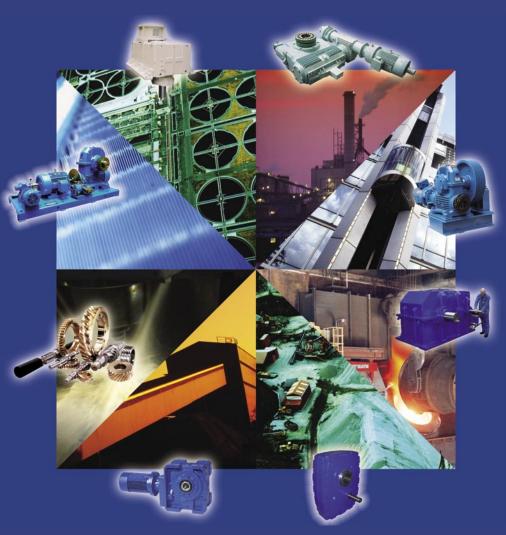
Tyreflex Couplings





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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The **RENOLD** Collection

















The **RENOLD** Collection







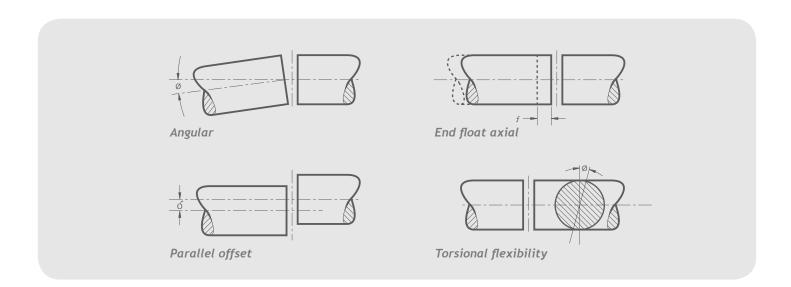








Coupling Selection Guide



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

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

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

- 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 $Ks = K \times fD \times fS$
- 6. Equivalent power at 100 RPM = $\frac{\text{Ks x } 100}{\text{RPM}}$
- 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.

