

Pinflex Couplings



RENOLD
Superior Coupling Technology

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RENOLD

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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

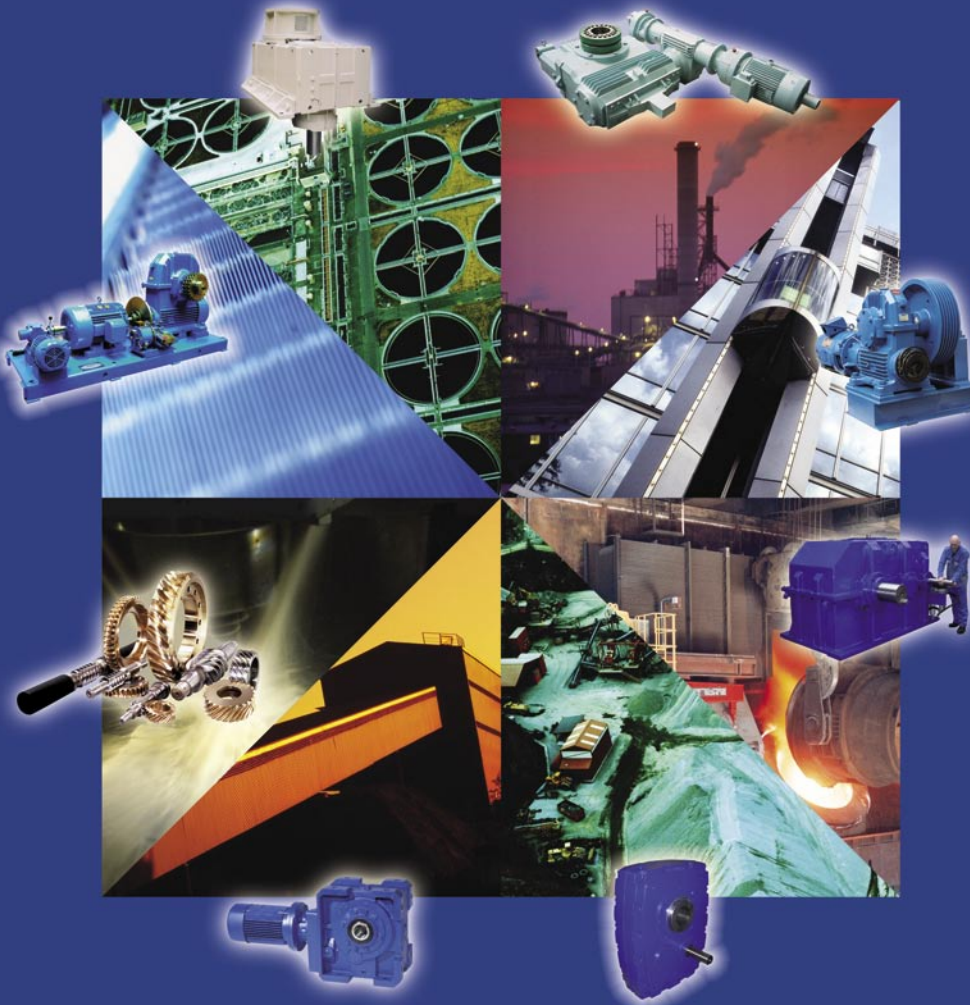
Renold Gears is unique in it's ability to offer custom made products designed to meet customers exacting requirements without compromise on availability and cost. From complete package solutions to individual precision replacement gears, all can be tailor made to meet specific applicational requirements.

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
Superior Gear Technology

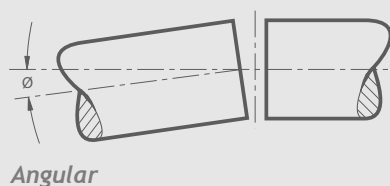
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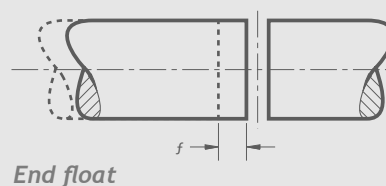
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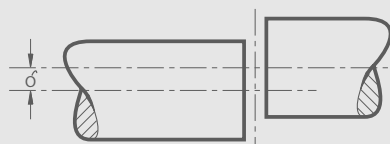
Coupling Selection Guide



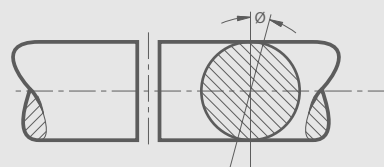
Angular



End float



Parallel offset



Torsional flexibility

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

Axial 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

- Normal.
- Maximum.
- Whether continuous or intermittent.

