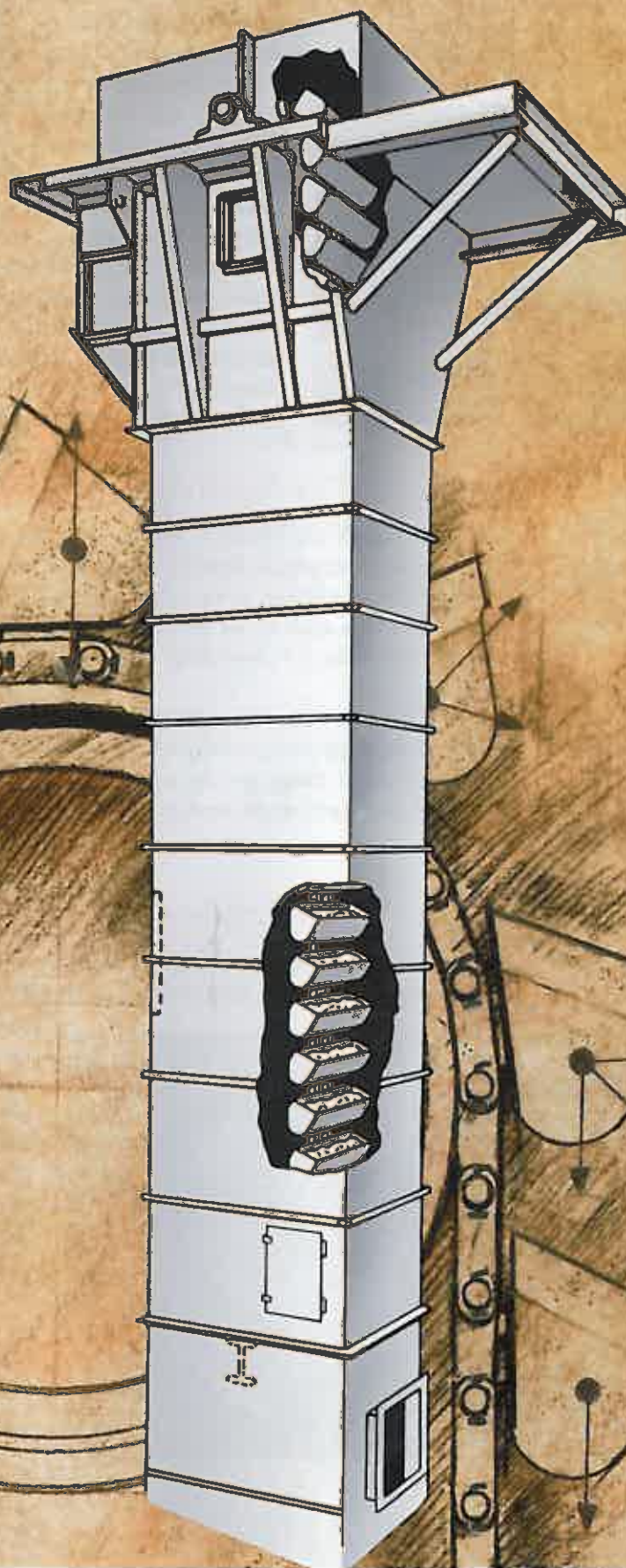


Cement Industry Chains and Accessories

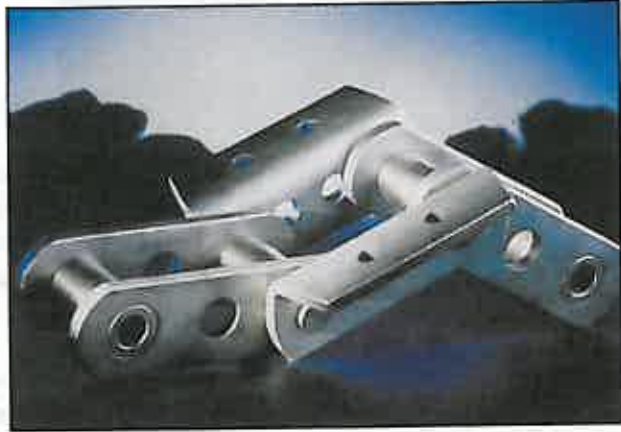


The Leader in Elevator Chain Design

Simply stated, an elevator chain must provide predictable wear life for the longest time possible. This factor is critical in elevator chain design to allow for planned maintenance and the elimination of costly downtime. **Don't risk your production with an elevator chain not designed specifically for demanding cement mill elevator service.** Rex® elevator chains are designed and

manufactured by Rexnord Industries, Inc., a leader in the manufacture of heavy duty bucket elevators

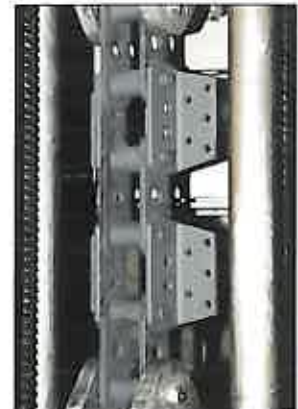
for cement mill service. Coupled with over 100 years of chain manufacturing experience, you can be assured that we know how to maximize elevator chain performance.