Load Classification by Application

āble 1		Dry dock cranes	(2)	Planer feed chains	W	Presses	N
Agitators		Main hoist	(2)	Planer floor chains	M	Pulp machine reel	Ν
	S	Auxiliary hoist	(2)	Planer tilting hoist	М	Stock chest	Ν
Pure liquids		Boom, luffing	(2)	Re-saw merry-go-round conveyor	M	Suction roll	Ν
Liquids and solids	W	Rotating, swing or slew	(3)	Roll cases	Н	Washers and thickeners	٨
iquids - variable density	М	Tracking, drive wheels	(4)	Slab conveyor	Н	Winders	Ν
Blowers		Elevators		Small waste conveyor-belt	S	Printing presses	*
Centrifugal	S	Bucket - uniform load	S	Small waste conveyor-chain	М	Pullers	
Lobe	M	Bucket - heavy load	M	Sorting table	М		-
Vane	S	•	S	Tipple hoist conveyor	M	Barge haul	H
		Bucket - continuous		Tipple hoist drive	M	Pumps	
Brewing and distilling		Centrifugal discharge	S		M	Centrifugal	S
Bottling machinery	S	Escalators	S	Transfer conveyors		Proportioning	Ν
Brew kettles - continuous duty	S	Freight	М	Transfer rolls	W	Reciprocating	
Cookers - continuous duty	S	Gravity discharge	S	Tray drive	M	single acting: 3 or more cylinders	Ν
Mash tubs - continuous duty	S	Man lifts	*	Trimmer feed	M	double acting: 2 or more cylinders	٨
Scale hopper - frequent starts	M	Passenger	*	Waste conveyor	M	single acting: 1 or 2 cylinders	*
Can filling machines	S	Extruders (plastic)		Machine tools			4
<u> </u>		Film	S	Bending roll	M	double acting: single cylinder	
Cane knives (1)	М		S	Punch press - gear driven	Н	Rotary - gear type	5
Car dumpers	Н	Sheet			*	Rotary - lobe, vane	S
Car pullers	М	Coating	S	Notching press - belt drive		Rubber and plastics industries	
Clarifiers	S	Rods	S	Plate planners	Н	Crackers (1)	F
		Tubing	S	Tapping machine	Н	Laboratory equipment	N
Classifiers	М	Blow moulders	M	Other machine tools		Mixed mills (1)	,,
Clay working machinery		Pre-plasticiers	M	Main drives	M		Λ
Brick press	Н	Fans		Auxiliary drives	S	Refiners (1)	
Briguette machine	H	Centrifugal	S	Metal mills		Rubber calenders (1)	٨
Clay working machinery	M		3	Drawn bench carriage and		Rubber mill, 2 on line (1)	N
Pug mill	M	Cooling towers	*	main drive	AA	Rubber mill, 3 on line (1)	S
	W	Induced draft			M	Sheeter (1)	Ν
Compressors		Forced draft	*	Pinch, dryer and scrubber	*	Tyre building machines	*
Centrifugal	S	Induced draft	M	rolls, reversing		Tyre and tube press openers	*
Lobe	M	Large, mine etc.	M	Slitters	M	Tubers and strainers (1)	Ν
Reciprocating - multi-cylinder	M	Large, industrial	M	Table conveyors nonreversing		Warming mills (1)	N
leciprocating - single cylinder	Н	Light, small diameter	S	group drives	M		
Conveyors - uniformly loaded or fo		Feeders		Individual drives	Н	Sand muller	٨
				Reversing	*	Screens	
Apron	S	Apron	W	Wire drawing and flattening machine	М	Air washing	S
Assembly	S	Belt	М	Wire winding machine	M	Rotary, stone or gravel	Ν
Belt	S	Disc	S		741	Travelling water intake	S
Bucket	S	Reciprocating	Н	Mills, rotary type		Sewage disposal equipment	
Chain	S	Screw	M	Ball (1)	M	Bar screens	S
Flight	S	Food industry		Cement kilns (1)	M		
Oven	S	Beef slicer	М	Dryers and coolers (1)	M	Chemical feeders	S
Screw	S	Cereal cooker	S	Kilns other than cement	M	Collectors	S
Conveyors - heavy duty	_	Dough mixer	M	Pebble (1)	М	Dewatering screws	Ν
				Rod, plain & wedge bar (1)	M	Scum breakers	Ν
not uniformly fed		Meat grinder	М	Tumbling barrels	Н	Slow or rapid mixers	Ν
Apron	W	Generators - not welding	S	_	•••	Thickeners	Ν
Assembly	M	Hammer mills	Н	Mixers		Vacuum filters	Ν
Belt	M	Hoists		Concrete mixers continuous	M	Slab pushers	N
Bucket	M			Concrete mixers intermittent	М		*
Chain	M	Heavy duty	H	Constant density	S	Steering gear	
Flight	M	Medium duty	W	Variable density	M	Stokers	S
ive roll	*	Skip hoist	M	Oil industry		Sugar industry	
Oven	М	Laundry		Chillers	М		
		Washers - reversing	М		/V\	Cane knives (1)	N
Reciprocating	H	Tumblers	W	Oil well pumping		Crushers (1)	٨
Screw	W	The state of the s	///	Paraffin filter press	W	Mills (1)	٨
Shaker	Н	Line shafts		Rotary kilns	М	Textile industry	
Crane Drives - not dry dock		Driving processing equipment	W	Paper mills		Batchers	٨
Main hoists	S	Light	S	Agitators (mixers)	М	Calenders	٨
Bridge travel	*	Other line shafts	S	Barker - auxiliaries hydraulic	M	Cards	٨
Trolley travel	*	Lumber industry		Barker - mechanical	H	Dry cans	٨
•		Barkers, hydraulic, mechanical	М		H		
Crushers		Burner conveyor	M	Barking drum		Dryers	٨
Ore	Н			Beater and pulper	W	Dyeing machinery	٨
Stone	Н	Chain saw and drag saw	Н	Bleacher	S	Looms	٨
Sugar (1)	M	Chain transfer	H	Calenders	M	Mangles	٨
Dredges		Craneway transfer	Н	Calenders - super	Н	Nappers	٨
Cable reels	М	De-barking drum	Н	Converting machine except		Pads	٨
Conveyors	M	Edger feed	M	cutters, platers	M	Range drives	,
		Gang feed	М	Conveyors	S	Slashers	٨
Cutter head drives	Н	Green chain	M	Couch	М	Soapers	٨
lig drives	Н	Live rolls	H				
Nanoeuvring winches	M	Log deck		Cutters, platers	Н	Spinners	1
Pumps	M		H	Cylinders	W	Tenter frames	
Screen drive	Н	Log haul - incline	H	Dryers	M	Washers	٨
Stackers	M	Log haul - well type	Н	Fell stretcher	M	Winders	٨
Jtility winches	M	Log turning device	Н	Fell whipper	Н	Windlass	4
service trinicines	.,,,	- Main log conveyor	Н	Jordans	М		_
		main tog conveyor		J01 uaris			

Key

S = Steady (1) = Select on 24 hours per day service factor only.

= Steady (1) = Select on 24 hours per day service factor only.

1 = Medium Impulsive (2) = Use service factor of 1.00 for any duration of service.

