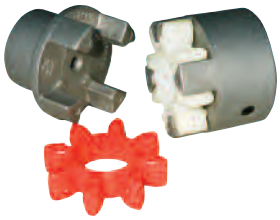
The optimum choice of flexible coupling for any application is the result of a compromise between many factors. Care should be taken to select a coupling which meets the performance criteria at the minimum cost.

1. Decide if the coupling should be torsionally soft or rigid. Torsionally soft types are generally less expensive.
2. Consider whether a small amount of backlash is tolerable; a backlash-free coupling is usually more expensive.
3. Calculate the required torque by multiplying the running power and speed by the service factors shown in the table below.
4. Make a provisional selection.
5. Check maximum speed and coupling dimensions meet requirements.
6. Contact us to confirm price and delivery. Please give the type number where possible. Our couplings specialists are able to give advice where needed and can offer other models.



Torsionally soft with backlash

Torsionally soft, backlash free

Torsionally rigid, backlash free

### With backlash or backlash free?

Couplings that have a one-piece construction or have bolted joints are backlash free. These are useful for precise positioning and to avoid wear on reversing drives. Couplings with backlash tend to have lower cost and are easier to install.

### Torsionally soft or torsionally rigid?

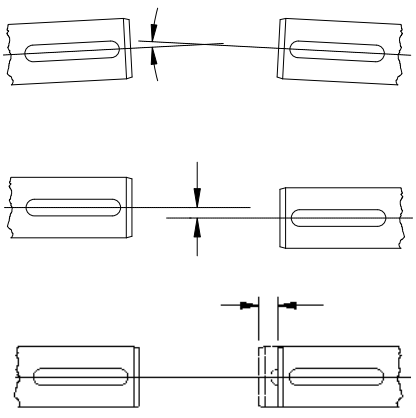
As a guide, couplings with rubber or plastic elements can be considered as torsionally soft. Most metal couplings are rigid, but some such as Simplaflex have quite low stiffness. A soft coupling may wind up 5° or more at rated torque whilst a rigid one would twist as little as 0.1°. Soft couplings are generally lower in cost.

## Types of misalignment

**Angular**
This is usually present to some extent on all applications, typical values 0.5° – 2°. Sometimes higher values are necessary.

**Radial**
Also known as parallel misalignment, this is also nearly always present. A well aligned installation might have values below 0.20mm.

**Axial**
This can be considered as end float. It is sometimes caused by thermal expansion or is a result of machine design.



Often a combination of all three types of misalignment is present.
Coupling maximum limits should not be used simultaneously.

# Selection guide

| Coupling type | Nominal torque range Nm | Speed capacity | Range of bores mm | Torsionally soft | Torsionally rigid | Backlash free | |
|---|---|---|---|---|---|---|---|
| Universal joints | 10 to 580 | Low to medium | 6 to 50 | ✘ | ✔ | ✔ | |
| Oldham | 0.2 to 42 | Medium | 3 to 30 | ✔ moderate | ✘ | ✔ | |
| Curved jaw | 11 to 1465 | High | 10 to 90 | ✔ | ✘ | ✘ | |
| Clamp hub curved jaw | 0.65 to 187 | High | 4 to 45 | ✔ | ✘ | ✔ | |
| High torque curved jaw* | 7 to 450 | High | 10 to 42 | ✔ | ✘ | ✔ | |
| Lovejoy Straight sided jaw | 0.4 to 660 | High | 4 to 67 | ✔ | ✘ | ✘ | |
| Barrel gear | 10 to 700 | High | 7 to 80 | ✔ Moderate | ✘ | ✘ | |
| Hexaflex Reinforced rubber disc | 100 to 2250 | Medium | 14 to 100 | ✔ | ✘ | ✔ | |
| Hexaflex BlueLine* Marine couplings | 100 to 2000 | Medium | 20 to 70 | ✔ | ✘ | ✔ | |
| Beam | 0.4 to 5 | High | 3 to 12 | ✘ | ✔ Moderate | ✔ | |
| Simplaflex spring Couplings | 2.5 to 900 | High | 3 to 75 | ✔ Moderate | ✘ | ✔ | |
| Bellows | 2.5 to 45 | High | 3 to 25 | ✘ | ✔ | ✔ | |
| Mini metal disc Servoflex 328 | 1 to 25 | High | 4 to 24 | ✘ | ✔ | ✔ | |
| Metal disc couplings Servoflex 318 | 35 to 500 | High | 12 to 55 | ✘ | ✔ | ✔ | |
| Arcoflex metal disc couplings | 800-23000 | High | 25 to 150 | ✘ | ✔ | ✔ | |

