

**RENOLD**

# sugar mill chain



**RENOLD**

harvest the benefit

# Sugar chain industry

## RENOLD SUGAR CHAIN

Renold have been producing high performance, quality chain for the Sugar Cane and Beet industries for over 80 years.

## FUNCTIONS - CANE SUGAR

Renold chains are used on:

- Cane harvesters
- Cane carrier conveyors
- Intermediate carriers
- Boiler house conveyors
- Cane feed tables
- Diffusers
- Bagasse conveyors
- Bagasse rakes

In addition Renold transmission roller chains are used on many drive applications throughout a Sugar Factory.

## FUNCTIONS - BEET SUGAR

Renold chains are used on:

- Beet conveyors
- Trash conveyors
- Scald tub / troughs
- Rock catchers
- Cossette conveyors
- Diffusers

## KEY FEATURES - CONVEYOR CHAIN

- Chain conforms to all international standards
- Close control of material tolerances ensures excellent resistance to high loadings
- Excellent concentricity and optimum heat treatment contribute to longer life
- Renold unique bush projection maintains precise clearance between plates to improve wear life by minimising retained foreign particles
- Customised heat treatment ensures long wear life combined with superb resistance to shock loading
- Unparalleled pitch accuracy ensures smooth operation and low noise

## KEY FEATURES - TRANSMISSION CHAIN

- Renold's unique dimpled rivet provides easy dismantling and connection of chain
- Renold's pioneering high waisted, heat treated sideplates ensure the optimum balance between resistance to shock loading and long wear life
- Resistance to fatigue is further enhanced by customised surface treatment and holing techniques
- Customised heat treatment and surface finishing on bushes and pins help maximise the chain's resistance to the harsh environment of sugar cane and beet processing
- Renold also ensures that the connecting links are subjected to the same vigorous and exacting manufacturing standards as the main body of the chain, thus ensuring the complete system gives true value for money

## PRODUCT DESCRIPTION - CONVEYOR CHAIN

- Feed Table and Cane Carrier chains are designed to run within standard machine "envelopes" and thus are largely interchangeable with other chain
- Renold sugar chains are detachable at every point to allow easy replacement of damaged links
- Intermediate cane carrier chains are fitted with stainless pins and bushes as standard to resist corrosion, and with swivel attachments for scrapers
- Bagasse and Boiler House chains are either straight or crank linked to order, and are fitted with swivel attachments for scrapers
- Sprockets are available for all the chains listed and are able to be manufactured with cast, flame or machine cut teeth and can be surface hardened

## PRODUCT DESCRIPTION - TRANSMISSION CHAIN

- Manufactured to British Standard or ANSI dimensions
- Available in simplex (1 strand), duplex (2 strands), triplex (3 strands) in British Standard and ANSI and multiplex strands in the ANSI standard up to octuplex (8 strands)
- A range of ANSI standard extra capacity chains are available for areas where drive space is limited
- Adapted transmission chains are produced with attachments for light duty conveying applications
- Transmission chains also available:
  - Nickel plated
  - In Stainless Steel (Renold Coris range)
  - Minimum maintenance (Renold Syno range)
- For heavy duty drive applications, a range of Renold crank link chains (Mark 3) is also available
- Renold long life sprockets are available for all standard chains ex-stock, or are manufactured to order

## CHAIN TYPES



Cane carrier chain



Bagasse chain



Diffuser chain



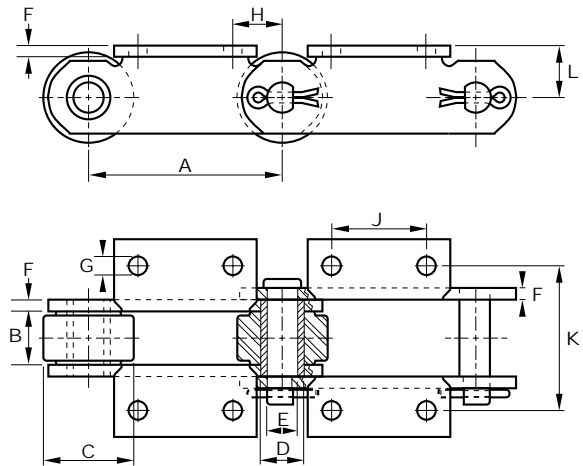
Transmission chain

## PRODUCTION DESCRIPTION - CANE CARRIER

Renold cane carrier chain is interchangeable in all respects, with corresponding quality products supplied to the Cane Sugar Industry. Breaking loads range from 31,800 kgf to 63,500 kgf (70,000-140,000 lbf).

