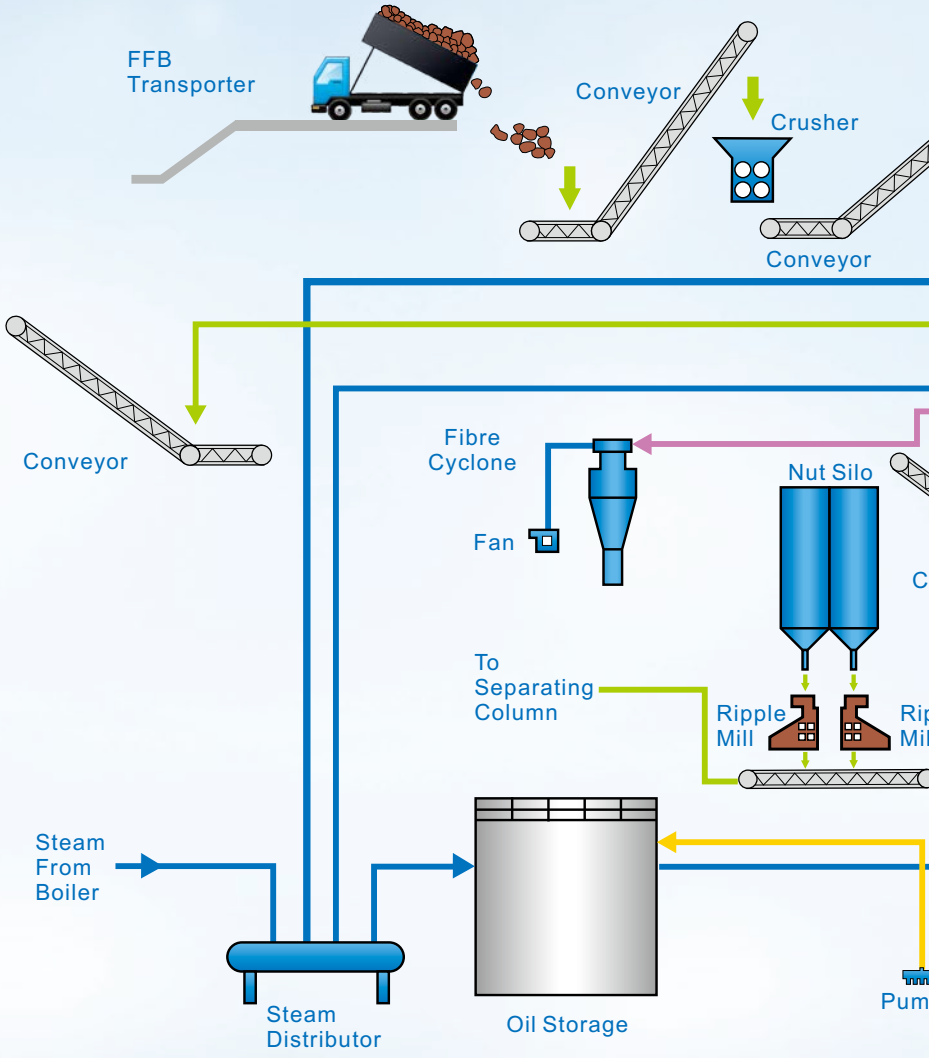
CHALLENGE®
POWER TRANSMISSION

Palm Oil Chain

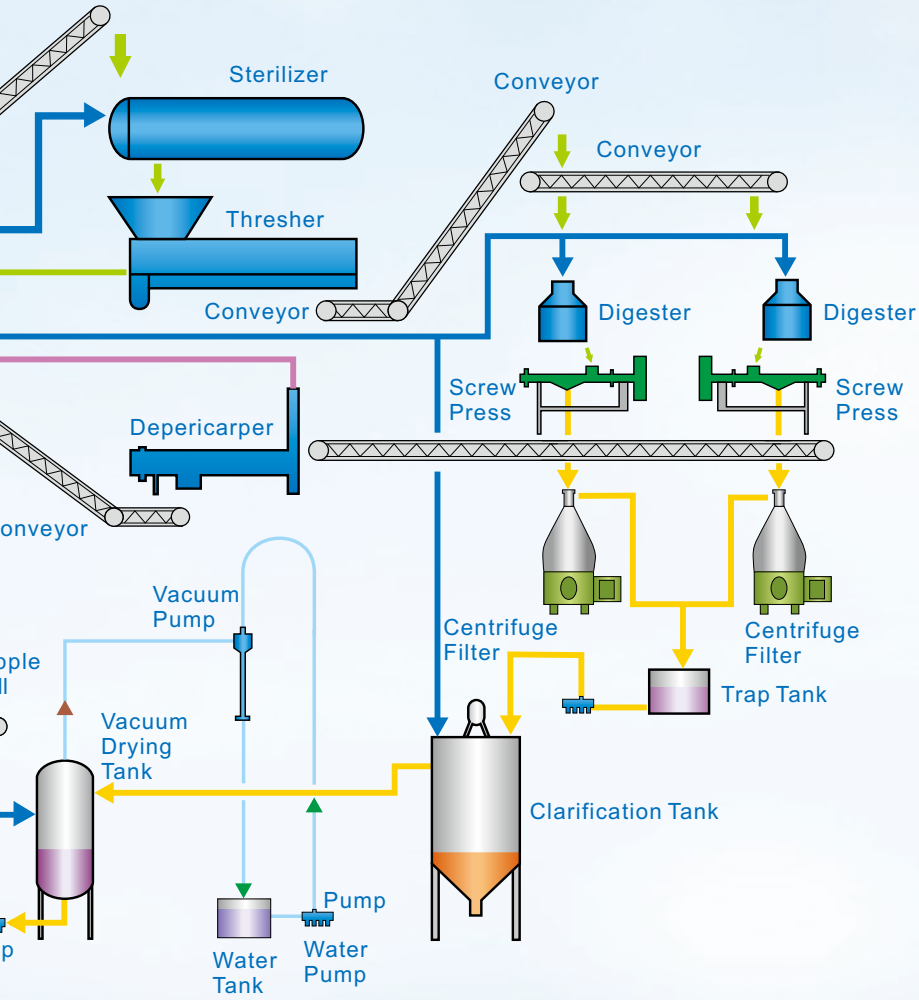
ENGLISH
ISSUE 1

www.challengept.com

Palm Oil Production



Process Drawing



Challenge Engineering Pedigree

The Challenge brand represents almost four decades of development, manufacture and refinement of the most comprehensive range of quality power transmission and engineered products available from any single source.

Challenge's global network of Regional Distribution Centres act as master importers; supplying Trade and OEMs with quality products on a wholesale distribution basis. End users are then served by their local sub-distributor.

Quality, value and service are the foundations of the Challenge group; we have unparalleled expertise in the manufacture and distribution of engineering products complying with all international standards, tolerances and technical requirements.

All Challenge manufacturing facilities are staffed by experienced engineers who are also able to offer custom made machine parts, ranging from raw castings to the finished product. Our products are branded and bar coded using the latest technology for ease of replacement, order, stock and dispatch.


