

# Theme Park Solutions

Putting Safety First

***RENOLD***

[www.renold.com](http://www.renold.com)

# Leaders in chain technology

Power, precision and durability



From the inception of our business in the 19th Century when our founder, Hans Renold invented the bush roller chain, Renold has continued to grow and innovate and today we manufacture an enviable portfolio of chain, gears and couplings.

All our products benefit from the same attention to detail, skills and expertise that have seen the Renold name become synonymous with quality, precision and engineering innovation.



## Company Overview

- More than 120 years of experience in the design and manufacture of precision roller and engineering class chain
- Continuous investment in people, process technology and manufacturing
- Highest specifications, with proven performance in diverse industries worldwide
- One stop for drive systems, including roller and conveyor chain, gears, motors and couplings
- Experienced applications engineers ensure the optimum solution with the aid of the latest computer aided design technology.
- 20 National Sales Companies
- Over 100 Overseas Distributors
- ISO 9001 & ISO14001 certified

## Applications

Renold offer reliable, high performance chain solutions for the entire spectrum of Theme Park Applications including:

- Roller Coasters
- Water Ride Transfer Chain
- Water Ride Plain & Slatted Lift Chain
- Carousel Rides
- Drag Inclines for splash rides

## Renold Solutions Offer

- Safe & Dependable Operation
- Cost Effective
- High Reliability
- Excellent Fatigue Performance
- Durable & Hard Wearing
- Easy to Maintain
- Resistant to corrosion
- Flexibility to use wide a range of attachments

## Renold Theme Park Solutions

- Cranked Link Chain
- Welded Steel Chain
- Straight Side Plate Chain
- Water Ride Chain

## Leaders in chain technology

Power, precision and durability

Renold provide solutions for the entire range of Theme Park applications – from the most straightforward to the most challenging.

Our experience and expertise in engineering design, metallurgy and heat treatment place us in the foremost position to provide the optimum solutions, whether standard or custom-designed product.



Our products are carefully designed to provide the optimum combination of value and performance by deploying a range of manufacturing technologies and processes:

- Multi-hit holes deliver dependable fatigue performance by ensuring predictable & reliable interference fits between plates & round components
- Stake Riveting provides greater chain ruggedness through secure interfaces between plates & round components
- Cotted Pin options simplify maintenance by allowing removal and replacement of individual pins.

- Through Hardened Pins provide excellent fatigue performance through greater material hardness & strength
- Induction Hardened Pins optimise fatigue and wear performance by providing precise control of material hardness
- Cranked Link Design enables compact chain design with good power handling characteristics at lower speeds
- Straight Sidebar designs exhibit higher tensile strength, improved fatigue performance and enable faster running

- Grease-Gun Lubrication improves service life by protecting bearing surfaces from corrosion and abrasion
- Honed Bush Bores contribute to enhanced wear performance by optimising the interface between bush and pin components
- Case Hardened Barrels improve wear performance at higher loads providing the optimum balance between material hardness and tensile strength
- Shot Peening extends fatigue performance through pre-stressing of plate components

# Applications

## Roller coaster chain



### In it for the long haul

Renold has a long and proven history in the supply of custom and standard chain solutions for the Theme Park industry. Our work begins with close customer involvement, using our experience and application know-how to develop carefully optimised solutions.

# Roller coaster chain

## Standard



### Features

- Multi-hit holes
- Stake Rivet options
- Cottered Pin options
- Through Hardened Pins
- Cranked Link Design
- Welded Steel variants available
- Supplied with Certificate of Conformity & Inspection Certificate

### Performance

- Fully compliant with industrial standards
- Durable wear performance

Beginning with tightly defined raw material specifications right through to tightly controlled component geometries, Renold set the standard for safe, dependable and durable chains for Roller Coaster applications.

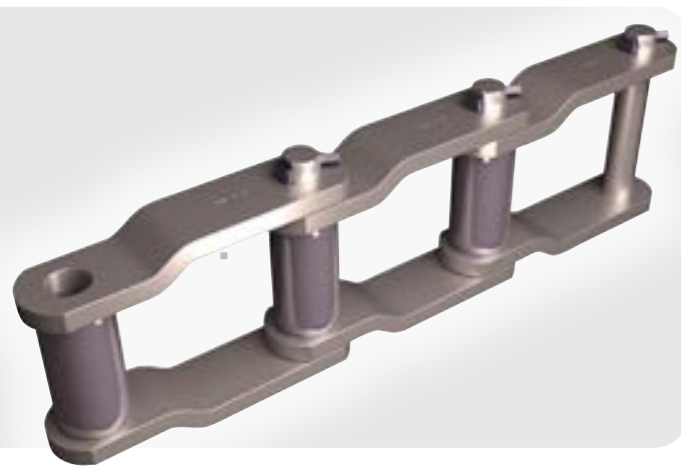
Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
WH82-TP	78.1	31.0	44.5	31.8	14.3	167
WH124-TP	101.6	36.5	52.4	38.1	19.1	267
WH126-TP	103.6	44.5	50.8	50.8	25.4	449
WH126H-TP	103.6	44.5	50.8	57.2	25.4	623
WH132-TP	153.7	44.5	85.7	50.8	25.4	445
4014-TP	103.2	44.5	49.2	57.2	22.2	622



