

SKF Jaw Couplings

Jaw couplings provide a cost-effective solution for standard power applications, cushioning moderate shock loads and dampening low vibration levels.

Maintenance-free and easy to install, jaw couplings are available with a “snap wrap” element allowing element replacement in situ.

Urethane and hytrel elements have a greater power rating than nitrile elements and are recommended for applications where a compact, high torque solution is required.

Selection

1 Service factor

Determine the required service factor in tables **tables 9** and **10** on **pages 87** and **88**.

2 Design power

Multiply normal running power by the service factor. This gives the design power for selecting a coupling with a nitrile element.

3 Alternative elements

To allow coupling selection based on one power rating table (nitrile), an element correction is required to give a new reference design power. This is done by dividing the design power calculated for a nitrile element by the alternative element power factor listed in **table 1**.

4 Coupling size

Using **table 2** on **page 78**, search for the appropriate speed until a power greater than the design power is found. The required jaw coupling is given at the head of the column.

5 Bore size

Using product table on **page 80**, check that the selected flanges can accommodate both the drive and driven shaft.

Example

A jaw coupling is required to transmit 4 kW from an electric motor running at 300 r/min to a centrifugal fan for 12 hours per day. The motor shaft is 20 mm diameter and the pump shaft diameter 18 mm.

1 Service factor

From **table 9** on **page 87** = 1,0.

2 Design power

Design power = 4 × 1,0 = 4 kW

3 Coupling size

When looking for for 300 r/min in **table 2** on **page 78**, the first power figure to exceed the required 4 kW of step 2 is 4,7 kW. In this case, a nitrile element can be used with a jaw coupling size 150.

4 Bore size

By referring to the product table on **page 80**, it can be seen that both shaft diameters fall within the bore range available.

Engineering data

Power ratings

Maximum torque figures should be treated as short duration overload ratings occurring in circumstances such as direct-on-line starting.

For speeds not shown, calculate the nominal torque for the design application using the formula below and select coupling according to nominal torque ratings.

Nominal torque (Nm) =

$$\frac{\text{Design power (kW)} \times 9\,550}{\text{r/min}}$$

For additional useful information on jaw couplings, such as standard bore and keyway data, please refer to **tables 1** to **3**.

Table 1

| Elements | | | | |
|----------|-------------------|--------------|----------|--------------|
| Type | Temperature range | Misalignment | | Power factor |
| | | Angular | Parallel | |
| – | °C | ° | mm | – |
| Nitrile | –40 to 100 | 1 | 0,38 | 1 |
| Urethane | –35 to 70 | 1 | 0,38 | 1,5 |
| Hytrel® | –50 to 120 | 0,5 | 0,38 | 3 |

Order data

A complete jaw coupling consists of: 2 hubs and 1 element. A complete coupling with spacer consists of 2 hubs, 2 nitrile wrap elements, 2 ring kits and 1 spacer.

For more detailed information on ordering specific couplings, refer to **table 4**.

