Wrench in. (mm) | ② Angular Offset Deg. | ② Parallel Offset mm | Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | | | | | | | | | | | | |
| Relieved | 13 | 728.13 | – | 0.50 (12.7) | .750 (19.1) | 0.24 (6.0) | 3.0 | 4.0 | 5.0 | 2.9 | M3 | - | 2.83 (0.32) | .059 (1.5) | 5.0 | .005 (.127) | 1.9 | 2.12 (0.24) |
| | | – | 729.13 | | | | | | | | - | M2 | 2.04 (0.23) | .059 (1.5) | | | | |
| | 16 | 728.16 | – | 0.63 (15.9) | 0.80 (20.3) | 0.26 (6.5) | 3.0 | 4.0 | 6.0 | 4.9 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .005 (.127) | 2.7 | 3.10 (0.35) |
| | | – | 729.16 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 19 | 728.19 | – | 0.75 (19.1) | 0.90 (22.9) | 0.26 (6.5) | 4.0 | 4.76 | 8.0 | 7.5 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .005 (.127) | 4.0 | 5.66 (0.64) |
| | | – | 729.19 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 25 | 728.25 | – | 1.0 (25.4) | 1.25 (31.8) | 0.35 (9.0) | 5.0 | 6.0 | 10.0 | 19.0 | M5 | - | 18.6 (2.10) | .098 (2.5) | 5.0 | .005 (.127) | 11 | 12.39 (1.40) |
| | | – | 729.25 | | | | | | | | - | M3 | 8.0 (0.90) | .098 (2.5) | | | | |
| | 32 | 728.32 | – | 1.25 (31.8) | 1.75 (44.5) | 0.47 (12.0) | 6.0 | 8.0 | 14.0 | 44.0 | M6 | - | 33 (3.75) | 0.12 (3.0) | 5.0 | .005 (.127) | 21 | 22.13 (2.50) |
| | | – | 729.32 | | | | | | | | - | M4 | 18.9 (2.14) | 0.12 (3.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

## BORE SIZES 3-BEAM COUPLINGS

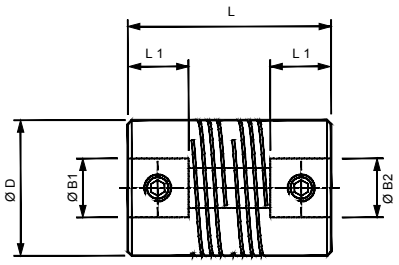
Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) |
| 13 | | | ○ | ○ | ● | ● | ● | | | | | | |
| 16 | | | ○ | ○ | ● | ● | ● | ● | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | ● | | | |
| 25 | | | | | | | ○ | ● | ● | ● | ● | ● | |
| 32 | | | | | | | | ○ | ○ | ● | ● | ● | ● |
| Bore ref. | 8 | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 |

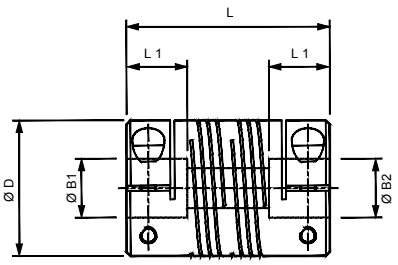
○ B1 only ● B1 & B2

# Acetal Multi-Helix Flexible 6 Beam Couplings Non-Relieved

## Set Screw Hubs




## Clamp Hubs




## Materials & Finishes

**Couplings:** Acetal (natural)
**Fasteners:** Stainless Steel

## Temperature Range

-20ºF to +140ºF

(–40°C to +60°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style / COUPLING REF | Clamp Type / COUPLING REF | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters Min B1 | Bore Diameters Min B2 | Bore Diameters Max B1 & B2 | Mass kgx10-3 | Fasteners Set Screw | Fasteners Cap Screw | Fasteners Torque lbs.-in. (Nm)) | Fasteners Wrench in. (mm) | ② Angular Offset Deg. | ② Parallel Offset mm | ④ Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Non-Relieved | 13 | 710.13 | – | 0.50 (12.7) | 0.9 (22.9) | 0.26 (6.5) | 3.0 | 5.0 | 6.0 | 3.2 | M3 | - | 2.83 (0.32) | .059 (1.5) | 5.0 | .007 (0.17) | 1.3 | 4.51 (0.51) |
| | | – | 711.13 | | | | | | | | - | M2 | 2.04 (0.23) | .059 (1.5) | | | | |
| | 16 | 710.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 6.0 | 8.0 | 5.4 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .008 (0.2) | 1.8 | 8.05 (0.91) |
| | | – | 711.16 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 19 | 710.19 | – | 0.75 (19.1) | 1.04 (26.5) | 0.26 (6.5) | 4.0 | 6.35 | 9.53 | 8.0 | M4 | - | 9.29 (1.05) | .079 (2.0) | 7.0 | 0.01 (0.25) | 2.7 | 11.5 (1.3) |
| | | – | 711.19 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 25 | 710.25 | – | 1.0 (25.4) | 1.5 (38.1) | 0.43 (11.0) | 5.0 | 8.0 | 12.0 | 21.0 | M5 | - | 18.6 (2.10) | .098 (2.5) | 7.0 | 0.15 (0.38) | 8.0 | 22.13 (2.5) |
| | | – | 711.25 | | | | | | | | - | M3 | 8.0 (0.90) | .098 (2.5) | | | | |
| | 32 | 710.32 | – | 1.25 (31.8) | 2.25 (57.2) | 0.63 (16.0) | 6.0 | 10.0 | 16.0 | 51.0 | M6 | - | 33 (3.75) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 14.0 | 35.4 (4.0) |
| | | – | 711.32 | | | | | | | | - | M4 | 18.9 (2.14) | 0.12 (3.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

④ Torsional Stiffness values based on maximum bores, for smaller bore combinations the values are nearer the non-relieved type.

## BORE SIZES 6-BEAM COUPLINGS, NON-RELIEVED

Sizes indicated in parenthesis are metric (mm).

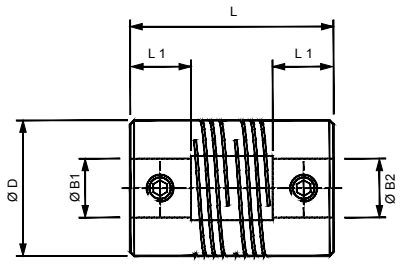
| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | ○ | ○ | ○ | ● | ● | | | | | | | | | | | |
| 13 | | ○ | ○ | ○ | ○ | ● | ● | | | | | | | | | |
| 16 | | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | | | | | | | |
| 19 | | | | | ○ | ○ | ○ | ● | ● | ● | | | | | | |
| 25 | | | | | | ○ | ○ | ○ | ● | ● | ● | ● | | | | |
| 32 | ● | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 |

○ B1 only ● B1 & B2

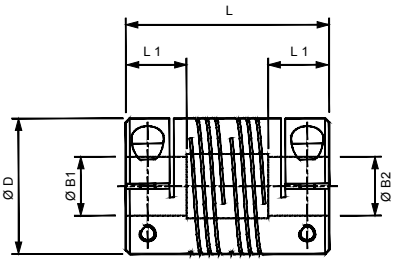
# Multi-Beam

## Acetal Multi-Helix Flexible 6 Beam Couplings

### Set Screw Hubs




### Clamp Hubs




### Materials & Finishes

**Couplings:** Acetal (natural)
**Fasteners:** Stainless Steel

### Temperature Range

-20ºF to +140ºF

(–20°C to +60°C)

## 6-BEAM COUPLINGS: DIMENSIONS & ORDER CODES

| Coupling Type & Size | | Set Screw Style | Clamp Type | ØD in. (mm) | L in. (mm) | ① L1 in. (mm) | Bore Diameters | | | Mass kgx10-3 | Fasteners | | | | ② Angular Offset Deg. | ② Parallel Offset mm | Torsional Stiffness Nm/rad | ③ Peak Torque lb.in (Nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COUPLING REF | | | | | Min B1 | Min B2 | Max B1 & B2 | | Set Screw | Cap Screw | Torque lbs.-in. (Nm) | Wrench in. (mm) | | | | |
| Relieved | 13 | 730.13 | – | 0.50 (12.7) | 0.9 (22.9) | 0.26 (6.5) | 3.0 | 4.0 | 5.0 | 3.2 | M3 | - | 2.83 (0.32) | .059 (1.5) | 5.0 | .007 (0.17) | 0.5 | 2.83 (.32) |
| | | – | 731.13 | | | | | | | | - | M2 | 2.04 (0.23) | .059 (1.5) | | | | |
| | 16 | 730.16 | – | 0.63 (15.9) | 1.00 (25.4) | 0.26 (6.5) | 3.0 | 4.0 | 6.35 | 5.4 | M4 | - | 9.29 (1.05) | .079 (2.0) | 5.0 | .008 (0.2) | 0.7 | 5.40 (.61) |
| | | – | 731.16 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 19 | 730.19 | – | 0.75 (19.1) | 1.04 (26.5) | 0.26 (6.5) | 4.0 | 5.0 | 8.0 | 7.8 | M4 | - | 9.29 (1.05) | .079 (2.0) | 7.0 | 0.01 (0.25) | 1.0 | 7.70 (.87) |
| | | – | 731.19 | | | | | | | | - | M2.5 | 4.51 (0.51) | .079 (2.0) | | | | |
| | 25 | 730.25 | – | 1.0 (25.4) | 1.5 (38.1) | 0.43 (11.0) | 5.0 | 6.0 | 10.0 | 21.0 | M5 | - | 18.6 (2.10) | .098 (2.5) | 7.0 | .015 (0.38) | 3.2 | 14.80 (1.67) |
| | | – | 731.25 | | | | | | | | - | M3 | 8.0 (0.90) | .098 (2.5) | | | | |
| | 32 | 730.32 | – | 1.25 (31.8) | 1.25 (31.8) | 2.25 (57.2) | 8.0 | 9.53 | 12.7 | 52.0 | M6 | - | 33 (3.75) | 0.12 (3.0) | 7.0 | 0.02 (0.5) | 5.6 | 21.1 (2.4) |
| | | – | 731.32 | | | | | | | | - | M4 | 18.9 (2.14) | 0.12 (3.0) | | | | |

① Length of supported bore.

② Max. compensation values are mutually exclusive.

③ ***Peak torque***. Select a size where Peak Torque exceeds the application torque x service factor. (***see page 4***)

## BORE SIZES 6-BEAM COUPLINGS, RELIEVED

Sizes indicated in parenthesis are metric (mm).

| Coupling Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (2) | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" |
| 9 | ○ | ● | ● | ● | ● | | | | | | | | |
| 13 | | ○ | ○ | ● | ● | ● | | | | | | | |
| 16 | | ○ | ○ | ● | ● | ● | ● | ● | | | | | |
| 19 | | | | | ○ | ● | ● | ● | ● | | | | |
| 25 | | | | | | ○ | ● | ● | ● | ● | ● | | |
| 32 | | | | | | | | | ○ | ● | ● | ● | ● |
| Bore ref. | 11 | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 |

○ B1 only ● B1 & B2

## Step Beam Couplings - Nylon



### Materials & Finishes

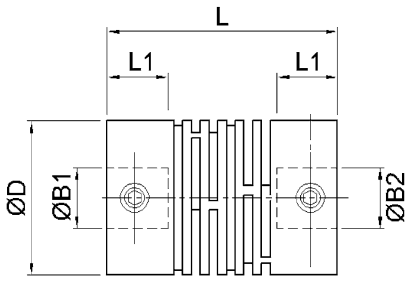
**Couplings:** Nylon type engineering polymer

**Fasteners:** Stainless Steel

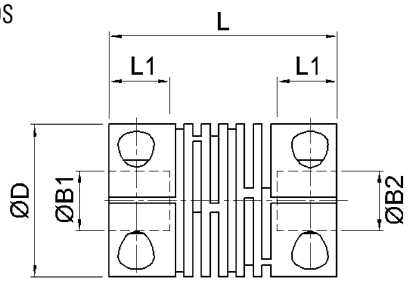
### Temperature Range

-20ºF to +302ºF
(–20°C to +150°C)

### Set Screw Hubs




### Clamp Hubs




## DIMENSIONS & ORDER CODES

| Size | Set Screw Style | Clamp Style | Dimensions | | | | | | Fasteners | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Order Code | | O.D. in. (mm) | O/A Length L in. (mm) | Max Shaft Depth L1 in. (mm) | Min Bore | Max Bore | Mass kg x 10-3 | Set Screw | Cap Screw | Torque lb.-in. (Ncm) | A/F in. (mm) |
| 13 | 636.13 | - | 0.51 (13) | 0.71 (18) | 0.20 (5.0) | 3 | 6.35 | 3.0 | M2 | - | .007 (0.08) | .035 (0.9) |
| | - | 637.13 | | | | | | | - | M2 | 0.02 (0.23) | .059 (1.5) |
| 19 | 636.19 | - | 0.75 (19) | 1.10 (28) | 0.31 (8.0) | 3 | 9.53 | 7.5 | M3 | - | 0.03 (0.32) | .059 (1.5) |
| | - | 637.19 | | | | | | | - | M2.5 | 0.05 (0.51) | .079 (2.0) |
| 25 | 636.25 | - | 0.98 (25) | 1.42 (36) | 0.39 (10.0) | 6 | 12.7 | 17.4 | M4 | - | 0.09 (1.05) | .079 (2.0) |
| | - | 637.25 | | | | | | | - | M3 | 0.08 (0.90) | .098 (2.5) |