The Greatest Fatigue Strength

Bucket elevators are "fatigue machines" that generate millions of load cycles. As an example, a chain in an elevator with 70 ft. centers operating at 300 FPM could see over 1,000,000 load cycles in just one year of service! For this reason, all Rexnord elevator chains are designed with a primary objective of providing the maximum fatigue strength that is possible.

Only Rexnord has the combination of design engineering, manufacturing technology and product testing to keep advancing the art of high fatigue strength chain production. We have tested competitive chains and, size for size, none match the fatigue strength of Rex elevator chains.



"Rexnord's fatigue testing machines are unique to the industry."

The Longest Wear Life

Rexnord leads the industry with its induction hardening and deep case carburizing capabilities. As a result, Rex elevator chain pins and bushings have the hardest and

deepest case depths providing maximum wear life. In addition, Rex chains provide consistent wear over the life of the chain. This allows users to predict the wear life of their chains, allowing for chain replacement as part of their preventative maintenance programs. This eliminates costly, unexpected maintenance and down time.



"Rexnord provides a comprehensive chain wear analysis service. Contact us for details."

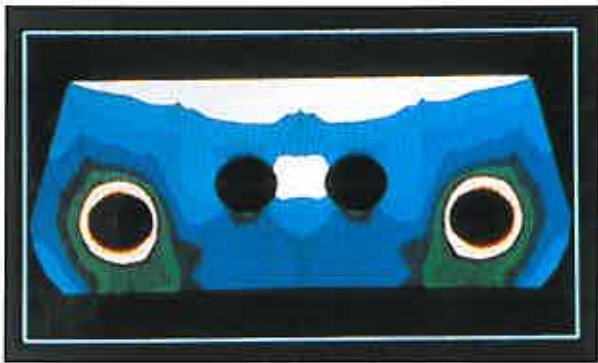
The Rex[®] Chain Story

A lot goes into a Rex chain that is not visible on the surface. The precision of a pin diameter or the

case depth of a heat treated pin can only be realized after an in-depth analysis. Rexnord regularly tests Rex and competitive chains and it is clear, all chains are not created equally. Rex heavy duty cement mill elevator chains are made to provide the utmost in performance and dependability. Period.

What follows is the story of how we make these chains the best in the world!

Maximizing Fatigue Strength Through Fit and Finish



"Finite element analysis is one tool used in developing Rex elevator chains."

Rexnord's 100 plus years of documented testing and application experience drives the development of elevator chain designs used to meet the cement industry's need for improved fatigue strength.

But design is only the beginning. Making these chains requires a major advancement in manufacturing technology to achieve:

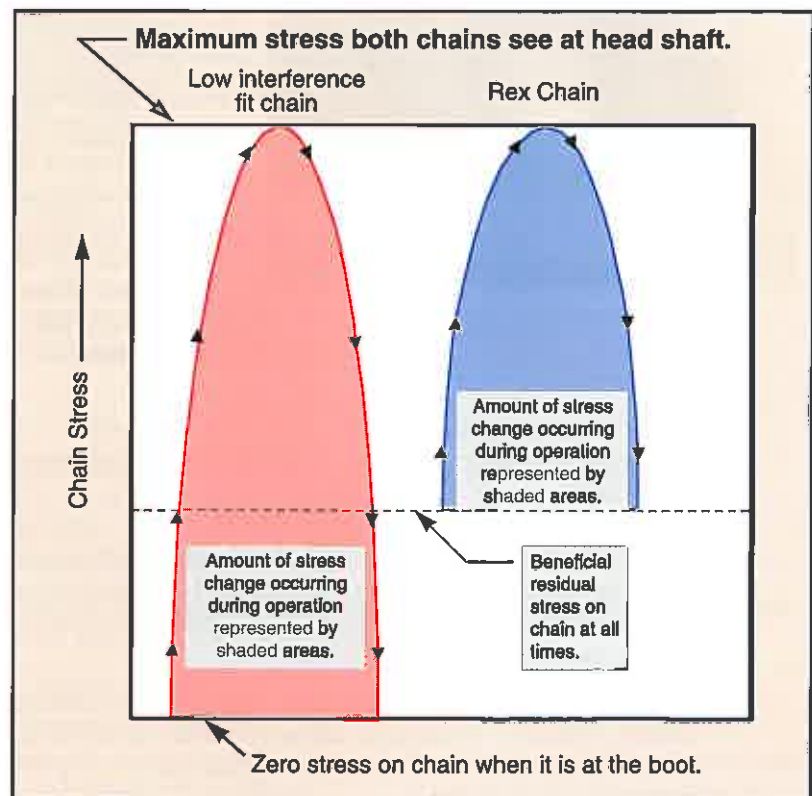
- Controlled and repeatable interference fits.
- Superb surface finishes.