Renold's experience, as the originators of the bush roller chain in 1879, and being the first company to incorporate these features for cane carrier applications during the 1920's, makes Renold placed to offer the finest products for carrying cane from the yard to the first mill.

Materials, heat treatment and design have been developed to ensure optimum chain life and maximum value for modest cost. Grease gun lubrication through the chain pin is available on request and heat treated stainless steel pins, bushes and rollers can be supplied.

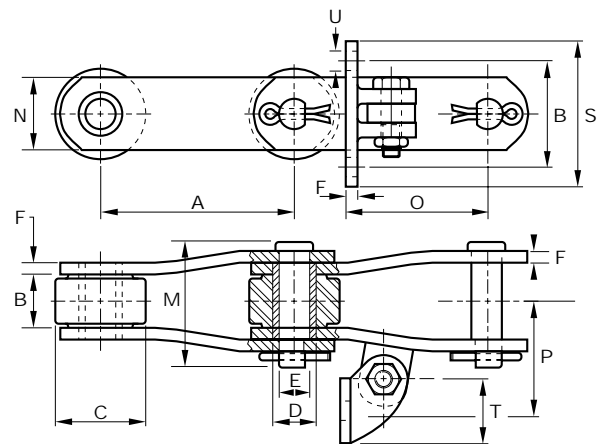


Renold Chain No.	Average breaking load	Pitch	Width between inner plates	Roller dia.	Bush dia.	Connecting pin dia.	Plate thickness	Attach. hole dia.	Distance from pitch point	Hole centres	Hole transverse centres	Platform height	Approx mass (weight)
Metric	Newtons	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	J mm	K mm	L mm	kg/m
R.9060	312000	152.4	38.1	69.85	28.58	19.05	9.53	13.87	38.1	76.2	111.13	41.28	24.7
R.9061	379000	152.4	38.1	69.85	28.58	19.05	9.53	13.87	38.1	76.2	111.13	41.28	25.3
R.1796	445000	152.4	38.1	69.85	31.75	22.23	9.53	13.87	38.1	76.2	111.13	41.28	26.2
R.9063	623000	152.4	38.1	76.20	31.75	23.83	10.31	13.87	38.1	76.2	111.13	44.45	27.5

## PRODUCTION DESCRIPTION - BAGASSE STYLE

Using the same round components as the cane carrier range, the bagasse chains provide the capacity to meet the majority of bagasse conveying requirements. They are available with straight plates STYLE A, or cranked plates STYLE B (as illustrated right), EXCEPT R.9063 which is produced in STYLE A only.

Although two standard roller sizes are available, other diameters are available on request. Additionally, stainless pins, bushes and rollers can be supplied. The lug and flight attachments are spaced according to individual requirements. All the chain components are replaceable.



Renold Chain No.	Average breaking load	Pitch	Width between inner plates	Roller dia.	Bush dia.	Connecting pin dia.	Plate thickness	Attach. hole dia.	Distance from pitch point	Hole centres	Hole transverse centres	Platform height	Approx mass (weight)
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R.1796	445000	152.4	38.1	69.85	31.75	22.23	9.53	13.87	38.1	76.2	111.13	41.28	26.2
R.9063	623000	152.4	38.1	76.20	31.75	23.83	10.31	13.87	38.1	76.2	111.13	44.45	27.5

# Sugar beet industry - products

## FUNCTION

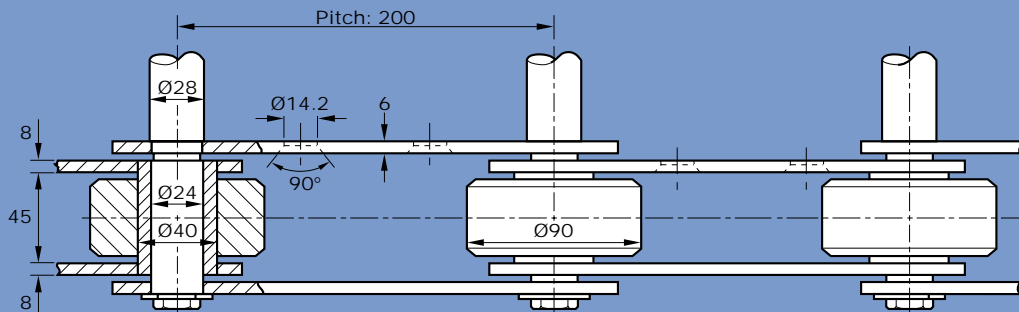
Chains for this industry are specially engineered to suit the conveyor application within each manufacturing process. The pitch size is normally in millimetres and the chains incorporate a number of different attachments, fixing holes and special pins. Some of these chains are run without rollers, whilst others have rollers incorporated into the design, the nature of the application determining where rollers are required. Renold manufacture a wide range of special conveyor chains for this industry. Our technical staff can help with the identification or advise on the interchangeability of a Renold Chain within a sugar plant.