Roller Chain


Standard Conveyor Chain

Classical & Curved Tooth Timing Belts


Chain Shaft Couplings


Slide Rail Electric Motor Mounts


X Series Spin Riveted Roller Chain


Bespoke Conveyor Chain


Synchronous Timing Pulleys


Taper Bushes


Torque Limiters


Double Pitch Roller Chain


Cement Chain


Taper Bored V Belt Pulleys


Clamping Elements


Ball Bearings


Leaf Chain


Sugar Chain


FFX Tyre Shaft Couplings


Bolt On Hubs


Taper Roller Bearings


Agricultural Chain


British Standard Sprockets


HRC Shaft Couplings


Weld On Hubs


Plummer Blocks


Engineered Bush Chain


ANSI Sprockets


RPX Shaft Couplings


Taper Bush Adaptors


Pillow Block Bearing Units


Cranked Link Drive Chain


Conveyor Sprockets


NPX Shaft Couplings


Shaft Mounted Speed Reducers


4 Hole Flange Bearing Units


Welded Steel Chain


Classical & Wedge V Belts


CNM Shaft Couplings


Worm Gear Units & Geared Motors


2 Hole Flange Bearing Units

Drop Forged Chain

Cogged Raw Edge V Belts

Jaw Shaft Couplings

Three & Single Phase Electric Motors

Take-Up Bearing Units

The Benefits of Challenge Spin Riveted Conveyor Chain

- **Material** – High quality steels used throughout

- **Link plates cropped from high carbon cold drawn steel**

  To avoid internal stresses associated with guillotined steel, Challenge produces all plates from high tolerance, on size, cold drawn steel bars resulting in a plate better able to withstand fatigue and shock loads.

- **Bushes with location shoulders and interference fit**

  For precise assembly; control on inner width and prevention of bush rotation. Bush shoulder length extended to form clearance between inner and outer plates and provide uniform lubrication; increased strength and life. This reduces the possibility of chain seizure.

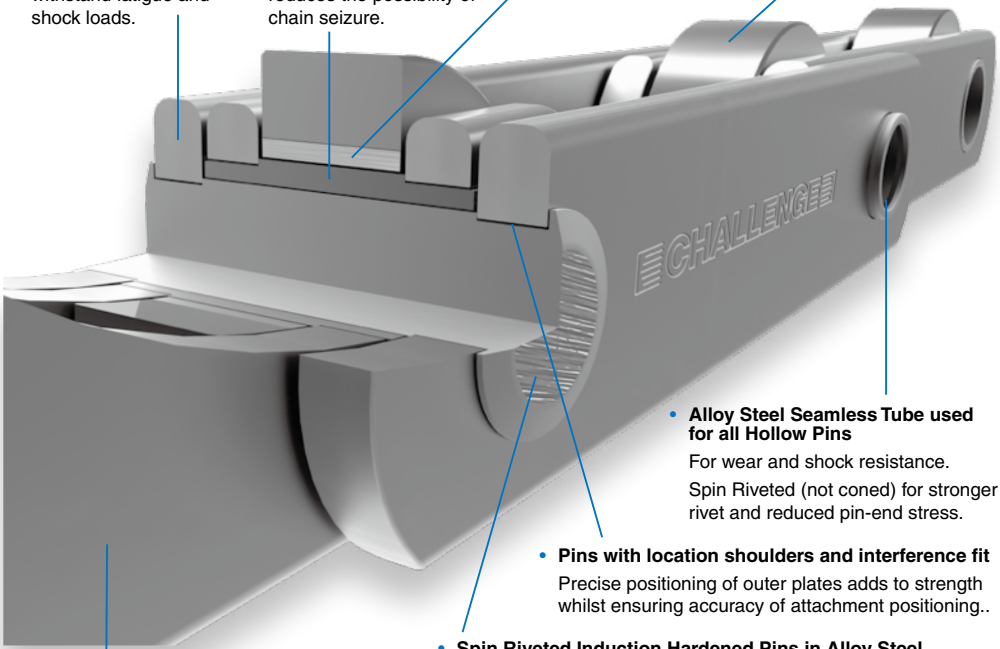
- **Case Hardened Alloy steel bushes precision machined from seamless tube**

  Ensuring minimum distortion and superior concentricity.

- **Optional Stainless Steel or Nitride treated liner bushes**

- **Hardened Rollers with grinding**

  Grinding the outer diameter gives excellent wear resistance and good load carrying qualities plus reduced wear on sprockets and better visual result.



- **Alloy Steel Seamless Tube used for all Hollow Pins**

  For wear and shock resistance.

  Spin Riveted (not coned) for stronger rivet and reduced pin-end stress.

- **Pins with location shoulders and interference fit**

  Precise positioning of outer plates adds to strength whilst ensuring accuracy of attachment positioning..

- **Spin Riveted Induction Hardened Pins in Alloy Steel**

  For optimum life and the strongest rivet in any standard chain..

- **Shot peened to produce a strong surface and reduce fatigue**

- **Holes precision punched on dedicated progression tooling**

  Guarantees consistently high tolerance pitch control and strong, fatigue resistant chain.

- **Challenge has invested heavily in CNC machinery for optimum batch component conformity.**

- **Attachment and options**

  CNC welded and integral attachments, special bushes, bearings. Zinc and Nickel plated parts, molykoted pins, bushes, and rollers. Plastic rollers, flanged rollers, hardened plates, stainless parts, liner bushes etc. All specials produced in highest quality - fast turnaround.

- **Attachment plates jig assembled maintains position and squareness.**

Conveyor Chain Manufacturing

OBIT is our 5500m^2 special chain production facility that was established in 2012 and is based in Ningbo, China where Challenge employs more than 120 staff between our OBIT factory and separate 5000m2 warehousing and offices building. Experienced UK managers and engineers are permanently stationed at our facilities and our ISO 9001 certification is conducted every year by European auditors.

Key machinery has been imported from Europe, along with best working practices and the implemented ISO 9001 systems. The factory supplies standard and bespoke conveyor chains into the EU market through three wholly owned European subsidiaries, along with 'white labelling' for a variety of brands including well known German OEM's and European chain manufacturers. The OBIT factory processes more than 350 tons of steel per month into high quality conveyor chains and ships these chains to customers around the world.

We work hard so that your conveyor chain can too, which is why we offer premium manufacturing as standard. All of our chains are manufactured using the very latest manufacturing technology and techniques. With fully punched and shot peened link plates, CNC machined components, precision component fits, in-house heat treatment, CNC welding, fully ground round parts and heavy duty spin riveting, our standard is designed and proven to outperform other leading brands.

In order to offer an un-interrupted supply of conveyor chains to our global customer base we keep large stocks of plain standard chains throughout our worldwide warehousing and distribution network. OBIT also has large stocks of M/FV series metric & British Standard series components, enabling us to manufacture attachment chains within a comparatively short time.

While offering standard conveyor chains and sprockets, a large part of our manufacturing time is used in the development and supply of special and bespoke conveyor chain. Examples include G4 attachment elevator chains, self-supporting clinker tray conveyor chain, palm oil & sugar chains, coal and clay reclaimer chains and cement chains to name but a few.

Chain Wear and Tensile Strength

As with all moving mechanical parts, wear on components will occur where there is contact between them. In conveyor chain, wear is measured by the amount of elongation over a given number of pitches where this should not exceed a 2% increase from the chains initial length, over the given number of pitches, before it should be replaced. As wear in conveyor chain is a measurement of the increase in length, it follows that the wear occurs between the chains pin and bush whenever the chain articulates, such as wrapping around a sprocket.

There are numerous factors that can increase the wear life of a chain. The largest contributing factors to an increase in chain wear life are;

- Correct lubrication of the chain. This reduces the friction between the pin and the bush.

- Replacement of sprockets whenever a new chain is fitted. Worn sprockets already have an elongated pitch and putting a new chain onto worn sprockets will prematurely wear the chain – the chain will elongate to fit the worn sprockets. This is an important but often overlooked factor in chain wear life.