## PERFORMANCE

| Size | Peak Torque in. (Nm) | Torsional Stiffness (Nm/rad) | Max misalignment / displacement | | |
|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (mm) |
| 13 | .009 (0.25) | 5.5 | 3 | .006 (0.15) | .008 (0.2) |
| 19 | .031 (0.8) | 12.0 | 4 | .006 (0.15) | .008 (0.2) |
| 25 | 0.98 (2.5) | 18.0 | 5 | .012 (0.3) | .012 (0.3) |

## AVAILABLE BORES

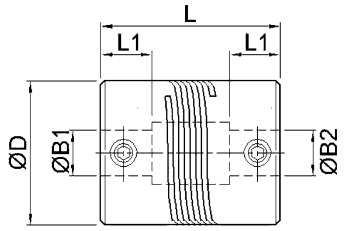
Sizes indicated in parenthesis are metric (mm).

| Size | ØB1, ØB2 +0.002/ -0 (+0.05mm/-0mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | 5/16" | (8) | 3/8" | (10) | (12) | 1/2" |
| 13 | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| 19 | | | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 25 | | | | | | ● | | ● | ● | ● | ● | ● | ● |
| **Bore Ref** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 27 | 28 | 31 | 32 | 35 | 36 |

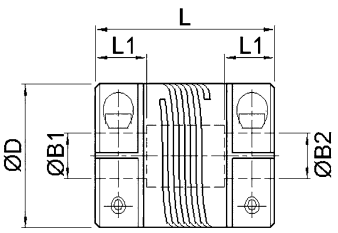
# S-Beam

## Single Helix Beam Couplings - Stainless Steel

Set Screw Hubs




Clamp Hubs






### DIMENSIONS & ORDER CODES

| Size | Set Screw Style / Order Code | Clamp Style / Order Code | Dimensions | | | | | | | Fasteners | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | O.D. in. (mm) | O/A Length L in. (mm) | Bore Depth L1 in. (mm) | Min B1 | Min B2 | Max B1 & B2 | Mass kg x 10-3 | Set Screw | Cap Screw | Torque lb.-in. (Nm) | A/F in. (mm) |
| 16 | 820.16 | - | 0.63 (15.9) | 0.79 (20) | 0.25 (6.0) | 3 | 4 | 6.35 | 25.6 | M4 | - | 9.29 (1.05) | 0.08 (2.0) |
| | - | 821.16 | | 0.87 (22) | 0.26 (6.5) | | | | 26.0 | - | M2.5 | 6.02 (0.68) | 0.08 (2.0) |
| 19 | 820.19 | - | 0.75 (19.1) | 0.79 (20) | 0.25 (6.0) | 4 | 4.76 | 8 | 35.8 | M4 | - | 9.29 (1.05) | 0.08 (2.0) |
| | - | 821.19 | | 1.1 (28) | 0.31 (8.0) | | | | 47.7 | - | M2.5 | 6.02 (0.68) | 0.08 (2.0) |
| 25 | 820.25 | - | 1.0 (25.4) | 0.94 (24) | 0.3 (7.5) | 5 | 6 | 10 | 78 | M5 | - | 18.59 (2.10) | 0.1 (2.5) |
| | - | 821.25 | | 1.18 (30) | 0.39 (10.0) | | | | 91 | - | M3 | 10.62 (1.20) | 0.1 (2.5) |
| 32 | 820.32 | - | 1.25 (31.8) | 1.18 (30) | 0.39 (10.0) | 6 | 8 | 16 | 152 | M6 | - | 33.19 (3.75) | 0.12 (3.0) |
| | - | 821.32 | | 1.5 (38) | 0.47 (12.0) | | | | 186 | - | M4 | 25.22 (2.85) | 0.12 (3.0) |
| 38 | 820.38 | - | 1.5 (38.1) | 1.97 (50) | 0.63 (16.0) | 8 | 12 | 19 | 365 | M6 | - | 33.19 (3.75) | 0.12 (3.0) |
| | - | 821.38 | | 1.97 (50) | 0.63 (16.0) | | | | 350 | - | M5 | 51.78 (5.85) | 0.16 (4.0) |
| 50 | 820.50 | - | 2.0 (50.8) | 2.13 (54) | 0.71 (18.0) | 10 | 16 | 26 | 680 | M8 | - | 79.66 (9.00) | 0.16 (4.0) |
| | - | 821.50 | | 2.13 (54) | 0.71 (18.0) | | | | 660 | - | M6 | 86.29 (9.75) | 0.2 (5.0) |

### PERFORMANCE

| Size | Peak Torque lb.-in. (Nm) | Max misalignment compensation | | | Nominal stiffness at std. bore size | |
|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Axial in. (mm) | Bore | Torsional Nm/rad |
| 16 | 10.62 (1.2) | 5 | 0.01 (0.25) | 0.01 (0.25) | 5 | 16 |
| 19 | 20.36 (2.3) | 5 | 0.01 (0.25) | 0.01 (0.25) | 6 | 33 |
| 25 | 38.06 (4.3) | 5 | 0.01 (0.25) | 0.01 (0.25) | 10 | 45 |
| 32 | 69.04 (7.8) | 5 | 0.01 (0.25) | 0.01 (0.25) | 12 | 84 |
| 38 | 177 (20) | 5 | 0.01 (0.25) | 0.01 (0.25) | 16 | 195 |
| 50 | 265 (30) | 5 | 0.01 (0.25) | 0.01 (0.25) | 20 | 320 |

### Materials & Finishes

**Couplings:** Stainless Steel 303 S31
**Fasteners:** Stainless Steel

### Temperature Range

-40ºF to +284ºF
(–40°C to +140°C)

### AVAILABLE BORES

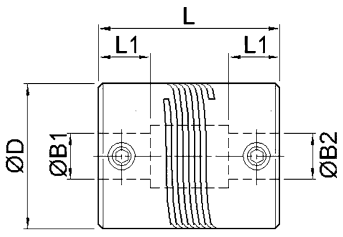
Sizes indicated in parenthesis are metric (mm).

| Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | 5/16" | (8) | (9) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | 3/4" | (20) | (25) | 1" |
| 16 | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| 19 | | | ○ | ● | ● | ● | ● | | ● | | | | | | | | | | | | | |
| 25 | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| 32 | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 38 | | | | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | | | | |
| 50 | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● |
| **Bore Ref** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 27 | 28 | 30 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 | 47 | 48 | 52 | 53 |

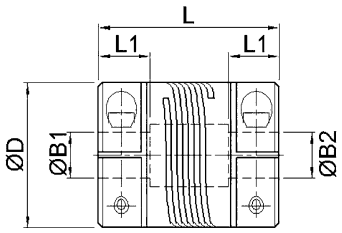
○ B1 only ● B1 & B2

# Single Helix Beam Couplings - Aluminium

## Set Screw Hubs




## Clamp Hubs






## DIMENSIONS & ORDER CODES

| Size | Set Screw Style | Clamp Style | Dimensions | | | | | | | Fasteners | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Order Code | | O.D. in. (mm) | O/A Length L in. (mm) | Bore Depth L1 in. (mm) | Min B1 | Min B2 | Max B1 & B2 | Mass kg x 10-3 | Set Screw | Cap Screw | Torque lb.-in. (Nm) | A/F in. (mm) |
| 16 | 826.16 | - | 0.63 (15.9) | 0.79 (20) | 0.25 (6.0) | 3 | 4 | 6.35 | 8.8 | M4 | - | 20.09 (2.27) | 0.08 (2.0) |
| | - | 827.16 | | 0.87 (22) | 0.26 (6.5) | | | | 9.8 | - | M2.5 | 11.68 (1.32) | 0.08 (2.0) |
| 19 | 826.19 | - | 0.75 (19.1) | 0.79 (20) | 0.25 (6.0) | 4 | 4.76 | 8 | 13.1 | M4 | - | 20.09 (2.27) | 0.08 (2.0) |
| | - | 827.19 | | 1.1 (28) | 0.31 (8.0) | | | | 17.3 | - | M2.5 | 11.68 (1.32) | 0.08 (2.0) |
| 25 | 826.25 | - | 1.0 (25.4) | 0.94 (24) | 0.3 (7.5) | 5 | 6 | 10 | 28 | M5 | - | 40.89 (4.62) | 0.1 (2.5) |
| | - | 827.25 | | 1.18 (30) | 0.39 (10.0) | | | | 33 | - | M3 | 21.5 (2.43) | 0.1 (2.5) |
| 32 | 826.32 | - | 1.25 (31.8) | 1.18 (30) | 0.39 (10.0) | 6 | 8 | 16 | 55 | M6 | - | 67.35 (.61) | 0.12 (3.0) |
| | - | 827.32 | | 1.5 (38) | 0.47 (12.0) | | | | 67 | - | M4 | 50.09 (5.66) | 0.12 (3.0) |
| 38 | 826.38 | - | 1.25 (38.1) | 1.97 (50) | 0.63 (16.0) | 8 | 12 | 19 | 127 | M6 | - | 67.35 (7.61) | 0.12 (3.0) |
| | - | 827.38 | | 1.97 (50) | 0.63 (16.0) | | | | 130 | - | M5 | 100.9 (11.4) | 0.16 (4.0) |
| 50 | 826.50 | - | 2.0 (50.8) | 2.13 (54) | 0.71 (18.0) | 10 | 16 | 26 | 241 | M8 | - | 164.6 (18.36) | 0.16 (4.0) |
| | - | 827.50 | | 2.13 (54) | 0.71 (18.0) | | | | 237 | - | M6 | 171.1 (19.34) | 0.2 (5.0) |

## PERFORMANCE

| Size | Peak Torque in. (Nm) | Max misalignment compensation | | | Nominal stiffness at std. bore size | |
|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | Axial in. (mm) | Bore | Torsional Nm/rad |
| 16 | 0.02 (0.6) | 5 | 0.01 (0.25) | 0.01 (0.25) | 5 | 6 |
| 19 | 0.04 (1.1) | 5 | 0.01 (0.25) | 0.01 (0.25) | 6 | 12 |
| 25 | 0.09 (2.2) | 5 | 0.01 (0.25) | 0.0.01 (0.25) | 10 | 17 |
| 32 | 0.16 (4.1) | 5 | 0.01 (0.25) | 0.01 (0.25) | 12 | 32 |
| 38 | 0.39 (10) | 5 | 0.01 (0.25) | 0.01 (0.25) | 16 | 70 |
| 50 | 0.59 (15) | 5 | 0.01 (0.25) | 0.01 (0.25) | 20 | 119 |

### Materials & Finishes

**Couplings:** Aluminium L 168 or better

**Fasteners:** Alloy steel, black oiled

### Temperature Range

-40ºF to +248ºF
(–40°C to +120°C)

## AVAILABLE BORES

Sizes indicated in parenthesis are metric (mm).

| Size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | 5/16" | (8) | (9) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) | 3/4" | (20) | (25) | 1" |
| 16 | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| 19 | | | ○ | ● | ● | ● | ● | | ● | | | | | | | | | | | | | |
| 25 | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| 32 | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 38 | | | | | | | | | | | ○ | ○ | ● | ● | ● | ● | ● | ● | | | | |
| 50 | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● |
| **Bore Ref** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 27 | 28 | 30 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 | 47 | 48 | 52 | 53 |

○ B1 only ● B1 & B2



# bevel gearboxes

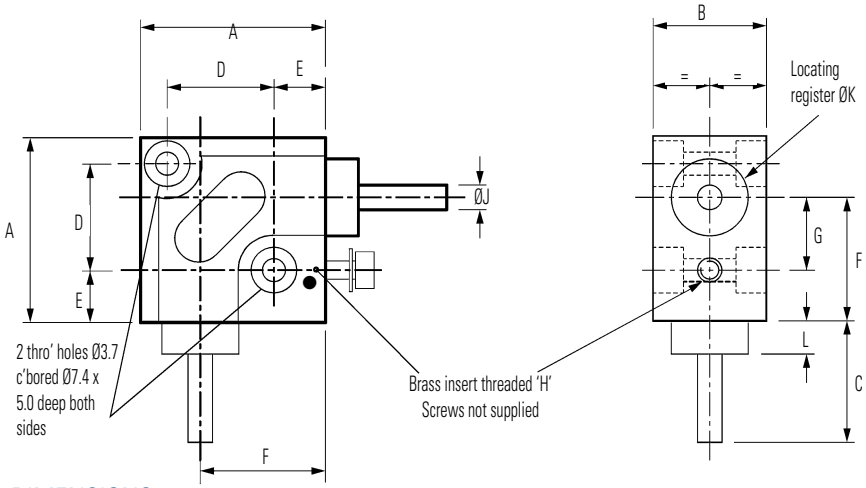
Huco L-Box miniaturized right-angle drives offer 2 alternative specifications to meet the need for a standard component with differing levels of application and economy.

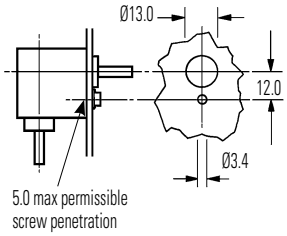
Both models feature two counterbored clearance holes for conventional chassis mounting and a tapped insert below each shaft for vertical mounting. Both models have a 1:1 ratio. Max backlash 2°.

Gear cases are injection moulded in filled Nylon 6.6 for low moisture take-up, low thermal expansion and rigidity.