Characteristics of the drive

- Type of prime mover and associated equipment.
- Degree of impulsiveness of driven load.

Speed in revolutions per minute

- At which normal power is transmitted.
- At which maximum power is transmitted.
- Maximum speed.

Dimensions of shafts to be connected

- Actual diameter.
- Length of shaft extension.
- Full keyway particulars.

Selection

When the input drive is not steady (i.e. not from an electric motor), and/or the driven load is impulsive, the actual power is multiplied by a Service Factor from the Table 2 (page 13).

Selection Procedure

- Nominal power in kW to be transmitted = K .
- Select appropriate load classification from Table 1, denoted as either S, M or H.
- From Table 2, establish Service Factor(s) to be applied, taking into account hours of operation/day and prime mover = fD .
- From Table 3 select factor for the required frequency of starts/hr = fS .
- Selection Power $K_s = K \times fD \times fS$
- Equivalent power at 100 RPM = $\frac{K_s \times 100}{\text{RPM}}$
- 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.

Load Classification by Application

Table 1

		Dry dock cranes					
Agitators		Main hoist	(2)	Planer feed chains	M	Presses	M
Pure liquids	S	Auxiliary hoist	(2)	Planer floor chains	M	Pulp machine reel	M
Liquids and solids	M	Boom, luffing	(2)	Planer tilting hoist	M	Stock chest	M
Liquids - variable density	M	Rotating, swing or slew	(3)	Re-saw merry-go-round conveyor	M	Suction roll	M
Blowers		Tracking, drive wheels	(4)	Roll cases	H	Washers and thickeners	M
Centrifugal	S	Elevators		Slab conveyor	H	Winders	M
Lobe	M	Bucket - uniform load	S	Small waste conveyor-belt	S	Printing presses	
Vane	S	Bucket - heavy load	M	Small waste conveyor-chain	M	Pullers	
Brewing and distilling		Bucket - continuous	S	Sorting table	M	Barge haul	H
Bottling machinery	S	Centrifugal discharge	S	Tipple hoist conveyor	M	Pumps	
Brew kettles - continuous duty	S	Escalators	S	Tipple hoist drive	M	Centrifugal	S
Cookers - continuous duty	S	Freight	M	Transfer conveyors	M	Proportioning	M
Mash tubs - continuous duty	S	Gravity discharge	S	Transfer rolls	M	Reciprocating	
Scale hopper - frequent starts	M	Man lifts	*	Tray drive	M	single acting: 3 or more cylinders	M
Can filling machines		Passenger	*	Trimmer feed	M	double acting: 2 or more cylinders	M
Cane knives (1)	M	Extruders (plastic)		Waste conveyor	M	single acting: 1 or 2 cylinders	*
Car dumpers	H	Film	S	Machine tools		double acting: single cylinder	*
Car pullers	M	Sheet	S	Bending roll	M	Rotary - gear type	S
Clarifiers	S	Coating	S	Punch press - gear driven	H	Rotary - lobe, vane	S
Classifiers	M	Rods	S	Notching press - belt drive	*	Rubber and plastics industries	
Clay working machinery		Tubing	S	Plate planners	H	Crackers (1)	H
Brick press	H	Blow moulders	M	Tapping machine	H	Laboratory equipment	M
Briquette machine	H	Pre-plasticisers	M	Other machine tools		Mixed mills (1)	H
Clay working machinery	M	Fans		Main drives	M	Refiners (1)	M
Pug mill	M	Centrifugal	S	Auxiliary drives	S	Rubber calenders (1)	M