*details on request

| | Typical misalignment values | | | Ambient temperatures °C | Spacer models | Comments |
|---|---|---|---|---|---|---|
| | Angular degrees | Radial mm | Axial mm | | | |
| | 45 per joint | High values with double joints | High values with telescopic models | to 100°C | Telescopic only for static adjustment | Not true flexible couplings, Double & telecopic version available |
| | 0.5 | 0.2 | 0.15 | -25 to +60˚C | | Compact design clamping hubs standard |
| | 1.5 | 0.12 | 1.4 | –30 to +80˚C | on request | General purpose & economic |
| | 1 | 0.12 | 1.4 | –40 to +120˚C | on request | Eliminates keyways |
| | 1 | 0.12 | 1.4 | –40 to +120˚C | on request | Compact with high torque |
| | 1 | 0.4 | 1.4 | –51 to +120˚C | | General purpose, variable stiffness by changing element |
| | 1 | 0.4 | ±1 | –25 to +90˚C | | Suits blind assembly, electrically insulating |
| | 3 | 0.6 | 3 | –30 to +80˚C | built from stock | General purpose coupling, rugged. |
| | 3 | 0.6 | 3 | –30 to +80˚C | On request | Flange to shaft connection with optimal damping for marine diesels |
| | 3 | 0.2 to 0.38 | 0.1 to 0.25 | –40 to +170˚C | On request | Set screw or clamp hub. Special materials available |
| | 3-6 | 0.5 (3.6 max) | +1 | –30 to +100˚C (300˚C on request) | | Strong all steel coupling, 3 lengths available |
| | 1.5 | 0.15 | 0.4 | –45 to +90˚C | | Lowest inertia, clamping hubs standard |
| | 2 | 0.2 | ±0.5 | –30 to +150˚C | | Clamping hubs standard |
| | 2 | 0.3 | 2 | –40 to +270˚C | to 3m or more | Clamping hubs and aluminuim construction optional |
| | 1 | 2.2 | 2 | –40 to +270˚C | to 5m or more | Adaptable metal disc couplings. Clamp hubs available |

## Size calculation

The required torque is determined using the following equation:

$$\text{Torque required} = 9550 \times \frac{kW}{N} \times k \times S, \text{ Nm}$$

**or in imperial units**

$$\text{Torque required} = 7124 \times \frac{hp}{N} \times k \times S, \text{ Nm}$$

N = revolutions per minute
k = service factor depending on operating conditions
S = starting frequency factor

### *Service factor k*

### *Type of machine*

| | 1 or 2 cylinder internal combustion engine | Hydraulic motor | Multi-cylinder engine | Electric motor |
|---|---|---|---|---|
| Hours running day | | | | |
| **Light, even load**<br>Small generators, centrifugal pumps,<br>turbo-compressors, belt conveyors | 4<br>8<br>24 | 0.8<br>1.0<br>1.25 | 1.0<br>1.25<br>1.5 | 1.25<br>1.5<br>1.75 |
| **Irregular shock-free load – few drive reversals**<br>Screw conveyors, agitators,<br>woodworking machines, machine tools | 4<br>8<br>24 | 1.0<br>1.25<br>1.5 | 1.25<br>1.5<br>1.75 | 1.5<br>1.75<br>2.0 |
| **Irregular shock load – few drive reversals**<br>Piston-type pumps and compressors<br>textile machines, agitators, centrifuges | 4<br>8<br>24 | 1.25<br>1.5<br>1.75 | 1.5<br>1.75<br>2.0 | 1.75<br>2.0<br>2.25 |
| **Arduous driving conditions – frequent drive reversals**<br>Piston type compressors (without flywheel)<br>vibrators, rolling mills | 4<br>8<br>24 | 1.5<br>1.75<br>2.0 | 1.75<br>2.0<br>2.25 | 2.0<br>2.25<br>2.5 |

### *Starting frequency, factor S*

| Maximum number of starts per hour | up to 30 | up to 60 | up to120 | up to180 |
|---|---|---|---|---|
| Starting frequency, factor | 1 | 1.2 | 1.5 | 2.0 |