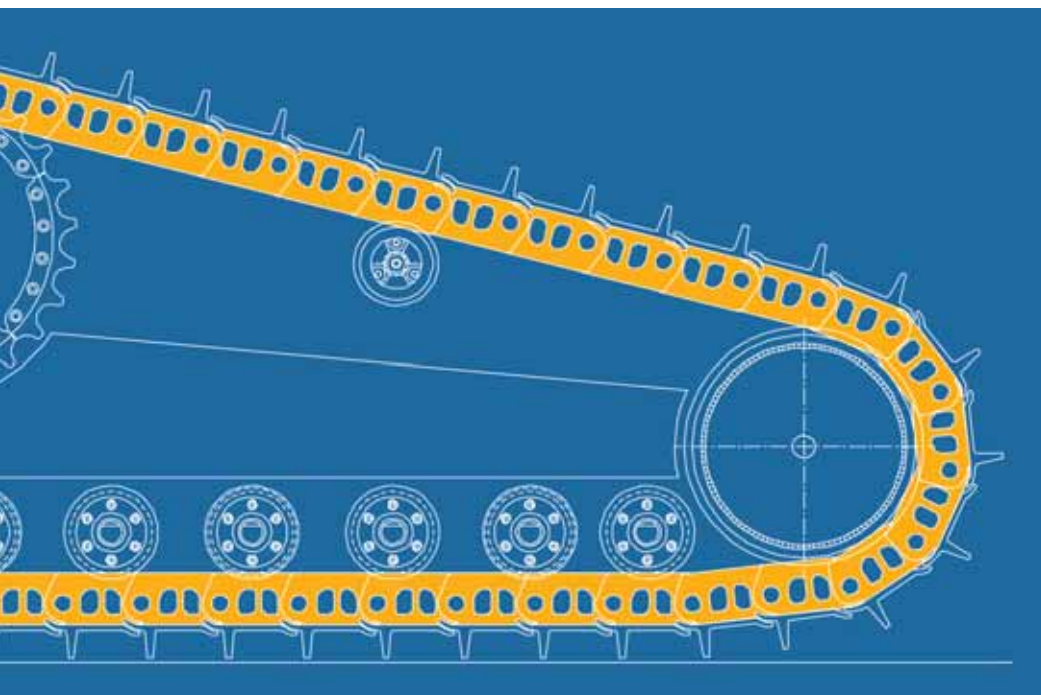


# Heavy Duty Track Chains

The Complete Choice



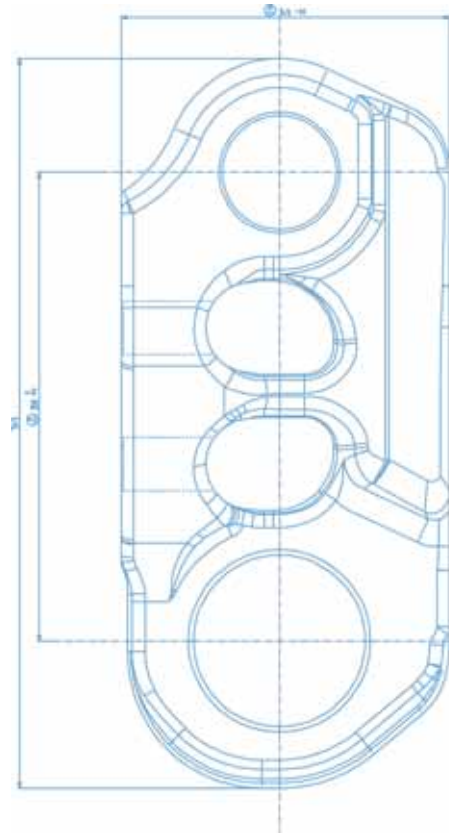
A Company of  
ThyssenKrupp  
Technologies

**BERCO** S.p.A.



# Berco

## Moving Your Business Ahead



### Leadership in Undercarriage

For about 90 years Berco's leadership and research has resulted in the greatest undercarriage value.

Quality is the critical link that assures the maximum productivity of your machine. No one has invested more than Berco to assure dependable

**High Quality Undercarriage.** Berco starts with the highest quality steel, then controls hardened depth along with other performance features. As a result Berco's undercarriage is second to none for extended wear life and value.

