

## Introduction to couplings

In the simplest of terms a coupling's purpose is to transfer rotational movement from one shaft to another. Reality is somewhat more complicated, though, as flexible shaft couplings have also to compensate for misalignment between two shafts. This ability must be balanced with the need to be pliable in the planes of misalignment while still having the torsional strength to carry out the coupling's main function. This is known as the Compliance mechanism where compliance is the capacity for allowing relative displacement.

Several factors should always be taken into consideration when looking to specify flexible shaft couplings. These are torsional stiffness, backlash, torque, life and attachment system. All of these have bearing on coupling selection.

## Selecting the ideal coupling

The choice of couplings available to today's engineers can be daunting, but follow our guidelines and you will arrive at the optimum coupling for your particular application.

- 1 Does the coupling provide adequate misalignment protection?
- 1 Can it transmit the required torque?
- 1 Do I need axial motion or axial stiffness?
- 1 Can it sustain the required speed of rotation?
- 1 Will it fit within the available space envelope?
- 1 Can it operate at the designated ambient temperature?
- 1 Does it provide torsional stiffness required for positional accuracy?
- 1 Does it provide electrical isolation between the shafts?
- 1 Will it have the required life expectancy?








## Service Factors

- 1 Peak torque values quoted in the coupling performance tables apply to uniform load conditions at constant speed where there is no misalignment or axial displacement.
- 1 The torque capacity of flexible couplings will reduce when acceleration is present, for example, in stop/start or reversing conditions.
- 1 The more severe the acceleration, the greater reduction in torque capacity.
- 1 Sliding couplings (Oldham and UniLat) are subject to a wear rate dependent on the number of cycles completed.

Peak torque must be greater than application torque x service factor

|                | Load         |            |           |          |                   | Duty (Hours/Day) |       |       |        |     |
|----------------|--------------|------------|-----------|----------|-------------------|------------------|-------|-------|--------|-----|
|                | Steady State | Stop/Start | Reversing | Shock    | Shock & Reversing | <1               | 1 - 2 | 3 - 5 | 6 - 12 | >12 |
| 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)          | -                | -     | -     | -      | -   |
| 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

| Sliding Disc type  | Universal/Lateral type   | Double Loop type   | Jaw Coupling   | Universal Joints & Teleshfts   | Friction Clutches   | Bevel Gearboxes   |
|--|--|--|--|--|---|---|
| <b>Oldham</b><br>Blind bored<br><br>Thru' bored<br><br>Thru' bored<br><br>Material Options:<br>Aluminium<br>Stainless Steel | <b>Uni-Lat</b><br><br>         | <b>Flex-P</b><br><br><br> | <b>Jaw coupling</b><br> | <b>Huco-Pol</b><br>Single joints<br><br>Double joints<br><br>Teleshfts<br> | <b>Vari-Tork, Polyclutch</b><br>Basic clutch<br><br>Basic clutch + Oldham coupling<br><br>Polyclutch<br> | <b>L-Box</b><br><br><b>T-Box</b><br>                        |
| General description  |  |  |  |  |   |   |
| 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 (teleshfts). Low mass, corrosion resistant, ideal where conventional steel joints would be under-utilised.   | 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, the T box for continuous. 1:1 & 2:1 ratios are available with the T-Box. |
| Where to use   |  |  |  |  |   |   |
| 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-utilised.  | 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°. T-box offers 2 & 3 shaft configurations for multiple power offtake.   |
| Speeds   |  |  |  |  |   |   |
| 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 1500 rpm for T-box  |
| Peak torque largest size   |  |  |  |  |   |   |
| 44 Nm  | 12 Nm  | 18 Nm  | 133 Nm   | 10.7 Nm  | 60 Nm   | 0.68 Nm   |
| Standard bores   |  |  |  |  |   |   |
| 2 to 30  | 3 to 22  | 3 to 16  | 3 to 16  | 3 to 20  | 6 to 32   | 4 & 5 (shafts)  |
| Temperature range  |  |  |  |  |   |   |
| -20 to +60°C   | -20 to +60°C   | -40 to +100°C  | -40 to +80°C   | -20 to +60°C   | -10 to +80°C (when operating)   | -20 to +60°C  |
| Electrically isolating   |  |  |  |  |   |   |
| Yes  | Yes  | Yes  | Yes  | Yes  | No  | See General Description above   |
| Connection   |  |  |  |  |   |   |
| 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   |
| <b>Page 28 - 30</b>  | <b>Page 26 - 27</b>  | <b>Page 44</b>   | <b>Page 42 - 43</b>  | <b>Page 45 - 50</b>  | <b>Page 51 - 56</b>   | <b>Page 57 - 58</b>   |

