

Chainflex Couplings



RENOLD
Superior Coupling Technology

www.renold.com

RENOLD

Strength through Service

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.

Interchangeability

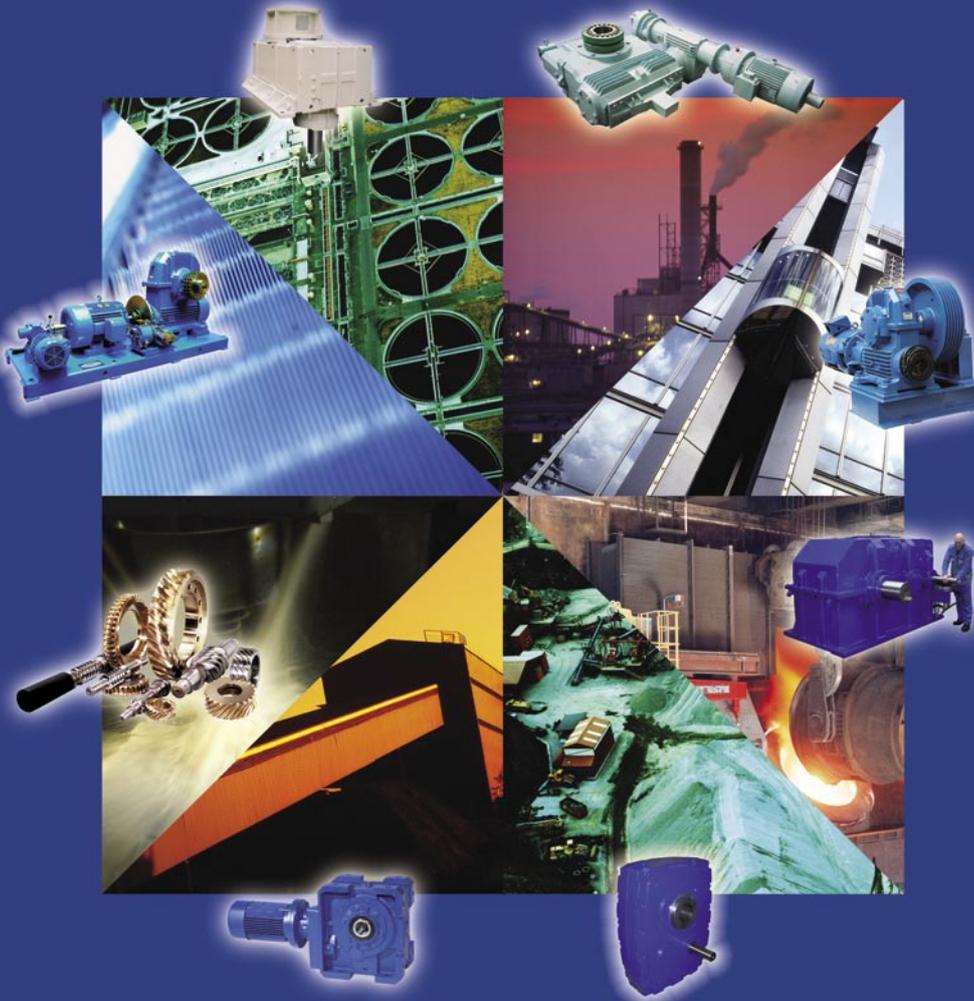
Many of the products from Renold Gears are dimensionally interchangeable with other manufacturers gear units, allowing a trouble free replacement of gearboxes, in most cases upgrading the capacity through state of the art technology and materials.

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.



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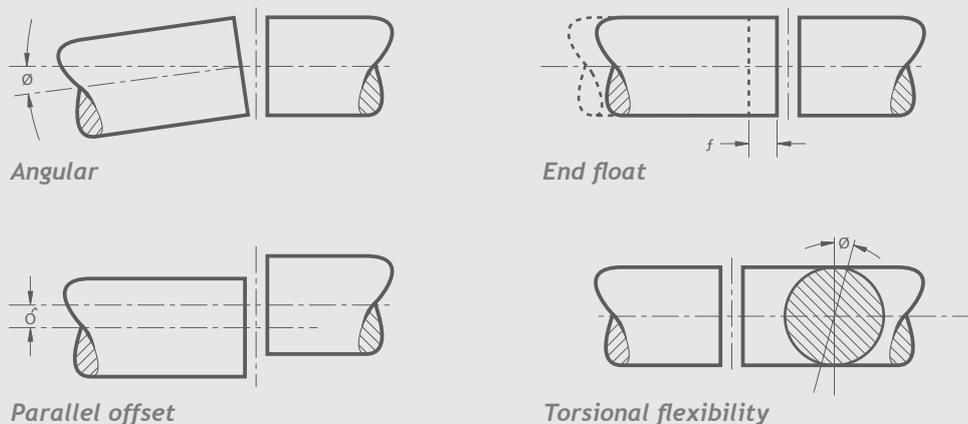
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Coupling Selection Guide



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

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

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.

$$K = 7.5kW$$

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:-

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

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

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:

$$T_{KM} = 7.5 \times 9550/1440 = 49.7Nm$$

$$r = 55/2 = 27.5mm \div 1000 = 0.0275m$$

$$F = 49.7/0.0275 = 1741N$$

$$A = 16 \times 45 = 720mm^2$$

$$f_k = 1741/720 = 2.4M/mm^2$$

Selection is therefore good.