Controlled interference fit through precision components

One of the main reasons for the durability of a Rex elevator chain is the optimum interference fit we achieve after assembly. The interference fit of pins and bushings creates a beneficial residual stress around the sidebar holes to significantly improve fatigue life.

To illustrate the importance of interference fit the following graph shows the range of stress that two chains might experience in an elevator as they travel from the loaded to unloaded conditions in a bucket elevator.

The red line shows a low interference fit chain and the blue line shows a Rex chain with a controlled interference fit. The low interference fit chain starts from a zero loading position, reaches a maximum load at the headshaft, and drops back to zero at the tailshaft – a large change in stress. The Rex chain has a narrower change in stress as it starts from a higher pre-stressed level – due to the controlled interference fit – rather than the lower stress level starting point of the low interference fit chain.

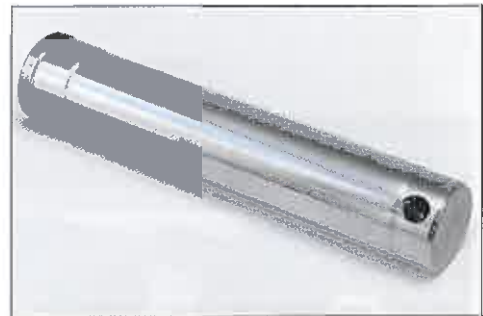


Over many cycles, the change in stress will lead to fatigue failures. The larger the change in stress, the greater the chance that the steel may break down and cause a chain failure – without warning!

You can experience this effect by bending a paper clip. Large bends (large changes in stress) cause the paper clip to break in only a few tries. If you make small bends, you might spend an hour before the clip breaks! The same goes for chain. A controlled interference fit “pre-loads” the chain to reduce the changes in stress as the chain cycles through the elevator.

Controlled interference fit comes from manufacturing components with very precise tolerances. If part diameters are not kept within a very close range, some links will have too much interference fit and others will have too little. In addition, Rexnord has spent years testing interference fit to find the optimum level for elevator chains. All Rex elevator chains are applied based upon fatigue curves generated from this testing.

To control the amount of interference, Rexnord uses the most advanced machine tools available today. These state-of-the-art machines yield chain pins and bushings with extremely accurate and repeatable diameters. Sidebar pin and bushing holes are made using advanced piercing techniques to produce precise hole diameters.



“Precise and consistent. An important key to high fatigue strength chain.”

No one but Rexnord has invested as much in time, testing, and equipment in the pursuit of excellence in chain manufacturing.

Super smooth hole finishes

In addition to controlling tolerances, sidebar hole and component surface quality is a significant part of optimizing a chain’s fatigue strength. Many chain failures occur from tiny imperfections in and around the pin and bushing sidebar holes. These imperfections result in stress concentrations that, over time, become cracks that slowly propagate with each cycle in the elevator. Eventually, these cracks lead to a sudden chain failure.



“Smooth and accurate. Screened for imperfections.”

Rexnord has developed advanced piercing techniques that ensure a smooth hole surface finish. Press operators are trained to inspect for hole finish and to ensure that this advanced tooling is properly maintained – their craftsmanship and experience is as crucial as the advanced tooling. As an additional step, all sidebars are shot-peened to remove surface imperfections and create beneficial residual surface stresses.

“Induction heat treatment of a traction wheel.”

Maximizing chain wear life through science and craftsmanship

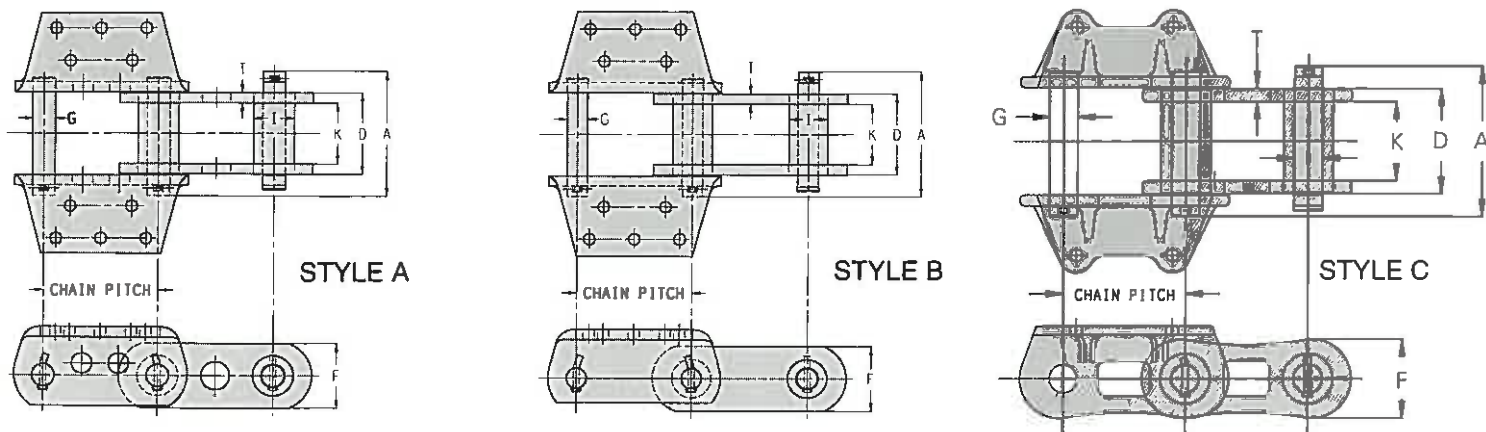
Rexnord leads the chain industry in heat treatment technology. Computer controlled furnaces and Rexnord designed induction heat treating equipment produce chain components with the hardest and deepest cases available.