Compressors		Cooling towers		Metal mills		Rubber mill, 2 on line (1)	M
Centrifugal	S	Induced draft	*	Drawn bench carriage and main drive	M	Rubber mill, 3 on line (1)	S
Lobe	M	Forced draft	*	Pinch, dryer and scrubber rolls, reversing	*	Sheeter (1)	M
Reciprocating - multi-cylinder	M	Large, mine etc.	M	Slitters	M	Tyre building machines	*
Reciprocating - single cylinder	H	Large, industrial	M	Table conveyors nonreversing group drives	M	Tyre and tube press openers	*
Conveyors - uniformly loaded or fed		Light, small diameter	S	Individual drives	H	Tubers and strainers (1)	M
Apron	S	Feeders		Reversing	*	Warming mills (1)	M
Assembly	S	Apron	M	Wire drawing and flattening machine	M	Sand muller	
Belt	S	Belt	M	Wire winding machine	M	Screens	
Bucket	S	Disc	S	Mills, rotary type		Air washing	S
Chain	S	Reciprocating	H	Ball (1)	M	Rotary, stone or gravel	M
Flight	S	Screw	M	Cement kilns (1)	M	Travelling water intake	S
Oven	S	Food industry		Dryers and coolers (1)	M	Sewage disposal equipment	
Screw	S	Beef slicer	M	Kilns other than cement	M	Bar screens	S
Conveyors - heavy duty not uniformly fed		Cereal cooker	S	Pebble (1)	M	Chemical feeders	S
Apron	M	Dough mixer	M	Rod, plain & wedge bar (1)	M	Collectors	S
Assembly	M	Meat grinder	M	Tumbling barrels	H	Dewatering screws	M
Belt	M	Generators - not welding		Mixers		Scum breakers	M
Bucket	M	Hammer mills		Concrete mixers continuous	M	Slow or rapid mixers	M
Chain	M	Hoists		Concrete mixers intermittent	M	Thickeners	M
Flight	M	Heavy duty	H	Constant density	S	Vacuum filters	M
Live roll	*	Medium duty	M	Variable density	M	Slab pushers	
Oven	M	Skip hoist	M	Oil industry		Steering gear	*
Reciprocating	H	Laundry		Chillers	M	Stokers	
Screw	H	Washers - reversing	M	Oil well pumping	*	Sugar industry	
Shaker	H	Tumblers	M	Paraffin filter press	M	Cane knives (1)	M
Crane Drives - not dry dock		Line shafts		Rotary kilns	M	Crushers (1)	M
Main hoists	S	Driving processing equipment	M	Paper mills		Mills (1)	M
Bridge travel	*	Light	S	Agitators (mixers)	M	Textile industry	
Trolley travel	*	Other line shafts	S	Barker - auxiliaries hydraulic	M	Batchers	M
Crushers		Lumber industry		Barker - mechanical	H	Calenders	M
Ore	H	Barkers, hydraulic, mechanical	M	Barking drum	H	Cards	M
Stone	H	Burner conveyor	M	Beater and pulper	M	Dry cans	M
Sugar (1)	M	Chain saw and drag saw	H	Bleacher	S	Dryers	M
Dredges		Chain transfer	H	Calenders	M	Dyeing machinery	M
Cable reels	M	Craneway transfer	H	Calenders - super	H	Looms	M
Conveyors	M	De-barking drum	H	Converting machine except cutters, platers	M	Mangles	M
Cutter head drives	H	Edger feed	M	Conveyors	S	Nappers	M
Jig drives	H	Gang feed	M	Couch	M	Pads	M
Manoeuvring winches	M	Green chain	M	Cutters, platers	H	Range drives	*
Pumps	M	Live rolls	H	Cylinders	M	Slashers	M
Screen drive	H	Log deck	H	Dryers	M	Soapers	M
Stackers	M	Log haul - incline	H	Fell stretcher	M	Spinners	M
Utility winches	M	Log haul - well type	H	Fell whipper	H	Tenter frames	M
		Log turning device	H	Jordans	M	Washers	M
		Main log conveyor	H	Log haul	H	Winders	M
		Off bearing rolls	M			Windlass	*