## CHAINS FOR THE SUGAR BEET INDUSTRY

Part Number: Consult Renold

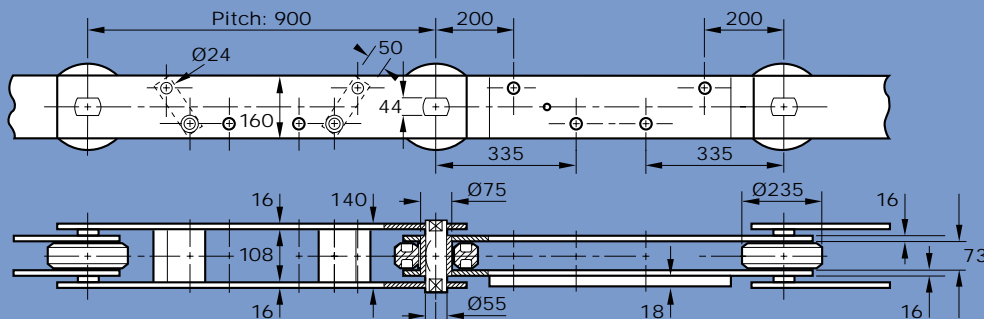
Application: The sugar beet industry, like the sugar cane industry, uses many different chains in the manufacture of crystallised sugar which is used in most households around the world. Chain is found in the reception, washing and diffuser processes within a sugar beet plant. Within these areas there are eight different conveyor chains commonly in use detailed on pages 4 and 5. When visiting a sugar beet plant, drives of different sizes are also found driving these conveyors. Renold have supplied large volumes of 3/4" pitch standard transmission chain, for sugar beet harvesting machine OEMs, following intensive field trials. Due to the arduous nature of the application chains tend to be changed after every season.

## BEET CONVEYOR



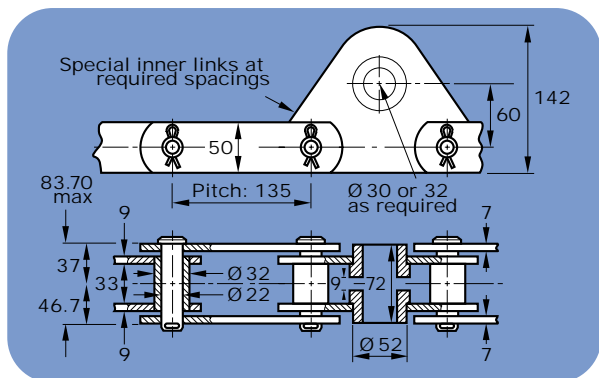
Reception area: An inclined conveyor which carries the beet from the beet slab to the beet washer. The chain is an integral component within the conveyor.

## SUGAR BEET DIFFUSER



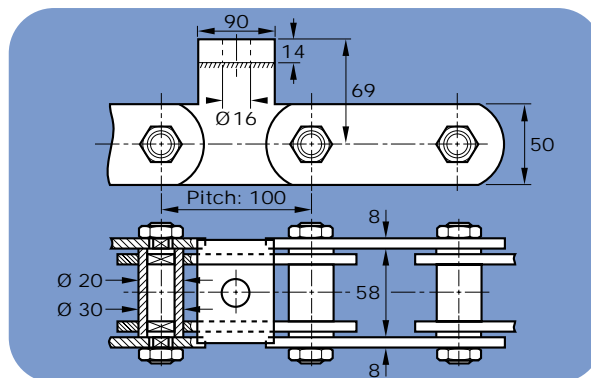
Diffuser area: Used on a continuous sugar beet diffuser. Two chains run in parallel connected by perforated steel slats forming a continuous apron.

## TRASH CATCHER



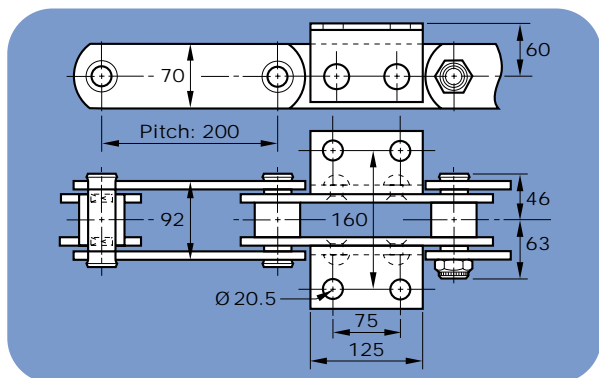
Washing area: Within the washer a water flume carries away grass washed from the sugar beet. The chain, fitted with rakes, removes this trash from the water and the washer.