Conveyor chain manufacturers can also assist with increasing chain life and decreasing chain wear by;

- Grinding components after heat treatment. This ensures a smooth mating surface and decreasing surface friction. This also reduces initial run-in elongation.

- Ensuring minimal component clearances. This increases mating face area, reduces bearing pressures and helps prevent contamination from external sources.

- Controlling component hardness. Strict tolerances on component surface hardness ensures that one component is not prematurely worn by the other, which helps evenly distribute wear over an extended period of time. This is best controlled by having similar hardness levels on mating parts e.g. pin + bush or bush + roller.

- Machined bushes. Using precision machined bushes over those that are rolled or curled ensures that there is minimal movement in heat treatment due to distribution of the hoop stress, but also removes the joining 'lip' which can cause premature wear to both the roller and the chain pin. Machined bushes are more expensive, but this extra expense is frequently offset by the increase in chain wear life which reduces the overall cost of ownership.

It should be noted that some chain manufacturers tend to discuss breaking load rather than wear resistance. Breaking load is only relevant during the original machine design stages. Due to the large safety factors involved, increasing the breaking load can actually be detrimental from an end user point of view, as the increase in breaking load is often achieved by reducing the size of the pins and bushes, which increases the bearing pressures and reduces the chains wear life.

Every palm oil chain manufactured by Challenge is specifically designed to maximise the chains operational wear life whilst meeting the breaking load specified by the chain design.

Special Chain Manufacturing

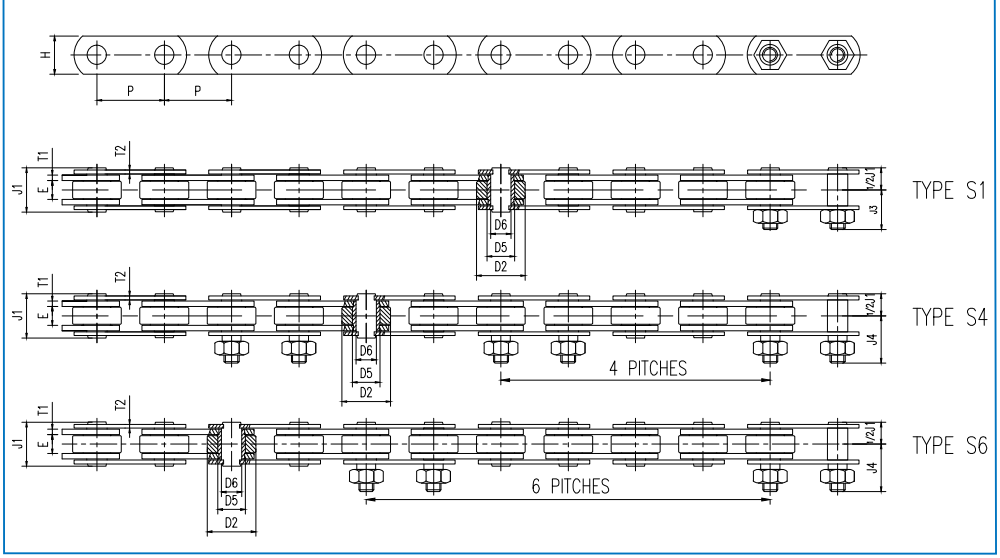
Challenge are well known for manufacturing special conveyor chains for numerous industries all around the world. Chains supplied can range from small extended pin transmission chains through to power plant hot ash conveyors and train carriage bulk un-loaders. By running our 100% wholly owned factory in China, we are able to independently test all materials that are delivered, control tight machining tolerances and process much of the heat treatments in house.

Our enviable quality control and UK certified ISO 9001:2015 has put us in a strong position to not only supply end users, but to also supply OEM branded chains mainly throughout Europe from our UK and German branches.

Along with custom built manufacturing of special chains, our factory also holds a large number of components for standard chains in the British Standard, Metric FV and Metric M series. This enables us to manufacture plain and attachment conveyor chains with a relatively short lead time.

BS Conveyor Chain (BS 4116 Part 4)

Solid Pin



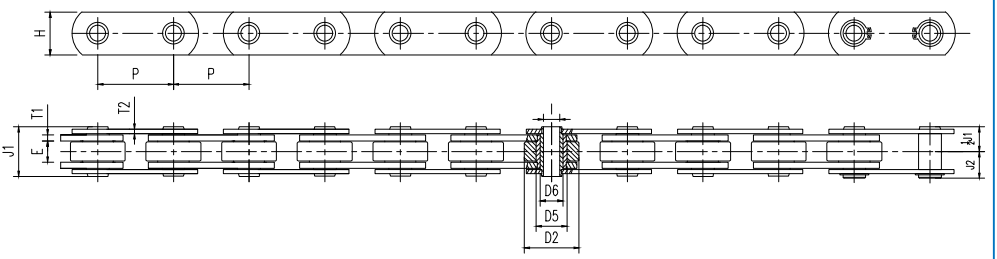
Solid Pin

BS Chain Range	Chain number	Series	Chain type	Pitch Inches P	Pitch mm P	E	H	T1	T2	J1	J3	J4	D2	D5	D6	Minimum breaking load lbf	Minimum breaking load kN	Weight kg/m
Z100	RCC-Z100C101.6	Standard	S1	4.0	101.6	19.16	38.1	5.1	3.8	46.1	38.3	-	47.63	25.4	19	20,000	89	6.5
"	RCC-Z100C101.6*	Extra	"	"	"	"	"	"	"	"	"	-	"	"	"	27,000	120	"
"	RCC-Z120C101.6	Extra Plus	"	"	"	"	"	"	5.1	48.5	"	-	"	"	"	32,000	142	7.0
Z100	RCC-Z100C101.6-EP4	Standard	S4	4.0	101.6	19.16	38.1	5.1	3.8	46.1	38.3	47	25.4	25.4	19	20,000	89	6.7
"	RCC-Z100C101.6-EP4*	Extra	"	"	"	"	"	"	"	"	"	"	"	"	"	27,000	120	"
"	RCC-Z120C101.6-EP4	Extra Plus	"	"	"	"	"	"	5.1	48.5	"	48	"	"	"	32,000	142	7.2
Z100	RCC-Z100C101.6-EP6	Standard	S6	4.0	101.6	19.16	38.1	5.1	3.8	46.1	38.3	47	25.4	25.4	19	20,000	89	6.6
"	RCC-Z100C101.6-EP6*	Extra	"	"	"	"	"	"	"	"	"	"	"	"	"	27,000	120	"
"	RCC-Z120C101.6-EP6	Extra Plus	"	"	"	"	"	"	5.1	48.5	"	"	"	"	"	32,000	142	7.1
Z100	RCC-Z100C152.4	Standard	S1	6.0	152.4	19.16	38.1	5.1	3.8	46.1	38.3	-	25.4	25.4	19	20,000	89	5.3
"	RCC-Z100C152.4*	Extra	"	"	"	"	"	"	"	"	"	-	"	"	"	27,000	120	"
"	RCC-Z120C152.4	Extra Plus	"	"	"	"	"	"	5.1	48.5	"	-	"	"	"	32,000	142	5.6
Z160	RCC-Z160C101.6	Standard	S1	4.0	101.6	25.5	50.8	7.1	5.1	59.13	48.9	-	66.7	34.9	26.9	38,000	169	14.3
"	RCC-Z260C101.6	Extra	"	"	"	"	"	"	"	"	"	-	"	"	"	60,000	266	"
"	RCC-Z460C101.6	Extra Plus	"	"	"	"	"	10	10	"	"	-	"	"	"	100,000	445	18.7
Z160	RCC-Z160C152.4	Standard	S1	6.0	152.4	25.5	50.8	7.1	5.1	59.13	48.9	-	66.7	34.9	26.9	38,000	169	11.3
"	RCC-Z260C152.4	Extra	"	"	"	"	"	"	"	"	"	-	"	"	"	60,000	266	"
"	RCC-Z460C152.4	Extra Plus	"	"	"	"	"	10	10	"	"	-	"	"	"	100,000	445	15.4
Z160	RCC-Z160C152.4-EP4	Standard	S4	6.0	152.4	25.5	50.8	7.1	5.1	59.13	48.9	63	66.7	34.9	26.9	38,000	169	11.7
"	RCC-Z260C152.4-EP4	Extra	"	"	"	"	"	"	"	"	"	"	"	"	"	60,000	266	"
"	RCC-Z460C152.4-EP4	Extra Plus	"	"	"	"	"	10	10	"	"	"	"	"	"	100,000	445	15.6
Z160	RCC-Z160C152.4-EP6	Standard	S6	6.0	152.4	25.5	50.8	7.1	5.1	59.13	48.9	63	66.7	34.9	26.9	38,000	169	11.5
"	RCC-Z260C152.4-EP6	Extra	"	"	"	"	"	"	"	"	"	"	"	"	"	60,000	266	"
"	RCC-Z460C152.4-EP6	Extra Plus	"	"	"	"	"	10	10	"	"	"	"	"	"	100,000	445	15.6
Z300	RCC-Z300C152.4	Standard	S1	6.0	152.4	38	65	10	8	82.5	60.3	-	88.9	41.3	31.75	75,000	334	24.3
"	RCC-Z500C152.4	Extra	"	"	"	"	"	"	"	"	"	-	"	"	"	90,000	400	"
"	RCC-Z500C152.4*	Extra Plus	"	"	"	"	"	"	"	"	"	-	"	"	"	120,000	534	"