## Round & Keywayed Bore Details & Codes

| Metric mm | Inch fraction | Inch decimal | Round bore code | Metric keys    |       | Inch keys      |        | Keywayed bore code |
|-----------|---------------|--------------|-----------------|----------------|-------|----------------|--------|--------------------|
|           |               |              |                 | Key size w x h | K     | Key size w x h | K      |                    |
| 1         | —             | 0.0394       | 08              | —              | —     | —              | —      | —                  |
| 1.588     | 1/16          | 0.0625       | 10              | —              | —     | —              | —      | —                  |
| 2         | —             | 0.0787       | 11              | —              | —     | —              | —      | —                  |
| 2.286     | —             | 0.0900       | 12              | —              | —     | —              | —      | —                  |
| 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              | —              | —     | —              | —      | —                  |
| 6         | —             | 0.2362       | 22              | —              | —     | —              | —      | —                  |
| 6.350     | 1/4           | 0.2500       | 24              | —              | —     | —              | —      | —                  |
| 7         | —             | 0.2756       | 25              | 2 x 2          | 8.00  | —              | —      | P25                |
| 7.938     | 5/16          | 0.3125       | 27              | —              | —     | 1/8 x 1/8      | 0.3755 | R27                |
| 8         | —             | 0.3150       | 28              | 2 x 2          | 9.00  | —              | —      | P28                |
| 9         | —             | 0.3543       | 30              | 3 x 3          | 10.40 | —              | —      | P30                |
| 9.525     | 3/8           | 0.3750       | 31              | —              | —     | 1/8 x 1/8      | 0.4380 | R31                |
| 10        | —             | 0.3937       | 32              | 3 x 3          | 11.40 | —              | —      | P32                |
| 11        | —             | 0.4331       | 33              | 4 x 4          | 12.80 | —              | —      | P33                |
| 12        | —             | 0.4724       | 35              | 4 x 4          | 13.80 | —              | —      | P35                |
| 12.700    | 1/2           | 0.5000       | 36              | —              | —     | 1/8 x 1/8      | 0.5630 | R36                |
| 13        | —             | 0.5118       | 37              | 5 x 5          | 15.30 | —              | —      | P37                |
| 14        | —             | 0.5512       | 38              | 5 x 5          | 16.30 | —              | —      | P38                |
| 15        | —             | 0.5906       | 40              | 5 x 5          | 17.30 | —              | —      | P40                |
| 15.875    | 5/8           | 0.6250       | 41              | —              | —     | 3/16 x 3/16    | 0.7160 | R41                |
| 16        | —             | 0.6299       | 42              | 5 x 5          | 18.30 | —              | —      | P42                |
| 17        | —             | 0.6693       | 43              | 5 x 5          | 19.30 | —              | —      | P43                |
| 18        | —             | 0.7087       | 45              | 6 x 6          | 20.80 | —              | —      | P45                |
| 19        | —             | 0.7480       | 46              | 6 x 6          | 21.80 | —              | —      | P46                |
| 19.050    | 3/4           | 0.7500       | 47              | —              | —     | 3/16 x 3/16    | 0.8410 | R47                |
| 20        | —             | 0.7874       | 48              | 6 x 6          | 22.80 | —              | —      | P48                |
| 22        | —             | 0.8661       | 49              | 6 x 6          | 24.80 | —              | —      | P49                |
| 22.225    | 7/8           | 0.8750       | 50              | —              | —     | 1/4 x 1/4      | 0.9930 | R50                |
| 24        | —             | 0.9449       | 51              | 8 x 7          | 27.30 | —              | —      | P51                |
| 25        | —             | 0.9843       | 52              | 8 x 7          | 28.30 | —              | —      | P52                |
| 25.400    | 1             | 1.0000       | 53              | —              | —     | 1/4 x 1/4      | 1.1180 | R53                |
| 28        | —             | 1.1024       | 54              | 8 x 7          | 31.30 | —              | —      | P54                |
| 28.575    | 1-1/8         | 1.1250       | 55              | —              | —     | 5/16 x 1/4     | 1.2400 | R55                |
| 30        | —             | 1.1811       | 56              | 8 x 7          | 33.30 | —              | —      | P56                |
| 31.750    | 1-1/4         | 1.2500       | 57              | —              | —     | 5/16 x 1/4     | 1.3580 | R57                |
| 32        | —             | 1.2598       | 58              | 10 x 8         | 35.30 | —              | —      | P58                |
| 34.925    | 1-3/8         | 1.3750       | 59              | —              | —     | 3/8 x 1/4      | 1.4830 | R59                |
| 35        | —             | 1.3780       | 60              | 10 x 8         | 38.30 | —              | —      | P60                |
| 38        | —             | 1.4961       | 61              | 10 x 8         | 41.30 | —              | —      | P61                |
| 40        | —             | 1.575        | 63              | 12 x 8         | 43.30 | —              | —      | P63                |
| 50        | —             | 1.969        | 70              | 14 x 9         | 53.8  | —              | —      | P70                |
| 50.800    | —             | 2.000        | 71              | —              | —     | 1/2 x 1/2      | 2.224  | R71                |
| 55        | —             | 2.165        | 73              | 16 x 10        | 59.3  | —              | —      | P73                |
| 60        | —             | 2.362        | 75              | 18 x 11        | 64.4  | —              | —      | P75                |
| 63.500    | 2-1/2         | 2.500        | 77              | —              | —     | 5/8 x 5/8      | 2.778  | R77                |
| 65        | —             | 2.559        | 78              | 18 x 11        | 69.4  | —              | —      | P78                |