## Bevel Gearboxes

### Huco L-Box




### DIMENSIONS

| Type | A | B | C | D | E | F | G | H | Dia J | Dia K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 332.31.2 | 30.5 | 18.7 | 19.8 | 17.6 | 8.7 | 20.7 | 12 | M3 | 4.000 | 12.7 | 5.3 |
| 333.31.3 | | | | | | | | | 3.998 | | |

### DATA

| Type | Max Input Speed | Max Power Watts | Max Backlash | Output Torque Nm | Ratio | Mass g |
|---|---|---|---|---|---|---|
| 332.31.2 | 1000 | 8 | 2 Deg | 0.68 | 1:1 | 41 |
| 333.31.3 | - | - | | 0.11 | | 37 |

HUCO L-BOX REF. **332.31.2**
Hardened steel gears bonded to ground and hardened steel shafts. Sintered bronze bearing system.
Gearbox and bearings lubricated for life.
Electrical isolation between shafts and housing.
Suitable for manual and short term drive applications.

HUCO L-BOX REF. **333.31.3**
Acetal gears moulded onto ground and hardened steel shafts.
Sintered bronze bearing system.
Gearbox and bearings lubricated for life.
Electrical isolation between input/output shafts and shafts and housing.
Suitable for manual and short term drive applications.

### New Aluminium Housing L-Box Available

- Adjustable Backlash to allow smooth movement
- Shaft size 4mm / 3mm and 1/8"

Enquire for details



# Drive Couplings

- Flexible Double Loop
- Flexible Jaw (Spider)

**General purpose couplings for light power drives.**



# Flex-G

## Flexible Jaw Coupling

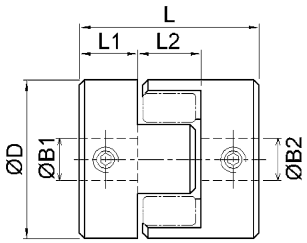
Huco Flexible Jaw Couplings utilize the flexibility and resilience of a polyurethane element between aluminium hubs. This combination allows high torque to be transmitted with little or no backlash, even where there is significant angular and/or parallel misalignment.

- Zero / Low backlash
- Rated up to 17Nm Torque
- Choice of 3 polyurethane elements



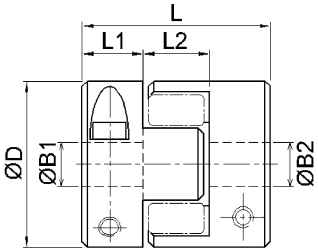
## Set Screw Hubs





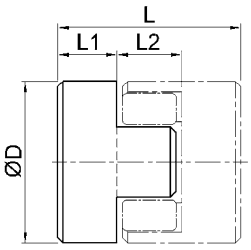

## Thro' Clamp Hubs





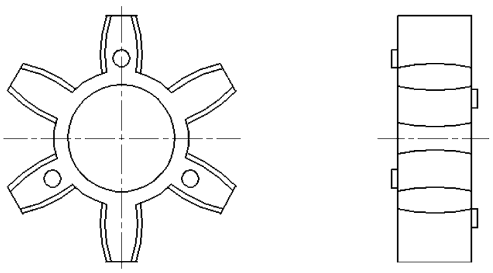

## Pilot Hubs






User-adaptable for special needs e.g. fitting within tubes. Blank hubs are supplied centered with no provision for fastening. External dimensions identical with blind hubs. Except size 40 which has 6.35mm pilot hole.

## Elements



Polyurethane elements are available with three hardness levels; hard, standard and soft which exhibit different operating characteristics. Other features of polyurethane are:

- Resistance to oils, grease and many solvents
- Good atmospheric and chemical resistance
- Excellent shock and vibration damping

# Flexible Jaw Coupling

## DIMENSIONS & ORDER CODES

| Coupling Size | Set Screw Style | Clamping Style | Pilot Hub | ØD in. (mm) | L in. (mm) | L1 in. (mm) ① | L2 in. (mm) | ØB1 max in. (mm) ⑥ | Fasteners | | | Moment of inertia kgm2 x 10-8 ③ | Mass kg x 10-3 ③ | Soft (Blue) | Med (White) | Hard (Red) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HUB REF | | | | | | | | Screw | Torque lb.-in. (Nm) | Wrench in. (mm) | | | ELEMENT REF | | |
| 14 | 802.14 | - | - | 0.55 (14.0) | 0.87 (22.0) | 0.28 (7.0) | 0.31 (8.0) | 0.25 (6.35) | M3 | 0.94 | 1.5 | 18.4 | 7.0 | 804.14 | 805.14 | 806.14 |
| | - | 803.14 | - | | | | | | M2.5 | 1.32 | 2.5 | | | | | |
| | - | - | 800.14 | | | | | | - | - | - | | | | | |
| 20 | 802.20 | - | - | 0.79 (20.0) | 1.18 (30.0) | 0.39 (10.0) | 0.39 (10.0) | 0.35 (9.0) | M3 | 0.94 | 1.5 | 106.0 | 17.0 | 804.20 | 805.20 | 806.20 |
| | - | 803.20 | - | | | | | | M3 | 2.43 | 2.5 | | | | | |
| | - | - | 800.20 | | | | | | - | - | - | | | | | |
| 30 | 802.30 | - | - | 1.18 (30.0) | 1.38 (35.0) | 0.43 (11.0) | 0.51 (13.0) | 0.55 (14.0) | M4 | 2.27 | 2.0 | 606.0 | 51.0 | 804.30 | 805.30 | 806.30 |
| | - | 803.30 | - | | | | | | M3 | 2.43 | 2.5 | | | | | |
| | - | - | 800.30 | | | | | | - | - | - | | | | | |
| 40 | 802.40 | - | - | 1.57 (40.0) | 2.60 (66.0) | 0.98 (25.0) | 0.63 (16.0) | 0.63 (16.0) | M5 | 4.62 | 2.5 | 4230.0 | 108.0 | 804.40 | 805.40 | 806.40 |
| | - | 803.40 | - | | | | | | M4 | 5.66 | 3.0 | | | | | |
| | - | - | 800.40 | | | | | | - | - | - | | | | | |

## PERFORMANCE (AT 20ºC)

| Coupling Size | Spider Rigidity Duro ⑦ | Misalignment | | Speed R.P.M max | Torsional ⑤ | | Backlash Free Torque lb.-in. (Nm) | Torque Nominal lb.-in. (Nm) ④ | Torque Max lb.-in. (Nm) |
|---|---|---|---|---|---|---|---|---|---|
| | | Angular deg | Radial in. (mm) | | Rate deg/Nm | Stiffness Nm/rad | | | |
| 14 | 80 Blue<br>92 White<br>98 Red | 2 | .003 (0.10) | 40000 | 6.7<br>3.9<br>2.29 | 8.5<br>14.7<br>25.0 | 1.95 (0.22) | 5.93 (0.67)<br>9.91 (1.12)<br>16.8 (1.90) | 11.9 (1.34)<br>19.8 (2.24)<br>33.6 (3.80) |
| 20 | 80 Blue<br>92 White<br>98 Red | 2 | .006 (0.15) | 28000 | 3.37<br>2.05<br>1.22 | 17<br>28<br>47 | 3.98 (0.45) | 15.9 (1.80)<br>25.9 (2.93)<br>42.9 (4.85) | 31.9 (3.60)<br>53.1 (6.00)<br>85.9 (9.70) |
| 30 | 80 Blue<br>92 White<br>98 Red | 2 | .008 (0.20) | 19000 | 1.24<br>0.40<br>0.25 | 71<br>143<br>228 | 8.85 (1.00) | 35.0 (3.95)<br>64.9 (7.33)<br>109.8 (12.4)0 | 69.9 (7.90)<br>129.2 (14.60)<br>219.5 (24.80 |
| 40 | 80 Blue<br>92 White<br>98 Red | 2 | 0.38 | 14000 | 0.34<br>0.17<br>0.10 | 170<br>344<br>573 | 21.2 (2.40) | 42.9 (4.85)<br>86.7 (9.80)<br>147.8 (16.70) | 85.9 (9.70)<br>173.5 (19.60)<br>295.6 (33.40) |

① Maximum permissable hub penetration

② Maximum recommended tightening torque

③ Values apply to complete couplings with max. bores

④ Nominal Torque. Select a size where Nominal Torque exceeds application torque x service factor (***see page 4)***

⑤ Values apply at 50% nominal torque, measured shaft to shaft with largest standard bores

⑥ Hubs can be provided with keyways or 'D' bores

⑦ Spider Durometer is shore 'A' hardness

## STANDARD BORES

Sizes indicated in parenthesis are metric (mm).

| | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coupling Size | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16 |
| 14 | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | |
| 20 | | | ● | ● | ● | ● | ● | | | | | | | | | |
| 30 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 40 | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Bore ref.** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 |

## Materials & Finishes

**Hub sizes 14 - 30:** Al. Alloy 2024
**Hub size 40:** Cast Aluminium LM9
**Membranes:** Polyurethane
**Fastener:** Alloy steel, black oiled

## Temperature Range

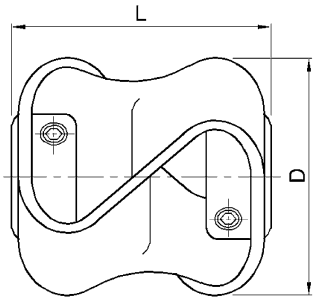
-40ºF to +176ºF (-40ºC to +80ºC)
For short durations up to 202ºF (100ºC)

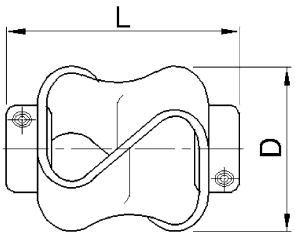
Note: Larger sizes available. Please ask for details.

# Flex-P

## Double Loop Flexible Coupling






### DIMENSIONS & ORDER CODES

| Size | Steel zinc plated hubs | Stainless steel hubs | Dimensions | | | | | Fasteners | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Order Code | | Max Diameter in. (mm) | Length L in. (+/- 1.0 mm) | Bore length in. (mm) | Max Bores | Mass kg x 10-3 | Size | Torque lb.-in. (Nm) | A/F in. (mm) |
| 10 | 047.10 - | - 049.10 | 1.06 (27) | 1.06 (27) | 0.31 (7.9) | 9.53 | 25 | M3 | 8.32 (0.94) .036 (0.32) | 0.17 (1.5) |
| 20 | 047.20 - | - 049.20 | 1.89 (48) | 1.89 (48) | 0.50 (12.7) | 12.7 | 92 | M4 | 0.26 (2.27) 0.23 (2.0) | 0.23 (2.0) |
| 30 | 047.30 - | - 049.30 | 2.13 (54) | 2.17 (55) | 0.63 (16.0) | 16.0 | 124 | M5 | 0.52 (4.62) 0.24 (2.1) | 0.28 (2.5) |
| 40 | 047.40 - | - 049.40 | 2.20 (56) | 2.20 (56) | 0.63 (16.0) | 16.0 | 136 | M6 | 0.86 (7.61) 0.43 (3.75) | 0.34 (3.0) |
| 40* | 050.40 | - | 2.20 (56) | 2.20 (56) | 0.63 (16.0) | 16.0 | 136 | M6 | 0.86 (7.61) | 0.34 (3.0) |

### PERFORMANCE

| Size | Max Torque 1 lb.-in. (Nm) | Max Torque 2 lb.-in. (Nm) | max misalignment/displacement | | |
|---|---|---|---|---|---|
| | | | Angular deg | Radial in. (mm) | Axial in. (+/- mm) |
| 10 | 4.43 (0.5) | 7.08 (0.8) | 10 | 0.10 (2.6) | 0.18 (4.5) |
| 20 | 15.9 (1.8) | 26.6 (3) | 15 | 0.13 (3.2) | 0.30 (7.5) |
| 30 | 44.3 (5) | 70.8 (8) | 15 | 0.13 (3.2) | 0.33 (8.5) |
| 40 | 88.5 (10) | 159.3 (18) | 15 | 0.13 (3.2) | 0.43 (11) |
| 40* | 22.1 (2.5) | 39.8 (4.5) | 15 | 0.13 (3.2) | 0.43 (11) |

Torque 1 = torque at maximum displacement
Torque 2 = torque at 1 deg. angular, 2mm axial and 0.5mm radial displacement

### Materials & Finishes

**Hubs:** Steel 230M07 pb Zn plated + clear passivate
or
Stainless Steel 303 S31 natural finish

**Flexing Element:** Hytrel

**Fastener:** Steel Hub: Alloy steel, black oiled
Stainless Steel Hub: stainless steel

### Temperature Range

-40ºF to +212ºF (–40°C to +100°C)

### Maximum Rotational Speed

3000 rev/min

### STANDARD BORES*

Sizes indicated in parenthesis are metric (mm).

| Size | ØB1, ØB2 +0.002/ -0 (+0.05mm/-0mm) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | 5/16" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | (15) | 5/8" | (16) |
| 10 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 20 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 30 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 40 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| **Bore Ref** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 27 | 28 | 31 | 32 | 35 | 36 | 38 | 40 | 41 | 42 |

* Couplings with dissimilar bores are non-standard



# Plastic Universal Joints and Teleshafts

- **Backlash-free up to $10^8$ turns**
- **Low mass**
- **Low inertia**
- **Corrosion resistant**
- **Electrically isolating**
- **No maintenance**

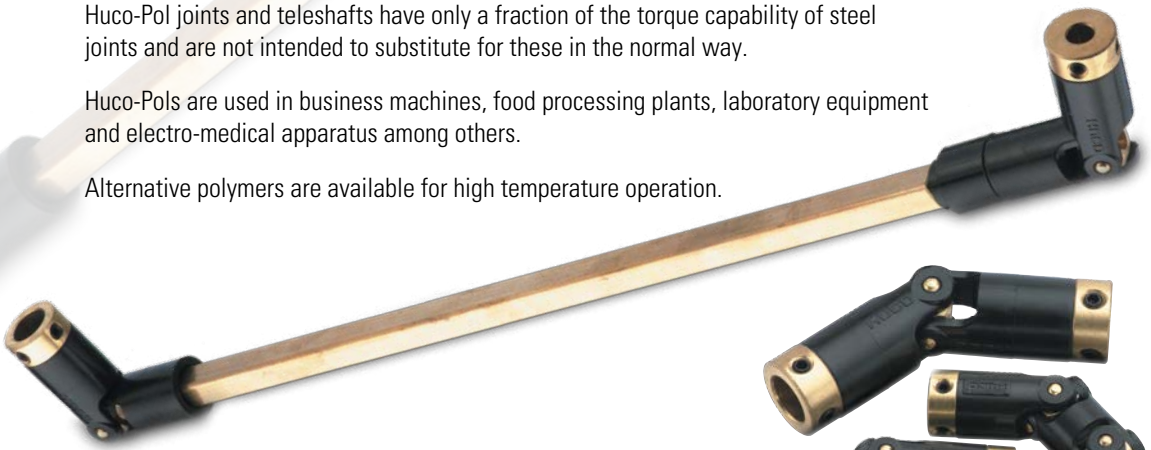
Huco-Pol is a range of light duty, backlash-free universal joints and teleshafts manufactured of acetal and non-ferrous metals.