Key

S = Steady
M = Medium Impulsive
H = Highly Impulsive
* = Refer to Renold

(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

Table 2 Service Factor (f_D)

Prime mover (Drive input)	Driven machinery characteristics			
	Duration service hours/day	Steady load	Medium impulsive	Highly impulsive
Electric, air & hydraulic Motors or steam turbine (Steady input)	Intermittent - 3hrs/day max	0.90	1.00	1.50
	3 - 10	1.00	1.25	1.75
	over 10	1.25	1.50	2.00
Multi-cylinder I.C. engine (Medium impulsive input)	Intermittent - 3hrs/day max	1.00	1.25	1.75
	3 - 10	1.25	1.50	2.00
	over 10	1.50	1.75	2.25
Single-cylinder I.C. engine (Highly impulsive input)	Intermittent - 3hrs/day max	1.25	1.50	2.00
	3 - 10	1.50	1.75	2.25
	over 10	1.75	2.00	2.50

Table 3 Factor for Starts/Hour(f_S)

No of starts per hour	0-1	1-30	30-60	60-
Factor	1,0	1,2	1,3	1,5

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:-

$$\begin{aligned} K_s &= K \times f_D \times f_S \\ &= 7.5 \times 1.5 \times 1.2 \\ &= 13.5 \text{ kW} \end{aligned}$$

$$\begin{aligned} \text{Equivalent power at 100 RPM} &= \frac{K_s \times 100}{\text{RPM}} \\ &= \frac{13.5 \times 100}{1440} \\ &= 0.9375\text{kW @ 100RPM} \end{aligned}$$

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

Key Stress

1. Permissible key stress = 70N/mm²
2. Nominal torque $T_{KM} = K \times 9550 / \text{RPM Nm}$
3. Force at key $F = T_{KM} / r$
4. Shaft Rad r. 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/mm² key stress is acceptable.
If resultant f_k is greater than 70, consider either two keyways or extending hub length.
8. Example:

$$\begin{aligned} T_{KM} &= 7.5 \times 9550 / 1440 = 49.7\text{Nm} \\ r &= 55/2 = 27.5\text{mm} \div 1000 = 0.0275\text{m} \\ F &= 49.7 / 0.0275 = 1741\text{N} \\ A &= 16 \times 45 = 720\text{mm}^2 \\ f_k &= 1741 / 720 = 2.4\text{N/mm}^2 \end{aligned}$$
 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.

