

Berco Mining Products

The Widest Undercarriage Choice



The n. 1 in Undercarriage

6,000,000 Track Shoes
1,300,000 Rollers
180,000 Track Chains
320,000 Idlers and Sprockets
250,000 Tons of product
12,000 Containers of product

7
BMP
MINING
PRODUCTS



A Company
of ThyssenKrupp
Group

BERCO S.p.A.





MOVING YOUR BUSINESS AHEAD

YOUR BEST UNDERCARRIAGE VALUE

Since **1920** Berco has offered an innovative, reliable and economical solution to any undercarriage need. Whether for the **original equipment manufacturers** (OEM) or the **aftermarket**, for a **special machine** or a **mini-excavator**, for a **bulldozer** or a **mining excavator**, Berco can offer you the right answer to your specific requirement.

Superior engineering, innovative technology, comprehensive know how and state-of-the-art manufacturing guarantee the **total quality** of the products and services offered to you.

“Original Equipment Quality, Aftermarket Value”

AN EXPERT PARTNER YOU CAN RELY ON

Custom made solutions and project engineering support is available upon request.

Our team of engineers can help you **choose or design** the most effective and efficient solution to your specific undercarriage need.

They can help you reduce development and engineering time, tooling expenses and facility costs, while **adding value** to your business.

“Berco, The choice of the leading OEMs”

All products shown in this document originate from Berco exclusively.
Any references to Caterpillar (the Caterpillar word signs) are mentioned to communicate that the aforementioned products are only suitable for Caterpillar machines with the corresponding model designation.

WE CARE

CUSTOMER SERVICE

We have a large dealer network covering more than 90 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, and 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**.

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**





LEADERSHIP IN ENVIRONMENTAL DEVELOPMENT

Not only do **we care** about our customers supplying quality products manufactured under **ISO 9001:2000** 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 favored environmental friendly transportation like trains and boats and have begun redesigning our packaging to use recyclable materials. We have changed our painting processes to an environmentally friendly water-based paint and we have reduced the amount of polluting emissions. We have adopted a closed loop cooling system to reuse water from our heat treating instead of emitting it into the environment.

ISO 9001 - ISO 14001

Berco Mining Products offers an efficient, reliable and economical range of solutions for mining operations, catering for the undercarriage needs of open pit mining, quarrying or earthmoving in large-scale land reclamation.

Superior engineering and technology, comprehensive know-how and state-of-the-art manufacturing ensure the total quality of the products and services offered. Our team of engineers is available to help you choose or design the most effective and efficient solution to your specific undercarriage needs.

THE WIDEST CHOICE

- A complete line of undercarriage components for track-type machine classes ranging from 50 to 300 ton and 215.9-350 mm (8¹/₂"-13.78") chain pitch
- Dry, greased, sealed & lubricated chain versions.
- Arctic (-50°C) version and track chains with life-time seal groups upon request
- Forged shoes for heavy duty applications
- Track chains for special applications: large conveyor systems, pipeline handling, etc.

THE WIDEST CHOICE OF UNDERCARRIAGE FOR EXCAVATORS

- Components for: CAT345, 350, 365, 375, E650, 5080; Demag H65, H85, H95, H121; Case CX800; Hitachi EX550, EX600, EX700, EX750, EX800, EX1000, EX1100, EX1800; Komatsu PC650, PC710, PC750, PC800, PC1100, PC1250, PC1800; Liebherr R954, R964, R974, R984, R994; Link Belt LS7400; Terex O&K RH30, RH40, RH60, RH90, RH120C; Poclairn 300, 400, 600, 1000; Sumitomo SH800 and other machines
- Chain pitch from 215.9 to 350 mm (8¹/₂"-13.78")



FORGED SHOES

Forged shoes for extreme applications, where greatest resistance is required.