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



WARNING

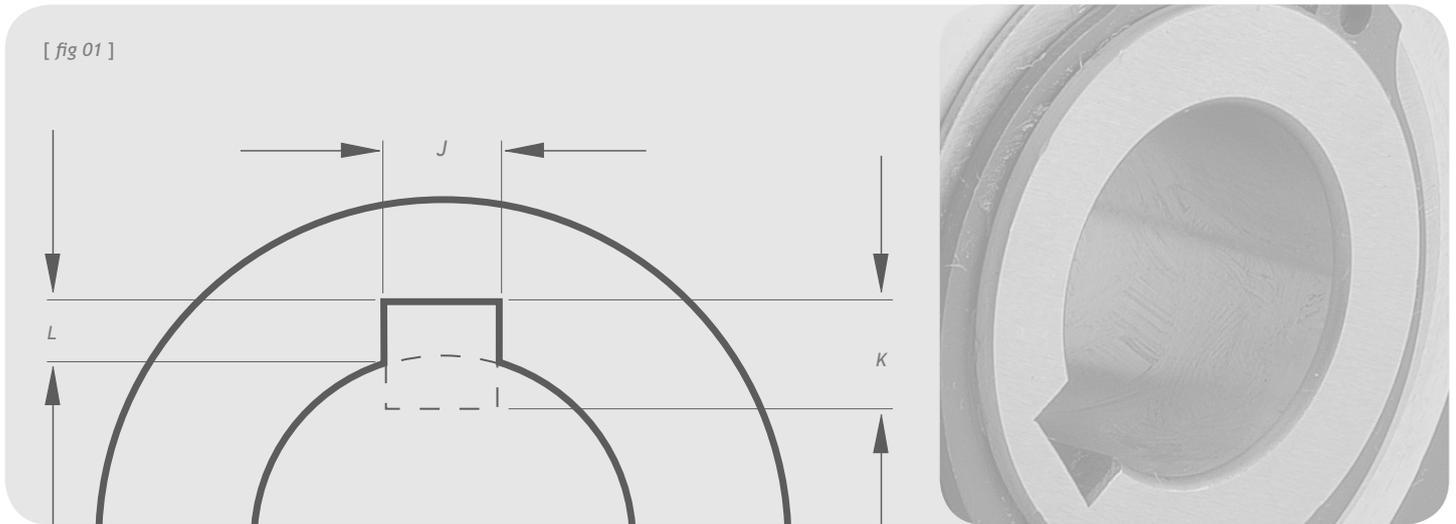
It is the responsibility of the system designer to ensure that the application of the coupling does not endanger the other constituent components in the system. Service factors given are an initial selection guide.



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

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.

Chainflex



An all metal flexible yet torsionally stiff coupling, suitable for use in arduous working conditions.

Coupling capacity

- Maximum power @ 100RPM: 90kW
- Maximum torque: 8595Nm

Features and benefits

- Torsionally stiff for use as a positive drive connection.
- Easy installation for ease of maintenance
- Misalignment capabilities allowing flexibility in installation.
- Hardened teeth giving long life with high torque capacity.

- All metal coupling for use in hostile environments.
- Taper bush bores available for ease of maintenance.
- Easy removal of chain for high speed disconnection of driven and driving machines.
- Precision moulded plastic cover with seals for lubrication retention and dust protection.

Standard range comprises

- Shaft to Shaft
- Taper Bush or Parallel Bored

Applications

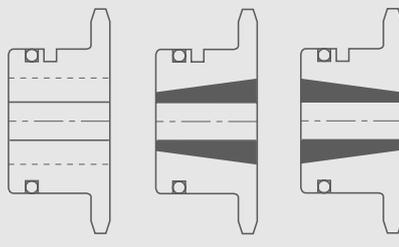
- Fans
- Feeders
- Kiln Dryers
- Line Shafts
- Pump Drives