They are suitable for intermittent applications where low mass, corrosion resistance and electrical isolation are desirable.

Huco-Pol joints and teleshafts have only a fraction of the torque capability of steel joints and are not intended to substitute for these in the normal way.

Huco-Pols are used in business machines, food processing plants, laboratory equipment and electro-medical apparatus among others.

Alternative polymers are available for high temperature operation.

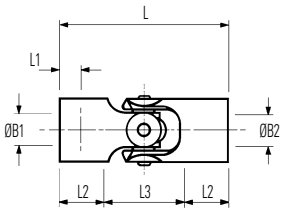




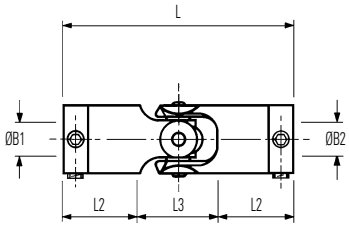
# Plastic Universal Joints





Type 101, 105, 601



Type 103, 603

## SINGLE JOINTS - DIMENSIONS & ORDER CODES

| Size | ① Brass Cross-piece Hub Ref | ② Plastic Cross-piece Hub Ref | Dimensions OD in. (mm) | L in. (mm) | L1 in. (mm) | L2 in. (mm) | L3 in. (mm) | B1, B2 Max in. (mm) | Moment of inertia kgm2 x 10-8 | Mass kg x 10-3 | Fasteners Size | Torque lb.-in. (Nm) | A/F in. (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 101.06 | - | 0.28 (7.1) | 0.75 (19.1) | 0.13 (3.3) | 0.21 (5.3) | 0.34 (8.6) | 0.19 (4.76) | 0.3 | 0.7 | - | - | - |
| | - | 601.06 | | | | | | | 0.2 | 0.4 | | | |
| | 103.06 | - | | 1.07 (27.2) | - | 0.37 (9.3) | | 0.13 (3.18) | 1.1 | 3.1 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 603.06 | | | | | | | 1.0 | 2.8 | | | |
| 09 | 101.09 | - | 0.44 (11.1) | 1.12 (28.5) | 0.17 (4.3) | 0.34 (8.6) | 0.45 (11.4) | 0.25 (6.35) | 4.0 | 2.7 | - | - | - |
| | - | 601.09 | | | | | | | 4.0 | 1.5 | | | |
| | 103.09 | - | | 1.48 (37.6) | - | 0.52 (13.1) | | 0.20 (5.0) | 13.5 | 9.3 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 603.09 | | | | | | | 12.6 | 8.1 | | | |
| 13 | 101.13 | - | 0.56 (14.3) | 1.40 (35.6) | 0.22 (5.6) | 0.41 (10.4) | 0.58 (14.8) | 0.31 (8.0) | 14.3 | 5.7 | - | - | - |
| | - | 601.13 | | | | | | | 11.9 | 3.6 | | | |
| | 103.13 | - | | 1.82 (46.2) | - | 0.62 (15.7) | | 0.25 (6.35) | 44.6 | 17.7 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 603.13 | | | | | | | 38.0 | 15.6 | | | |
| 16 | 101.16 | - | 0.69 (17.5) | 2.10 (53.3) | 0.35 (8.9) | 0.60 (15.2) | 0.91 (23.0) | 0.43 (11.0) | 32.3 | 12.2 | - | - | - |
| | - | 601.16 | | | | | | | 18.3 | 5.0 | | | |
| | 103.16 | - | | 2.66 (67.6) | - | 0.88 (22.3) | | 0.39 (10.0 | 136 | 35.0 | M4 | 20.1 (2.27) | 0.08 (2.0) |
| | - | 603.16 | | | | | | | 122 | 31.4 | | | |
| 20 | 105.20 | - | 0.90 (23.0) | 2.44 (62.0) | 0.31 (8.0) | 0.67 (17.0) | 1.10 (28.0) | 0.50 (12.7) | 147 | 25.7 | - | - | - |
| 25 | 105.25 | - | 1.12 (28.5) | 2.91 (74.0) | 0.39 (10.0) | 0.79 (20.0) | 1.34 (34.0) | 0.55 (14) | 463 | 56 | - | - | - |
| 32 | 105.32 | - | 1.44 (36.5) | 3.39 (86.0) | 0.39 (10.0) | 0.83 (21.0) | 1.73 (44.0) | 0.79 (20) | 1339 | 103 | - | - | - |

## SINGLE JOINTS - PERFORMANCE at 68ºF (20ºC)

| Size | Brass Cross-piece 101, 103, 105 Peak Torque lb.-in. (Nm) | Static Break Torque lb.-in. (Nm) | Torsional Rate deg/Nm | Torsional Stiff-ness Nm/Rad | Plastic Cross-piece 601, 603 Peak Torque lb.-in. (Nm) | Static Break Torque lb.-in. (Nm) | Torsional Rate deg/Nm | Torsional Stiff-ness Nm/Rad | Max angular com-pensation @ 1000 rev/min | Max axial loading N |
|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 0.97 (0.11) | 3.98 (0.45) | 19.7 | 2.9 | 0.80 (0.09) | 2.66 (0.3) | 22 | 2.6 | 45 | 18 |
| 09 | 3.19 (0.36) | 16.8 (1.9) | 6.8 | 8.4 | 5.31 (0.6) | 13.28 (1.5) | 6.8 | 8.4 | 45 | 38 |
| 13 | 7.52 (0.85) | 39.8 (4.5) | 3.2 | 18 | 6.2 (0.7) | 22.13 (2.5) | 3.6 | 16.0 | 45 | 67 |
| 16 | 14.2 (1.6) | 60.2 (6.8) | 1.7 | 34 | 8.85 (1.0) | 0.56 (5.0) | 2.8 | 20.0 | 45 | 98 |
| 20 | 24.8 (2.8) | 151 (17) | 0.94 | 61 | - | - | - | - | 40 | 138 |
| 25 | 49.6 (5.6) | 301 (34) | 0.51 | 112 | - | - | - | - | 40 | 222 |
| 32 | 94.7 (10.7) | 637 (72) | 0.25 | 229 | - | - | - | - | 40 | 334 |

FOR STANDARD BORES SEE FACING PAGE

## Materials & Finishes

**Bodies:** Acetal

**Cross-pieces:** Brass BS 2874 CZ121,CZ122 (101, 103, 109, 111)
Nylon Glass filled (601, 603, 609, 611)

**Bore Inserts:** Brass BS 2874 CZ121 (103, 111, 603, 611)
Al. Alloy 2014A T6 (105)

**Fasteners:** Alloy steel, black oiled

## Operating Temperature Range

-20ºF to +140ºF (- 20ºC to +60ºC)

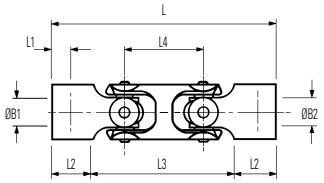
## Maximum Rotational Speed

1000 rev/min

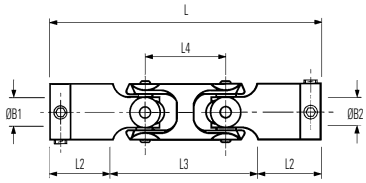
# Plastic Universal Joints



①   ②




Type 109, 609




Type 111, 611

## DOUBLE JOINTS - DIMENSIONS & ORDER CODES

| Size | ① Brass Cross-piece Hub Ref | ② Plastic Cross-piece Hub Ref | Dimensions OD in. (mm) | L in. (mm) | L1 in. (mm) | L2 in. (mm) | L3 in. (mm) | L4 in. (mm) | B1, B2 Max | Moment of inertia kgm2 x 10-8 | Mass kg x 10-3 | Fasteners Size | Torque lb.-in. (Nm) | A/F in. (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 109.06 | - | 0.28 (7.1) | 1.07 (27.2) | 0.13 (3.3) | 0.21 (5.3) | 0.66 (16.7) | 8.1 | 4.76 | 0.6 | 1.1 | - | - | - |
| | - | 609.06 | | | | | | | | 0.4 | 0.6 | | | |
| | 111.06 | - | | 1.39 (35.3) | - | 0.37 (9.3) | | | 3.18 | 1.3 | 3.5 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 611.06 | | | | | | | | 1.1 | 3.0 | | | |
| 09 | 109.09 | - | 0.44 (11.1) | 1.64 (41.7) | 0.17 (4.3) | 0.34 (8.6) | 0.97 (24.6) | 13.2 | 6.35 | 5.9 | 4.5 | - | - | - |
| | - | 609.09 | | | | | | | | 5.8 | 2.0 | | | |
| | 111.09 | - | | 2.00 (50.8) | - | 0.52 (13.1) | | | 5.0 | 15.3 | 11.1 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 611.09 | | | | | | | | 14.0 | 8.6 | | | |
| 13 | 109.13 | - | 0.56 (14.3) | 2.02 (51.4) | 0.22 (5.6) | 0.41 (10.4) | 1.21 (30.7) | 15.9 | 8.0 | 23.7 | 9.6 | - | - | - |
| | - | 609.13 | | | | | | | | 21.5 | 7.5 | | | |
| | 111.13 | - | | 2.44 (62.1) | - | 0.62 (15.7) | | | 6.35 | 50.4 | 21.6 | M3 | 8.32 (0.94) | 0.06 (1.5) |
| | - | 611.13 | | | | | | | | 50.4 | 15.6 | | | |
| 16 | 109.16 | - | 0.69 (17.5) | 2.97 (75.5) | 0.35 (8.9) | 0.60 (15.2) | 1.78 (45.2) | 22.2 | 11.0 | 63.5 | 19.7 | - | - | - |
| | - | 609.16 | | | | | | | | 35.5 | 12.5 | | | |
| | 111.16 | - | | 3.53 (89.8) | - | 0.88 (22.3) | | | 10.0 | 178.0 | 42.4 | M4 | 20.1 (2.27) | 0.08 (2.0) |
| | - | 611.16 | | | | | | | | 150.0 | 35.2 | | | |

## DOUBLE JOINTS - PERFORMANCE at 68ºF (20ºC)

| Size | Brass Cross-piece 109, 111 Peak Torque lb.-in. (Nm) | Static Break Torque lb.-in. (Nm) | Torsional Rate deg/Nm | Torsional Stiffness Nm/Rad | Plastic Cross-piece 609, 611 Peak Torque lb.-in. (Nm) | Static Break Torque lb.-in. (Nm) | Torsional Rate deg/Nm | Torsional Stiffness Nm/Rad | Max angular compensation @ 1000 rev/min | Max radial compensation in. (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 0.71 (0.08) | 3.00 (0.34) | 81.9 | 0.7 | 0.71 (0.08) | 2.66 (0.3) | 115 | 0.5 | 90 | 49.6 (5.6) |
| 09 | 1.42 (0.16) | 16.82 (1.9) | 13.3 | 4.3 | 1.42 (0.16) | 13.28 (1.5) | 17.3 | 3.3 | 90 | 80.5 (9.1) |
| 13 | 5.22 (0.59) | 30.1 (3.4) | 8.1 | 7.1 | 5.22 (0.59) | 22.13 (2.5) | 10.4 | 5.5 | 90 | 96.5 (10.9) |
| 16 | 11.5 (1.3) | 60.2 (6.8) | 4.5 | 12.6 | 8.85 (1.0) | 44.25 (5.0) | 7.5 | 7.6 | 90 | 137 (15.5) |

## STANDARD BORES

| Size | Bore tolerences 101, 601, 109, 609 = +0.0016/ -0 (+0.04mm/-0mm) • 103, 603, 111, 611 = +0.0012/ -0 (+0.03mm/-0mm) (3) | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (20) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| 09 | ○ | ○ | ● | ● | ● | ● | ● | | | | | | | | | | | | |
| 13 | | | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | | | |
| 16 | | | | | | ○ | ○ | ● | ● | ● | | | | | | | | | |
| 20 | | | | | | | | ○ | ○ | ○ | | ○ | | | | | | | |
| 25 | | | | | | | | | | ○ | ○ | ○ | | | | | | | |
| 32 | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **Bore Ref** | 14 | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 |

● Moulded bores only ○ Sleeved bores only ● Moulded or sleeved bores available

# Plastic Universal Joints

## Constant velocity

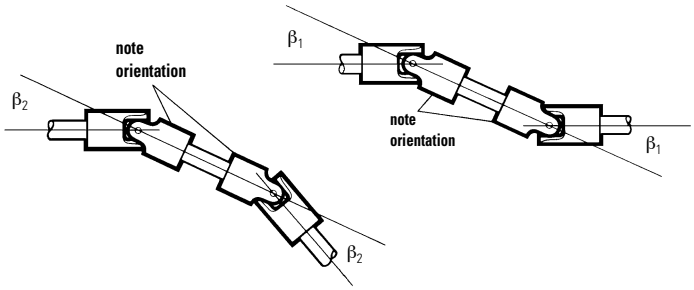
The velocity ratio of single universal joints is not constant when the working angle is greater than zero. Their geometry gives rise to sinusoidal fluctuations at the output that increase with the working angle and which vary between:

$\omega \cos \beta$ and $\omega \sec \beta$

where $\omega$ = angular velocity
and $\beta$ = operating angle

For example, when the operating angle is 5°, the maximum error is ±0.4%; at 7° it is ±0.8%, and at 10° it is ±1.5%. A motor shaft turning at a constant 1000 rpm, driving through a single universal joint set at an operating angle of 5°, produces an output that fluctuates between 996 rpm and 1004 rpm twice each revolution.