### Getting the Most from your Undercarriage

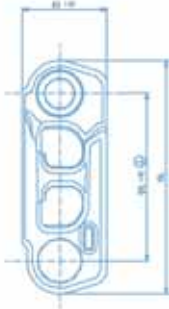
Since 1920 Berco has continued to innovate and improve undercarriage performance. High-quality materials and careful manufacturing processes ensure that Berco undercarriage components are reliable, durable and wear at a predictable rate. Longer life and controllable wear mean that you get **maximum undercarriage performance** at the **lowest** operating **cost**. At Berco we call it "**Best Undercarriage Value**"

### Berco Process Control

Berco builds value & durability into every undercarriage component. Berco controls processes critical to durability and value, such as: design, raw material, heat treating, manufacturing and because **Berco has control over these processes,** our undercarriages wear at a predictable rate and can be managed as a system.

# Heavy Duty Track Chains

## The Complete Choice



### Berco Heavy Duty Track Chains

Heavy duty, sealed & lubricated track chains have been specifically designed for **increased** pin & bushing **retention**. Track link incorporates **greater** pin-to-link and bushing-to-link **contact areas** while **additional** link **wear material** increases component life. Heavy Duty chains are also available in the version with **Extreme Wear Resistance Bushings** for maximum life in high abrasion environment. Exclusive heat treatment gives Berco links consistent surface hardness, superior hardened depth and strong core hardness. Berco pins & bushings are dimensionally matched to the links and manufactured to provide excellent track joint reliability, while the design ensures maximum sealability. All this results in excellent wear resistance, strength and durability for superior sealability and longer life. Heavy duty track chains work best in moderate to high impact conditions and they are ideal for rocky conditions, logging, reforestation, side sloping and for uneven terrain. Heavy duty track chains with *Extreme Wear Resistance Bushings*, work best in high abrasion/low impact applications.



### Your Best Undercarriage Value

- **Greater** pin-to-link and bushing-to-link **contact areas** for increased pin retention
- Higher track link provide **additional wear material**
- Track links are forged from deep hardening low alloyed boron steels with certified hardenability based on Berco's specification
- Links are quenched & tempered for tough and strong core hardness, superior strength and higher pin & bushing retention
- Rail surface induction hardened (HRC 53) to the wear limit (HRC > 45)
- Final furnace tempering reduces link chipping and spalling
- Bushings are treated in a special furnace for high temperature carburizing
- Pins are deep hardened for best resistance to wear and fatigue
- The choice of the leading OEMs

### The Complete Choice

- Heavy Duty Chains version with *Extreme Wear Resistance Bushings* available as an option
- For track-type machines ranging in class from D4H-HD to D7H-HD
- Suitable for XR, XL, LGP and TSK undercarriages
- Ultra low temperature (-50°C) version available
- The choice of the leading OEMs

### Customer Satisfaction

Considering that more than 50% of your maintenance costs will go into maintaining the undercarriage, it is not surprising that Berco represents the best choice when the time comes for the replacement. And the best choice is confirmed by the large number of **Satisfied Customers** that **Keep Choosing Berco**



