Tyreflex Couplings
Interchangeability
Many of the products from Renold Gears are dimensionally interchangeable with other manufacturers gear units, allowing a trouble free replacement of gearboxes, in most cases upgrading the capacity through state of the art technology and materials.

Custom Made
Renold Gears is unique in it’s ability to offer custom made products designed to meet customers exacting requirements without compromise on availability and cost. From complete package solutions to individual precision replacement gears, all can be tailor made to meet specific applicational requirements.

Available
The most popular ranges of gearboxes are available from local distribution stock, backed up by extensive stocks from our manufacturing plant in the UK.

Renold Gears has been manufacturing high quality, high specification gear units for over 100 years and has always been at the leading edge of gear technology with innovative products and power transmission solutions.
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</table>
The RENOLD Collection

Spiderflex Coupling
Max power / 100 rpm (kW) 33 kW
Max weight 63 kg
Max shaft size 115 mm
Max speed (rpm) 7,700 rpm
Max outer diameter 275 mm
Max torque (Nm) 3,150 Nm

SpiderJaw Coupling
Max power / 100 rpm (kW) 45 kW
Max weight 84 kg
Max shaft size 115 mm
Max speed (rpm) 31,000 rpm
Max outer diameter 305 mm
Max torque (Nm) 4,308 Nm

SpiderWrap Coupling
Max power / 100 rpm (kW) 45 kW
Max weight 84 kg
Max shaft size 115 mm
Max speed (rpm) 9,000 rpm
Max outer diameter 323 mm
Max torque (Nm) 4,308 Nm

Pinflex Coupling
Max power / 100 rpm (kW) 340 kW
Max weight 423 kg
Max shaft size 260 mm
Max speed (rpm) 6,800 rpm
Max outer diameter 490 mm
Max torque (Nm) 32,500 Nm

Crownpin Coupling
Max power / 100 rpm (kW) 2,607 kW
Max weight 2,250 kg
Max shaft size 300 mm
Max speed (rpm) 6,210 rpm
Max outer diameter 1,220 mm
Max torque (Nm) 249,400 Nm

Tyreflex Coupling
Max power / 100 rpm (kW) 66 kW
Max weight 49 kg
Max shaft size 150 mm
Max speed (rpm) 4,500 rpm
Max outer diameter 470 mm
Max torque (Nm) 6,270 Nm

Discflex Coupling
Max power / 100 rpm (kW) 45 kW
Max weight 67 kg
Max shaft size 110 mm
Max speed (rpm) 2,900 rpm
Max outer diameter 324 mm
Max torque (Nm) 4,298 Nm

Chainflex Coupling
Max power / 100 rpm (kW) 90 kW
Max weight 85 kg
Max shaft size 140 mm
Max speed (rpm) 3,500 rpm
Max outer diameter 357 mm
Max torque (Nm) 8,595 Nm
Max power / 100 rpm (kW) 1,640 kW
Max weight 501 kg
Max shaft size 290 mm
Max speed (rpm) 7,100 rpm
Max outer diameter 527 mm
Max torque (Nm) 156,620 Nm

Max power / 100 rpm (kW) 39.1 kW
Max weight 207 kg
Max shaft size 127 mm
Max speed (rpm) 3,500 rpm
Max outer diameter 751 mm
Max torque (Nm) N/A

Max power / 100 rpm (kW) 482 kW
Max weight N/A
Max shaft size 180 mm
Max speed (rpm) 1,2000 rpm
Max outer diameter 345 mm
Max torque (Nm) 46,000 Nm

Max power / 100 rpm (kW) 482 kW
Max weight N/A
Max shaft size 180 mm
Max speed (rpm) 1,2000 rpm
Max outer diameter 345 mm
Max torque (Nm) 46,000 Nm

Max power / 100 rpm (kW) 39.1 kW
Max weight N/A
Max shaft size 110 mm
Max speed (rpm) 2,500 rpm
Max outer diameter 751 mm
Max torque (Nm) N/A
Flexible Couplings should be used to accommodate any combination of misalignment conditions described below.

At installation all couplings should be aligned as near to perfect as possible.

1. Angular
Angular misalignment is present when the shaft axes are inclined one to the other. Its magnitude can be measured at the coupling faces.