All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

BS Conveyor Chain (BS 4116 Part 4)

Hollow Pin



Hollow Pin

BS Chain Range	Chain number	Series	Pitch Inches P	Pitch mm P	E	I	H	T1	T2	J1	J2	D2	D5	D6	Minimum breaking load lbf	Minimum breaking load kN	Weight kg/m
ZC60	RCC-ZC60C101.6	Standard	4.0	101.6	19.16	13.2	38.1	5.1	3.8	44.1	24.7	47.63	25.4	19	20,000	89	6.0
"	RCC-ZC60C101.6*	Extra Plus	"	"	"	"	"	"	"	"	"	"	"	"	27,000	120	"
ZC60	RCC-ZC60C152.4	Standard	6.0	152.4	19.16	13.2	38.1	5.1	3.8	44.1	24.7	47.63	25.4	19	20,000	89	4.9
"	RCC-ZC60C152.4*	Extra Plus	"	"	"	"	"	"	"	"	"	"	"	"	27,000	120	"
ZC150	RCC-ZC150C101.6	Standard	4.0	101.6	25.5	19.6	50.8	7.1	5.1	57.1	31.9	66.7	34.9	26.9	35,000	156	12.8
ZC220	RCC-ZC220C101.6	Extra	"	"	"	"	"	"	"	"	"	"	"	"	46,000	205	"
ZC220	RCC-ZC220C101.6*	Extra Plus	"	"	"	"	"	"	"	"	"	"	"	"	50,000	222	"
ZC150	RCC-ZC150C152.4	Standard	6.0	152.4	25.5	19.6	50.8	7.1	5.1	57.1	31.9	66.7	34.9	26.9	35,000	156	11.0
ZC220	RCC-ZC220C152.4	Extra	"	"	"	"	"	"	"	"	"	"	"	"	46,000	205	"
ZC220	RCC-ZC220C152.4*	Extra Plus	"	"	"	"	"	"	"	"	"	"	"	"	50,000	222	"

Standard and Special Attachments and Fittings

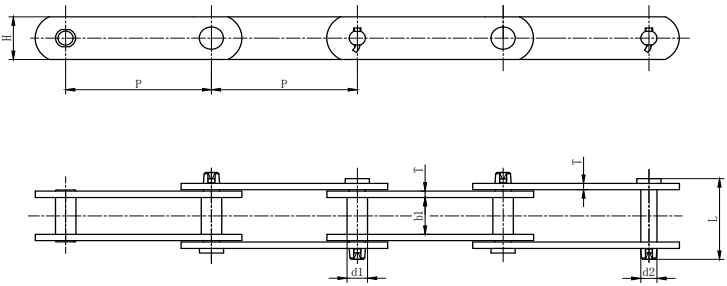
If the chain does not have hollow or extended pins, then an attachment of some kind is generally required to attach other equipment to the chain, such as buckets or slats.

Challenge offer a full range of standard welded and integral attachments, such as A, K, G, L, M and F types although we are also able to offer many special attachment types as well.

Along with our range of attachments, we can also offer other features such as welded pins, anti-backbend modifications, plastic or steel wear pads, side bow, top cover plates and numerous other features and fittings.

Engineered Steel Bush Chains

Engineered Steel Bush Chains



ANSI chain number	Challenge chain number	Pitch inches	Pitch mm	Bush diameter	Width between inner plates	Pin diameter	Pin length	Side plate height	Plate thickness	Average Tensile strength	Approx weight
		P	P	d1 max	b1 min	d2	L max	H	T	kN/bf	kg/m
S102B	S102B	4.00	101.60	25.4	54.1	15.88	111.3	38.10	9.70	176.00	10.40
S102B	S102B-C	4.00	101.60	25.4	54.0	15.88	108.2	40.00	10.00	210.00	11.00
S110	S110	6.00	152.40	32	54.1	15.88	111.3	38.10	9.70	176.00	9.80
S111	S111	4.76	120.90	36.6	66.8	19.05	131.2	50.80	9.70	235.40	15.90
S131	S131	3.08	78.11	32	33.5	15.88	90.5	38.10	9.70	176.00	11.60
S150	S150	6.05	153.67	44.7	84.3	25.4	164.6	63.50	12.70	416.00	25.70
S188	S188	2.61	66.27	22.4	26.9	12.7	68.6	28.40	6.40	112.20	5.60
S856	S856	6.00	152.40	44.4	76.2	25.4	154.9	63.50	12.70	401.50	25.00
S857	S857	6.00	152.40	44.4	76.2	25.4	154.9	82.60	12.70	475.20	32.00
S859	S859	6.00	152.40	60.4	95.3	31.75	188.5	101.60	16.00	759.00	55.90
S864	S864	7.00	177.80	60.4	95.3	31.75	188.5	101.60	16.00	759.00	51.80