Don't forget! Renold also supply a range of gears for the Theme Park industry. To find out more visit [www.renold.com/products/gears](http://www.renold.com/products/gears)

# Roller coaster chain

## High Performance



### Features

- Multi-hit holing
- Stake Rivet or Cottered Pin options
- Induction Hardened Pins
- Honed Bush Bores
- Shot Peened Plates
- Grease Gun Lubrication Option
- Supplied with Certificate of Conformity & Inspection certificate.

### Performance

- Exceeds industrial chain standards
- Every batch subjected to full breaking load test
- Significantly enhanced wear performance

Meeting the needs of more challenging applications, Renold High Performance roller coaster chains include features that deliver even greater strength & wear performance.

Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
WHX124-TP	101.6	36.5	52.4	38.1	19.1	267
WHX124HD-TP	103.2	41.3	50.8	50.8	22.2	554
WHX126-TP	103.6	44.5	50.8	50.8	25.4	449
WHX126H-TP	103.6	44.5	50.8	57.2	25.4	623
WHX132-TP	153.7	44.5	85.7	50.8	25.4	445
4042-TP	103.2	44.5	49.2	57.2	23.0	667

# Roller coaster chain

## Extreme Performance



### Features

- Precision machined holes
- Stake Rivet or Cottered Pin Options
- Induction Hardened Pins
- Honed Bush Bores
- Shot Peened Plates
- Case Hardened Barrels
- Grease Gun Lubrication Option
- Supplied with Certificate of Conformity & Inspection certificate

### Performance

- Far exceeds industrial chain standards
- Every batch subjected to full breaking load test
- Maximised wear performance

The toughest challenges demand the most robust solutions and Renold delivers with a family of products designed to handle the most extreme of applications.

Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
WS124P-TP	101.6	36.5	52.4	38.1	19.1	267
WS126P-TP	103.6	44.5	50.8	50.8	25.4	449
WS126HP-TP	103.6	44.5	50.8	57.2	25.4	623
WS132AP-TP	153.7	44.5	85.7	50.8	25.4	594
WS855AP-TP	153.7	44.5	84.2	63.5	28.6	909
586946	103.2	44.5	49.2	57.2	23.0	700
586961	120.9	44.5	49.2	57.2	23.0	700
586958	120.9	44.5	49.2	60.3	24.0	667
586960	110.0	50.0	55.2	63.5	28.6	900
586954	118.0	50.0	49.2	63.5	28.6	1000
586951	136.0	55.0	49.2	76.2	31.6	1200



Don't forget! Renold also supply a range of couplings for the Theme Park industry. To find out more visit [www.renold.com/products/couplings](http://www.renold.com/products/couplings)

## Applications

Chain for use with water rides and wet environments



Constant exposure to water corrosion is a significant factor in limiting the service life of water-ride chains.

To counter this, Renold offer a range of high performance, durable chain solutions to meet the most demanding applications.

In addition to the core processes and technologies described above for roller coaster chain, Renold have developed a range of solutions to meet the specific challenges for water-ride chains

### Features

- Zinc based plating – the carefully optimised Renold process ensures a durable barrier protecting steel parts against corrosion
- Hydroservice coating – Renold HydroService provides enhanced corrosion protection whilst improving fatigue performance by protecting against the effects of Hydrogen embrittlement
- Hydroservice Extreme's dual stage coating process delivers maximum protection against corrosion and improved fatigue performance

### Applications

- Transfer Chain
- Slatted Lift Chain
- Lift Chain

# Water ride chain

## Standard



### Features

- Multi-hit Holing
- Hardened Pins
- Zinc based coating
- Water Resistant Lubricant
- Supplied with Certificate of Conformity & Inspection certificate

### Performance

- Fully compliant with industrial standards
- Durable wear performance

Our standard water ride chain product family has long been delivering solid wear and anti-corrosion performance.

Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
17649903	101.6	23.8	19	38.1	19.05	67
17936203	152.4	38.2	38	63.5	31.75	200
WH132-TP HS	153.7	44.5	82.5	50.8	25.4	445
M315B Series	160, 200, 250 & 315 AVAILABLE	36	48	72	25	315
M315S Series	160, 200, 250 & 315 AVAILABLE	50	48	72	25	315

# Water ride chain

## High Performance



### Features

- Multi-hit Holes
- Stake Rivet or Cottered Pin options
- Induction Hardened Pins
- Increased knuckle thickness
- Shot Peened Plates
- HydroService Coating
- Water Resistant Lubricant
- Grease gun lubrication option
- Supplied with Certificate of Conformity & Inspection certificate.