Dedicated equipment is used to heat treat sprockets and traction wheels. Rexnord’s specialized carburizing and induction heating equipment for these accessories is not matched in the sprocket market!



“Induction heat treating chain pins.”

Centrifugal Elevator Chain



Centrifugal Elevator Chain Dimensions

Chain Number	Pitch	Style	Sidebars		Pins		Bushings			Sprocket Number			
			A	K	T	F	Heat Treat	G	Heat Treat		D	I	Heat Treat
ER856*	6	B	6.44	3.00	0.50	2.50	TH	1.00	CIH	4.00	1.75	CARB	856
	162		164	76.2	12.7	63.5		25.4		102	44.5		
ER956	6	A	6.44	3.00	0.50	3.00	TH	1.00	CIH	4.00	1.75	CARB	856
	162		164	76.2	12.7	76.2		25.4		102	44.5		
ER857	6	B	6.44	3.00	0.50	3.25	TH	1.00	CIH	4.00	1.75	CARB	856
	162		164	76.2	12.7	83.6		25.4		102	44.5		
ER958	6	A	6.44	3.00	0.56	3.25	TH	1.13	CIH	4.13	2.00	CARB	958
	162		164	76.2	14.2	83.6		28.6		105	50.8		
ER859	6	B	7.74	3.75	0.62	4.00	TH	1.25	CIH	5.00	2.38	CARB	859
	162		197	95.3	15.7	102		31.8		127	60.5		
ER864	7	B	7.74	3.75	0.62	4.00	TH	1.25	CIH	5.00	2.38	CARB	864
	178		197	95.3	15.7	102		31.8		127	60.5		
ER984	7	A	7.74	3.75	0.62	4.00	TH	1.375	CIH	5.00	2.50	CARB	984
	178		197	95.3	15.7	102		34.9		127	63.5		
ER1084	7	C	8.6	4.43	0.75	4.50	TH	1.62	CIH	6.00	2.85	CARB	1084
	178		218	112.5	19	114		41		152	72.4		

Consult with Rexnord engineering for elevator chain selection and application.

TH: Thru-hardened CIH: Circumferentially Induction Hardened after thru-hardening CARB: Carburized

*Rexnord recommends ER956 for elevator service.

Dimensions shown are in inches. Shaded dimensions are millimeters.

Dimensions are subject to change. Certified drawings are supplied upon request.

800 Series and 900 Series Elevator Chains

Rexnord introduced the original 800 Series of elevator chains in the 1950s. The strength and wear resistance provided by these chains allowed elevators to be built taller and run faster than ever before. Rexnord continues to increase the performance of the 800 Series through improvements in manufacturing technology.

The new 900 Series of chains was created to provide even more strength than the present 800 Series. Rexnord gave the 900 Series larger components to provide a minimum of 30% greater fatigue strength. This greater strength may be used for additional capacity in new elevators, or it may be used to provide a low cost solution to an existing elevator problem. Both the 800 and 900 Series are produced to the same high quality and premium performance specifications.

The 900 Series conveniently interchanges with the 800 Series chains. **Now upgrading your elevator can be as simple as replacing your chain!** Contact Rexnord for application assistance.

ER856 versus ER956

Benefit: Provides 30% greater fatigue strength. Operates on same traction wheel and sprocket. Bucket hole spacing is identical.