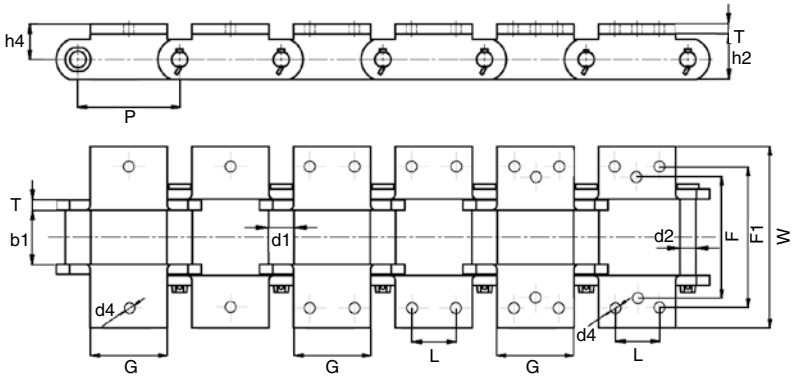
Challenge S102B-C Extra Plus

Many of our customers have asked us to improve upon the standard S102B that they have purchased from other suppliers. Although we still offer S102B in its standard form, over 90% of the S102B chain that we supply is to the Challenge Extra Plus standard which includes the following benefits;

- 40x10mm Heat Treated (Normalized) link plates, offering a 20% increase in breaking load to 210kn and a more uniform link plate material with increased toughness.
- Extended wear life which is achieved by carefully controlling our material quality and heat treatments. We also grind our round parts to ensure the strictest tolerances and best possible wear surfaces.
- Interchangeable with standard S102B for easy installation.
- Covered by our Lifetime Guarantee (as are all of our products).

S102B & S102B-C Attachments A1 & K1, A2 & K2, A3 & K3

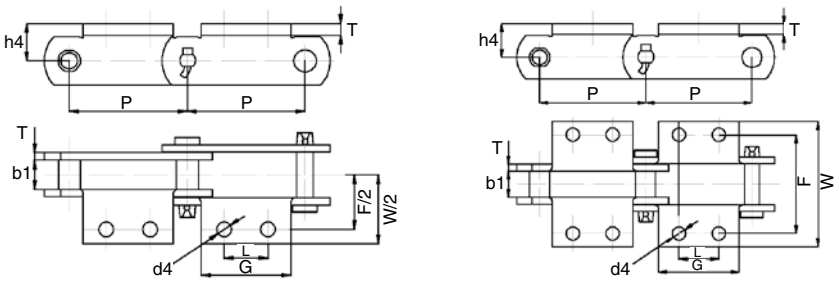
S102B & S102B-C Attachments A1 & K1, A2 & K2, A3 & K3



ANSI chain number	Challenge chain number	Pitch inches	Pitch mm	Hole distance	Attachment diameter						Plate thickness			
		P		L	G	F	F1	W max	h4	d4 min	T	h2	d1	d2
S102B/K1	S102B/K1	4.00	101.60	-	77.0	121.0	-	180.8	25.4	10.20	10.00	40.0	25.4	15.88
S102B/K2	S102B/K2	4.00	101.60	44.5	69.9	134.9	-	180.8	25.4	10.20	10.00	40.0	25.4	15.88
S102B/K3	S102B/K3	4.00	101.60	22.22	71.4	120.6	134.9	169.8	25.4	10.20	10.00	40.0	25.4	15.88

Engineered Steel Bush Chains Attachments A2 & K2

Engineered Steel Bush Chains Attachments A2 & K2

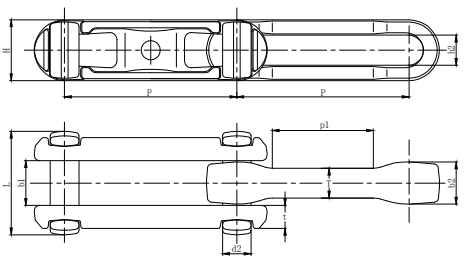


ANSI chain number	Challenge chain number	Pitch inches	Hole distance	Attachment diameter					Plate thickness
		P	L	G max	F	W max	h4	d4 min	T
S110	S110	6.00	44.50	89.6	134.9	180.8	25.4	10.20	9.70
S111	S111	4.76	58.70	92.7	158.8	210.8	38.1	13.50	9.70
S131	S131	3.08	38.10	73.9	104.6	157	25.4	13.50	9.70
S150	S150	6.05	69.90	108.7	190.5	249.4	47.8	13.50	12.70
S188	S188	2.61	31.80	54.6	106.4	131.6	20.6	8.60	6.40
S856	S856	6.00	63.50	103.1	184.2	241.3	47.8	16.80	12.70

 All dimensions in millimetres unless otherwise stated.

Rivetless Forged Chain

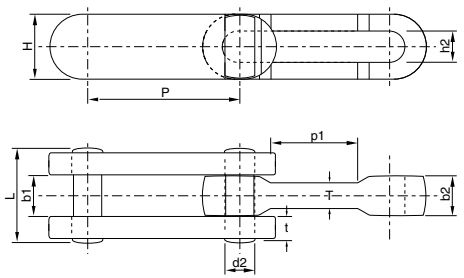
Rivetless Forged Chain



Chain number	Pitch mm P	Pin diameter d2	Pin length L	Center link gap h2 min	Chain height H max	Plate thickness t	Plate thickness T	Center link width b1	Ultimate tensile strength / kN Q min
X228	50.80	6.40	27.70	7.90	18.00	6.40	9.40	13.00	26.70
X348	76.20	12.40	43.90	13.50	27.90	10.20	13.00	20.10	97.90
X458	101.60	16.00	57.20	16.80	36.60	12.20	16.30	27.20	210.00
X458XP	101.60	16.00	57.20	16.80	36.60	12.20	16.30	27.20	255.00
468	102.40	19.05	84.10	22.35	47.80	10.40	28.70	42.93	391.00
X678	152.40	22.10	77.00	24.10	51.60	17.80	21.10	34.30	380.00
X678XP	152.40	22.10	77.00	24.10	51.60	17.80	21.10	34.30	450.00
698	152.40	28.70	95.25	31.75	65.00	14.20	25.40	41.40	650.00
698XP	152.40	28.70	95.25	31.75	65.00	14.20	25.40	41.40	720.00
998	229.40	28.70	95.30	31.75	67.60	14.20	25.40	42.93	578.00
9118	229.40	35.00	124.00	38.10	76.20	19.80	33.30	51.10	979.00

Forged Chain

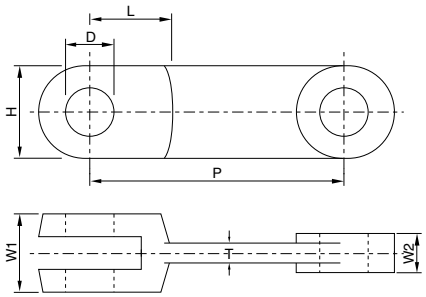
Forged Chain



Chain number	Pitch mm P	Pin diameter d2	Pin length L	Center link gap h2 min	Chain height H max	Plate thickness t	Plate thickness T	Center link width b1	Ultimate tensile strength / kN Q min
S348	76.68	12.70	44.45	20.57	28.70	12.70	14.22	8.89	3.58
S458	102.39	16.00	52.32	26.92	35.05	16.00	17.53	17.78	5.22
S468	102.39	19.05	74.68	42.93	50.80	28.70	22.35	29.78	11.78
S678	153.19	22.35	76.20	36.58	50.80	20.57	25.40	34.22	12.83
S698	153.19	28.70	82.55	41.40	63.50	25.40	31.75	48.00	17.45
S998	229.39	28.70	82.55	42.93	63.50	25.40	31.75	48.00	18.05
S9118	229.39	35.05	111.25	54.10	76.20	33.27	38.10	81.33	34.75

All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Drop Forged Chain Links



Chain number	Pitch mm P	H	W1	W2	T	L	D	*Weight kg	Min. UTS kN
102	102	36	28	12	7.6	32	14	0.44	150
142	142	50	42	20	11	46	25	1.26	300
142H	142	50	62	30	16.5	55	25	2.1	450
142T	142	50	62	30	16.5	55	25	2.1	600
200	200	60	62	28	20	58	25	3.2	500
216	216	72	58	25	18	60	35	4.6	582
260	260	75	70	31	20	79	32	5.65	700

* Weight including Pin and Circlip.