# Heavy Duty Track Chains

## The Complete Choice



	<b>Class D4H</b> Pitch 171,45 mm (6,75") 5/8" Hardware D5N - D5M - D4H - LGP - XL			<b>Class D5H</b> Pitch 190,5 mm (7,50") 3/4" Hardware D6N - D6M - D5H LGP D6M XL - D5H XL - D5H STD			<b>Class D6H</b> Pitch 203,2 mm (8,00") 3/4" Hardware D6R - D6H LGP D6H XL - D6H XW - D6H XR			<b>Class D7H</b> Pitch 215,9 mm (8,50") 7/8" Hardware D7R - D7H XR -D7H LGP		
	Link	BERCO #	OEM #	Link	BERCO #	OEM #	Link	BERCO #	OEM #	Link	BERCO #	OEM #
<b>HEAVY DUTY TRACK CHAINS</b> Lubricated Chain without Shoes	39	CR 5552/39	108-0953	37	CR 5465A/37	106-1635	39	CR 5534B/39	6I-9668	40	CR 5574/40	115-6301
	41	CR 5552/41	108-0955	39	CR 5465A/39	106-1637	40	CR 5534B/40	6I-9670	41	CR 5574/41	115-6303
	44	CR 5552/44	108-0954	40	CR 54465A/40	110-2976	41	CR 5534B/41	6I-9671	43	CR 5574/43	115-6302
<b>BERCO CHAIN COMPONENTS</b> • Bushing and Seal Kit • Pin & Bushing Kit	39	CR 5563/39		37	CR 5508/37		39	CR 5544A		40	CR 5585/40	
	39	CR 5565/39		37	CR 5509A/37		39	CR 5546B		40	CR 5587/40	
<b>OEM CHAINS ONLY</b> • Bushing and Seal Kit • Pin & Bushing Kit	39	CR 5564/39	115-2438	37	CR 5466/37	115-2439	39	CR 5545/39	115-2440	40	CR 5586/40	128-5604
	39	CR 5566/39	N.A.	37	CR 5507/37	N.A.	39	CR 5547/39	N.A.	40	CR 5588/40	N.A.
<b>TRACK SHOES HARDWARE</b> • Bolt • Nut • Short Master Link Bolt • Long Master Link Bolt		AC 226A	9G-3110		CR 4441	6V-1792		CR 4441	6V-1792		CR 1000C	7H-3599
		CR 1250B	1M-1408		CR 1967	1S-1860		CR 1967	1S-1860		CR 1969	2S-2140
		CR 4357	3T-8601		CR 5443	106-1642		CR 3326	9S-1838		CR 4135	6V-1723
	CR 5573	9G-8592		CR 5444	107-0719					CR 4789	9W-9058	
<b>TRACK SHOES</b> <b>Standard Shoe</b> • Single Grouser		CR 4358/14"	3T-0356		CR 5450/18"	106-1603		CR 5320/20"	6Y-6285		CR 4526/22"	7T-0737
		CR 4358/16"	3T-0358		CR 5450/20"	106-1604		CR 5320/22"	6Y-6286		CR 4526/24"	7T-3940
		CR 4358/18"	3T-0360		CR 5450/22"	106-1607		CR 5320/24"	6Y-6287		CR 4526/26"	7T-5968
<b>Master Shoe</b> • Single Grouser		CR 4358/20"	8E-9812		CR 5450/24"	117-0615		CR 5320/26"	133-2890		CR 4526/28"	7T-2282
		CR 4358/22"	8E-9810		CR 5450/28"	106-1602		CR 5320/30"	6Y-8973		CR 4526/30"	115-7462
		CR 4358/24"	8E-4972		CR 5450/34"	106-1605		CR 5320/36"	196-7839		CR 4526/36"	6I-9912
		CR 4358/26"	6I-9573									
		CR 4358/30"	216-6286									
					CR 5451/18"	106-1611		CR 5316/20"	6Y-6292			
					CR 5451/20"	106-1612		CR 5316/22"	6Y-6294			
					CR 5451/22"	106-1613		CR 5316/24"	6Y-6296			
					CR 5451/24"	117-0616		CR 5316/26"	6Y-6298			
					CR 5451/28"	106-1615		CR 5316/30"	6Y-6300			
				CR 5451/34"	106-1616		CR 5316/36"	196-1236				
<b>EXTREME SERVICE TRACK SHOES</b> <b>Standard Shoe</b> • Single Grouser		CR 4826/18"	6Y-5624		CR 5448/20"	106-1608		CR 4443/18"	6Y-6390		CR 4054/20"	117-0756
		CR 4826/20"	8E-9816		CR 5448/22"	107-0713		CR 4443/20"	6Y-6391		CR 4054/22"	7T-2750
		CR 4826/22"	8E-9814		CR 5448/600	132-1334		CR 4443/22"	6Y-6389		CR 4054/24"	7T-5969
<b>Master Shoe</b> • Single Grouser		CR 4826/24"	1Q-4754		CR 5448/34	222-1796		CR 4443/24"	1Q-4930		CR 4054/26"	1Q-4960
		CR 4826/30"	236-1870					CR 4443/30"	138-5774		CR 4054/36"	247-0264
								CR 4443/36"	169-5868			
					CR 5449/20"	106-1617		CR 3695/18"	6Y-6392			
					CR 5449/22"	107-0714		CR 3695/20"	6Y-6394			
					CR 5449/600	132-1336		CR 3695/22"	6Y-6412			
					CR 5449/34	222-1797		CR 3695/24"	6Y-6397			
							CR 3695/30"	6Y-6404				
							CR 3695/36"	169-5867				

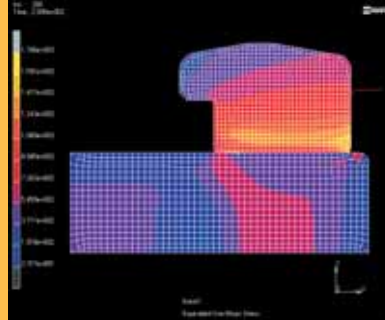
**Note:** the table is not complete, for codes regarding chains with shoes (standard or extreme service) and chains with or without shoes (standard or extreme service).