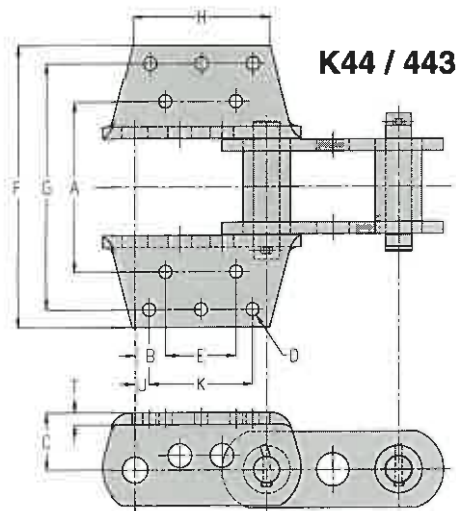
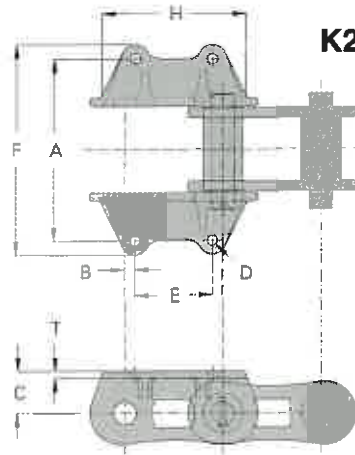
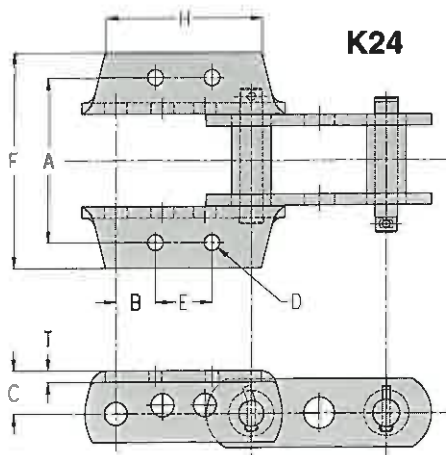
ER857 versus ER958

Benefit: Provides 30% greater fatigue strength. Operates on same traction wheel but sprockets are different. Bucket hole spacing is identical.

ER864 versus ER984

Benefit: Provides 30% greater fatigue strength. Operates on same traction wheel but sprockets are different. Bucket hole spacing is identical.

Centrifugal Elevator Chain Attachments



Chain Number	Attachment Style	A	B	C	D	E	F	G	H	J	K	T	Weight*
ER856	K24	7.25	1.75	1.88	0.69	2.50	9.38	-	6.91	-	-	0.50	22.0
		184	44.5	47.8	17.5	63.5	238	-	176	-	-	12.7	32.8
ER856	K24	7.25	1.75	1.88	0.69	2.50	9.50	-	6.91	-	-	0.50	22.8
		184	44.5	47.8	17.5	63.5	241	-	176	-	-	12.7	34.0
ER857	K44	7.00	1.25	2.50	0.56	3.50	14.00	12.00	5.50	1.25	3.50	0.50	29.5
		178	31.8	63.5	14.2	88.9	356	305	140	31.8	88.9	12.7	44.0
ER859	K44	9.00	1.62	3.00	0.69	2.75	15.00	13.00	5.92	0.75	4.50	0.62	46.5
		229	41.1	76.2	17.5	69.9	381	330	150	19.1	114	15.7	69.3
ER958	K44	7.00	1.25	2.50	0.56	3.50	13.68	12.00	5.75	1.25	3.50	0.50	30.5
		178	31.8	63.5	14.2	88.9	347	305	146	31.8	88.9	12.7	45.4
ER864	K443	9.00	1.62	3.00	0.69	3.75	15.00	13.00	7.00	0.75	5.50	0.62	44.0
		229	41.1	76.2	17.5	95.3	381	330	178	19.1	140	15.7	65.6
ER984	K443	9.00	1.62	3.00	0.69	3.75	14.88	13.00	7.32	0.75	5.50	0.62	45.5
		229	41.1	76.2	17.5	95.3	378	330	186	19.1	140	15.7	67.8
ER1084	K2	13.0	0.75	3.00	0.69	5.50	15.00	-	-	-	-	0.50	51.5
		330	19.1	76.2	17.5	139.7	381	-	-	-	-	12.7	78.7