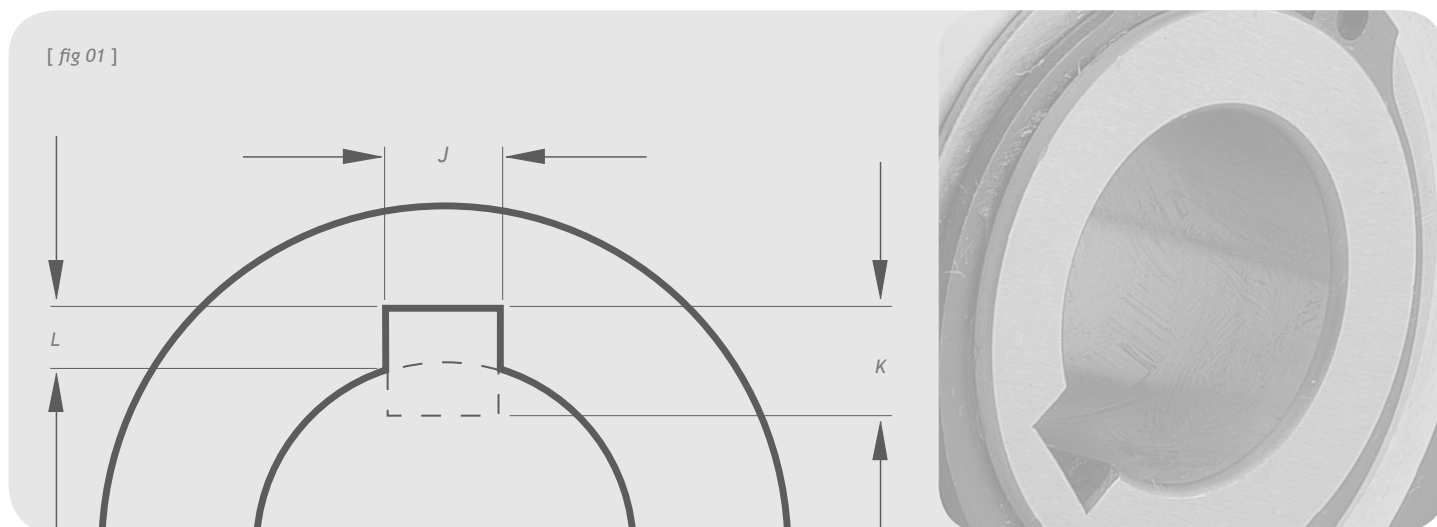


WARNING

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

Key and Keyway Dimensions

[fig 01]



Metric (mm)

Keyways comply with BS4235: Part 1: 1972

Shaft dia.		Key & keyway		
Over	Incl.	J	K	L
6	8	2	2	1.0
8	10	3	3	1.4
10	12	4	4	1.8
12	17	5	5	2.3
17	22	6	6	2.8
22	30	8	7	3.3
30	38	10	8	3.3
38	44	12	8	3.3
44	50	14	9	3.8
50	58	16	10	4.3
58	65	18	11	4.4
65	75	20	12	4.9
75	85	22	14	5.4
85	95	25	14	5.4
95	110	28	16	6.4
110	130	32	18	7.4
130	150	36	20	8.4
150	170	40	22	9.4
170	200	45	25	10.4
200	230	50	28	11.4

Imperial (inches)

Keyways comply with BS46: Part 1: 1958

Shaft dia.		Key & keyway		
Over	Incl.	J	K	L
0.25	0.05	0.125	0.125	0.060
0.50	0.75	0.187	0.187	0.088
0.75	1.00	0.250	0.250	0.115
1.00	1.25	0.312	0.250	0.090
1.25	1.50	0.375	0.250	0.085
1.50	1.75	0.437	0.312	0.112
1.75	2.00	0.500	0.312	0.108
2.00	2.50	0.625	0.437	0.162
2.50	3.00	0.750	0.500	0.185
3.00	3.50	0.875	0.625	0.245
3.50	4.00	1.000	0.750	0.293
4.00	5.00	1.250	0.875	0.340
5.00	6.00	1.500	1.000	0.384

Keyway dimensions [fig 01]

Parallel keyways are supplied unless customer states otherwise.

Pinflex



A robust, general purpose pin/buffer coupling providing reliable fail safe transmission of torque and misalignment capability.

Coupling capacity

- Maximum power @ 100RPM: 340kW
- Maximum torque: 32500Nm

Features and benefits

- Steel half bodies, strong yet compact.
- Heavy duty pin and buffer coupling - for heavy shock load conditions.
- Torsionally flexible - shock absorbing, extending machine life.
- Maintenance free - minimum number of wearing parts.
- Misalignment capabilities allowing flexibility in installation.

- Common half bodies - minimise stock holding.
- Polyurethane buffers, reliable/ flexible and temperature resistant.
- Modular construction - available as coupling, brakedrum and shear pin designs.
- Taper bores available for ease of maintenance.
- Potential energy saving when used to replace older cast iron pin and bush couplings.