## FEED CONVEYOR



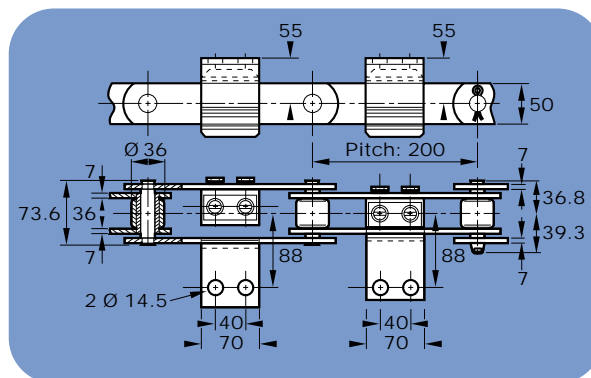
Diffusion area: This chain carries beet pulp to the drying kilns after diffusion, to be prepared for cattle feed.

## COSSETTE CONVEYOR



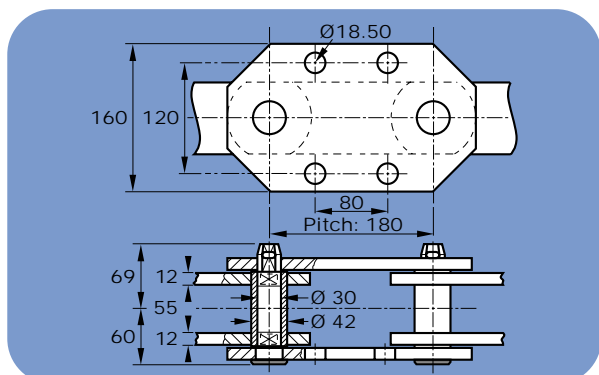
Diffuser area: These chains are fitted with rakes and run in inclined conveyors, scraping the beet pulp to the scalding tub.

## SCALDING TUB



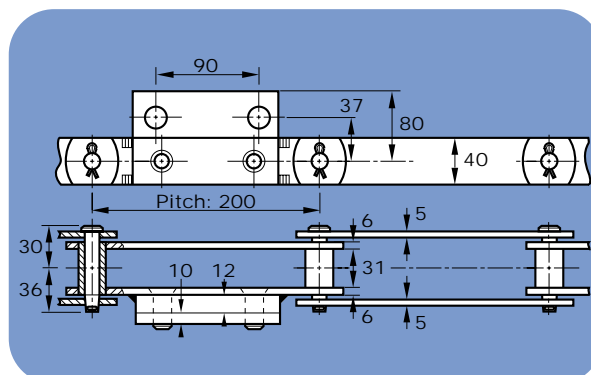
Diffuser area: This chain conveys cassettes through the scald process prior to the diffuser.

## ROCK CATCHER



Washing area: This chain is used to carry away stones removed during the washing of the sugar beet.

## HYDRO TRASH CATCHER



Washing area: This chain is used to convey the beet through a washer.

# Sugar industry conveyor sprockets

## FEATURES

The normal function of a chain sprocket is not only to drive or be driven by the chain, but also to guide and support it in its intended path. Sprockets can be manufactured from good quality cast iron or fabricated steel.

For arduous duty, it may be necessary to use steel sprockets having a high carbon content.

For extremely arduous duty the tooth flanks should be flame hardened.

There are other materials which may be specified for particular requirements. Stainless steel for example is used in high temperature or corrosive conditions.



The table below gives a guide to the material required.

Normal Conditions	Moderate Shock Loading	Heavy Shock Loading	Abrasion, No Shock Loading	Abrasion and Heavy Shock Loading
Cast Iron or Fabricated Steel	Cast Iron or Fabricated Steel	High Carbon Steel	Cast Iron	High Carbon Steel with hardened teeth

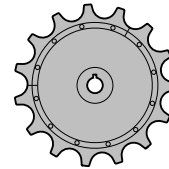
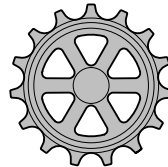
The vast majority of sprockets in use are of the one piece cast iron or fabricated steel design and are usually parallel or taper keyed to a through shaft. In this case it is necessary to remove the complete shaft to be able to remove the sprockets.