RH 120C

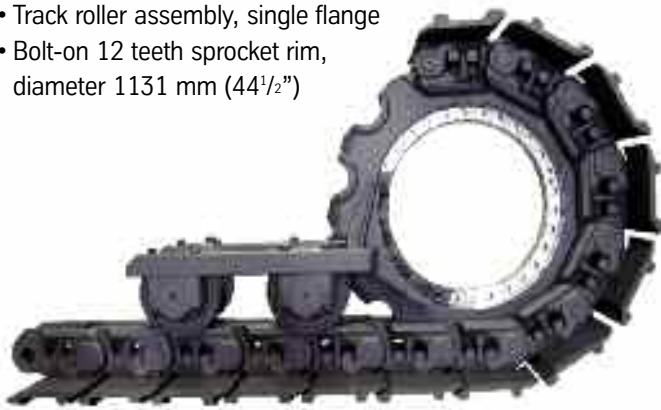
- Greased unsealed track chain
- Chain pitch 350 mm (13.78")
- Double grouser forged shoe, width 800 mm (31¹/₂")
- Track roller assembly, single flange, with oil fill plug on collars and locking pins, reinforced shaft dimensions





LIEBHERR R984C

- Track group, greased, sealed, chain pitch 280 mm (11")
- Double grouser shoes, open center, clipped corner, shoe width 750 mm (29 1/2")
- Track roller assembly, single flange
- Bolt-on 12 teeth sprocket rim, diameter 1131 mm (44 1/2")

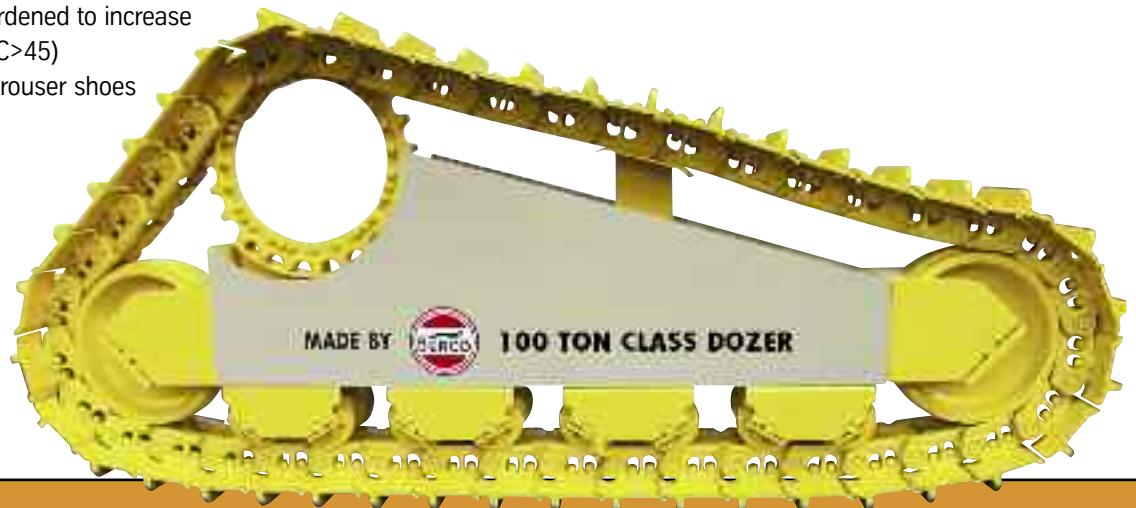


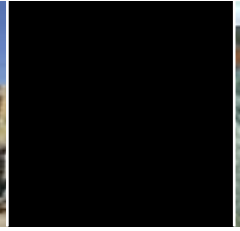
TRACK CHAINS WITH BPR

- For D9L, D9N, D9R, D10N, D10R, D11N, D11R, D275, D375, D455 and D475 machines
- Lubricated track chains with snap rings in all joints (BPR)
- BPR - Berco Pin Retention - improves operating life of components. The snap rings on the pin ends provide a perfect sealability of the track chains. Side loads can be partially supported by this device
- D10 and D11 are available with lifetime seal groups, for applications in which the life of the seal becomes the critical factor for the life of the chain