H = Highly Impulsive (3) = Use service factor of 1.25 for any duration of service.

* = Refer to Renold

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

Table 3 Factor for Starts/Hour(fs)

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:-

$$Ks = K \times f_D \times fS$$

= 7.5 x 1.5 x 1.2
= 13.5 kW

Equivalent power at 100 RPM =
$$\frac{\text{Ks x } 100}{\text{RPM}}$$

13.5 x 100 1440

= 0.9375kW @ 100RPM

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



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.

Key Stress

- 1. Permissible key stress = 70N/mm²
- 2. Nominal torque $T_{KM} = K \times 9550 / RPM Nm$
- 3. Force at key $F = T_{KM} / r$
- 4. Shaft Rad r. metres
- 5. Key area A = J x HUB length mm (Obtain from relevant catalogue page).
- 6. Key stress $fk = F/A N/mm^2$
- 7. If resultant stress is less than 70 N/mm² key stress is acceptable.

If resultant fk is greater than 70, consider either two keyways or extending hub length.

8. Example:

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

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

F = 49.7/0.0275 = 1741N

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

fk = 1741/720 = N/mm2

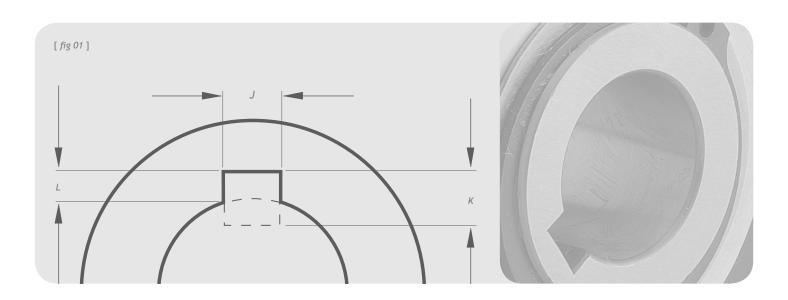
Selection is therefore good.

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



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

Sha	ıft 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

,,											
Sha	ıft 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	0.112							
1.25	1.50	0.375	0.250	0.108							
1.50	1.75	0.437	0.312	0.135							
1.75	2.00	0.500	0.312	0.131							
2.00	2.50	0.625	0.437	0.185							
2.50	3.00	0.750	0.500	0.209							
3.00	3.50	0.875	0.625	0.264							
3.50	4.00	1.000	0.750	0.318							
4.00	5.00	1.250	0.875	0.366							
5.00	6.00	1.500	1.000	0.412							

Keyway dimensions [fig 01]

Parallel keyways are supplied unless customer states otherwise.

Tyreflex



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 reengineering.

- 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

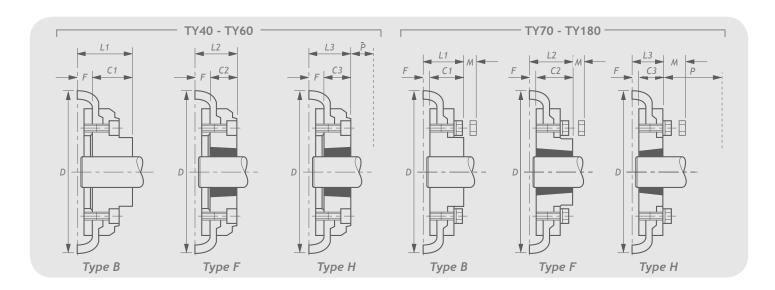


Can be certified for use in potentially explosive atmospheres containing gas or dust, according to ATEX directive 94/9/EC.

The couplings are classified for equipment group II, categories 2 and 3.

Contact Renold for further details.

Tyreflex



Coupling	Power	Torque	Speed	Тур	е В		Type F			Type H		Type H Max misalignn			alignment	End	Torsional
size	/100rpm	-	max	Вс	re	Bush	Вс	re	Bush	Вс	re		Angular	float	stiffness Nm°		
	kW	Nm	rpm	Max	Min	size	Max	Min	size	Max	Min	Offset mm	deg	mm	at 20°C		
TY40 # #	0.26	25	4500	30	12	TB1008	25	9	TB1008	25	9	1.1	4	±1.3	6		
TY50 # #	0.69	66	4500	38	15	TB1210	32	11	TB1210	32	11	1.3	4	±1.7	12.5		
TY60 # #	1.33	127	4000	45	18	TB1610	42	14	TB1610	42	14	1.6	4	±2.0	32		
TY70 # #	2.62	250	3600	50	22	TB2012	50	14	TB1610	42	14	1.9	4	±2.3	60		
TY80 # #	3.93	375	3100	60	25	TB2517	60	16	TB2012	50	14	2.1	4	±2.6	63		
TY90 # #	5.24	500	3000	70	28	TB2517	60	16	TB2517	60	16	2.4	4	±3.0	91		
TY100 # #	7.07	675	2600	80	32	TB3020	75	25	TB2517	60	16	2.6	4	±3.3	126		
TY110 # #	9.2	875	2300	95	30	TB3020	75	25	TB3020	75	25	2.9	4	±3.7	178		
TY120 # #	13.9	1300	2050	110	38	TB3525	100	35	TB3020	75	25	3.2	4	±4.0	296		
TY140 # #	24.3	2320	1800	130	75	TB3525	100	35	TB3525	100	35	3.7	4	±4.6	470		
TY160 # #	39.4	3770	1600	140	85	TB4030	100	40	TB4030	100	40	4.2	4	±5.3	776		
TY180 # #	65.8	6270	1500	150	85	TB4535	125	55	TB4535	125	55	4.8	4	±6.0	1370		