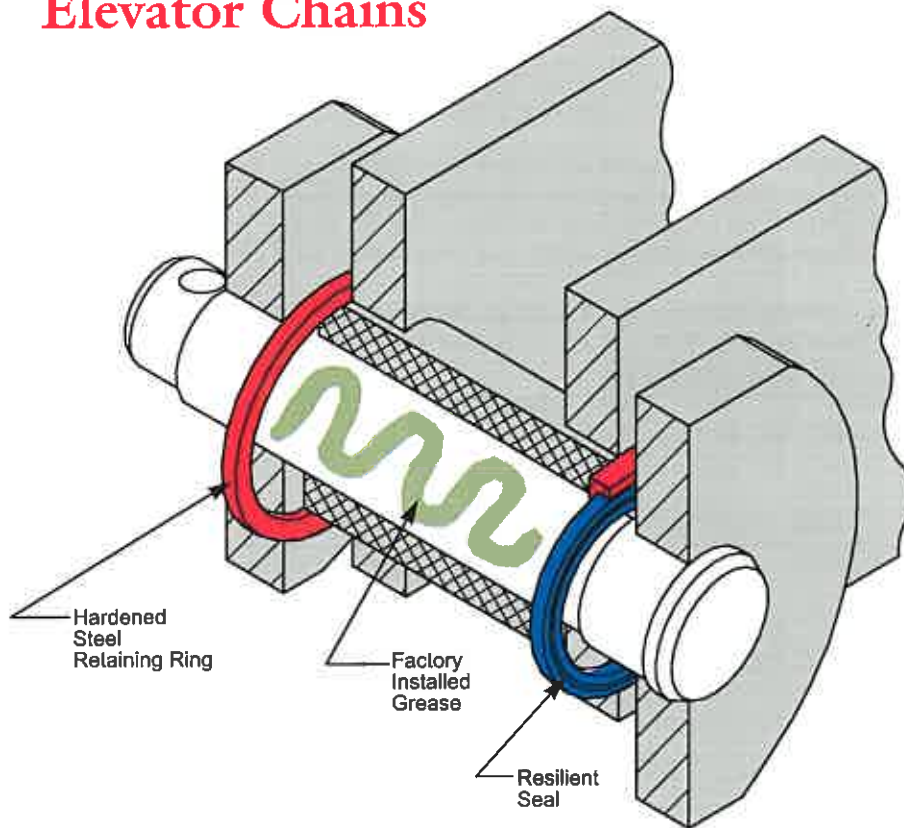
All attachments are thru-hardened.

*Assumes attachments are every second pitch.

Dimensions and weights are shown in inches and lb./ft. Shaded dimensions and weights are millimeters and kg/M.

Dimensions are subject to change. Certified drawings are supplied upon request.

Rexnord Exclusive Pre-Lubricated Sealed Joint Elevator Chains



Rexnord's patented seal keeps grease in and abrasive materials out of the chain joint to significantly improve chain joint life. This unique design couples a resilient seal (blue) with a hardened steel retaining ring (red) to completely seal off the chain joint from fine abrasives. Equally as important, the seal retains factory installed grease (green) in the chain joint to dramatically reduce wear of the chain. Nothing else in the industry comes close.

When to Consider the Sealed Joint Option

Sealed joint chains are more expensive than standard chains. Therefore, some forethought must be given to the proposed application so that the greater expense justifies itself. Severe pin wear in finished cement elevators or pin corrosion due to corrosive environments can be reduced with the sealed joint. The standard seal is limited to 250°F (121°C). A higher temperature seal material is available. Rexnord engineers are available to discuss any applications you may be considering.

Available Chains

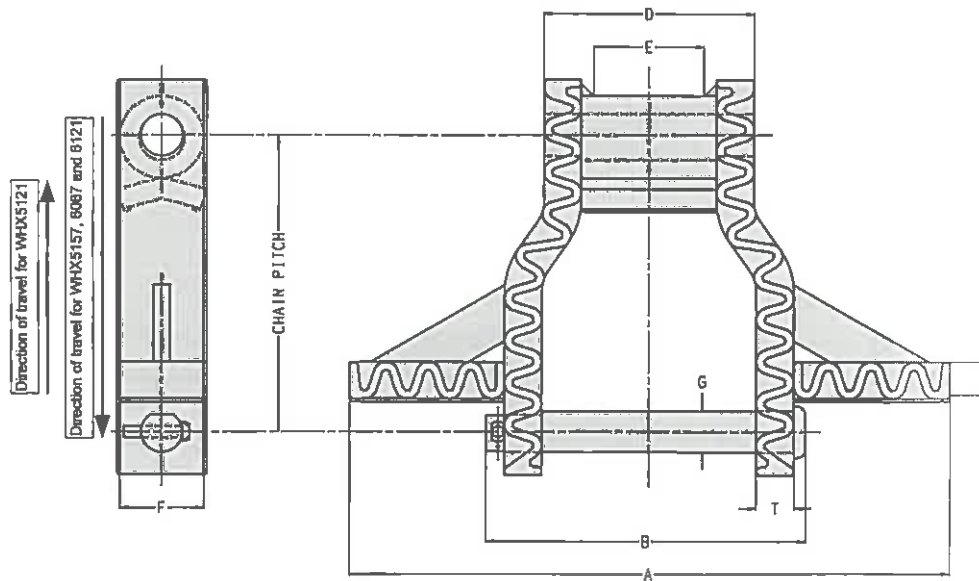
Many elevator chains are available with this option. Sealed joint chains have a "SJM" prefix that replaces the "ER" prefix. As an example, to order an ER984 as a sealed joint chain one would describe it as SJM984.

Heavy Duty Welded Steel Drag Chain

Reduce maintenance and downtime with Rex heavy duty welded drag chain while increasing your conveying efficiency!