Standard range comprises

- Shaft to Shaft
- Shear Pin
- Brake Drum/Disc

Applications

- Conveyors
- Escalators
- Mixers
- Pumps
- General Industrial Applications

Construction details

Steel Half Bodies

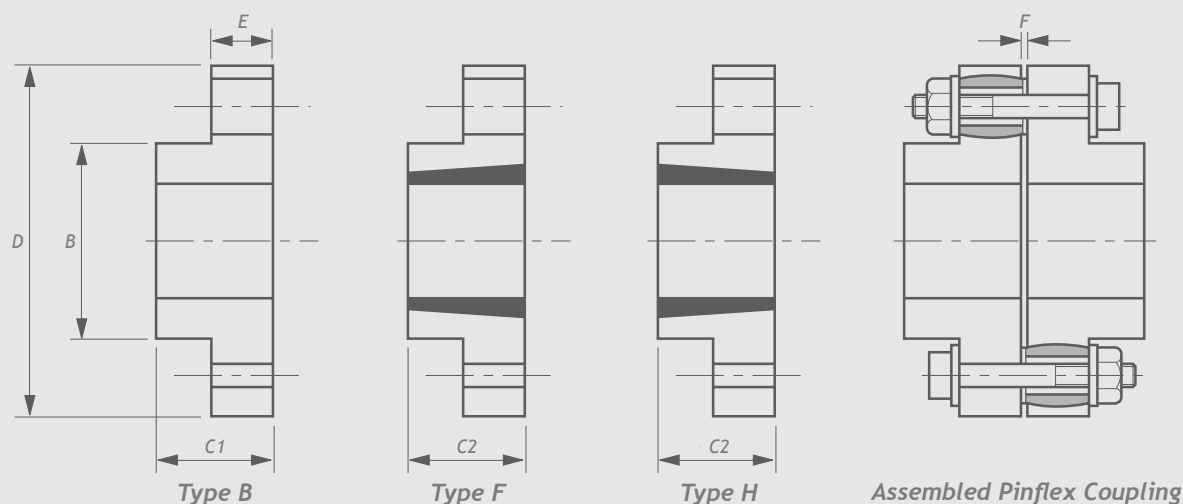
Urethane Buffer: Temp Range -40°C to +80°C



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.



Catalogue number	Product number	Power/ 100rpm kW	Torque nominal Nm	Speed max rpm	Type B		Type F & H			Dimensions						Type B		Type F & H	
					Bore		Bush size	Bore		B mm	C1 mm	C2 mm	D mm	E mm	F mm	Mass* kg	WR ² * kg m ²	Mass* kg	WR ² * kg m ²
					Max	Min		Max	Min										
PF1# #3	8001042/3	2.03	194	6800	50	0	TB1215	32	11	70	44	40	125	20	4	5.2	0.00828	5.0	0.00813
PF1# #6	8001042/6	4.05	387																
PF1BB9	8001042/9	6.08	581																
PF1BB12	8001042/12	8.1	774																
PF2# #3	8002050/3	3.59	343	5900	55	0	TB1615	42	14	80	50	40	145	25	5	8.3	0.01843	7.6	0.01780
PF2# #6	8002050/6	7.18	685																
PF2BB9	8002050/9	10.76	1028																
PF2BB12	8002050/12	14.35	1370																
PF3# #3	8003060/3	4.24	405	5200	72	0	TB2017	50	18	100	60	47	165	25	5	13.8	0.03335	12.1	0.03143
PF3# #6	8003060/6	8.48	810																
PF3BB9	8003060/9	12.71	1214																
PF3BB12	8003060/12	16.96	1620																
PF4# #3	8004075/3	8.32	795	4400	80	0	TB2525	60	19	113	75	65	195	35	6	22.0	0.08470	20.3	0.08195
PF4# #6	8004075/6	16.65	1590																
PF4BB9	8004075/9	24.97	2384																
PF4BB12	8004075/12	33.29	3179																
PF5# #4	8005090/4	13.94	1331	3600	110	0	TB3030	75	35	150	89	80	235	35	6	37.8	0.19972	35.3	0.19274
PF5# #8	8005090/8	27.88	2662																
PF5# #12	8005090/12	41.82	3994																
PF5BB16	8005090/16	55.76	5325																
PF6# #3	8006110/3	24.70	2359	2900	130	55	TB3535	90	35	180	110	91	290	50	7	73.2	0.61140	65.2	0.58086
PF6# #6	8006110/6	49.40	4717																
PF6# #9	8006110/9	74.10	7076																
PF6BB12	8006110/12	98.80	9435																
PF7# #4	8007130/4	37.18	3550	2600	150	65	TB4040	100	40	210	130	105	320	50	7	103.0	0.99756	88.5	0.92310
PF7# #8	8007130/8	74.35	7100																
PF7# #12	8007130/12	111.53	10650																
PF7BB16	8007130/16	148.70	14200																
PF8# #4	8008150/4	64.70	6179	2200	175	75	TB5050	125	70	245	150	130	380	60	7	168.8	2.33646	154.1	2.22610
PF8# #8	8008150/8	129.40	12357																
PF8# #12	8008150/12	194.10	18536																
PF8BB16	8008150/16	258.80	24714																
PF9BB4	8009240/4	85.00	8130	1700	260	75	N/A	N/A	N/A	355	220	-	490	60	7	423.0	9.19000	N/A	N/A
PF9BB8	8009240/8	170.00	16255																
PF9BB12	8009240/12	255.00	24385																
PF9BB16	8009240/16	340.00	32500																