Construction details

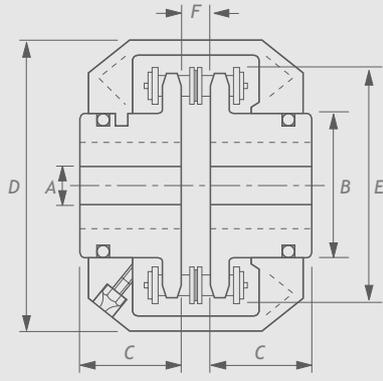
Hardened Steel Sprockets

Renold Duplex Chain

Moulded Cover



Type B Type F Type H



Ordering code

C 63 # # #

Chainflex ————

Size ————

Half body type ————

B - Plain bore

F - Taper bush

H - Taper bush

Supplied with or without cover

K - With cover

R - Rubber/fabric

Half body type

B - Plain bore

F - Taper bush

H - Taper bush

Max angular misalignment 1°

Coupling size with cover	Power/100rpm kW	Torque nominal Nm	Speed max rpm	Type B		Type F & H			Dimensions						Offset Max mm	End float mm
				Bore		Bush size	Bore		B mm	C mm	D mm	E mm	F mm	Mass kg		
				Max	Min		Max	Min								
C28BB K	0.55	52.5	3500	25	12	N/A	-	-	42	21	72	62	3	0.5	0.25	0.7
C33BB K	1	95.5	3000	30	12	N/A	-	-	50	25	83	74	5.1	1.0	0.25	1.0
C43 # # K	2.25	215	2250	40	14	TB1008	28	9	59	32	108	99	6.9	2.1	0.25	1.3
C63 # # K	7.5	716	1500	60	19	TB1615	42	14	91	51	159	148	8.9	7.1	0.30	2.0
C81 # # K	17.5	1671	1200	80	24	TB2525	60	19	117	63	206	197	16.2	16	0.38	2.5
C101BB K	33.5	3200	960	100	32	N/A	-	-	144	76	258	245	18.8	30	0.38	3.3
C122BB K	60	5730	750	130	50	N/A	-	-	182	101	311	295	25.1	61	0.50	3.8
C140BB K	90	8595	700	140	55	N/A	-	-	195	114	357	343	31.2	85	0.50	4.6

Component Spares

With cover		Without cover		Cover	Half body pilot bored	Half body taper bored F type	Half body taper bored H type	Chain with connectors
Coupling number	Product number	Coupling number	Product number					
C28BBK	642602	C28BB	642802	616602	642080	-	-	114500/96620
C33BBK	642603	C33BB	642803	616603	642081	-	-	114038/96620
C43BBK	642604	C43BB	642804	616604	642082	-	-	114046/96620
C43FFK	642604/77	C43FF	642804/77	616604	-	642082/77	642082/88	114046/96620
C63BBK	642606	C63BB	642806	616606	642084	-	-	114066/96620
C63FFK	642606/77	C63FF	642806/77	616606	-	642084/77	642084/88	114066/96620
C81BBK	642608	C81BB	642808	616608	642086	-	-	114088/96620
C81FFK	642608/77	C81FF	642808/77	616608	-	642086/77	642086/88	114088/96620
C101BBK	642610	C101BB	642810	616610	642088	-	-	114106/96620
C122BBK	642612	C122BB	642812	616612	642090	-	-	114127/96620
C140BBK	642614	C140BB	642814	616614	642092	-	-	114147/96620

The best range of solution chain products available anywhere



RENOLD **Synergy**™

- High performance
- Superior wear life
- Outstanding fatigue resistance



RENOLD **Syno**™

- Maintenance free
- Self-lubricating chain
- Food industry-approved lubricant



RENOLD

- Best premium chain
- Leading performance
- Solid bush / solid roller / end softened pin



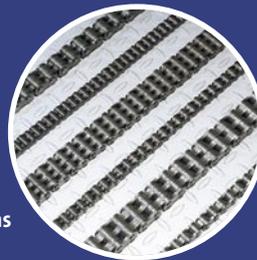
Hydro-Service™

- Superior corrosion resistant coating
- Alternative choice to stainless steel chain
- Will not chip or peel
- Hexavalent chrome-free



Steel Pin Bush Roller Chain

- Manufactured to international stds
- Full range of pitch alternatives
- Breaking loads 13 to 900 kN as std
- Attachments to suit varied applications



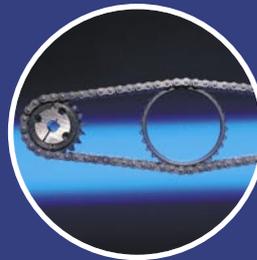
Leaf Chain

- Comprehensive ranges used worldwide for safety critical lifting applications
- 100 years experience in developing and maintaining lifting chain



Steel Knuckle Chain

- Heavy duty, detachable elevator chains
- Integral K type attachments
- Breaking loads from 642kN to 1724kN
- Sealed joint to extend chain life



Roll-Ring™

- Revolutionary chain tensioner
- Installed in seconds and self adjusting
- Maintenance free
- Also acts as noise damper



Customised Engineering Chain

- Wide range to suit specialised applications using high specification materials and treatment processes
- Designed in close collaboration with customer



Smartlink™

- Load monitoring technology
- Technical reports & data logging

RENOLD
Superior Chain Technology

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