This premium performance drag chain features:

- Hardface welding on both of the chain's sliding surfaces as standard. A typical weld hardness of 60 R_C and a heavy weld bead give this chain excellent wear resistance in cold clinker applications.
- Interference fit between the pin and chain sidebar dramatically improves chain strength and joint wear life over that of a cast drag chain. No loose pins to move around in the chain joint.
- An Induction Hardened pin gives the best of two worlds - a 60 R_C typical case and tough, impact resistant material in the balance of the pin. The result: wear resistance coupled with impact resistance.
- Square edges on the wing and sidebar of welded drag chain conveys more efficiently than rounded cast chain edges and moves a deeper bed of material with each revolution of the chain.
- Heat treated and fabricated steel components eliminate the failures that cast chains experience from casting porosity and inclusions.



Chain Number	Pitch	Sidebars				Pins			D	E	Rated Working Load	Sprocket Number
		A	T	F	Heat Treat	B	G	Heat Treat				
WHX5157	6.05	8 - 14	0.63	2.50	TH	6.94	1.13	SIH	4.63	2.75	18,200	5157
	6.05	8 - 14	0.63	2.50	TH	6.94	1.13	SIH	4.63	2.75	18,200	5157
WHX6067	9.00	10 - 26	0.75	2.50	TH	8.19	1.25	CIH	5.50	3.63	24,300	6121
	9.00	10 - 26	0.75	2.50	TH	8.19	1.25	CIH	5.50	3.63	24,300	6121
WHX5121*	9.00	10 - 30	1.13	2.50	TH	9.75	1.25	CIH	6.31	3.63	27,600	6121
	9.00	10 - 30	1.13	2.50	TH	9.75	1.25	CIH	6.31	3.63	27,600	6121
WHX6121	9.00	10 - 30	1.13	2.50	TH	9.75	1.25	CIH	6.31	3.63	27,600	6121
	9.00	10 - 30	1.13	2.50	TH	9.75	1.25	CIH	6.31	3.63	27,600	6121

*WHX5121 is dimensionally the same as WHX6121 except it runs closed end forward.

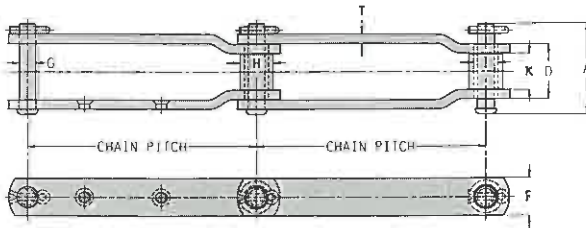
TH: Thru-hardened SIH: Selectively Induction Hardened after thru-hardening CIH: Circumferentially Induction Hardened after thru-hardening

Dimensions and working loads shown are in inches and pounds. Shaded dimensions and working loads are millimeters and Newtons. Dimensions are subject to change. Certified drawings are supplied upon request.

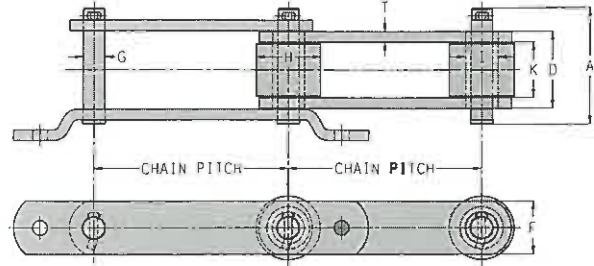
Continuous Discharge, Dual Strand Elevator Chains

Some elevator applications require the strength or performance characteristics that only a dual strand chain system can offer. Rexnord manufactures these chains to the same exacting standards as the centrifugal elevator chains. Rexnord takes special care during manufacturing to insure that these chains are within allowable tolerances for synchronized conveying.

NOTE: When ordering any dual strand elevator chain be sure to ask for matched and tagged strands and keyed in-line sprockets.



G117 & G118 Attachment Style



G5 Attachment Style

Continuous Discharge Elevator Chain Dimensions with Attachments

Chain Number	Pitch	Sidebars					Pins		Rollers		Bushings			Rated Working Load	Weight*
		A	K	T	F	Heat Treat	G	Heat Treat	H	Heat Treat	D	I	Heat Treat		
R1251-G117	12	4.63	1.94	0.50	2.00	TH	0.88	CARB	1.75	CARB	2.94	1.25	CARB	9,000	9.8
	126	118	49.3	12.7	50.8		22.4		44.5		74.7	31.8		40,000	14.6
R4004-G5	9	5.69	2.63	0.50	2.50	TH	1.00	CIH	3.00	CARB	3.63	1.50	CARB	12,700	18.5
	90	145	66.6	12.7	63.5		25.4		76.2		92.2	38.1		56,500	27.6
R4035-G5	9	6.13	3.19	0.50	3.00	TH	1.12	CIH	3.50	CARB	4.19	1.75	CARB	16,400	25.6
	90	156	80.8	12.7	76.2		28.4		88.9		106	44.5		73,000	38.1
R4037-G5	9	6.80	3.17	0.63	4.00	TH	1.50	CIH	4.50	CARB	4.50	2.13	CARB	23,600	44.8
	90	172.7	80.8	16.0	101.6		38.1		114.3		114.3	54.1		105,000	66.8
R4065-G5	9	6.16	3.06	0.63	3.50	TH	1.25	CIH	4.25	CARB	4.31	2.00	CARB	18,900	38.6
	90	156	77.3	16.0	88.9		31.8		108		109	50.8		84,000	57.5
R4251-G118	12	4.84	1.88	0.50	69.8	TH	0.88	CIH	-	-	2.94	1.75	CARB	9,000	12.4
	126	122	47.6	12.7	178		22.4				74.7	14.5		40,000	18.5

*Assumes attachments are every second pitch.