# Adding Value to Our Products

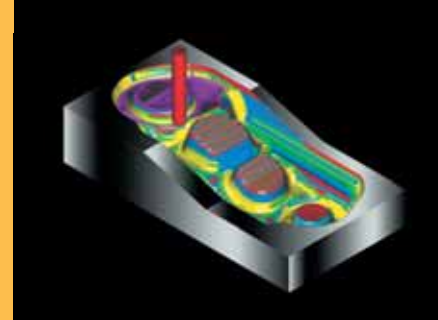
## Adding value to Your Business



3D modeling of links joint for kinematic analysis



FEM analysis of pin & link press fit



3D modeling of a link die

## Making a Superior Product

It all begins in the design stage, Berco **Research & Development** engineers employ state of the art computer design. The use of 3D modeling and finite element analysis (FEM) allow us to design and evaluate a component before it is built.

Our **Rapid Prototyping** enables Berco's engineers to optimize a design before spending money in tooling.

Berco **Metallurgy Laboratory** employs advanced machines such as an electron microscope with microanalysis, a spectrophotometer, tribometers for wear tests, MTS presses for static and fatigue tests on materials and components.

**Photo-elasticity** and **strain gauge** techniques are commonly used for stress and fatigue analysis on individual and assembled components.

Stress analysis at **extreme temperatures** (-70°C ÷ 250°C) are also carried out.

**Reliability Test** on components (ex. rollers) are carried out to determine life and performance in a variety of field applications.

**Artificial Intelligence** and **Vision** techniques are currently being developed to automatically inspect 100% of components. This reduces defects (ex. after forging or heat treatment) attributable to manufacturing to almost zero.

Huge efforts are also devoted to the development of **New Materials** and improvement of the **Heat Treating Processes**, to guarantee longer product life and **Superior Products**.

Having supplied leading OEMs for decades, **Berco's Engineers** and product specialists can help you design and manufacture the right undercarriage, using high tech software, tools and expertise. Berco can also help you reduce development and engineering time, tooling expenses and facility costs. **Berco Adds Value** not only to our products but also **to Your Business**.



Photo-elasticity analysis



Electron microscope with microanalysis



Rapid prototyping



Stress analysis at extreme temperatures



# State of the Art Production

## State of the Art Components



Track links forging



Track links forging



QT Process

With a capacity of over **130,000 ton** of finished product the Berco Track Chain Department manufactures more than **180,000 Track Chains** per year. From the central raw material warehouse the steel bars are transferred to one of the automatic cutting & forging stations. After quenching & tempering chain links are milled on the shoe and rail surfaces. A conveyor then transfers the links to the two step induction hardening and quenching station. Accurate induction frequency and artificial vision ensure optimum hardened depth and total quality of the links. Link boring and stress relieving completes the link manufacturing cycle. Bushings are turned and drilled in double spindle lathes, deep hardened after carburizing, grinded and superfinished (lapped) for longer seal life. These processes ensure high wear resistance and excellent core toughness. Pins are machined deep hardened and ground to ensure narrow dimensional tolerances and the best surface finish for longer life. Complete track chains are finally assembled in automatic press (Berco's Design) where all important parameters (torque, lubrication, seals positioning, etc.) are monitored online. Painting completes the process while final inspection of the finished products guarantees the **Total Quality** of all components.

### Heat Treated to Treat You Even Better

Quality materials and state-of-art manufacturing are not enough to guarantee the quality of the finished products. That's why the heat treating processes are carried out making sure that all process parameters (temperature gradients, time, quenching temperature, etc.) are constantly monitored online. Hardening and tempering upgrade mechanical properties for superior wear resistance, stress relieving guarantees perfect geometry and excellent resistance for longer product life.

### Automated Processes

#### Automatic Quality

The entire production process is fully automated and computer controlled via Computer Manufacturing Technology systems. This guarantees a highly reliable process and constant quality of the products.

### The Right Product at The Right Time

A vast variety of raw materials and flexible manufacturing give the competitive advantage of short lead times while matching your specific need. That's what we also call **Customer Satisfaction**.