## PRODUCT DESCRIPTION

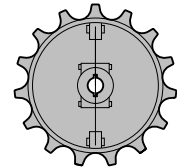
If quick detachability is necessary without dismantling shafts or bearings, then sprockets may be of the split type. These are made in two half sections and the mating faces are machined to allow accurate assembly with the shaft in place. This type of sprocket is particularly useful on multi-strand conveyors where long through-shafts are used, as considerable expense can be saved in sprocket replacement time. Sprockets with removable tooth segments are particularly useful where sprocket tooth wear is much more rapid than chain wear. With this type of sprocket, segments of teeth can be replaced one at a time without having to disconnect or remove the chain, thus considerable expense and downtime can be saved. Shafts, whether they are through shafts or of the stub type, should be of such proportions and strength that sprocket alignment remains unimpaired under load. Shaft sizes should be selected taking into account combined bending and torsional moments. (Consult Renold or refer to The Designer Guide Conveyor Chain for further details).

Segmental sprocket

Cast sprocket



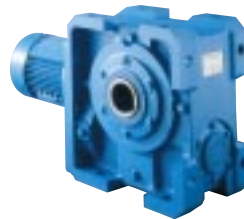
Split sprocket



## ALSO AVAILABLE FROM RENOLD

The need for reproducible standards of excellence requires finer and ever more stringent process control. Renold's proficiency, total capability and flexibility offers designers, specifiers and end users the reassurance required for precision and accuracy. This distinguishes Renold as the Hallmark of Quality.

## PM SERIES



PM Series are helical / worm geared motor units available in six sizes, up to 90kW capacity. A wide range of mounting and shaft options are available. The standard unit has ratios from 8:1 to 307:1 and when combined with RS Series helical gear units, offer ratios of up to 20,000:1.

## TITAN



The Titan range of 10" to 28" centres, heavy-duty worm units, is available in single and double reduction types, ratios from 5:1 up to 4900:1, with input powers from 16 to 506kW.

## GEARFLEX



Designed to AGMA and metric standards of interchangeability, the Gearflex 'A' series coupling is a heavy duty product with power capacities of up to 60,000kW @ 100rpm.

# Unique quality and safety

# RENOLD

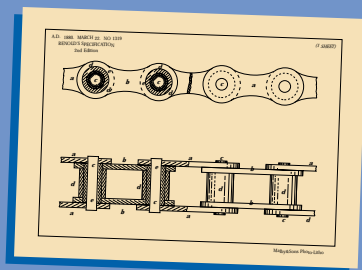
## 'IN A CLASS OF ITS OWN'

Renold, the inventor of Bush Roller Chain has led the world in chain technology for more than a century.



Only products designed and supplied to our specification carry the MARK OF EXCELLENCE, 'RENOLD'. You can be sure that when you choose such a product, Renold Service, Quality, Value for Money and LONG LIFE PERFORMANCE are guaranteed.

Original patent drawing 1880



## A UNIQUE SERVICE



Renold, the premier chain company is dedicated to providing national and global customers with products to the ultimate of specification and design, manufactured to exceed the highest international standards.

Investment in manufacturing and process technology, combined with an international sales and distribution network, places Renold's commitment to the development of chain products and customer service at the forefront of the industry. Renold's 16 national sales companies and over 70 country distributors around the world have direct access to extensive Renold design, test and manufacturing facilities, enabling the chain required to be promptly specified and produced. Renold, the power transmission specialists, provide a worldwide customer orientated product service.

## CONSISTENCY

Only materials that meet the Renold exacting specifications are used for the manufacture of our chain components.

*Continual investment in new technology demonstrates Renold's commitment to innovation. State of the art automatic assembly, ensures consistent quality of all Renold components.*



*Stringent process controls are in place at every stage of production. Every chain is proof loaded, resulting in minimum initial wear, greater fatigue resistance and improved wear performance.*



*Corrosion protection and long life are achieved by automatically pre-lubricating every chain with a specially formulated grease. Chain lubrication is one of the most important factors in achieving a long and trouble free service life. Renold can advise the correct method to suit your needs.*



## QUALITY

Our commitment to quality ensures that Renold Transmission and Conveyor Chain conforms to and surpasses the highest international standards of manufacture and design, including approval by the American Petroleum Institute.

All of our manufacturing systems conform to ISO9001.

Renold employees are fully trained to ensure all products meet the unique Renold specification.



*We also manufacture to the specifications required by API, BAe, CAA, LONDON UNDERGROUND, ROLLS-ROYCE and JAGUAR.*

# RENOLD INVEST IN OUR STRENGTH



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