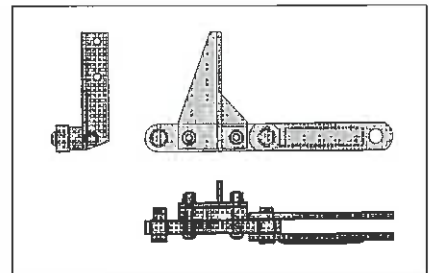
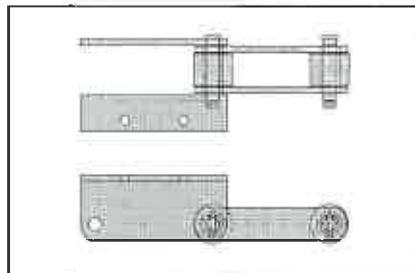
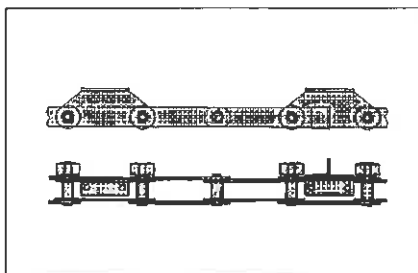
TH: Thru-hardened CIH: Circumferentially Induction Hardened after thru-hardening CARB: Carburized

Dimensions, working loads and weights shown are in inches and pounds. Shaded dimensions, working loads and weights are millimeters, Newtons and Kg/M. Dimensions are subject to change. Certified drawings supplied upon request.

Reclaimer Chains

Many of the stacker-reclaimer systems in use today are of European origin. Fortunately, Rexnord is able to provide replacement chains for these systems at very competitive prices and lead times.

There is no standard chain design used in the industry but the drawings below illustrate some of the recent designs we have manufactured. We will gladly work with your organization to optimize the design of these chains to provide improved attachment retention and wear life. A sample or drawing of your current chain is required for a quotation.





Elevator Buckets

Rexnord manufactures a variety of bucket styles in fabricated steel, cast, polymeric and urethane materials. Over 60 years of elevator design gives us practical application experience that we have used to design our buckets. Available in "AC" and "Mill Duty" versions, these buckets can be used with chains and belts. Please refer to our Catalog No. 5050 for dimensions, wing attachments and punching patterns.

Elevator Sprockets and Traction Wheels

All the heat treat and hardening expertise that goes into chain is applied to Rexnord's sprockets and traction wheels. A matched set of chain and sprockets or traction wheels assure smooth system operation. Plus, Rexnord's unique ability to achieve deep and hard case depths provides the longest wearing drive components available. Don't settle for substandard drive components when you've purchased a premium elevator chain.

"Cross-section of a Rex sprocket tooth showing the hardened case material."



Linkmaster® Chain Assembly Tool

Keep the advantage of high interference fit by using the Linkmaster assembly and disassembly tool for all Rex elevator chains. This rugged device uses a hydraulic ram and hand pump to deliver the extremely high forces necessary to drive chain pins in the field or shop. Never heat sidebars or grind pins—premature chain failure will result.

For drive chain applications, a Drivemaster® chain tool is available to ease assembly and disassembly of these chains.

Contact Rexnord for more details.



Rex[®] Chain



in Bucket Elevators



Around the World!

Customer Service

For over 100 years the dedicated people of Rexnord have delivered excellence in quality and service to our customers around the globe. Rexnord is a trusted name when it comes to providing skillfully engineered products that improve productivity and efficiency for industrial applications worldwide. We are committed to exceeding customer expectations in every area of our business: design, application engineering, research, production and service.

Because of our industry team focus, we are able to more thoroughly understand the needs of your business and have the resources available to work closely with you to reduce maintenance costs, eliminate redundant inventories and prevent equipment down time.

Breadth of Product

Rexnord represents the most comprehensive portfolio of power transmission and conveying components in the world with the brands you know and trust.



- Aerospace Bearings
- Ball Bearings
- Mounted Ball Bearings
- Cylindrical Bearings
- Roller Bearings
- Mounted Roller Bearings
- Brakes & Clutches
- Conveyor Chain
- Engineered Chain
- Roller Chain
- Conveying Equipment
- Conveyor Components
- Couplings
- Drives
- Idlers
- Repair Services
- Speed Reducers

The Power of Rexnord

WORLDWIDE CUSTOMER SERVICE

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