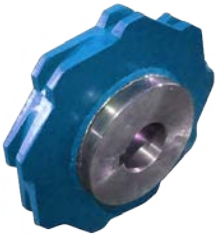
Nylon and welded steel flights available, eg:

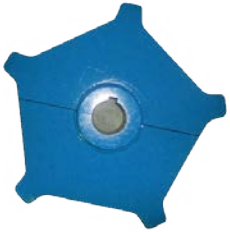
Square Bar Flight **Flat Bar Flight** **Paddle Flight**

U Flight **Closed U Flight** **Close U Flight with Filler Plates**

OO Flight **OO Flight with Filler Plates** **Return Cup Flights**

All types of sprocket available





 All dimensions in millimetres unless otherwise stated.

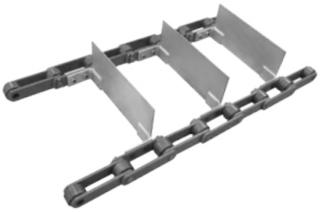
Just a few of the limitless options available:

6” pitch 09060 Sugar Chain w/ A42 attachment

160mm pitch M160 chain with special integral scraper attachment, sheradised plates and Molykote® round parts

250mm pitch coal reclaimer chain w/ gusseted integral A2 attachment

160mm pitch bolted furnace chain w/ welded A2 attachment



125mm pitch twin strand bolted scraper chain, pin and bush w/ molykote®, sheradised plates and galvanised scraper plate

FV180-B-125 w/ drilled integral scraper for feed mill

152.4mm pitch FU270 flow conveyor chain w/ welded scraper bars

152.4mm pitch bucket elevator chain w/ G4 attachment with square holes for captive bolts

200mm pitch limestone supply chain w/ gusseted integral A2 attachment

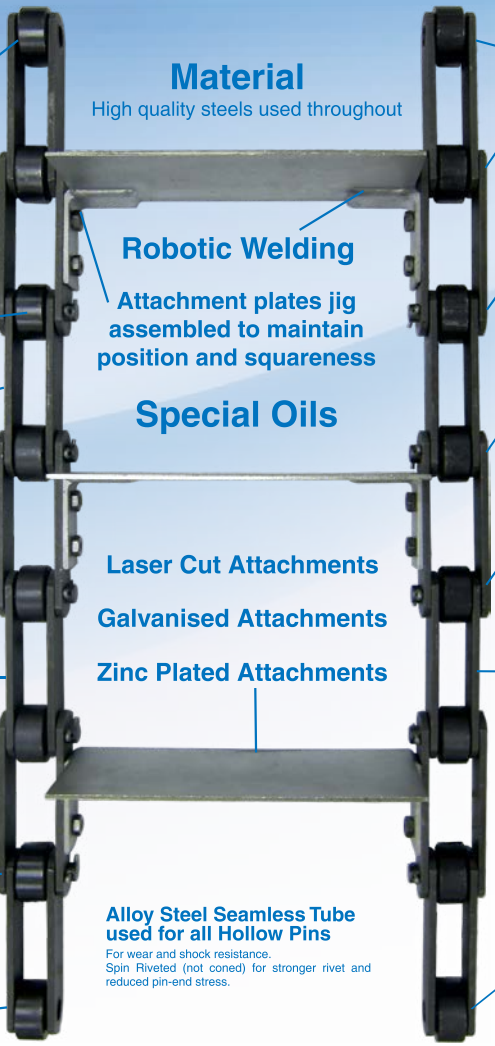
125mm pitch NSE600 bucket elevator chain w/ G4 attachment

315mm pitch clay supply chain w/ integral K2 attachment and bolted locking plate

160mm pitch self supporting clinker tray conveyor chain w/ integral A2 attachment

SPECIAL CHAIN APPLICATIONS?

CHALLENGE® HAS ALL THE OPTIONS!



Material
High quality steels used throughout

Oilite® Bushes
Optional Stainless Steel or Nitride treated liner bushes

IGUS® Bushes

Spin Riveted Induction Hardened Pins in Alloy Steel
For optimum life and the strongest rivet in any standard chain.

Twin Track Roller

Robotic Welding

Needle Bearing Roller

Stainless Steel Pins

Attachment plates jig assembled to maintain position and squareness

Shot peened to produce a strong surface and reduce fatigue

Special Oils

Pins with location shoulders and interference fit

Flanged Rollers

Holes precision punched on dedicated progression tooling
Guarantees consistently high tolerance pitch control and strong, fatigue resistant chain.

Outboard Rollers

Laser Cut Attachments

Galvanised Attachments

Zinc Plated Attachments

Link plates cropped from high carbon cold drawn steel
To avoid internal stresses associated with guillotined steel, Challenge produces all plates from high tolerance, on size, cold drawn steel bars resulting in a plate better able to withstand fatigue and shock loads.

Sherardized Link Plates

Delrin® Rollers

Through Lube Chain Bush Lubrication

Molykote® Dry Lube:- Pins, Bushes, Rollers

Alloy Steel Seamless Tube used for all Hollow Pins
For wear and shock resistance.
Spin Riveted (not coned) for stronger rivet and reduced pin-end stress.

Case Hardened Alloy steel bushes precision machined from seamless tube
Ensuring minimum distortion and superior concentricity.

Bushes with location shoulders/flats and interference fit
For precise assembly; control on inner width and prevention of bush rotation. Bush shoulder length extended to form clearance between inner and outer plates and provide uniform lubrication; increased strength and life. This reduces the possibility of chain seizure.

Other Options

CNC welded and integral attachments, special bushes, bearings. Zinc and Nickel plated parts, molykoted pins, bushes, and rollers. Plastic rollers, flanged rollers, hardened plates, stainless parts, liner bushes etc. All specials produced in highest quality - fast turnaround.

HOT DIPPED IN FORMULA 818X +MOLY

Conveyor Chain Sprockets

Challenge produce a range of sprockets to suit all of the chains that are manufactured. Due to the large range of customer requirements, we manufacture sprockets to the customers individual requirements. Sprocket options include:

· Hub size and location, for example a hub on one side, hub on both sides, offset hubs, bearing inserts, taper lock bushes etc.
· Bore details, such as plain bore, bored and keyed, splined, bronze bushed etc
· Number of teeth.
· Tooth profile, such as dirt relief, root relief and increased clearance.
· Hunting tooth designed sprockets - increasing sprocket wear life by up to 50%
· Tooth hardening such as induction hardening.

As standard, sprockets are profile cut from EN8/C45 medium carbon steel plate with a hub on one side. The sprocket bore is then machined and the teeth are hardened if requested.

Sprockets are also produced with machine cut teeth which increases the tooth profile accuracy. Machine cut sprockets are most advantageous when used in very high load or high speed applications where a slight variation in tooth position can cause uneven distribution of high loads or miss-gearing at high speed.

Numerous material options are also available depending upon quantities and the sprockets application. For high volume production, sprockets can be forged. Forged sprockets are hard wearing and accurate, but the tooling production costs are only appropriate for large quantity production runs. Challenge already offer a range of forged sprockets for agricultural applications.