NOTE: Maximum power and torques for taper bore options are limited by the taper bush capacity.

* Values are for couplings with no bore and a full set of pin assemblies.

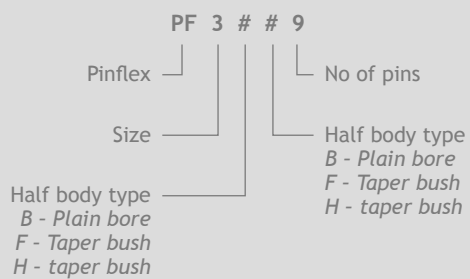
Disc Brake Drum version also available - consult Renold for details.

Max angular misalignment 0.25°

Max offset misalignment 0.13mm

Pinflex

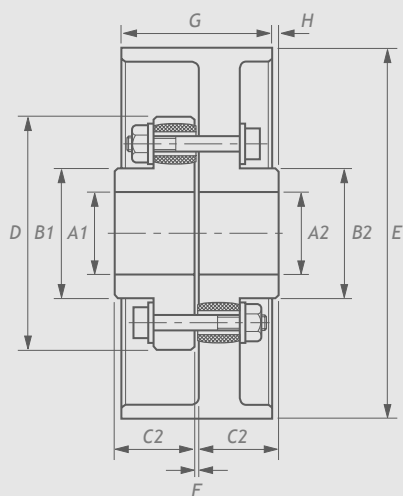
Ordering code



Component Spares

Coupling size	Half body pilot bored		Half body F type		Half body H type		Pin and buffer set		Coupling Size
	Catalogue number	Product number	Catalogue number	Product number	Catalogue number	Product number	Product number	Number per set	
PF1	PF1 B	8001042	PF1 F	8001042/77	PF1 H	8001042/88	800 0008	3	PF1
PF2	PF2 B	8002050	PF2 F	8002050/77	PF2 H	8002050/88	800 0010	3	PF2
PF3	PF3 B	8003060	PF3 F	8003060/77	PF3 H	8003060/88	800 0010	3	PF3
PF4	PF4 B	8004075	PF4 F	8004075/77	PF4 H	8004075/88	800 0012	1	PF4
PF5	PF5 B	8005090	PF5 F	8005090/77	PF5 H	8005090/88	800 0012	1	PF5
PF6	PF6 B	8006110	PF6 F	8006110/77	PF6 H	8006110/88	800 0016	1	PF6
PF7	PF7 B	8007130	PF7 F	8007130/77	PF7 H	8007130/88	800 0016	1	PF7
PF8	PF8 B	8008150	PF8 F	8008150/77	PF8 H	8008150/88	800 0020	1	PF8
PF9	PF9 B	8009240	N/A	N/A	N/A	N/A	800 0020	1	PF9

Pinflex Brakedrum Coupling



Ordering code

PF BD 5 #
 Pinflex —
 Brake drum —
 Size —

M - Metric drum dia
 B - Imperial drum dia

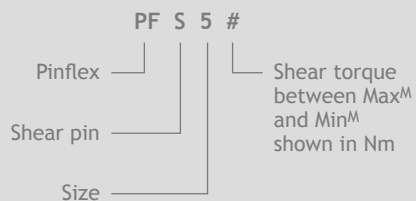
Disc brake version also available
 - consult Renold for details