2. Parallel Offset
Parallel misalignment is present when the axes of the driving and driven shafts are parallel but laterally displaced.

3. End float (axial)
End float is the ability to accommodate a relative axial displacement of the connected shafts; achieved by sliding members or flexing of resilient components.

4. Torsional flexibility
Torsional flexibility is a design feature necessary to permit shock and impulsive loadings to be suitably dampened. It is achieved by the provision of a flexible medium such as rubber, springs, etc., between the two halves of the coupling.

Selection
In order to select the correct type and size of coupling, the following basic information should be known:

Power to be transmitted
(a) Normal.
(b) Maximum.
(c) Whether continuous or intermittent.

Characteristics of the drive
(a) Type of prime mover and associated equipment.
(b) Degree of impulsiveness of driven load.

Speed in revolutions per minute
(a) At which normal power is transmitted.
(b) At which maximum power is transmitted.
(c) Maximum speed.

Dimensions of shafts to be connected
(a) Actual diameter.
(b) Length of shaft extension.
(c) Full keyway particulars.

Selection Procedure
1. Nominal power in kW to be transmitted = K.
2. Select appropriate load classification from Table 1, denoted as either S, M or H.
3. From Table 2, establish Service Factor(s) to be applied, taking into account hours of operation/day and prime mover = fD.
4. From Table 3 select factor for the required frequency of starts/hr = fS.
5. Selection Power Ks = K x fD x fS
6. Equivalent power at 100 RPM = \( \frac{Ks \times 100}{RPM} \)
7. Check that coupling selected will accept the required shaft diameters. Should shaft diameter exceed maximum permissible, then re-select using next larger size of coupling.
### Table 1

<table>
<thead>
<tr>
<th>Machinery Characteristics</th>
<th>Service Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agitators</td>
<td>M</td>
</tr>
<tr>
<td>Pure liquids</td>
<td>M</td>
</tr>
<tr>
<td>Liquids and solids</td>
<td>M</td>
</tr>
<tr>
<td>Liquids - variable density</td>
<td>M</td>
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<tr>
<td>Centrifuges</td>
<td>S</td>
</tr>
<tr>
<td>Centrifugal</td>
<td>S</td>
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<tr>
<td>Lobe</td>
<td>M</td>
</tr>
<tr>
<td>Vane</td>
<td>S</td>
</tr>
<tr>
<td>Bottling machinery</td>
<td>S</td>
</tr>
<tr>
<td>Brew kettles - continuous</td>
<td>S</td>
</tr>
<tr>
<td>Cookers - continuous</td>
<td>S</td>
</tr>
<tr>
<td>Mash tanks - continuous</td>
<td>S</td>
</tr>
<tr>
<td>Scale hopper - frequent</td>
<td>S</td>
</tr>
<tr>
<td>Refuse collection</td>
<td>S</td>
</tr>
<tr>
<td>Carders</td>
<td>H</td>
</tr>
<tr>
<td>Crimpers</td>
<td>H</td>
</tr>
<tr>
<td>Reciprocating</td>
<td>M</td>
</tr>
<tr>
<td>Reciprocating - single cylinder</td>
<td>H</td>
</tr>
<tr>
<td>Conveyors</td>
<td>M</td>
</tr>
<tr>
<td>Conveyors - heavy duty</td>
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<tr>
<td>Not uniformly fed</td>
<td>H</td>
</tr>
<tr>
<td>Main hoists</td>
<td>M</td>
</tr>
<tr>
<td>Bridge travel</td>
<td>*</td>
</tr>
<tr>
<td>Trolley travel</td>
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<tr>
<td>Crushers</td>
<td>M</td>
</tr>
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<td>Concrete</td>
<td>H</td>
</tr>
<tr>
<td>Stone</td>
<td>H</td>
</tr>
<tr>
<td>Sugar (1)</td>
<td>M</td>
</tr>
<tr>
<td>Drives</td>
<td>M</td>
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<tr>
<td>Cable reels</td>
<td>M</td>
</tr>
<tr>
<td>Conveyors</td>
<td>M</td>
</tr>
<tr>
<td>Cutter head drives</td>
<td>H</td>
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<tr>
<td>Jig drives</td>
<td>H</td>
</tr>
<tr>
<td>Manoeuvring winches</td>
<td>M</td>
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<tr>
<td>Pumps</td>
<td>M</td>
</tr>
<tr>
<td>Screen drive</td>
<td>H</td>
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<tr>
<td>Packers</td>
<td>H</td>
</tr>
<tr>
<td>Utility winches</td>
<td>M</td>
</tr>
</tbody>
</table>