Table 2

Power ratings – Nitrile elements

| Speed | Coupling sizes | | | | | | | | | |
|--------------------------|----------------|-------|------|------|------|------|------|------|------|-------|
| | 50 | 70 | 75 | 90 | 95 | 100 | 110 | 150 | 190 | 225 |
| r/min | kW | | | | | | | | | |
| 50 | 0,018 | 0,030 | 0,06 | 0,10 | 0,14 | 0,3 | 0,5 | 0,8 | 1,1 | 1,5 |
| 100 | 0,037 | 0,060 | 0,12 | 0,20 | 0,27 | 0,6 | 1,1 | 1,6 | 2,1 | 2,9 |
| 200 | 0,074 | 0,121 | 0,25 | 0,40 | 0,54 | 1,2 | 2,2 | 3,1 | 4,2 | 5,9 |
| 300 | 0,110 | 0,181 | 0,37 | 0,60 | 0,81 | 1,7 | 3,3 | 4,7 | 6,3 | 8,8 |
| 400 | 0,147 | 0,242 | 0,50 | 0,80 | 1,08 | 2,3 | 4,4 | 6,3 | 8,4 | 11,7 |
| 500 | 0,184 | 0,302 | 0,62 | 1,01 | 1,35 | 2,9 | 5,5 | 7,9 | 10,5 | 14,7 |
| 600 | 0,221 | 0,363 | 0,75 | 1,21 | 1,62 | 3,5 | 6,6 | 9,4 | 12,6 | 17,6 |
| 700 | 0,257 | 0,423 | 0,87 | 1,41 | 1,89 | 4,1 | 7,7 | 11,0 | 14,7 | 20,5 |
| 720 | 0,265 | 0,435 | 0,90 | 1,45 | 1,95 | 4,2 | 7,9 | 11,3 | 15,1 | 21,1 |
| 800 | 0,294 | 0,483 | 1,00 | 1,61 | 2,16 | 4,6 | 8,8 | 12,6 | 16,8 | 23,5 |
| 900 | 0,331 | 0,544 | 1,12 | 1,81 | 2,43 | 5,2 | 9,9 | 14,1 | 18,8 | 26,4 |
| 960 | 0,353 | 0,580 | 1,20 | 1,93 | 2,59 | 5,6 | 10,6 | 15,1 | 20,1 | 28,1 |
| 1 000 | 0,368 | 0,604 | 1,25 | 2,01 | 2,70 | 5,8 | 11,0 | 15,7 | 20,9 | 29,3 |
| 1 200 | 0,441 | 0,725 | 1,50 | 2,41 | 3,24 | 7,0 | 13,2 | 18,8 | 25,1 | 35,2 |
| 1 400 | 0,515 | 0,846 | 1,74 | 2,81 | 3,78 | 8,1 | 15,4 | 22,0 | 29,3 | 41,1 |
| 1 440 | 0,529 | 0,870 | 1,79 | 2,90 | 3,89 | 8,4 | 15,8 | 22,6 | 30,2 | 42,2 |
| 1 600 | 0,588 | 0,967 | 1,99 | 3,22 | 4,32 | 9,3 | 17,6 | 25,1 | 33,5 | 46,9 |
| 1 800 | 0,662 | 1,088 | 2,24 | 3,62 | 4,86 | 10,4 | 19,8 | 28,3 | 37,7 | 52,8 |
| 2 000 | 0,735 | 1,208 | 2,49 | 4,02 | 5,40 | 11,6 | 22,0 | 31,4 | 41,9 | 58,6 |
| 2 200 | 0,809 | 1,329 | 2,74 | 4,42 | 5,94 | 12,8 | 24,2 | 34,6 | 46,1 | 64,5 |
| 2 400 | 0,882 | 1,450 | 2,99 | 4,83 | 6,48 | 13,9 | 26,4 | 37,7 | 50,3 | 70,4 |
| 2 600 | 0,956 | 1,571 | 3,24 | 5,23 | 7,02 | 15,1 | 28,6 | 40,8 | 54,5 | 76,2 |
| 2 800 | 1,029 | 1,692 | 3,49 | 5,63 | 7,56 | 16,2 | 30,8 | 44,0 | 58,6 | 82,1 |
| 2 880 | 1,059 | 1,740 | 3,59 | 5,79 | 7,78 | 16,7 | 31,7 | 45,2 | 60,3 | 84,4 |
| 3 000 | 1,103 | 1,813 | 3,74 | 6,03 | 8,10 | 17,4 | 33,0 | 47,1 | 62,8 | 88,0 |
| 3 600 | 1,323 | 2,175 | 4,49 | 7,24 | 9,73 | 20,9 | 39,6 | 56,5 | 75,4 | 105,5 |
| Nominal torque Nm | 3,51 | 5,77 | 11,9 | 19,2 | 25,8 | 55,4 | 105 | 150 | 200 | 280 |