The fluctuations are cancelled out when using a double joint or two single joints connected back to back.




To maintain constant velocity ratio, ensure that:

a) The orientation of two single joints is correct; the inboard forks should align as in double joints.

b) The working angle of both joints, or both halves of a double joint, is the same.

## ADJUSTED TORQUE

Peak torque values apply when the working angle is zero. Adjusted torque takes account of dynamic loading at the bearings. To find adjusted torque, determine application speed, torque and operating angle,

Then:

a) multiply speed x working angle

b) subtract the result from 10000

c) divide the answer into 10000

d) apply the result to the application torque.

| | |
|---|---|
| eg. speed | = 400 rpm |
| application torque | = 0.1Nm |
| working angle | = 20° |

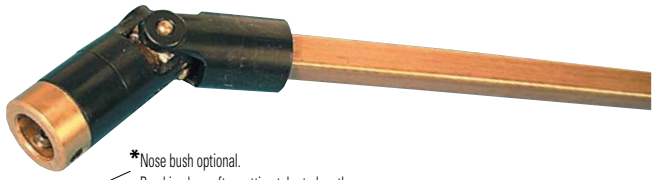
Accordingly:

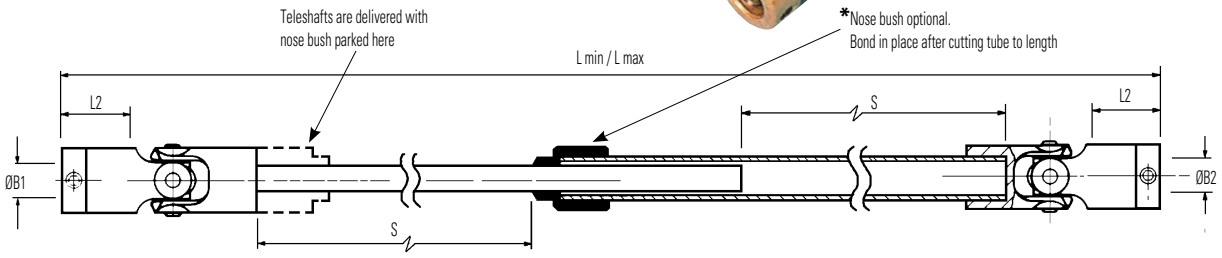
| | |
|---|---|
| a) 400 rpm x 20° | = 8000 |
| b) 10000 – 8000 | = 2000 |
| c) 10000 / 2000 | = 5 |
| d) 5 x 0.1Nm | = 0.5Nm |

Select a joint where Peak Torque exceeds 0.5Nm, ie., size 13 or larger.

***Note:*** To remain within the capacity of the joint, the result of speed x working angle must be less than 10000.

# Plastic Universal Joints Brass Cross Pieces and Tubes

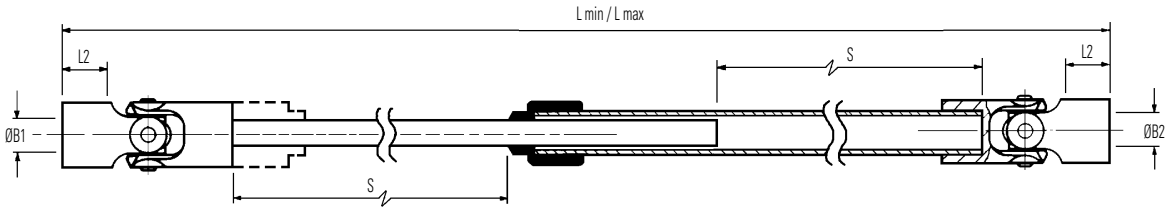


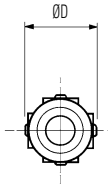



**Refs. 128 & 495**
Joints sleeved with headed brass inserts fitted 2 screws per end

**End A (inner tube)**

**End B (outer tube)**




**Refs. 130 & 497**
Joints sleeved with metal inserts. Attach to shafts by cross-pinning or bonding

**Typical**

## DIMENSIONS & ORDER CODES

| Teleshaft size | ① Teleshaft options | | ØD in. (mm) | L in. (mm ±1.0) | L in. (mm) | Stroke in. (mm) | L2 in. (mm) | ØB1, ØB2 max | Mass kg x 10–3 ③ | Corresponding joints. For dimensions see |
|---|---|---|---|---|---|---|---|---|---|---|
| | Standard tubes self-colour brass | Wear-resistant tubes Niflor coated | | | | | | | | |
| | teleshaft REF | | | min | max | S | ② | | | |
| 09 | 128.09.240 | 495.09.240 | .43 (11.1) | 9.45 (240) | 15.3 (389) | 5.87 (149) | .52 (13.1) | 5 | 36 | 103.09 |
| 13 | 128.13.300 | 495.13.300 | .56 (14.3) | 11.8 (300) | 19.0 (484) | 7.24 (184) | .62 (15.7) | 6.35 | 58 | 103.13 |
| 16 | 128.16.450 | 495.16.450 | .69 (17.5) | 17.7 (450) | 28.7 (730) | 11.02 (280) | .88 (22.3) | 10 | 168 | 103.16 |
| 20 | 130.20.464 | 497.20.464 | .91 (23.0) | 18.3 (464) | 29.3 (745) | 11.06 (281) | .67 (17.0) | 12.70 | 241 | 105.20 |
| 25 | 130.25.500 | 497.25.500 | 1.12 (28.5) | 19.7 (500) | 30.9 (784) | 11.18 (284) | .79 (20.0) | 14 | 457 | 105.25 |
| 32 | 130.32.564 | 497.32.564 | 1.44 (36.5) | 22.2 (564) | 34.2 (868) | 11.97 (304) | .83 (21.0) | 20 | 827 | 105.32 |

① Niflor is a proprietory PTFE impregnated electroless nickel plating process.

② Max shaft penetration

③ Values apply with max bores.

- A range of standard telescopes is available which can be shortened to achieve an infinite number of length/stroke requirements. The lengths L min shown in the table above are the longest of the standard range in each size. Specific lengths are produced by cutting an equal amount from both ends of the nearest standard size. See next page for recommended procedure.
- Custom Teleshaft assemblies can be factory made subject to minimum order quantities.
- *The nose bush eliminates any torsional free play that may be apparent in the tubes due to working clearances.
- Full details of the standard range and product order codes are available on request. Please ask for a Huco Teleshaft data sheet.

## STANDARD BORES

Sizes indicated in parenthesis are metric (mm).

| Teleshaft size | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/8" | (4) | 3/16" | (5) | (6) | 1/4" | (8) | 3/8" | (10) | (12) | 1/2" | 5/8" | (16) | 3/4" | (20) |
| 09 | ● | ● | ● | ● | | | | | | | | | | | |
| 13 | | ● | ● | ● | ● | ● | | | | | | | | | |
| 16 | | | | | ● | ● | ● | ● | ● | | | | | | |
| 20 | | | | | | | | ● | ● | | | | | | |
| 25 | | | | | | | | | | ● | ● | | | | |
| 32 | | | | | | | | | | | | ● | ● | ● | ● |
| **Bore ref.** | 16 | 18 | 19 | 20 | 22 | 24 | 28 | 31 | 32 | 35 | 36 | 41 | 42 | 47 | 48 |
| **Corresponding bore adaptor** | | | | **251** | | **253** | **255** | | **257** | | **259** | | **260** | | **261** |

Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes. *See page 58* for details.

# Huco Teleshafts

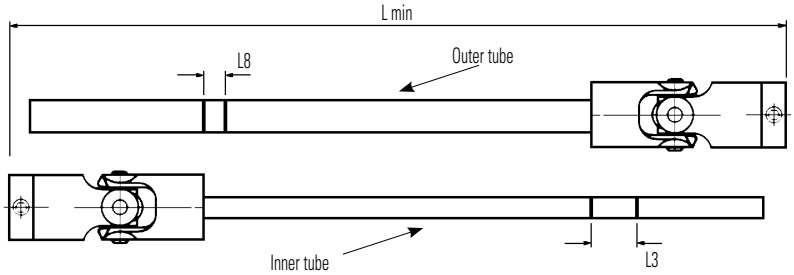
## Plastic Universal Joints Brass Cross Pieces and Tubes

Extensible drive shafts (teleshafts), are useful when the distance between actuator and load varies during operation, or needs to accommodate component variances, or when a quick disconnect facility is needed in the drive line.

Huco teleshafts are in keeping with the light duty capabilities of plastics universal joints and employ precision drawn square brass tubes as the telescoping medium. These can easily be cut by the user to provide an extensible drive shaft with customised dimensions.

There are 2 ways to arrive at a customized teleshaft: empirically (shown below), or with tables that provide all necessary data on stroke and tube lengths for teleshafts with and without nose bushes up to 520mm retracted length.

### Empirical method (based on the retracted length).

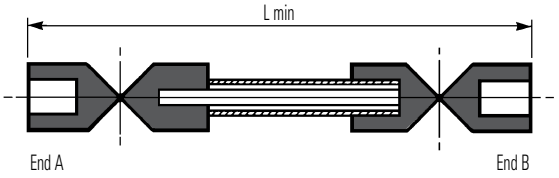


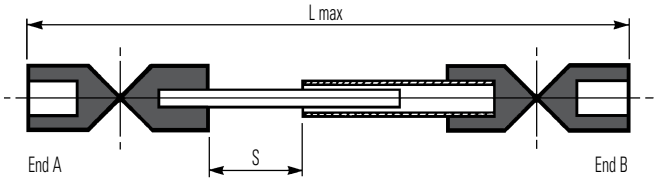

| Size | L3 | L8 |
|---|---|---|
| 09 | 0.34 (8.6) | 0.13 (3.2) |
| 13 | 0.41 (10.4) | 0.17 (4.3) |
| 16 | 0.60 (15.2) | 0.24 (6.1) |
| 20 | 0.67 (17.0) | 0.32 (8.2) |
| 25 | 0.79 (20.0) | 0.41 (10.3) |
| 32 | 0.83 (21.0) | 0.71 (18.0) |

- Disengage the teleshaft, remove the nose bush parked on the inner tube and keep it in case you need to use it later. Then lay the 2 halves of the teleshaft side by side.
- Slide one half alongside the other so that overall length L *min* matches the intended length of the teleshaft when *fully retracted*. With a felt tip pen, draw a line across the outer tube at the point where this is level with the inboard end of the universal joint.
- If you are sure that the teleshaft will satisfactorily extend the required amount, cut the tube at the line.
- Mark the inner tube in the same way, then add an amount equivalent to dimension L3 for your teleshaft size and draw a second line. Cut the tube at this second line.
- Now re-engage the tubes, taking care to orientate them correctly so that the inboard forks of the joints are in the same plane, and retract the teleshaft. The overall length should be as intended, and both tubes should bottom out simultaneously.
- If required, the nose bush can now be fitted by bonding it to the outer tube with an instant adhesive, (factory fitted bushes are retained by a barbing technique). The bush will add an amount equivalent to dimension L8 to the retracted length. Cutting this amount from the outer tube will reinstate the intended retracted length.
- The purpose of the nose bush is to eliminate any torsional free play that may be apparent in the tubes due to working clearances.

## How to order customized teleshafts

Please specify your teleshaft by completing the questionnaire.




Teleshaft size 09 13 16 20 25 32

Teleshaft ref. 128 130 495 497

Bore diameter End A .....

Bore diameter End B .....

Fitted nose bush (end B only) ☐

Speed of rotation ☐ rpm

Please specify:

L min ..... and/or

L max ..... and/or

Stroke S .....