Coupling		Dimensions									Type B	Type F	Type H
size	C1 mm	C2 mm	C3 mm	D mm	F mm	L1 mm	L2 mm	L3 mm	M mm	P mm	mass* kg	mass* kg	mass* kg
TY40 # #	22	22	22	104	11	33.5	33.5	33.5	N/A	29	1.05	1.05	1.05
TY50 # #	32	25	25	133	12.5	45	38	38	N/A	38	1.5	1.5	1.5
TY60 # #	38	25	25	165	16.5	55	42	42	N/A	38	2.35	2.35	2.35
TY70 # #	35	32	25	187	11.5	47	44	42	13	38	3.45	3.45	3.45
TY80 # #	42	45	32	211	12.5	55	58	45	16	42	5	5	5
TY90 # #	49	45	45	235	13.5	63	59	59	16	48	7.25	7.25	7.25
TY100 # #	56	51	45	254	13.5	70	65	59	16	48	10	10	10
TY110 # #	63	51	51	279	12.5	76	63.5	63.5	16	55	12.5	11.7	11.7
TY120 # #	70	65	51	314	14.5	84.5	78.5	65.5	16	67	16.9	16.5	15.9
TY140 # #	94	65	65	359	16	110.5	81	81	17	67	22.2	22.3	22.3
TY160 # #	102	77	77	402	15	117	92	92	19	80	35.8	33.5	32.5
TY180 # #	114	89	89	470	23	137	112	112	19	89	49.1	42.2	42.2

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.

Tyreflex



Component Spares

Coupli size	_	Tyre flexib	le element		/ unbored be B	_	aper bored be F		aper bored e H
		Catalogue no	Product no	Catalogue no	Product no	Catalogue no	Product no	Catalogue no	Product no
TY40 #	# #	TY40	7131104/1	TY40 B	7131104/HB02	TY40 F	7131104/HB77	TY40 H	7131104/HB88
TY50 #	# #	TY50	7131105/1	TY50 B	7131105/HB02	TY50 F	7131105/HB77	TY50 H	7131105/HB88
TY60 #	# #	TY60	7131106/1	TY60 B	7131106/HB02	TY60 F	7131106/HB77	TY60 H	7131106/HB88
TY70 #	# #	TY70	7132107/1	TY70 B	7132107/HB02	TY70 F	713107/HB77	TY70 H	7132107/HB88
TY80 #	##	TY80	7132108/1	TY80 B	7132108/HB02	TY80 F	7132108/HB77	TY80 H	7132108/HB88
TY90 #	##	TY90	7132109/1	TY90 B	7132109/HB02	TY90 F	7132109/HB77	TY90 H	7132109/HB88
TY100	##	TY100	7132110/1	TY100 B	7132110/HB02	TY100 F	7132110/HB77	TY100 H	7132110/HB88
TY110	##	TY110	7132111/1	TY110 B	7132111/HB02	TY110 F	7132111/HB77	TY110 H	7132111/HB88
TY120	##	TY120	7132112/1	TY120 B	7132112/HB02	TY120 F	7132112/HB77	TY120 H	7132112/HB88
TY140	##	TY140	7132114/1	TY140 B	7132114/HB02	TY140 F	7132114/HB77	TY140 H	7132114/HB88
TY160	##	TY160	7132116/1	TY160 B	7132116/HB02	TY160 F	7132116/HB77	TY160 H	7132116/HB88
TY180	##	TY180	7132118/1	TY180 B	7132118/HB02	TY180 F	7132118/HB77	TY180 H	7132118/HB88



The best range of solution chain products available anywhere



Synergy

- High performance
- · Superior wear life
- Outstanding fatigue resistance



Syno^{*}

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



RENOLD

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



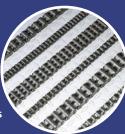
Hydro-Service[™]

- 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



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