### Dry Dock Cranes

- Main hoist (2)
- Auxiliary hoist (2)
- Re-wound merry-go-round conveyor (3)
- Rotating, swing or slew (3)
- Tracking, drive wheels (4)

### Elevators

- Bucket - uniform load (S)
- Bucket - heavy load (M)
- Bucket - continuous (S)
- Centrifugal discharge (S)
- Escalators (S)
- Freight (M)
- Gravity discharge (M)
- Man lifts (S)
- Passenger (S)

### Extruders (plastic)

- Film (S)
- Sheet (S)
- Coating (S)
- Rods (S)
- Tubing (S)
- Blow moulders (S)
- Pre-plasticisers (S)

### Fans

- Centrifugal (S)
- Cooling towers (M)
- Induced draft (S)
- Forced draft (M)
- Induced draft (M)
- Large, mine etc. (M)
- Large, industrial (M)
- Light, small diameter (S)

### Feeders

- Apron (M)
- Belt (M)
- Disc (M)
- Reciprocating (H)

### Food Industry

- Beef slicer (M)
- Cereal cooker (S)
- Dough mixer (M)
- Meat grinder (M)
- Generators - not welding (S)
- Hammer mills (H)
- Roasts (S)
- Heavy duty (H)
- Medium duty (H)
- Skips hoist (M)
- Laundry (M)
- Washers - reversing (M)
- Tumblers (M)

### Line shafts

- Driving processing equipment (M)
- Light (S)
- Other line shafts (M)

### Lumber Industry

- Barkers, hydraulic, mechanical (M)
- Burner conveyor (M)
- Chain saw and drag saw (H)
- Chain transfer (H)
- Craneway transfer (H)
- De-barking drum (H)
- Edger feed (M)
- Green chain (M)
- Live rolls (H)
- Log deck (M)
- Log haul - incline (H)
- Log haul - well type (H)
- Log turning device (M)
- Main log conveyor (H)
- Off bearing rolls (M)

### Planer Feed Chains

- Main hoist (M)
- Planer floor chains (M)
- Planer lifting hoist (M)
- Re-wound merry-go-round conveyor (M)
- Roll chains (M)
- Slab conveyors (S)
- Small waste conveyor-belt (S)
- Small waste conveyor-chain (M)
- Sorting table (M)
- Tippie hoist conveyor (M)
- Tippie hold drive (M)
- Transfer conveyors (M)
- Transfer rollers (M)
- Tray drive (M)
- Trimmer feed (M)
- Waste conveyor (M)

### Machine Tools

- Bending roll (M)
- Punch press - gear driven (H)
- Notching press - belt drive (S)
- Plate planers (H)
- Tapping machine (H)
- Other main tools (S)
- Main drives (M)
- Auxiliary drives (S)

### Mills, Rotary Type

- Ball (1)
- Cement kilns (1) (M)
- Dryers and coolers (1) (M)
- Kilns other than cement (M)
- Pebble (1) (M)
- Rod, plain & wedge bar (1) (M)
- Tumbling barrels (H)
- Mixed mills (1)

### Mills, Mixed Type

- Cement mills (1)
- Ball (1) (M)
- Mills, rotary type (M)

### Other Machine Tools

- Wire winding machine (M)
- Individually driven (H)
- Reversing (H)
- Wire drawing and flattening machine (M)
- Wire winding machine (M)

### Mills, Reversing

- Main drives (M)
- Auxiliary drives (S)

### Metal Mills

- Drawn bench carriage (M)
- main drive (M)
- Pinch, dryer and scrubber rollers, reversing (S)
- Slitters (M)
- Table conveyors nonreversing group drives (M)
- Individual drives (H)
- Reversing (H)
- Wire drawing and flattening machine (M)
- Wire winding machine (M)