If more than one parameter is specified, which one is critical? .....

Please quote ..... pcs

Projected annual qtys ..... pcs



# Adjustable Friction Clutches

Huco Vari-Tork are rotary friction devices with adjustable drag or slip torque. Controlled slip takes place between the hub and housing whenever the load exceeds the set torque.

- **Three sizes - up to 3Nm torque capacity**
- **4 interface styles**
- **Set screw or clamp connection**
- **Compact proportions**
- **Use as a torque limiter, tensioning, or overrun device**

The construction is simple and robust and comprises a series of steel clutch plates engaging a hub and a series of friction rings engaging a housing. Pressure is brought to bear on the plates and friction rings by an adjuster acting through a spring and pressure plate. The load can be connected to either the steel inner hub or the aluminium alloy housing.

As a torque limiter, Vari-Tork interrupts continuity between power source and load when this reaches a pre-determined level.

As a tensioning device, Vari-Tork typically maintains tension in a filament or tape winding operation by exerting drag on the feed spool.

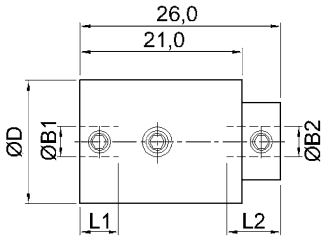
As an overrun device, Vari-Tork absorbs residual inertia of a motor when the load is braked or reaches a terminal stop.



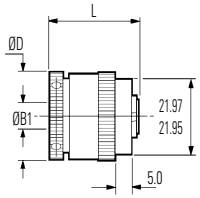
# Adjustable Friction Clutches



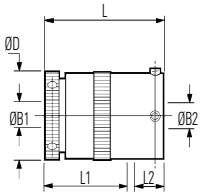
## Size 16 Set Screw Shaft Fixing



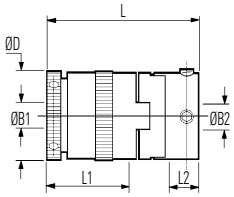

## Size 25 Set Screw Shaft Fixing



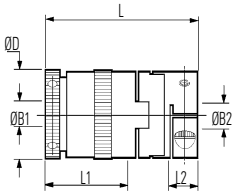

**Ref. 271** (2 plate)
**279** (6 plate)
Basic clutch (thro' bore)




**Ref. 273** (2 plate)
**281** (6 plate)
Basic clutch + sleeve adaptor

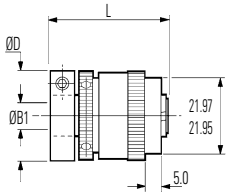



**Ref. 277** (2 plate)
**285** (6 plate)
Basic clutch + Oldham (set screw) coupling

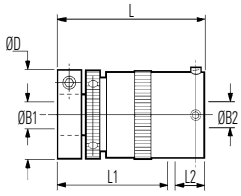



**Ref. 267** (2 plate)
**269** (6 plate)
Basic clutch + Oldham (clamp) coupling

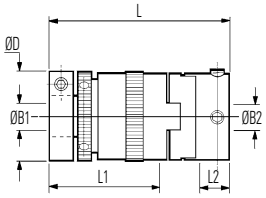
## Size 25 Clamp Shaft Fixing



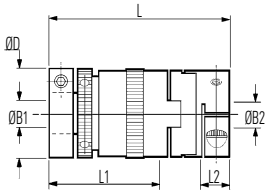

**Ref. 401** (2 plate)
**409** (6 plate)
Basic clutch (thro' bore)




**Ref. 403** (2 plate)
**411** (6 plate)
Basic clutch + sleeve adaptor

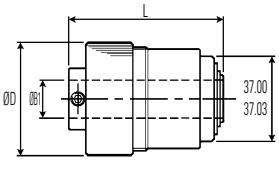



**Ref. 407** (2 plate)
**415** (6 plate)
Basic clutch + Oldham (set screw) coupling

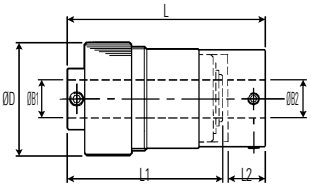



**Ref. 397** (2 plate)
**399** (6 plate)
Basic clutch + Oldham (clamp) coupling

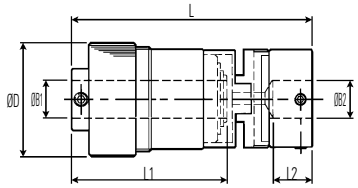
## Size 48 Set Screw Shaft Fixing



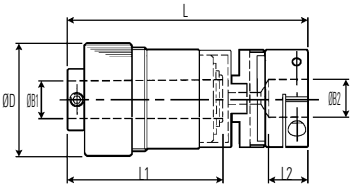

**Ref. 279**
Basic Clutch (thro' bore)




**Ref. 281**
Basic Clutch + sleeve adaptor




**Ref. 285**
Basic Clutch + Oldham (set screw) coupling




**Ref. 269**
Basic Clutch + Oldham (clamp) coupling

## Materials & Finishes

| | |
|---|---|
| **Housing, adjuster ring, adaptors:** | Al. Alloy 2014 T6<br>Irridite NCP finish |
| **Hub:** | Steel, heat treated |
| **Clutch plates:** | Size 25 Steel, heat treated<br>Size 48 Brass |
| **Bearings:** | Sintered bronze |
| **Fasteners:** | Alloy steel, black oiled |

## DIMENSIONS & ORDER CODES

| Size & Model | Set Screw Hub | Clamp Hub | ØD in. (mm) | L in. (mm) | L1 in. (mm) ① | L2 in. (mm) | ØB1 max in. (mm) ② | Fasteners at B1 end | | | ØB2 max in. (mm) | Fasteners at B2 end | | | Max drag torque lb.-in (Ncm) | Moment of inertia kgm2 x 10-8 ③ | Mass kg x 10-3 ③ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CLUTCH REF | | | | | | | Screw | Torque lb.-in. (Nm) | Wrench in. (mm) | | Screw | Torque lb.-in. (Nm) ② | Wrench in. (mm) | | | |
| 16 | 311.16 | - | 0.63 (16.0) | 1.89 (26.0) | 0.2 (5.0) | 0.28 (7.0) | 0.16 (4) | M3 | 0.94 | 0.06 (1.5) | 0.16 (4) | M3 | 8.32 (0.94) | 0.06 (1.5) | 0.04 (0.5) | 30 | 14 |
| 25 2-PLATE | 267.25 | - | 1.02 (25.8) | 1.83 (46.5) | 0.98 (25.0) | 0.34 (8.6) | 0.31 (8) | M3 | 0.94 | 0.06 (1.5) | 0.47 (12) | M3 | 21.5 (2.43) | 0.1 (2.5) | 4.7 (53) | 416 | 58 |
| | 271.25 | - | | 1.04 (26.4) | thro' | - | | | | | - | - | - | - | | 242 | 37 |
| | 273.25 | - | | 1.42 (36.0) | 0.98 (25.0) | 0.35 (9.0) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 382 | 50 |
| | 277.25 | - | | 1.83 (46.5) | 0.98 (25.0) | 0.34 (8.6) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 425 | 58 |
| | - | 397.25 | | 2.15 (54.5) | 3.27 (33.0) | 0.34 (8.6) | | | | | 0.47 (12) | M3 | 21.5 (2.43) | 0.1 (2.5) | | 508 | 68 |
| | - | 401.25 | 1.02 (25.8) | 1.35 (34.4) | thro' | - | 0.31 (8) | M3 | 2.43 | 0.1 (2.5) | - | - | - | - | 4.7 (53) | 317 | 47 |
| | - | 403.25 | | 1.73 (44.0) | 3.27 (33.0) | 0.35 (9.0) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 441 | 60 |
| | - | 407.25 | | 2.15 (54.5) | 3.27 (33.0) | 0.34 (8.6) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 511 | 69 |
| 25 6-PLATE | 269.25 | - | 1.02 (25.8) | 2.1 (53.4) | 1.22 (31.0) | 0.34 (8.6) | 0.31 (8) | M3 | 0.94 | 0.06 (1.5) | 0.47 (12) | M3 | 21.5 (2.43) | 0.1 (2.5) | 11.6 (132) | 529 | 68 |
| | 279.25 | - | | 1.28 (32.4) | thro' | - | | | | | - | - | - | - | | 312 | 48 |
| | 281.25 | - | | 1.67 (42.5) | 1.22 (31.0) | 0.35 (9.0) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 451 | 60 |
| | 285.25 | - | | 2.1 (53.4) | 1.22 (31.0) | 0.34 (8.6) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 516 | 69 |
| | - | 399.25 | | 2.39 (60.8) | 1.22 (31.0) | 0.34 (8.6) | | | | | 0.47 (12) | M3 | 21.5 (2.43) | 0.1 (2.5) | | 617 | 79 |
| | - | 409.25 | 1.02 (25.8) | 1.6 (40.7) | thro' | - | 0.31 (8) | M3 | 2.43 | 0.1 (2.5) | - | - | - | - | 11.6 (132) | 381 | 58 |
| | - | 411.25 | | 1.98 (50.3) | 1.54 (39.0) | 0.35 (9.0) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 530 | 71 |
| | - | 415.25 | | 2.39 (60.8) | 1.54 (39.0) | 0.34 (8.6) | | | | | 0.47 (12) | M4 | 20.09 (2.27) | 0.08 (2) | | 590 | 80 |
| 48 6-PLATE | 269.48 | - | 1.89 (48.0) | 4.02 (102.0) | 2.56 (65.0) | 0.66 (16.7) | 0.63 (16) | M6 | 7.60 | 0.12 (3.0) | 0.79 (20) | M4 | 50.1 (5.66) | 0.12 (3) | 26.5 (300) | 8037 | 390 |
| | 279.48 | - | | 2.56 (65.0) | thro' | - | | | | | 0.79 (20) | - | - | - | | 5548 | 278 |
| | 281.48 | - | | 3.27 (33.0) | 2.56 (65.0) | 0.63 (16.0) | | | | | 0.79 (20) | M5 | 40.89 (4.62) | 0.1 (2.5) | | 7135 | 350 |
| | 285.48 | - | | 4.02 (102.0) | 2.56 (65.0) | 0.66 (16.7) | | | | | 0.79 (20) | M5 | 40.89 (4.62) | 0.1 (2.5) | | 8037 | 390 |

## PERFORMANCE DATA

| Size | Size 16 | Size 25 | Size 48 |
|---|---|---|---|
| Power dissipation at 20°C<br>2-PLATE<br>6-PLATE | 0.5 watt | <br>7 watts<br>8.6 watts | <br><br>18 watts |
| Backlash | 0° max | 2° max | zero |
| Max surface temperature | 80° C | 80° C | 80° C |
| Max speed continuous slip | 1000 rpm | 1000 rpm | 600 rpm |

## STANDARD BORES

Sizes indicated in parenthesis are metric (mm).

| | | ØB1, ØB2 +0.0012/ -0 (+0.03mm/-0mm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (4) | (6) | 1/4" | 5/16" | (8) | 3/8" | (10) | (12) | 1/2" | (14) | 5/8" | (16) | (18) | (19) | 3/4" | (20) |
| Size 16 | At B1 end | ● | | | | | | | | | | | | | | | |
| | At B2 end | ● | | | | | | | | | | | | | | | |
| Size 25 | At B1 end | | ● | ● | ● | ● | | | | | | | | | | | |
| | At B2 end | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| Size 48 | At B1 end | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| | At B2 end | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Bore ref.** | | 18 | 22 | 24 | 27 | 28 | 31 | 32 | 35 | 36 | 38 | 41 | 42 | 45 | 46 | 47 | 48 |
| **Corresponding bore adaptor** | | | | 253 | | 255 | | 257 | | 259 | | | 260 | | | | 261 |

Diameters for which a bore adaptor is shown can be adapted to smaller shaft sizes. *See page 58* for details

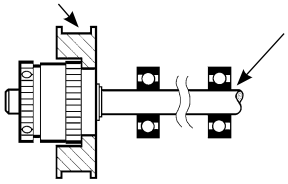
# Adjustable Friction Clutches

## How to install Vari-Tork

### BASIC CLUTCH – REFS. 271, 279, 401 & 409

Controlled slip occurs between pulley and shaft.

Pulley (or gear, etc.) bonded to register. Press fits not permissible.

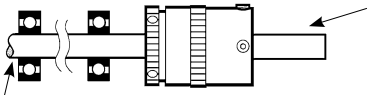


Motor, gearbox, or other externally supported shafts can pass thro' hollow hub.

Please enquire for clutch/pulley assemblies.

### BASIC CLUTCH + SLEEVE ADAPTOR – REFS. 273, 281, 403 & 411

Controlled slip occurs between LH & RH shafts. Clutch orientation not important, supported shaft may be entered either end.

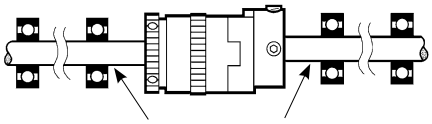


Small spools, paddles, knobs, etc. can be attached after fitting a suitable stub shaft. Side loads must be minimal. Avoid connecting both ends of this clutch to externally supported shafts.

Motor, gearbox, or other externally supported shaft

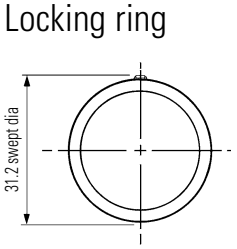
### BASIC CLUTCH + FLEXIBLE COUPLING - REFS. 267, 269, 277, 285, 397, 399, 407 & 415

Controlled slip occurs between LH & RH shafts.