Stainless steel sprockets are another popular option, especially for food processing or elevated temperature applications where stainless steel chain is used. Stainless steel sprockets can be offered with all of the features of their EN8/C45 counterparts except hardened teeth.

Challenge recommend that sprockets are always replaced whenever a chain is replaced. Sprockets and chain wear together, with the tooth profile of the sprocket wearing to match the increase in chain pitch as the chain wears. If a new chain is fitted to an old sprocket then it tends not to gear on every sprocket tooth as it is designed to do. By loading the entire chain on only one sprocket tooth, the chain will begin to stretch in order to correctly seat into the sprocket, which will rapidly wear the chain or potentially cause the chain to fracture and fail.

Split Sprockets and Removable Teeth

Some of the main challenges when replacing sprockets are removing the shafts from the machinery and correctly aligning the sprockets between the head and tail shafts after replacement.

Challenge are able to offer split sprockets, removable tooth sprockets and split tooth/split hub sprockets in order to overcome these issues and save time during sprocket replacement.

Split sprockets allow sprockets to be replaced without removing the shafts as the sprockets are split in half and then bolted back together.

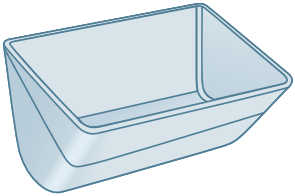
With removable tooth sprockets the hub can be left in place which keeps the original sprocket alignment, with only the outer ring of sprocket teeth being replaced.

A split tooth/split hub sprocket allows the hub to be attached to the shaft without removing it. The outer split ring of teeth are then loosely attached to the hub, alignment is made and then the entire assembly is tightened. When the teeth need replacing, the outer rings can be replaced without removing the shaft and the hub.

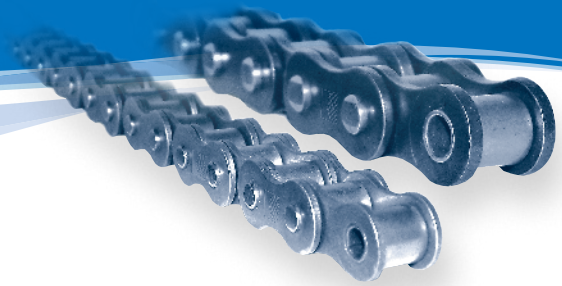
Buckets and Scrapers

Challenge are able to manufacture buckets to most customer specifications, with test fitting as standard if they are ordered with an elevator chain.

Scraper attachments can also be manufactured to customer specifications. These can either be bolt on type, hollow pin bolt through type, welded type or to a custom specification.



Transmission Chain



Features

Challenge offer a large range of various types of chain including – Transmission, Conveyor, Agricultural, Leaf and many types of special chains

Challenge Transmission Roller chain

Challenge roller chain is supplied in five meter boxes including one connecting link. Some sizes are available on reels or in 10ft boxes.

The range includes – ISO, BS, ANSI and many bespoke chains.

ISO roller chain – standard, straight side plate, extended pin, hollow pin, stainless steel, nickel plated, zinc plated, double pitch and specials.

ANSI roller chain – standard, heavy duty, cottered, cottered heavy duty, straight side plate, extended pin, stainless steel, nickel plated, zinc plated, double pitch (including extended pin, hollow pin) and specials.

Roller chain attachments – cover a large range for both ISO and ANSI chain, Timber, Agricultural and Conveyor chain.

Challenge transmission chains have a longer life because:

- **Pins** – manufactured from case hardened chrome manganese molybdenum steel. This increases wear resistance with more shock absorption ability.
- **Pre-stretched** – "fit and forget".
- **Ball swaged holes** – combats fatigue failure.
- **Shot peened rollers and side plates** – reduces fatigue failure.
- **Deep waisted side plates** – increases breaking load and reduces stress.
- **Solid rollers** – prolongs wear life.

The Benefits...

CHALLENGE X Series Transmission Chain

- **Spin Riveted Case Hardened Pins in Alloy Steel**
  - For optimum life
- **Pre-stretched** - Fit and forget
- **Ball swaged holes** - Combats fatigue
- **Shot peened**
  - Produces strong surface and reduced fatigue
- **Deep waisted side plates** - Reduces stress
- **Rollers from seamless tube**
  - For strength and long life

The X Series Range...

British standard		American standard	
20B-1X	32B-2X	100-1X	180-1X
20B-1GLX	32B-3X	100-2X	180-2X
20B-2X	40B-1X	100-3X	180-3X
20B-2GLX	40B-1GLX	120-1X	200-1X
20B-3X	40B-2X	120-1X	200-2X
20B-3GLX	40B-3X	120-1X	200-3X
24B-1X	48B-1X	140-1X	240-1X
24B-1GLX	48B-1GLX	140-2X	240-2X
24B-2X	48B-2X	140-3X	240-3X
24B-3X	48B-3X	160-1X	
28B-1X	56B-1X	160-2X	
28B-1GLX	56B-2X	160-2X	
28B-2X	56B-3X		
28B-3X	64B-1X		
32B-1X	64B-2X		
32B-1GLX	64B-3X		

Also in the Roller Chain range

Roller Chain
British Standard Roller Chain
ANSI Standard Roller Chain
ANSI Heavy Duty Roller Chain
ANSI Cottered Series Roller Chain
ANSI Cottered Heavy Duty Series Roller Chain
ANSI Straight Side Plate Roller Chain
British Standard Straight Side Plate Roller Chain
Chain Breakers
Timing Chain
Bush Chain
Bicycle Chain
Bicycle Chain/Connecting Links
Roller Chain with Extended Pins
Special Transmission Roller Chain
Hollow Pin Roller Chain
Special Chain with "U" Elements
Special Chain with "U" and Rubber Elements
Transport Chain
Special Chain with Driver
Stainless Steel Transmission Roller Chain
Side Bow Chain
Nickel & Zinc Plated Transmission Roller Chain
Roller Chain Attachments

Double Pitch Chain
Double Pitch Transmission Chain Double Pitch Conveyor Chain Double Pitch Attachments Double Pitch Special ChainDouble Pitch Extended Pin Chain Double Pitch Hollow Pin Chain

Leaf Chain
LH / BL Series Leaf Chain
LL Series Leaf Chain
AL Series Leaf Chain
FL Series Leaf Chain
Clevis Pins
Special Leaf Chain with Hollow Pin

Timber Chain
Welded Steel Chain
Welded Steel Chain Attachments (offset sidebar)
Welded Steel Chain (offset side bar)
Offset Sidebar Roller Chain
Straight Sidebar Roller Chain
Welded Steel Drag Chain
Drag Chain Attachments

Agricultural Chain
Steel Agricultural Chain
Agricultural Chain Attachments

Conveyor Chain
BS Z Series with Solid Pin Chain
BS ZC Series with Hollow Pin Chain
BS Z/ZC Series Attachments Chain
BS ZE Series Deep Link Chain
M Series Metric Solid Pin Chain
M Series Chain Attachments
MC Series Hollow Pin Chain
MT/ME Series Deep Link Chain
FV/C Series Metric Solid Pin Chain
FV/C Series Metric Hollow Pin Chain
FV/C Series Chain Attachments
FVT/CE Series Metric Deep Link Chain
FV/CR Series Metric Scraper Chain
Special Conveyor Chain
Special Conveyor Chain
Conveyor Chain Attachment Chain Designations

Transmission sprockets

Challenge are well known for the manufacture and supply of transmission sprockets to suit the wide range of transmission chains on offer, from stock, in our warehouses.