### Mills, Rotary Type

- Ball (1)
- Cement kilns (1) (M)
- Dryers and coolers (1) (M)
- Kilns other than cement (M)
- Pebble (1) (M)
- Rod, plain & wedge bar (1) (M)
- Tumbling barrels (H)

### Mills, Mixed Type

- Cement mills (1)
- Ball (1) (M)
- Mills, rotary type (M)

### Oil Industry

- Chillers (M)
- Oil well pumping (M)
- Paraffin filter press (M)
- Rotary kilns (M)

### Oil Mills

- Agitators (mixers) (M)
- Barker - auxiliary hydraulic (H)
- Barker - mechanical (H)
- Barking drum (H)
- Beater and pulper (M)
- Bleacher (S)
- Calenders (H)
- Converters - super (H)
- Cutting machine except cutters, platers (M)
- Conveyors (S)
- Couch (S)
- Cutters, platers (H)
- Cylinders (M)
- Dryers (M)
- Feil stretcher (M)
- Feil whiper (M)
- Jordan (M)
- Log haul (H)

### Paper Mills

- Agitators (mixers) (M)
- Barker - auxiliary hydraulic (H)
- Barker - mechanical (H)
- Barking drum (H)
- Beater and pulper (M)
- Bleacher (S)
- Calenders (H)
- Converters - super (H)
- Cutting machine except cutters, platers (M)
- Conveyors (S)
- Couch (S)
- Cutters, platers (H)
- Cylinders (M)
- Dryers (M)
- Feil stretcher (M)
- Feil whiper (M)
- Jordan (M)
- Log haul (H)

### Presses

- Pulp machine reel (M)
- Stock chest (M)
- Suction roll (M)
- Washers and thickeners (M)
- Winders (M)

### Printing Presses

- Cylinder (M)
- Press (H)
- Single acting: 3 or more cylinders (M)
- Double acting: 2 or more cylinders (M)
- Single acting: 1 or 2 cylinders (M)

### Rolling Mills

- Cylinders (M)
- Rotary - gear type (S)
- Rotary - lobe, vane (M)

### Rubber and Plastics Industries

- Crackers (1) (M)
- Laboratory equipment (M)
- Mixed mills (1) (H)
- Refiners (M)
- Rubber calendars (M)
- Rubber mill, 2 on line (1) (M)
- Rubber mill, 3 on line (S)
- Sheeter (1) (M)
- Tyre building machines (M)
- Tyre and tube press openers (M)
- Tubers and strainers (1) (M)
- Warmin Mills (1) (M)

### Sand Molders

- Mixed mills (1) (S)

### Screws

- Screws (M)

### Air washing

- Air washing (S)

### Rotary, stone or gravel

- Travelling water intake (M)

### Sewage Disposal Equipment

- Septic tanks (M)
- Chemical feeders (S)
- Collectors (S)
- Dewatering screws (M)
- Scum breakers (M)
- Slow or rapid mixers (M)
- Thickeners (M)
- Vacuum filters (M)

### Slab Pushers

- Slab pushers (M)

### Picking Gear

- Stokers (S)

### Sugar Industry

- Cane knives (1) (M)
- Crushers (1) (M)
- Mills (1) (M)

### Textile Industry

- Batching machines (M)
- Calenders (M)
- Cards (M)
- Dry cans (M)
- Dryers (M)
- Drying machinery (M)
- Looms (M)
- Mangies (M)
- Nappers (M)
- Pads (M)
- Range drives (M)
- Slashers (M)
- Soapers (M)
- Spinners (M)
- Tenter frames (M)
- Washers (M)
- Winders (M)
- Windlass (M)

### Key

<table>
<thead>
<tr>
<th>S</th>
<th>M</th>
<th>H</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady</td>
<td>Medium Impulsive</td>
<td>Highly Impulsive</td>
<td>Refer to Renold</td>
</tr>
</tbody>
</table>

(1) = Select on 24 hours per day service factor only.
(2) = Use service factor of 1.00 for any duration of service.
(3) = Use service factor of 1.25 for any duration of service.
(4) = Use service factor of 1.50 for any duration of service.