Table 3

Standard bore and keyway chart

| Bore | Keyway | Coupling size | | | | | | | | | |
|-----------|--------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 050 | 070 | 075 | 090 | 095 | 100 | 110 | 150 | 190 | 225 |
| mm | mm | - | | | | | | | | | |
| 9 | 3×1,4 | X | X | X | X | - | - | - | - | - | - |
| 10 | 3×1,4 | X | X | X | X | - | - | - | - | - | - |
| 11 | 4×1,8 | X | X | X | X | - | - | - | - | - | - |
| 12 | 4×1,8 | X | X | X | X | X | - | - | - | - | - |
| 14 | 5×2,3 | X | X | X | X | X | X | - | - | - | - |
| 15 | 5×2,3 | - | X | X | X | X | X | - | - | - | - |
| 16 | 5×2,3 | - | X | X | X | X | X | X | X | - | - |
| 17 | 5×2,3 | - | X | X | X | X | X | X | X | X | - |
| 18 | 6×2,8 | - | X | X | X | X | X | X | X | X | - |
| 19 | 6×2,8 | - | X | X | X | X | X | X | X | X | - |
| 20 | 6×2,8 | - | - | X | X | X | X | X | X | X | X |
| 22 | 6×2,8 | - | - | X | X | X | X | X | X | X | X |
| 24 | 8×3,3 | - | - | - | X | X | X | X | X | X | X |
| 25 | 8×3,3 | - | - | - | - | X | X | X | X | X | X |
| 28 | 8×3,3 | - | - | - | - | X | X | X | X | X | X |
| 30 | 8×3,3 | - | - | - | - | - | X | X | X | X | X |
| 32 | 10×3,3 | - | - | - | - | - | - | X | X | X | X |
| 35 | 10×3,3 | - | - | - | - | - | - | X | X | X | X |
| 38 | 10×3,3 | - | - | - | - | - | - | X | X | X | X |
| 40 | 12×3,3 | - | - | - | - | - | - | - | X | X | X |
| 42 | 12×3,3 | - | - | - | - | - | - | - | X | X | X |
| 45 | 14×3,8 | - | - | - | - | - | - | - | - | X | X |
| 48 | 14×3,8 | - | - | - | - | - | - | - | - | X | X |
| 50 | 14×3,8 | - | - | - | - | - | - | - | - | - | X |
| 55 | 16×4,3 | - | - | - | - | - | - | - | - | - | X |
| 60 | 18×4,4 | - | - | - | - | - | - | - | - | - | X |

Table 4

Order data

| Coupling type | Flanges | Qty | Element | Qty | Spacer shaft | Qty | Nitrile wrap element | Qty | Ring kit | Qty |
|---|---|--------|---|-----|----------------------|-----|----------------------|-----|-----------------|-----|
| RSB both sides | PHE L095HUB | 2 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |
| Bore with keyway/ RSB combination | PHE L095HUB PHE L095 - ... MM | 1 1 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |
| Bore with keyway on both sides | PHE L095 - ... MM | 2 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |
| Bore only/ RSB combination | PHE L095 - ... MMP PHE L095HUB | 1 1 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |
| Bore only | PHE L095 - ... MMP | 2 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |
| Bore only/bore with keyway combination | PHE L095 - ... MMP PHE L095 - ... MM | 1 1 | PHE L095NR or PHE L095UR PHE L095HL | 1 | PHE L090X ... SPACER | 1 | PHE L090NRWRAP | 2 | PHE L090RINGKIT | 2 |

NR = Nitrile
UR = Urethane
HL = Hytrel

Available spacer shaft lengths are 100 mm and 140 mm. To complete the designation, add spacer length. For example: PHE L090X100SPACER for spacer of 100 mm, coupling size 090. When ordering bored to size and keywayed hubs, it is required that the bore diameter is added to the designation found in the table above.

Where a keyway is NOT required, the designation should be suffixed with a P.