Motor, gearbox, or other externally supported shafts

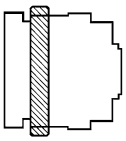
## Locking ring




order ref.

**294.25**

size 25 only



Fit locking ring flush with end of housing as shown. Lightly tension locking screw to secure the adjuster.
Wrench size 1.5

## Vari-Tork characteristics

The characteristics of dry plate clutches favour those applications which can tolerate relatively imprecise drag torques. Three tendencies should be noted:

### BREAKAWAY TORQUE

After a period during which no slipping has taken place, the breakaway torque can be up to $2^{1}/_{2}$ times the set value.

### TORQUE DECAY

There is an inverse relationship between clutch temperature and slipping torque. The slipping torque reduces from the set value as the power being dissipated causes the clutch temperature to rise. When slipping continuously, torque settles at approximately 70% of the value set on a new clutch and at approximately 80% of the value set on a used clutch. This characteristic is not speed-dependent.

### SPEED RELATED TORQUE FLUCTUATIONS

Variations in slipping speed cause a momentary increase in the prevailing output torque. The clutches behave more consistently at high speed/low torque than at low speed/high torque. High speed in this instance starts at approximately 500 rpm.

Where applications call for sustained slipping, the housing temperature should be maintained below 80°C. Clutches mounted concentrically within pulleys, gear wheels, etc. will be more effective at dissipating heat generated during slipping.

### CALCULATING FOR POWER DISSIPATION

Given the slipping speed in rpm and the drag torque in Nm, the following equation can be used for calculating the power dissipation in watts (W).

$$W = \frac{Nm \bullet rpm}{9.55}$$

## Locking ring

In some circumstances it is possible for the adjuster ring to unscrew during operation. The adjuster ring can be secured by fitting locking ring ref. **294.25**.

## Removing the adjuster ring

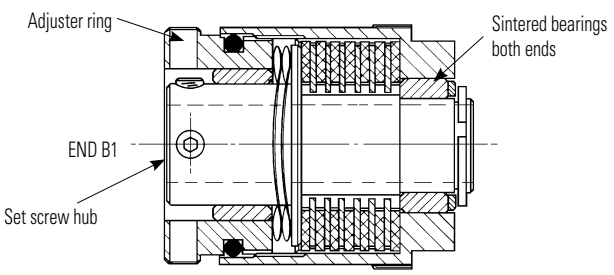
1) If this should be necessary, be sure to replace the pressure plate first, then the spring washers. Ensure that the topmost friction ring is fully engaged with the splines. *A disengaged friction ring will cause the clutch to malfunction.*

2) To remove the adjuster ring, first remove the clamp. With set screw hubs the adjuster ring cannot be removed if the set screws protrude above the hub diameter. Flatting or dimpling of shafts is recommended and may be necessary with shafts larger than Ø6.35 to avoid the screws fouling the adjuster ring.

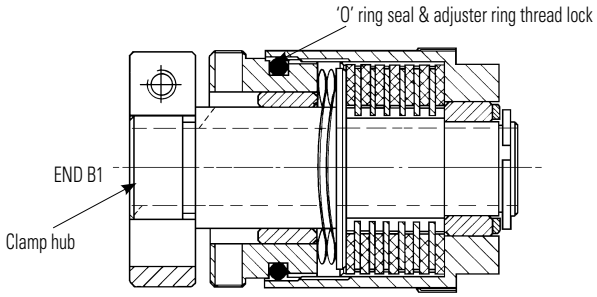
## Waved washers

Two waved washers are fitted to these clutches. In some instances, better torque control may result from removing one of them, particularly when working in the lower torque ranges.

## Construction - Size 25 Vari-Tork




**Sectional view of 6-plate Vari-Tork Ref. 279.25 Shafts are secured by set screws accessed through radial holes in the adjuster ring.**




**Sectional view of 6-plate Vari-Tork Ref. 409.25 Shafts are secured by a split hub and ring clamp method which does not score the shafts.**

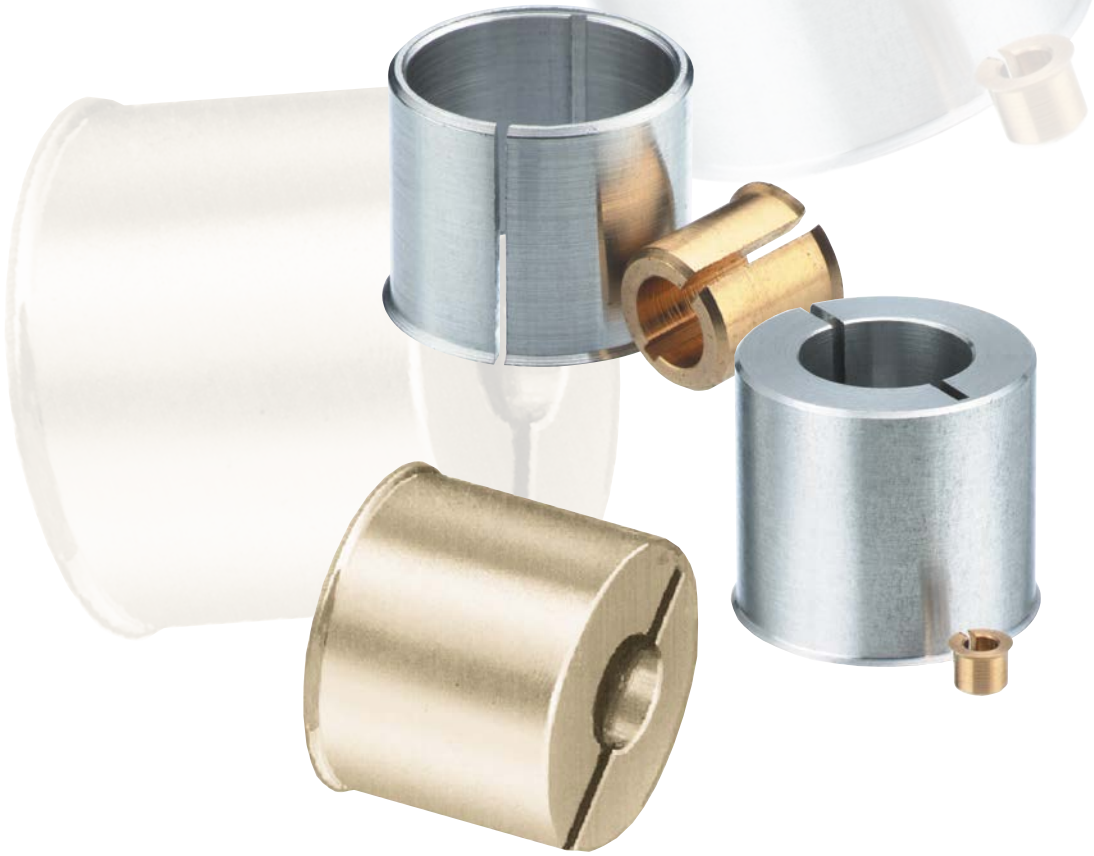


# Bore Adaptors

Bore adaptors offer a convenient way of adapting a coupling to a variety of shaft diameters, typically at the R & D stage. A range of motor options, for example, can be accommodated with one coupling and a selection of Huco-Loks.

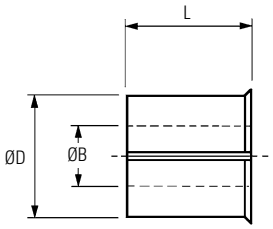
When fitted to set screw hubs, adaptors prevent the screws from scoring the shafts and permit repeated re-positioning and easy removal of the coupling.

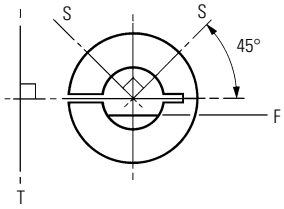
The adaptors feature a feathered head which sits in the chamfer at the bore entry and prevents over-insertion.



# Metal (non insulating) bore adaptors






Bore For optimum fastening, install HUCO-LOK bore adaptors as shown.

'S' represents screws in set screw hub.

'T' represents tangential screw in clamp hub.

'F' shows recommended orientation of flatted shaft in set screw hub.

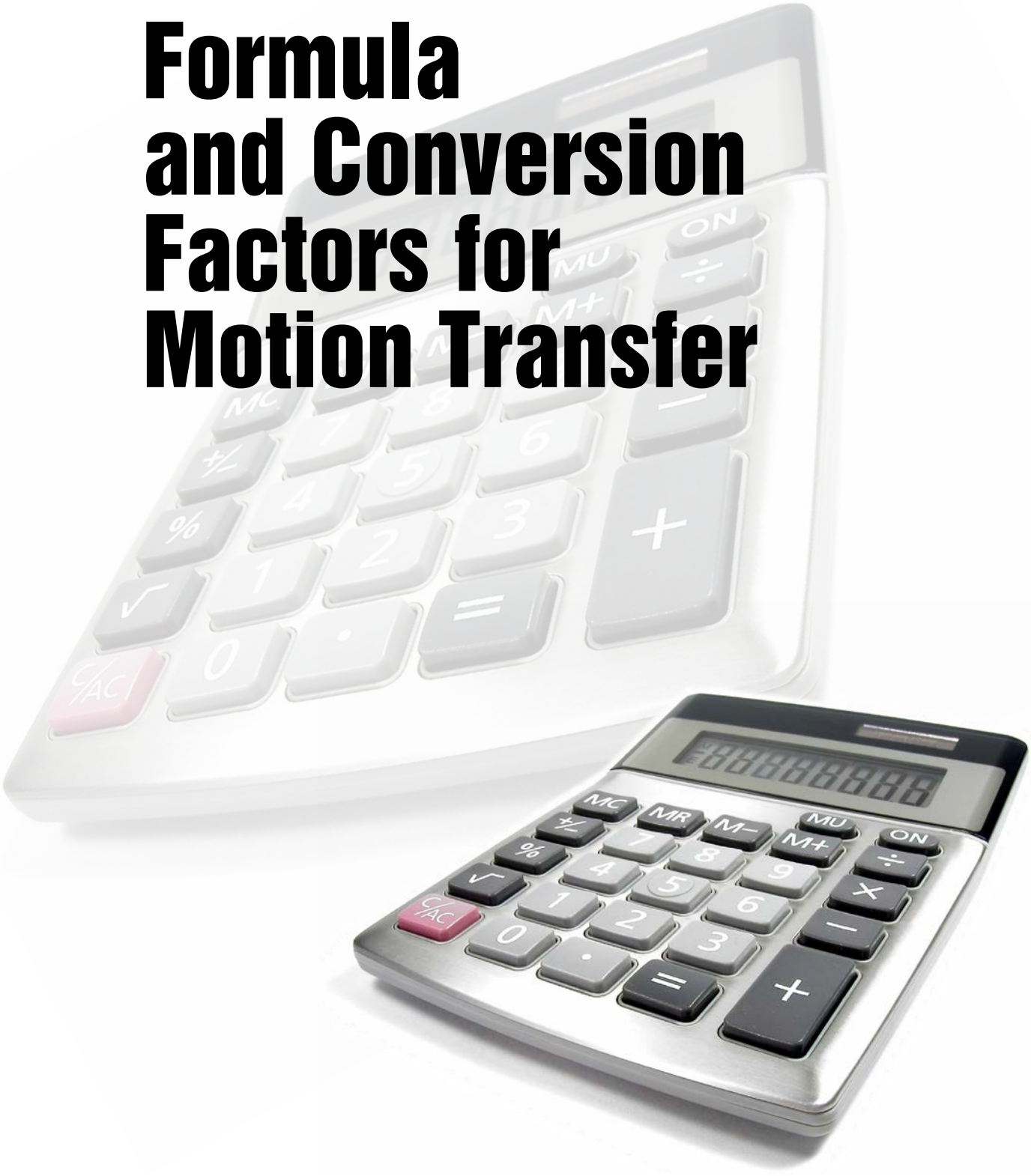
Note that both traction and concentricity may be affected when using an adaptor. For best results shafts with h6 tolerance or better, are recommended. Undersized shafts become progressively less effective. For similar reasons, flatted shafts with more than 1/4 of their diameter removed are not recommended.