**Note:**

Machinery characteristics and service factors listed in this catalogue are a guide only. Some applications (e.g. constant power) may require special considerations. Please consult Renold.
**Service Factors and Selection**

**Example of Selection**

Coupling is required to transmit 7.5kW at 1440 RPM to connect an electric motor to a gear box driving a chain conveyor running for 18 hours/day and starting 15 times/hour. Shaft diameters /55mm respectively.

\[
K = 7.5\text{kW}
\]

From Table 1 Load Classification = M (medium impulsive)

From Table 2 Service Factor \( f_D \) = 1.5

From Table 3 \( f_s \) = 1.2

Therefore selection kW is:

\[
K_s = K \times f_D \times f_S
\]

\[
= 7.5 \times 1.5 \times 1.2
\]

\[
= 13.5 \text{kW}
\]

Equivalent power at 100 RPM =

\[
K_s \times \frac{100}{\text{RPM}}
\]

\[
= \frac{13.5 \times 100}{1440}
\]

\[
= 0.9375\text{kW} @ 100\text{RPM}
\]

From page 17 selection is RSC110 (644911) (maximum bore 55 mm).

**Table 2 Service Factor \( (f_D) \)**

<table>
<thead>
<tr>
<th>Prime mover (Drive input)</th>
<th>Driven machinery characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Duration service hours/day</td>
</tr>
<tr>
<td>Electric, air &amp; hydraulic Motors or steam turbine (Steady input)</td>
<td>Intermittent - 3hrs/day max 3 - 10</td>
</tr>
<tr>
<td></td>
<td>over 10</td>
</tr>
<tr>
<td>Multi-cylinder I.C. engine (Medium impulsive input)</td>
<td>Intermittent - 3hrs/day max 3 - 10</td>
</tr>
<tr>
<td></td>
<td>over 10</td>
</tr>
<tr>
<td>Single-cylinder I.C. engine (Highly impulsive input)</td>
<td>Intermittent - 3hrs/day max 3 - 10</td>
</tr>
<tr>
<td></td>
<td>over 10</td>
</tr>
</tbody>
</table>

**Table 3 Factor for Starts/Hour\( (f_s) \)**

<table>
<thead>
<tr>
<th>No of starts per hour</th>
<th>0-1</th>
<th>1-30</th>
<th>30-60</th>
<th>60-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Key Stress**

1. Permissible key stress = 70N/mm\(^2\)

2. Nominal torque \( T_{KM} = K \times 9550 / \text{RPM Nm} \)

3. Force at key \( F = T_{KM} / r \)

4. Shaft Rad. metres

5. Key area \( A = J \times \text{HUB length mm} \)
   (Obtain from relevant catalogue page).

6. Key stress \( f_k = F / A \text{N/mm}^2 \)

7. If resultant stress is less than 70 N/mm\(^2\) key stress is acceptable.
   If resultant \( f_k \) is greater than 70, consider either two keyways or extending hub length.

8. Example:

   \[
   T_{KM} = 7.5 \times 9550/1440 = 49.7\text{Nm}
   \]

   \[
   r = 55/2 = 27.5\text{mm} / 1000 = 0.0275\text{m}
   \]

   \[
   F = 49.7/0.0275 = 1741\text{N}
   \]

   \[
   A = 16 \times 45 = 720\text{mm}^2
   \]

   \[
   f_k = 1741/720 = \text{N/mm}^2
   \]

   Selection is therefore good.

For operation above 80% of the declared maximum coupling speed it is recommended that the coupling is dynamically balanced.

---

**WARNING**

It is the responsibility of the system designer to ensure that the application of the coupling does not endanger the other constituent components in the system. Service factors given are an initial selection guide.

---

**WARNING**

Rotating equipment must be provided with a suitable guard before operating or injury may result.
Key and Keyway Dimensions

Metric (mm)

Keyways comply with BS4235: Part 1: 1972

<table>
<thead>
<tr>
<th>Shaft dia.</th>
<th>Key &amp; keyway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over</td>
<td>Incl.</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
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<tr>
<td>8</td>
<td>10</td>
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<td>200</td>
<td>230</td>
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</tbody>
</table>

Imperial (inches)

Keyways comply with BS46: Part 1: 1958

<table>
<thead>
<tr>
<th>Shaft dia.</th>
<th>Key &amp; keyway</th>
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<tbody>
<tr>
<td>Over</td>
<td>Incl.</td>
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<tr>
<td>0.25</td>
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<tr>
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<td>4.00</td>
</tr>
<tr>
<td>4.00</td>
<td>5.00</td>
</tr>
<tr>
<td>5.00</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Keyway dimensions [fig 01]

Parallel keyways are supplied unless customer states otherwise.
A range of highly flexible couplings offering excellent misalignment capacity and suitable to absorb both shock loads and vibrations.