All shaft mounted products in this catalogue can be specified with inch and/or metric bore diameters. A standard range of sizes is listed for each product. Where physical dimensions permit, keyways may be specified at extra cost.

For the sake of uniformity and avoidance of errors when ordering, bore diameters are designated with a 2-digit number which forms part of the order code. *Please note that only the bore diameters listed for each product in the product pages are standard.*

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

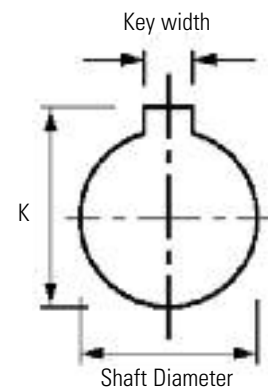
Standard keyways are machined to 2 specifications:

Bore codes prefixed 'P' denote a metric keyway conforming to ISO 773/774 (BS 4235 Pt. 1).

Bore codes prefixed 'R' denote an inch keyway conforming to BS 46 Pt. 1.

In most cases, keyways prefixed 'R' are compatible with AGMA 9002-A86 but can differ in the depth of the key seat.

All Huco couplings are RoHS compliant.



Note that our tooling produces a key seat classified as 'nominal' being a nominal clearance on standard keys

## Order Codes

Combine the COUPLING REF in Main Product Tables with BORE REFS in Standard Bores Table. Please identify both bores e.g.

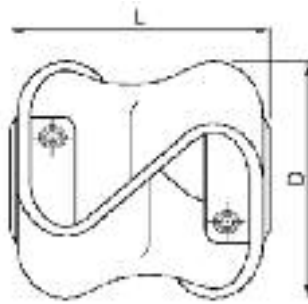
# 706.19.1924

Coupling ref.