Coupling size	Product number	Power /100rpm kW	Torque nominal Nm	Speed max rpm	Bore		Drum dimensions		
					A1 max mm	A2 max mm	Dia E mm	Width G mm	Dia E inch
PFBD1 #	8101042	8.1	774	3600	50	45	160	92	6
PFBD2 #	8102050	14.35	1370	2850	55	50	200	105	8
PFBD3 #	8103060	16.96	1620	2300	72	60	250	124	10
PFBD4 #	8104075	33.29	3179	1900	80	75	315	140	12
PFBD5 #	8105090	55.76	5325	1400	110	90	400	184	16
PFBD6 #	8106110	98.8	9435	1400	130	110	400	184	16
PFBD7 #	8107130	148.7	14200	1100	150	130	500	241	20
PFBD8 #	8108150	258.8	24714	900	175	150	630	267	24

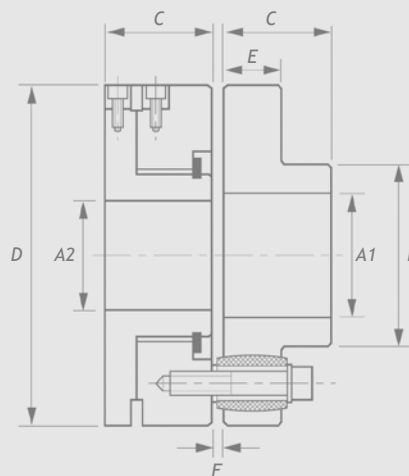
Coupling size	Product number	Dimensions									Number of pins per coupling	Pin & buffer set	
		B1 mm	B2 mm	C1 mm	C2 mm	D mm	F mm	H mm	WR ³ kg m ²	Mass kg		Part number	Number per set
PFBD1 #	8201042	70	70	44	44	125	4	-	0.0277	8.7	12	PFA	3
PFBD2 #	8202050	80	80	50	50	145	5	-	0.0696	14.3	12	PFB	3
PFBD3 #	8203060	100	100	60	60	165	5	-	0.1801	24.2	12	PFB	3
PFBD4 #	8204075	113	113	75	75	195	6	-	0.5487	49.0	12	PFC	1
PFBD5 #	8205090	150	150	90	90	235	6	-	1.6548	82.2	16	PFC	1
PFBD6 #	8206110	180	180	110	110	290	7	22	2.0706	114.1	12	PFD	1
PFBD7 #	8207130	210	210	130	130	320	7	13	5.2192	199.7	16	PFD	1
PFBD8 #	8208150	245	245	150	150	380	7	20	13.566	303.4	16	PFE	1

Pinflex Shearpin Coupling

Ordering code



Select coupling based on nominal torque using service factors from page 13. Then select required shear torque from table below.



Coupling size	Nominal torque	Shear torque		Speed max rpm	Bore A1		Bore A2		Dimensions						No. of pins
		Min Nm	Max Nm		Max mm	Min mm	Max mm	Min mm	B mm	C kg	D mm	E mm	F mm	Mass kg	
PFS1 #	387	194	774	6800	50	-	40	-	70	44	125	20	4	6.3	6
PFS2 #	685	220	1370	5900	55	-	47	-	80	50	145	25	5	10.1	6
PFS3 #	810	350	1620	5200	72	-	57	-	100	60	165	25	5	15.3	6
PFS4 #	1590	425	3180	4400	80	-	63	-	113	75	195	35	6	27.3	6
PFS5 #	2662	520	5324	3600	110	-	93	-	150	89	235	35	6	47.3	8
PFS6 #	4717	1100	9434	2900	130	55	107	55	180	110	290	50	7	89.8	6
PFS7 #	7100	2750	14200	2600	150	65	120	65	210	130	320	50	7	129	8
PFS8 #	12357	5900	24714	2200	175	75	147	75	245	150	380	60	7	212	8
PFS9 #	16255	8130	32510	1700	260	75	200	75	355	220	490	60	7	513	8