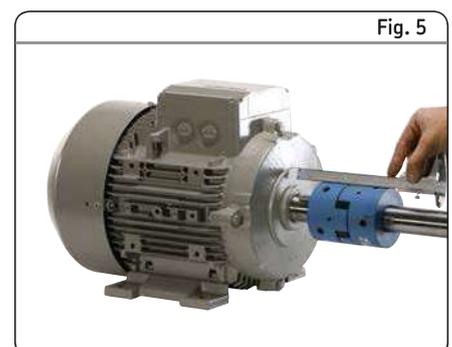
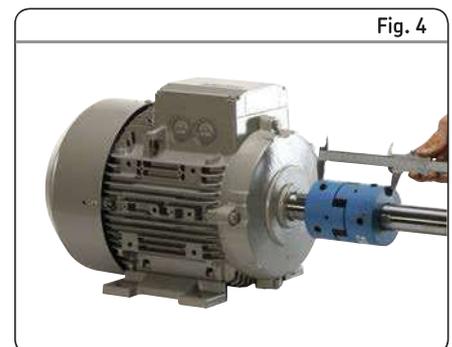
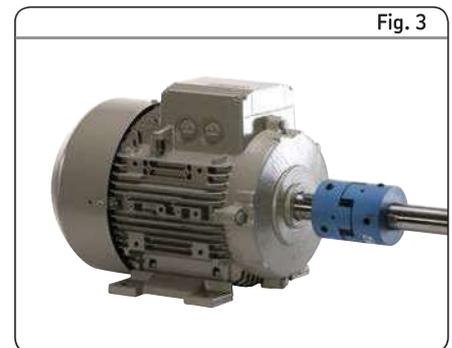
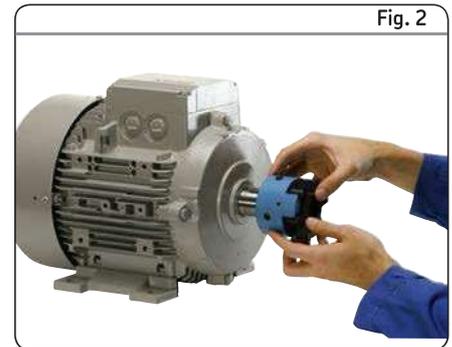
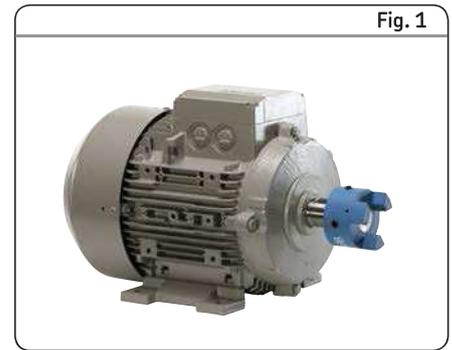
PHE L150-18MM = Hub Size 150 with 18 mm bore and keyway.

PHE L070-16MMP = Hub Size 070 with 16 mm bore (no keyway).