Ø B1 ref.

Ø B2 ref.

\*Not manufactured. Nearest alternative 4mm. Intermediate size available on request



## DIMENSIONS & ORDER CODES

| Size | steel zinc plated hubs | stainless steel hubs | Dimensions   |                  |             |           |                | Fasteners |             |          |
|------|------------------------|----------------------|--------------|------------------|-------------|-----------|----------------|-----------|-------------|----------|
|      | Order Code             |                      | Max Diameter | Length L +/- 1.0 | Bore length | Max Bores | Mass kg x 10-3 | Size      | Torque (Nm) | A/F (mm) |
| 10   | 047.10                 | -                    | 27           | 27               | 7.9         | 9.53      | 25             | M3        | 0.94        | 1.5      |
|      | -                      | 049.10               |              |                  |             |           |                |           | 0.32        |          |
| 20   | 047.20                 | -                    | 48           | 48               | 12.7        | 12.7      | 92             | M4        | 2.27        | 2.0      |
|      | -                      | 049.20               |              |                  |             |           |                |           | 2.0         |          |
| 30   | 047.30                 | -                    | 54           | 55               | 16.0        | 16.0      | 124            | M5        | 4.62        | 2.5      |
|      | -                      | 049.30               |              |                  |             |           |                |           | 2.1         |          |
| 40   | 047.40                 | -                    | 56           | 56               | 16.0        | 16.0      | 136            | M6        | 7.61        | 3.0      |
|      | -                      | 049.40               |              |                  |             |           |                |           | 3.75        |          |
| 40*  | -                      | 050.40               | 56           | 56               | 16.0        | 16.0      | 136            | M6        | 7.61        | 3.0      |

## PERFORMANCE

| Size | Max Torque 1 (Nm) | Max Torque 2 (Nm) | max misalignment/displacement |           |              |
|------|-------------------|-------------------|-------------------------------|-----------|--------------|
|      |                   |                   | Angular deg                   | Radial mm | Axial +/- mm |
| 10   | 0.5               | 0.8               | 10                            | 2.6       | 4.5          |
| 20   | 1.8               | 3                 | 15                            | 3.2       | 7.5          |
| 30   | 5                 | 8                 | 15                            | 3.2       | 8.5          |
| 40   | 10                | 18                | 15                            | 3.2       | 11           |
| 40*  | 2.5               | 4.5               | 15                            | 3.2       | 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