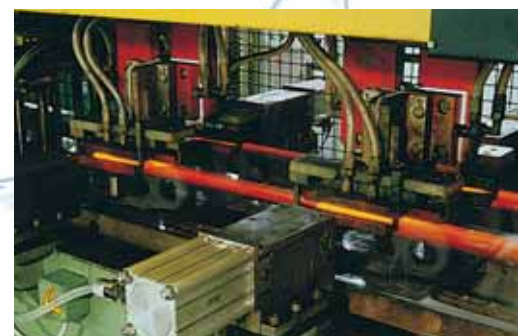


▲ Bushings milling

▼ Track chains fully automated assembly

Split master links creep feed grinding

Induction hardening of track links





# We Care

## Leadership in Environmental Development

Not only do **we care** about our **customers** supplying quality products manufactured under **ISO 9001** certified processes, but also **we care** about the **Environment**.

Since Jan 2000 Berco is **ISO 14001** certified and has adopted **Environmental Procedures** throughout the entire manufacturing process. We have an **Environmental Strategy** and we continuously check on the progress made toward the set Objectives.

### Getting More out of Less.

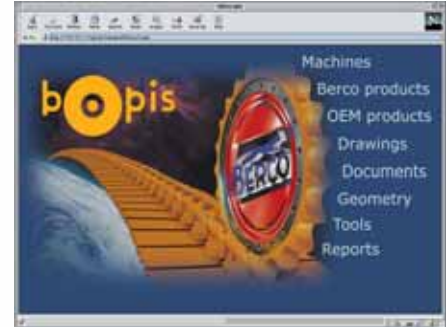
Reduction of energy consumption, improved use of materials and minimization of waste, allows for a lower impact on the environment. We have given preference to environmentally friendly transportation like trains and boats and we have begun redesigning our packaging in order to use recyclable materials. We have changed our painting processes and now use environmentally friendly water-based paint, with a reduction in the amount of pollutant emissions. We have adopted a closed loop cooling system that reuses the water from our heat treatment processes instead of emitting it into the environment.

## Customer Service

We have a large dealer network covering 70 countries in the world. They have been in business for decades, they know the business and they know it from their customers' point of view. They understand **customers' needs** and they know that their success is tied to their customers' successes.

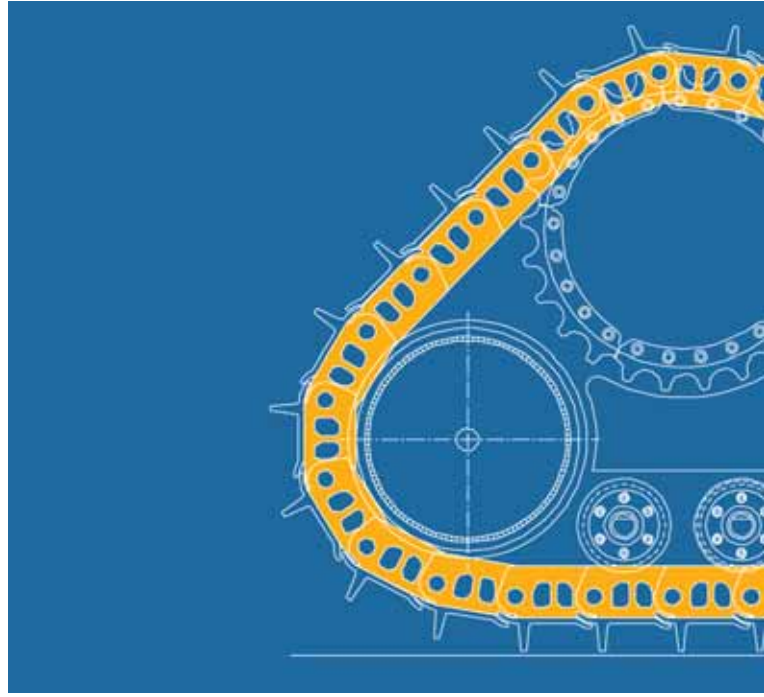
We **support** our dealers with our professional sales force. We train them, we provide them with the right marketing tools and advanced technological systems. We have developed a computer based integrated system **BOPIS** (Berco Online Product Information System) enabling a dealer technician to use a laptop computer from the field to consult our database and easily find the right answer.

**We back you, wherever you are.** We work with our dealers to establish a parts and service presence near you, in order to always have the right product at the right time in the right place. It is customer satisfaction that has built our **Berco Track Record**.



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The specifications and processes described in this brochure are subject to change without notice

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