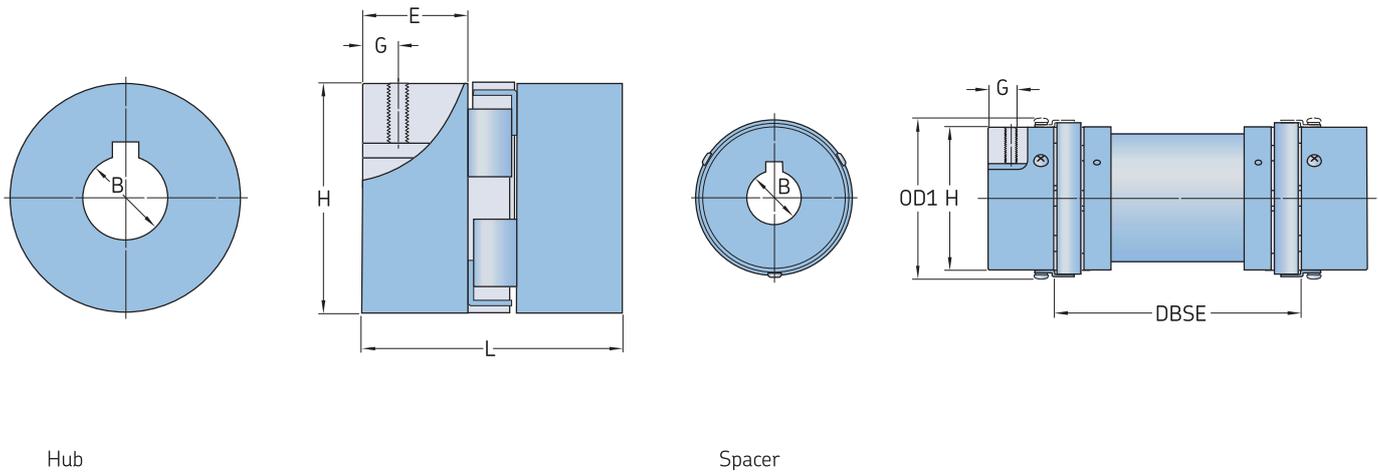
Installation

- 1 Place each coupling on its shaft so that shaft ends do not protrude into the internal section of the coupling (→ **fig. 1**). Then tighten the set screws.
- 2 Insert the coupling element into one side of the coupling (→ **fig. 2**).
- 3 Move the other coupling side into position and connect the two halves (→ **fig. 3**). Check that the assembled length is correct (→ **fig. 4**).
- 4 Check the angular misalignment by checking the assembled length in four positions at 90° around the coupling. Check parallel misalignment using a straight edge across the length of the coupling flange (→ **fig. 5**). Allowable angular misalignment for all jaw couplings is 1°. Allowable parallel misalignment for all jaw couplings is 0,38 mm.

Note: For most consistent results, check across at least 3 of the 6 points where the rubber elements are visible between the flanges.



SKF Jaw Couplings



| Size | Dimensions | | OD | OD ¹⁾ | L | E | H | G | Set screw | Approx. mass ²⁾ | Speed | Designation |
|------------|------------|------|-------|------------------|-------|------|-------|------|-----------|----------------------------|--------|--------------------|
| | Pilot B | Max. | | | | | | | | | Max. | |
| – | mm | | – | – | – | – | – | – | – | kg | – | – |
| 035 | 3,20 | 9,5 | 15,9 | – | 20,6 | 6,7 | 15,9 | – | – | 0,03 | 31 000 | PHE L035HUB |
| 050 | 6,35 | 14,0 | 27,5 | – | 44,0 | 16,0 | 27,5 | 6,5 | M6 | 0,05 | 18 000 | PHE L050HUB |
| 070 | 6,35 | 19,0 | 35,0 | – | 51,0 | 19,0 | 35,0 | 9,5 | M6 | 0,12 | 14 000 | PHE L070HUB |
| 075 | 6,35 | 24,0 | 44,5 | – | 54,0 | 21,0 | 44,5 | 9,0 | M6 | 0,22 | 11 000 | PHE L075HUB |
| 090 | 6,35 | 24,0 | 54,0 | – | 54,0 | 21,0 | 54,0 | 8,7 | M6 | 0,28 | 9 000 | PHE L090HUB |
| 095 | 11,11 | 28,0 | 54,0 | 64 | 64,0 | 25,0 | 54,0 | 11,0 | M8 | 0,31 | 9 000 | PHE L095HUB |
| 100 | 12,70 | 35,0 | 65,0 | 77 | 89,0 | 35,0 | 65,0 | 11,0 | M8 | 0,75 | 7 000 | PHE L100HUB |
| 110 | 15,87 | 42,0 | 84,0 | 97 | 108,0 | 43,0 | 84,0 | 19,0 | M10 | 1,50 | 5 000 | PHE L110HUB |
| 150 | 15,87 | 48,0 | 96,0 | 112 | 115,0 | 45,0 | 96,0 | 22,0 | M10 | 2,40 | 4 000 | PHE L150HUB |
| 190 | 19,05 | 55,0 | 115,0 | 130 | 133,0 | 54,0 | 102,0 | 22,0 | M12 | 3,50 | 3 600 | PHE L190HUB |
| 225 | 19,05 | 60,0 | 127,0 | 143 | 153,0 | 64,0 | 108,0 | 29,0 | M12 | 4,50 | 3 600 | PHE L225HUB |

¹⁾ Outer diameter of ring kit
²⁾ Mass of hub with pilot bores
 DBSE = Distance between shaft ends
 Hub material is high grade cast iron. Spacer material is aluminium.