Sizes indicated in parenthesis are metric (mm).

| Cat ref. | 251 | 253 | *254 | 255 | 257 | 259 | 260 | 261 |
|---|---|---|---|---|---|---|---|---|
| ØD in. | (5) | 1/4" | (8) | (8) | (10) | 1/2" | (16) | (20) |
| L in. | 0.17 (4.3) | 0.26 (6.6) | 0.23 (5.8) | 0.32 (8.1) | 0.32 (8.1) | 0.42 (10.7) | 0.52 (13.2) | 0.79 (20) |
| **to fit bores coded** | **20** | **24** | **28** | **28** | **32** | **36** | **42** | **48** |
| **minor ØB** | **Adaptor ref.** | | | | | | | |
| **(2)** | 251.11 | 253.11 | | | | | | |
| **(3)** | 251.14 | 253.14 | 254.14 | 255.14 | | | | |
| **.120"** | 251.15 | 253.15 | 254.15 | 255.15 | | | | |
| **1/8"** | 251.16 | 253.16 | 254.16 | 255.16 | | | | |
| **(4)** | 251.18 | 253.18 | 254.18 | 255.18 | | | | |
| **3/16"** | | 253.19 | 254.19 | 255.19 | | | | |
| **(5)** | | 253.20 | 254.20 | 255.20 | | | | |
| **(6)** | | | 254.22 | 255.22 | 257.22 | | | |
| **1/4"** | | | | | 257.24 | 259.24 | 260.24 | |
| **(7)** | | | | | 257.25 | 259.25 | 260.25 | |
| **(8)** | | | | | 257.28 | 259.28 | 260.28 | 261.28 |
| **(9)** | | | | | | 259.30 | 260.30 | 261.30 |
| **(10)** | | | | | | 259.32 | 260.32 | 261.32 |
| **(11)** | | | | | | | 260.33 | 261.33 |
| **(12)** | | | | | | | 260.35 | 261.35 |
| **(14)** | | | | | | | 260.38 | 261.38 |
| **(15)** | | | | | | | | 261.40 |
| **(16)** | | | | | | | | 261.42 |
| **(18)** | | | | | | | | 261.45 |
| **material** | **brass** | | | | **aluminium alloy** | | | |



# Formula and Conversion Factors for Motion Transfer



# Formula and Conversion Factors

## SI BASE UNITS

| Quantity | Unit Symbol | Name |
|---|---|---|
| length | m | meter |
| mass | kg | kilogram |
| time | s | second |
| electric current | A | ampere |
| Thermodynamic temperature | K | kelvin |
| luminous intensity | cd | candela |

## LETTER SYMBOLS & SI UNITS IN POWER TRANSMISSION ENGINEERING

| Symbol | Quantity | SI Unit Symbol | Name |
|---|---|---|---|
| Mechanics | | | |
| E | modulus of elasticity (Young's modulus) | Pa | pascal |
| F | force | N | Newton |
| G (W) | weight | N | Newton |
| J | moment of inertia | kgm2 | kilogram meter squared |
| M (T) | torque | Nm | Newton meter |
| m | mass | kg | kilogram |
| P | power | W | watt |
| p | pressure | Pa | pascal |
| $\rho$ | density (mas density) | $kg/m^3$ | - |
| $\sigma$ | stress | Pa | pascal |
| W (E) | work (energy) | J | joule |
| $\eta$ | efficiency | 1 | - |
| $\mu$ | coefficient of friction | 1 | - |

## FORMULAE

International System(SI) | Imperial System (FPS)

## POWER

**Lifting motion**

$$P = \frac{m \cdot g \cdot v}{\eta \cdot 1000}$$

**Linear motion**

$$P = \frac{F_r \cdot v}{1000}$$

$$F_r = \mu \cdot m \cdot g$$

**Rotary motion**

$$P = \frac{M \cdot n}{9550}$$

P - Power in kW
$F_r$ - Frictional resistance in N
m - Mass in kg
g - Acceleration of free fall (9.81) in $m/s_2$
v - Velocity in m/s
$\eta$ - Efficiency in decimals
$\mu$ - Coefficient of friction
M - Torque in Nm
n - Rotational speed in 1/min or r/min

**Lifting motion**

$$P = \frac{W \cdot v}{\eta \cdot 33000}$$

**Linear motion**

$$P = \frac{F_r \cdot v}{33000}$$

$$F_r = \mu \cdot W$$

**Rotary motion**

$$P = \frac{M \cdot n}{5250}$$

P - Power in hp
$F_r$ - Frictional resistance in lbf
W - Weight in lb
v - Velocity in ft/min
$\eta$ - Efficiency in decimals
$\mu$ - Coefficient of friction
M - Torque in lbf . ft
n - Rotational speed in rpm

International System(SI) | Imperial System (FPS)

## TORQUE

$$M - F \cdot r$$

$$P = \frac{9550 \cdot P}{n}$$

M - Torque in Nm
F - Force in N
r - Radius of lever in m
P - Power in kW
n - Rotational speed in 1/min or r/min

$$M - F \cdot r$$

$$P = \frac{5250 \cdot P}{n}$$

M - Torque in lbf . ft
F - Force in lbf
r - Radius of lever in ft
P - Power in hp
n - Rotational speed in rpm

## WORK

$$W - F \cdot s = m \cdot g \cdot s$$

$$W = \frac{j \cdot n^2}{182.5}$$

W - Work (energy) in Nm = Ws = J
F - Force in N
s - Length of path in m
m - Mass in kg
g - Acceleration of free fall (9.81) in m/s2
J - Moment of inertia in $kgm_2$
n - Rotational speed in 1/min or r/min

$$W - F \cdot s$$

$$W = \frac{WK^2 \cdot n^2}{5880}$$

W - Work (energy) in lb . ft
F - Force in lbf
s - Length of path in ft
m - Mass in kg
g - Acceleration of free fall (9.81) in m/s2
$WK_2$- Flywheel effect lb . $ft_2$
n - Rotational speed in rpm

## ACCELERATION OR BRAKING TIME

$$ta = \frac{j \cdot n}{9.55\ M_a}$$

ta - Acceleration or braking time in s
J - Moment of inertia in $kgm_2$
n - Rotational speed in 1/min or r/min
$M_a$- Acceleration or braking torque in Nm

$$ta = \frac{WK^2 \cdot n}{308\ M_a}$$

ta - Acceleration or braking time in s
$WK_2$- Flywheel effect in $kgm_2$
n - Rotational speed in rpm
$M_a$- Acceleration or braking torque in lb . ft

## MOMENT OF INERTIA

Solid Cylinder

$$J = \frac{1}{2} \cdot m \cdot r^2_{ext}$$

$$= \frac{1}{32} \cdot 1000 \cdot \pi \cdot \rho \cdot l \cdot d^4_{ext}$$

$$= 98\ \rho \cdot l \cdot d^4_{ext}$$

Hollow Cylinder

$$J = \frac{1}{2} \cdot m \cdot (r^2_{ext} + r^2_{int})$$

$$= \frac{1}{32} \cdot 1000 \cdot \pi \cdot \rho \cdot l\ (d^4_{ext} - d^4_{int})$$

$$= 98 \cdot \rho \cdot l\ (d^4_{ext} - d^4_{int})$$

Solid Cylinder

$$WK_2 = \frac{1}{2} \cdot W \cdot r^2_{ext}$$

$$= \frac{\pi}{32} \cdot \rho \cdot l \cdot d^4_{ext}$$

$$= 0.1\ \rho \cdot l \cdot d^4_{ext}$$

Hollow Cylinder

$$WK_2 = \frac{1}{2} \cdot W \cdot (r^2_{ext} + r^2_{int})$$

$$= \frac{\pi}{32} \cdot \rho \cdot l\ (d^4_{ext} - d^4_{int})$$

$$= 0.1 \cdot \rho \cdot l\ (d^4_{ext} - d^4_{int})$$

*torsional stiffness and resonant frequency*

$$C_T \le \frac{(F_R \times 2\pi)^2}{\left(\frac{1}{J_M} + \frac{1}{J_L}\right)}$$

$$FR \le \frac{1}{2\pi} \times \sqrt{\left(\frac{1}{J_M} + \frac{1}{J_L}\right) \times C_T}$$

*Where*
$C_T$ = *torsional stiffness (Nm/rad);*
$J_M$ = *motor inertia ($kgm^2$)*
$F_R$ = *resonant frequency (Hz)*
$J_L$ = *load inertia ($kgm^2$)*

## FORCE

| | | N | kp | p | tonf (UK) | lbf | ozf |
|---|---|---|---|---|---|---|---|
| 1N | = | 1 | 0.1020 | 102.0 | $100.4 \times 10^{-6}$ | 0.2248 | 3.597 |
| 1kp | = | 9.807 | 1 | 1000 | $0.984 \times 10^{-3}$ | 2.205 | 35.27 |
| 1p | = | $9.81 \times 10^{-3}$ | $1 \times 10^{-3}$ | 1 | $0.984 \times 10^{-6}$ | $2.2 \times 10^{-3}$ | $35.3 \times 10^{-3}$ |
| 1tonf (UK) | = | 9964 | 1016 | $1.02 \times 10^{6}$ | 1 | 2240 | $35.8 \times 10^{3}$ |
| 1lbf | = | 4.448 | 0.4536 | 453.6 | $0.5 \times 10^{-6}$ | 1 | 16 |
| 1ozf | = | - | $28.4 \times 10^{-3}$ | 28.35 | $27.9 \times 10^{-6}$ | $62.5 \times 10^{-3}$ | 1 |

## VELOCITY

| | | km/h | m/min | m/s | mile/h | ft/min | ft/s | in/s |
|---|---|---|---|---|---|---|---|---|
| 1km/h | = | 1 | 16.667 | 0.2778 | 0.6214 | 54.68 | 0.9113 | 10.936 |
| m/min | = | 0.06 | 1 | $16.7 \times 10^{-3}$ | $37.3 \times 10^{-3}$ | 3.281 | $54.7 \times 10^{-3}$ | 0.656 |
| 1m/s | = | 3.6 | 60 | 1 | 2.237 | 196.85 | 3.281 | 39.37 |
| 1mile/h | = | 1.609 | 26.82 | 0.4470 | 1 | 88 | 1.467 | 17.6 |
| 1ft/min | = | $18.3 \times 10^{-3}$ | 0.3048 | $5.08 \times 10^{-3}$ | $11.4 \times 10^{-3}$ | 1 | $16.7 \times 10^{-3}$ | 0.2 |
| 1ft/s | = | 1.097 | 18.288 | 0.3048 | 0.6818 | 60 | 1 | 12 |
| 1in/s | = | $91 \times 10^{-3}$ | 1.524 | $25.4 \times 10^{-3}$ | $56.8 \times 10^{-3}$ | 5 | $83.3 \times 10^{-3}$ | 1 |

## TORQUE

| | | Nm | Ncm | kgfm | lbf.ft | lbf.in | ozf.in |
|---|---|---|---|---|---|---|---|
| 1Nm | = | 1 | 100 | 0.10197 | 0.73756 | 8.8507 | 141.61 |
| Ncm | = | 0.01 | 1 | $1.02 \times 10^{-3}$ | $7.376 \times 10^{-3}$ | $88.5 \times 10^{-3}$ | 1.4161 |
| 1kgfm | = | 9.8067 | 980.67 | 1 | 7.233 | 86.796 | 1389 |
| 1lbf.ft | = | 1.356 | 135.6 | 0.1383 | 1 | 12 | 192 |
| 1lbf.in | = | 0.1129 | 11.29 | $11.5 \times 10^{-3}$ | $83.3 \times 10^{-3}$ | 1 | 16 |
| 1ozf.in | = | $7.062 \times 10^{-3}$ | 0.7062 | $0.72 \times 10^{-3}$ | $5.21 \times 10^{-3}$ | $62.5 \times 10^{-3}$ | 1 |

## POWER

| | | kW | PS | hp | kgfm/s | ft.lbf/s |
|---|---|---|---|---|---|---|
| 1kW | = | 1 | 1.360 | 1.341 | 102.0 | 737.6 |
| 1PS | = | 0.7355 | 1 | 0.9863 | 75 | 542.5 |
| 1hp | = | 0.7457 | 1.014 | 1 | 76.04 | 550 |
| 1kgfm/s | = | $9.81 \times 10^{-3}$ | $13.33 \times 10^{-3}$ | $13.15 \times 10^{-3}$ | 1 | 7.233 |
| 1ft.lbf/s | = | $1.36 \times 10^{-3}$ | $1.84 \times 10^{-3}$ | $1.82 \times 10^{-3}$ | 0.1383 | 1 |

## MOMENT OF INERTIA AND OTHER FLYWHEEL EFFECTS

| | | kgm² ($mr^2$) | kgfm² ($GD^2$) | lb.ft²($WK^2$) | kpms² | ft lbf s² |
|---|---|---|---|---|---|---|
| 1kgm² ($mr^2$) | = | 1 | 4 | 23.73 | 0.102 | 0.7376 |
| 1kgfm² ($GD^2$) | = | 0.25 | 1 | 5.933 | $25 \times 10^{-3}$ | 0.1844 |
| 1lb.ft²($WK^2$) | = | $42.1 \times 10^{-3}$ | 0.1686 | 1 | $4.30 \times 10^{-3}$ | $31.1 \times 10^{-3}$ |
| 1kpms² | = | 9.807 | 39.23 | 232.7 | 1 | 7.233 |
| 1ft lbf s² | = | 1.356 | 5.423 | 32.17 | 0.1383 | 1 |

## LENGTH

| | mm | m | in | ft | yds | km | miles |
|---|---|---|---|---|---|---|---|
| 1mm | 1 | 0.001 | 0.3937 | 0.0033 | 0.00109 | - | - |
| 1m | 1000 | 1 | 39.370 | 3.2808 | 1.0936 | 0.001 | 0.0006215 |
| 1in | 25.4 | 0.0254 | 1 | 0.0833 | 0.0277 | 0.0000254 | 0.0000158 |
| 1ft | 304.8 | 0.3048 | 12 | 1 | 0.3333 | 0.000304 | 0.0001894 |
| 1yd | 914.4 | 0.9144 | 36 | 3 | 1 | 0.000914 | 0.000568 |
| 1km | - | 1000 | 39,370.07 | 3,280.83 | 1,093.613 | 1 | 0.6215 |
| 1mile | - | 1,609 | 63,346.45 | 5,278.87 | 1,759.623 | 1.609 | 1 |

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P-7293-HD 4/14 Printed in USA