**Coupling capacity**
- Maximum power @ 100RPM: 65.8 kW
- Maximum torque: 6270 Nm

**Features and benefits**
- High misalignment capabilities - high flexibility.
- Shock absorbing - extending machine life.
- Maintenance free - minimum number of wearing parts.
- Fire retardent, anti-static elements available for use in a flameproof environment.
- Interchangeability means no re-engineering.
- Pump spacer option for easy pump maintenance.
- Taper bush bores available for ease of replacement.
- Easy replacement of tyre element without any need to move hubs axially on driven or driving shafts.

**Standard range comprises**
- Shaft to Shaft
- Pump Spacer Type

**Applications**
- Compressors
- Generator Sets
- Pumps
- Roller Table Drives
- General Industrial Applications

**Construction details**
Steel or S.G. Iron Half Bodies
Rubber Tyres:
- Temp Range -50°C to +50°C
Chloroprene Tyres:
- Temp Range -15°C to +70°C

Can be certified for use in potentially explosive atmospheres containing gas or dust, according to ATEX directive 94/9/EC. The couplings are classified for equipment group II, categories 2 and 3. Contact Renold for further details.
<table>
<thead>
<tr>
<th>Coupling size</th>
<th>Power /100rpm kW</th>
<th>Torque nominal Nm</th>
<th>Speed max rpm</th>
<th>Type B</th>
<th>Type F</th>
<th>Type H</th>
<th>Max misalignment</th>
<th>End float mm</th>
<th>Torsional stiffness Nm° at 20°C</th>
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<tbody>
<tr>
<td>TY40 # #</td>
<td>0.26</td>
<td>25</td>
<td>4500</td>
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<td>12</td>
<td>25</td>
<td>9</td>
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<td>4 ±1.3</td>
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<tr>
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<td>66</td>
<td>4500</td>
<td>38</td>
<td>15</td>
<td>32</td>
<td>11</td>
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<td>4 ±1.7</td>
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<td>1.33</td>
<td>127</td>
<td>4000</td>
<td>45</td>
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<td>42</td>
<td>14</td>
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</tr>
<tr>
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<td>250</td>
<td>3600</td>
<td>50</td>
<td>22</td>
<td>50</td>
<td>14</td>
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<tr>
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<td>3100</td>
<td>60</td>
<td>25</td>
<td>60</td>
<td>16</td>
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<td>TY90 # #</td>
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<td>3000</td>
<td>70</td>
<td>28</td>
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<td>2300</td>
<td>95</td>
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<tr>
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<td>1300</td>
<td>2050</td>
<td>110</td>
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<td>100</td>
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<td>4 ±4.0</td>
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<td>2320</td>
<td>1800</td>
<td>130</td>
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<td>1500</td>
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<td>125</td>
<td>55</td>
<td>4.8</td>
<td>4 ±6.0</td>
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</tbody>
</table>

**NOTE:** M is distance by which clamping screws need to be withdrawn to release tyres.
P is wrench clearance for taper bush screws when large end is outboard Type H.
*Mass is for single hub assembly and half tyre.
## Component Spares

<table>
<thead>
<tr>
<th>Coupling size</th>
<th>Tyre flexible element</th>
<th>Half body unbored Type B</th>
<th>Half body taper bored Type F</th>
<th>Half body taper bored Type H</th>
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<tr>
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<td>Product no</td>
<td>Catalogue no</td>
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<td>TY180 B</td>
<td>7132118/HB02</td>
</tr>
</tbody>
</table>

**Tyreflex Couplings**
The best range of solution chain products available anywhere

**RENOLD Synergy™**
- High performance
- Superior wear life
- Outstanding fatigue resistance

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- Food industry-approved lubricant

**RENOLD**
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- Leading performance
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- Hexavalent chrome-free

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