### Performance

- Extended breaking & working loads
- Enhanced wear resistance
- Every batch subjected to full breaking load test
- Significantly enhanced wear performance

Renold high performance water ride chains feature a range of product design and manufacturing developments that ensure even further enhanced durability and service life.

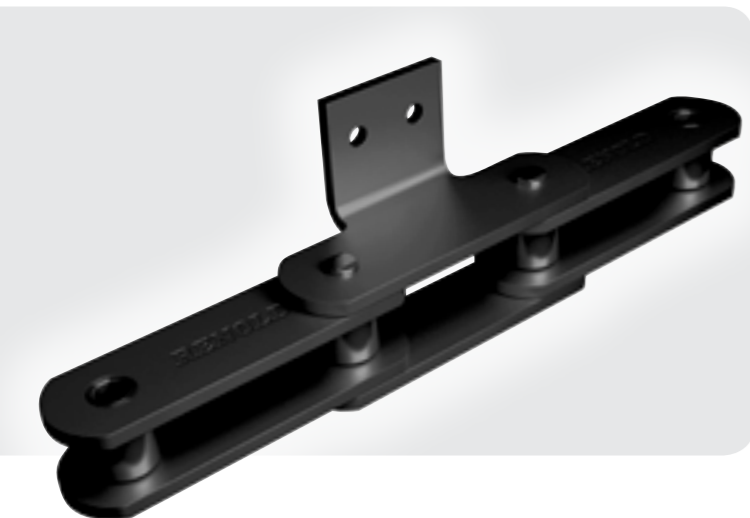
Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
6233-RC	101.6	23.8	19	38.1	19.05	71
6247-B	152.4	38.2	38	63.5	25.4	295
6248B-TP	152.4	38.2	38	63.5	25.4	334
WS132-P-TP HS	153.7	44.5	85.7	50.8	25.4	445
6110	152.4	31.8	54	38.1	15.8	216
6111	120.9	36.6	66.5	50.8	19.05	222
6440	102.6	38.2	35	63.5	25.4	431

For information on installation & maintenance procedures for Renold chain, please visit [www.renold.com/conveyor-chain/amusement\\_park](http://www.renold.com/conveyor-chain/amusement_park)

# Water ride chain

## Extreme Performance

Drawing on our extensive experience supplying theme parks around the world, Renold have identified the three main causes of chain failure water ride environments and developed the Trident family of chains.



### Features

- Stake Rivet or Cottered Pin options
- Hardened Pins
- Maximised knuckle thickness
- Shot Peened Plates
- Enhanced Heat Treatment
- Integral attachments – eliminating weld corrosion issues
- HydroService Extreme dual-step corrosion Inhibiting process
- Lubrication free bearing technology
- Supplied with Certificate of Conformity & Inspection certificate.

### Performance

- Quieter running
- Lower maintenance
- Superior breaking & working loads
- Every batch subjected to full breaking load test
- Optimised wear performance

Product	Pitch (mm)	Gearing Diameter	Inside Width (Min)	Plate Height (Nom)	Pin Diameter	Breaking Load (k/N)
9933	101.6	23.8	19	38.1	9.54	107
9948	152.4	38.1	38.1	63.5	19.05	409
9932	153.7	44.5	85.7	50.8	22.22	445
9910	152.4	31.8	54	38.1	13.9	231
9940	102.6	38.1	35	63.5	19.05	436
9929	160, 200, 250 & 315 AVAILABLE	50	48	72	19.05	315
9930	160, 200, 250 & 315 AVAILABLE	36	48	72	19.05	315



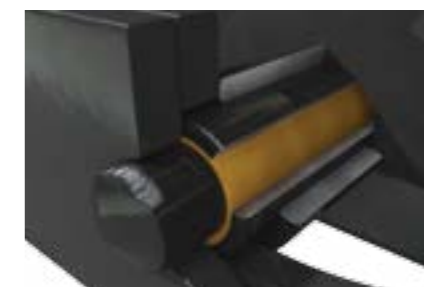
### Tackling Corrosion

The dual-step HydroService Extreme offers superior corrosion protection over other surface treatments - even when the outer coating is penetrated.



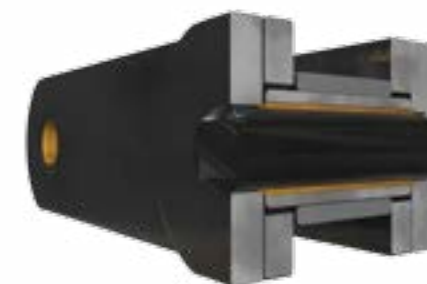
### Eliminating Seizure

Conventional Transfer & Lift Chains can suffer from seizure of the bush and pin, significantly shortening the life of the chain. Metal-to-metal contact is dramatically reduced by deploying a specially developed polymer bush. This carefully developed feature also enables lubrication free operation.



### Reducing Wear

The development of heavy wall bush technology overcomes premature wear and failure of the bush. Additionally this design enables incorporation of a shell roller, further reducing wear on sprocket teeth.





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