-40°C to +100°C

## Maximum Rotational Speed

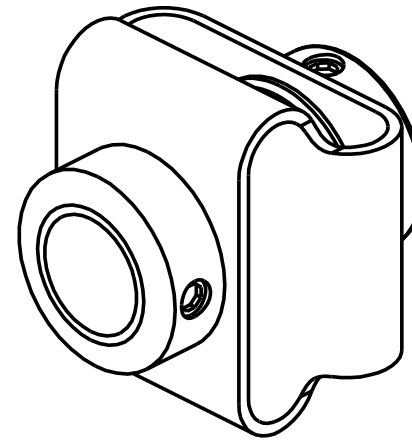
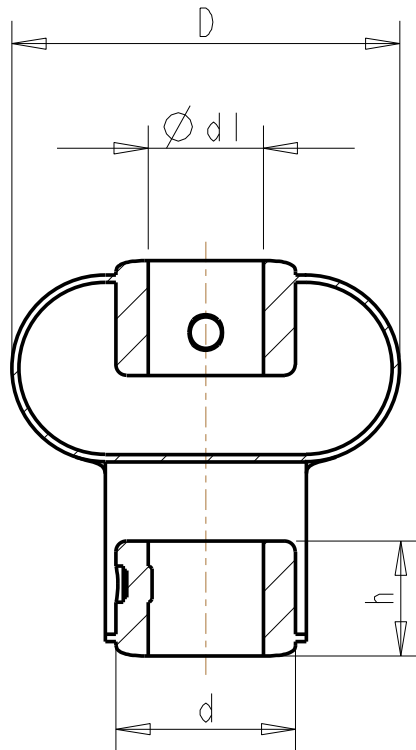
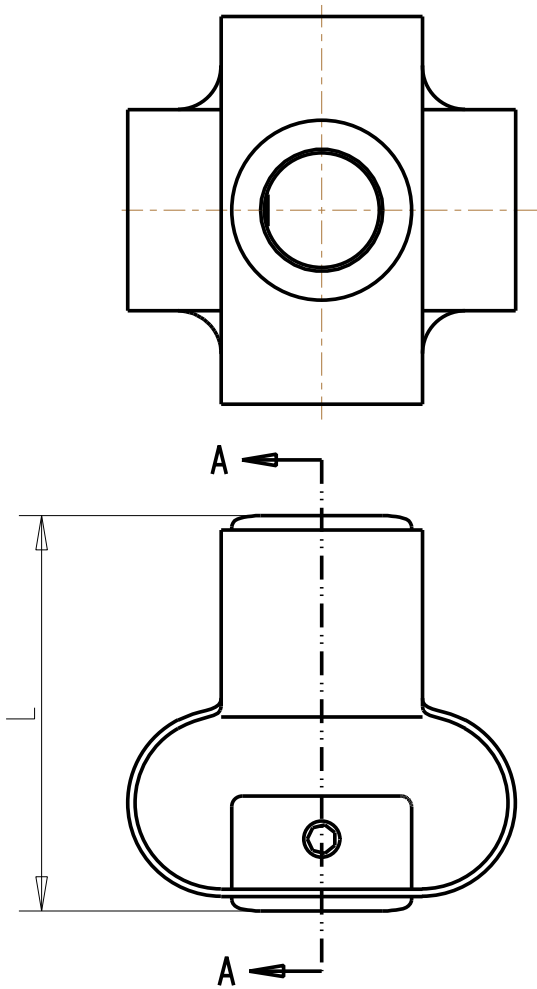
3000 rev/min

## STANDARD BORES\*

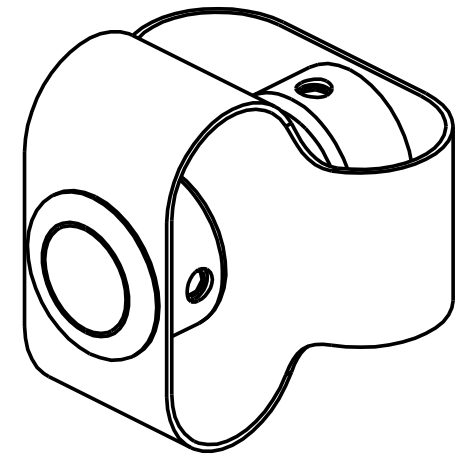
| Size     | +0.05/-0mm |       |    |       |    |    |       |       |    |       |    |    |        |    |    |        |    |
|----------|------------|-------|----|-------|----|----|-------|-------|----|-------|----|----|--------|----|----|--------|----|
|          | 3          | 3.175 | 4  | 4.763 | 5  | 6  | 6.350 | 7.938 | 8  | 9.525 | 10 | 12 | 12.700 | 14 | 15 | 15.875 | 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

# Double loop Couplings with Steel & Stainless Steel Hub



Size - 10



Size - 20,30,40

SECTION A-A

All Dimensions in mm

NOT TO SCALE

\* For Stainless Steel 0.49.20  
the Bore max is 12.7

| Ref. No.<br>Stainless Steel | Ref. No.<br>Steel | $\phi$ D<br>(max) | d1      | L  | h     | Screw |
|-----------------------------|-------------------|-------------------|---------|----|-------|-------|
| 049.10                      | 047.10            | 27                | 9.53    | 27 | 7.90  | M3    |
| 049.20                      | 047.20            | 48                | * 12.00 | 48 | 12.70 | M4    |
| 049.30                      | 047.30            | 54                | 16.00   | 55 | 16.00 | M5    |
| 049.40                      | 047.40            | 56                | 16.00   | 56 | 16.0  | M6    |