Sprockets are manufactured from C45 medium carbon steel which can be both welded and hardened or GG22 close grain cast iron. All standard steel sprockets are produced from either sawn bar or from a forged block.

Our stocked range includes BS Taper Bores in sizes 06B-24B, BS Pilot Bores in sizes 03B-32B, Plate Wheels in sizes 03B-32B, Double Simplex in sizes 06B-16B, Idler Bearing Sprockets in sizes 05B-20B and ANSI Pilot Bores in sizes 35-160.

Non-stock items and special sprockets are available in a large range of sizes and configurations. They are available for small production runs through to high volume requirements.

Finished machining can also be offered for example taper bores, metric and imperial bores and keys, splines, gib head keys and many other options.

Outstanding Power Transmission products whenever and wherever you need them

Mechanical power transmission products are found wherever there is a motor. Challenge is a well established manufacturer and distributor of high quality products working to well known international standard such as BS, ISO, DIN and ANSI. Challenge is internationally certified to ISO 9001:2015 and supplies products to light, medium and heavy industry.

We have worked hard to ensure that the Challenge brand is known globally as a high quality, cost effective and hassle free product. This is backed up by our Free Replacement Quality Guarantee should ANY of our products have a manufacturing defect.

Whatever your power transmission needs, you can be assured that we will have the solution that you need, delivered to wherever you are in the world.

Pulleys

The Challenge range of 'V' pulleys are produced with taper bore configuration and conform to ISO 4183. Pulleys are produced from phosphated GG25 grade cast iron and are balanced to Q6.3 or better.
Challenge also manufacture taper bored and pilot bore classical and HTD timing pulleys to the same demanding specifications.
To complement the range of pulleys, variable speed and our simple Mi-lock pulley system are also available.

Taper Bushes & Hubs

For torque transmission you need the maximum contact area. Challenge's high machining tolerances deliver just that, with over 500 metric and imperial bore sizes of taper bush available and manufactured from close grain cast iron.

To complement our range of shaft fixings, Challenge also manufacture precision machined low carbon steel Weld-on-Hubs, as well as phosphated Bolt-on-Hubs in GG22 Cast iron, plus a broad range of keyed and keyless adaptors, ideal for our pilot bored components.

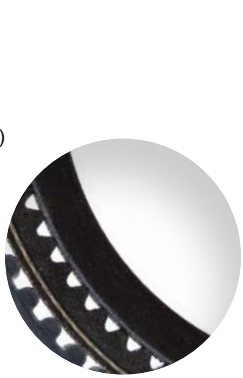
Cone Clamping Elements

Challenge Shaftlock keyless shaft fixings come in a wide range of size and configurations and are simply installed and uninstalled.
Challenge Shaftlock is a premium grade locking assembly with high machining tolerances and surface finishes resulting in high torque ratings.

Belts

All belts feature international labeling and fully comply with ISO, BS, DIN and other international standards. The extensive Challenge range of quality belts include our:

- Classical V-Belts (Z, A, B, C, D)
- Classical CRE V-Belts (AX, BX)
- Wedge Belts (SPZ, SPA, SPB, SPC, SPP)
- CRE Wedge Belts (SPZX, SPAX, SPBX, SPCX)
- Narrow V belts (3V, 5V, 8V)
- Classical Timing Belts including sleeves (XL, L, H, XH)
- Curved Tooth Timing Belts including sleeves (HTD in 3M, 5M, 8M and 14M)
- Other belts to suit agricultural and automotive applications are available to special order



Bearing Units

Challenge Triple Seal Pillow blocks, 2 and 4 hole flange units and take-up units all have triple lipped seals fitted as standard. These triple seals ensure the longevity of these bearing units and make them ideal for high dust environments such as in agriculture, mining and quarrying applications..

Bearings

Our ever increasing range of bearings include metric 1600, 6000, 6200, 6300 and 6800/6900 series, and R series imperial bearings.
All our roller bearings are shielded for longer life and ease of maintenance.
We also stock a popular range of metric and imperial taper roller bearings.

Shaft Mounted Speed Reducers (SMSR)

The workhorse on many conveyors, Challenge's range of metric SMSRs and imperial TXT units are fully interchangeable with other manufacturers and are supplied complete with a torque arm. The Metric SMSR is available with the Grip-Loc hub system or standard output hubs with reducing bushes. The TXT unit is available with a full range of imperial output hub bushings. Backstops for both units are available and sold separately.

Consistent quality and close tolerances are guaranteed by Challenge's production line manufacturing and all units are fully traceable via a unique serial number. Challenge gearboxes are test run for 30 minutes before final quality control and drained of oil before shipment.

Torque Limiters

The torque limiter range from Challenge will save money in damage and downtime, with its zero manual re-setting and simple installation, this unit works with our Challenge plate wheels, sprockets, gears, pulleys, couplings etc.

Shaft Couplings

Challenge shaft couplings are suitable for use in a wide range of applications.

The range encompasses FFX tyre coupling, HRC, Jaw and Chain shaft couplings as well as our NPX, RPX and CNM couplings which match industry standards.

Whether you need to absorb shock from a crusher or drive a smooth running generator, Challenge has a suitable coupling for your application.

FFX

HRC

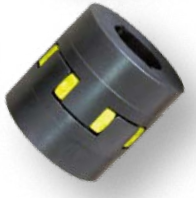
CNM

CHAIN

NPX

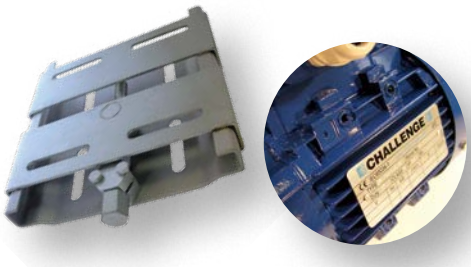
JAW

RPX



Motor Mounts

Manufactured from galvanized steel, Challenge motor mounts maintain your motor's alignment and drive tension, whilst reducing vibration and noise.
They are easily adjustable and available in five motor frame sizes covering 63 to 180.



Electric Motors

The Challenge range of three phase electric motors comply with IEC 60034 standards and are available in IE1, IE2 and IE3 efficiencies.
The motors are CE approved having fan cooled, high grade cast aluminium alloy squirrel caged construction, incorporating engineering grade plastic terminal boxes.
All motors have multi-mount feet and thus can achieve numerous mounting positions.

Worm Gear Units

Challenge offer a range of worm gear units with aluminium alloy cases.
This extremely versatile unit can be offered with output shafts, electric motors, input flanges, torque arms with many different configurations to fulfil most application criteria.
The sizes match industry standards.

Challenge Technical Catalogue

The new ISSUE6 Challenge Power Transmission Technical Catalogue covers our entire range of products in our 430 page publication. Contact your local Challenge Sales office for your copy now.


Pillow blocks
Flange Units
Plummer Blocks
Pop Metric Bearings
Taper Roller Bearings
Electric Motors
Transmission Sprockets
Conveyor Sprockets
All types of Chain
RPX Couplings
HRC Couplings
CNM Couplings
Jaw Couplings


Taper bushes
Bolt on Hubs
Taper Bore Pulleys
Shaft Mounted Speed Reducers
Weld on Hubs
FFX Couplings
Synchronous Belts
Vee Belts
Geared Drives
Torque Limiters
CRE Belts
Chain Couplings
NPX Couplings
Motor Slide Bases
Timing Pulleys

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Never a problem always a ...

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