THE WIDEST CHOICE OF UNDERCARRIAGE FOR DOZERS

- Components for: CAT D8, D9, D10, D11 classes; Dresser TD25, TD40; Fiatallis FD30, FD40, FD50; Deere 1050C; Komatsu D135, D155, D275, D355, D375, D455, D475; Liebherr PR751, PR752 and other machines
- Chain pitch from 215.9 to 317.5 mm (8 1/2" - 12 1/2")
- Track links are forged, quenched and tempered, rail surface induction hardened to increase the wear resistance (HRC>45)
- Extreme service single grouser shoes available





TRACK CHAINS

Special heavy duty, sealed & lubricated track chains have been accurately designed for increased pin & bushing retention. The links incorporate greater pin-to-link and bushing-to-link contact areas while additional link wear material increases component life.

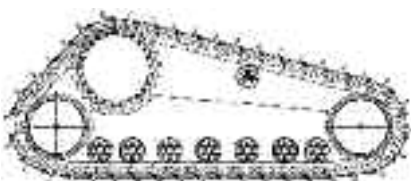
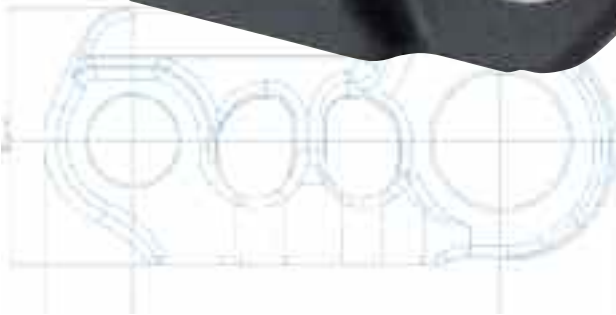
Exclusive **heat treatment** gives Berco links consistent surface hardness, unmatched hardened depth and strong core hardness for increased component life.

Berco **pins & bushings** are dimensionally matched to the links and manufactured to provide excellent track joint reliability, while the specific design ensures maximum sealability.

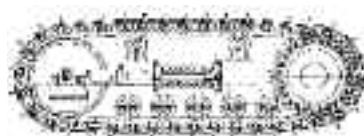
BPR, Berco Pin Retention (available for some track chains) improves operating life of components. The snap rings on the pin ends provide a perfect sealability of the track chains. Side loads can be partially supported by this device D10 and D11 are also available with lifetime seal groups, for applications in which the life of the seal becomes the critical factor for the life of the undercarriage.

All this results in excellent wear resistance, strength and durability for superior sealability and longer life.

- Links are forged from deep hardening boron steels with certified hardenability based on Berco specification
- Links are either quenched and tempered or through hardened for 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
- Precision designed and accurately machined for proper fit, higher reliability and longer life



CLASS D8N/R
Pitch: 215.9 mm - 8¹/₂"



CLASS D9L (PC600)
Pitch: 228.6 mm - 9"



CLASS D155
Pitch: 228.6 mm - 9"





ROLLERS

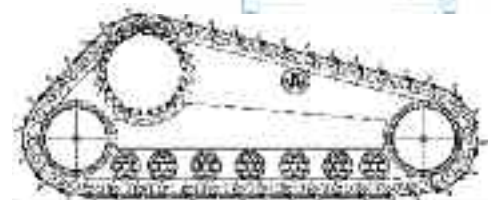
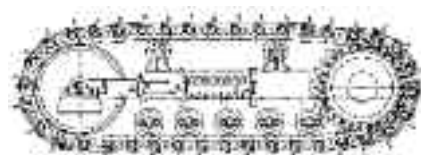
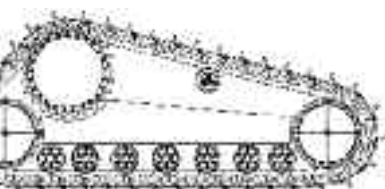
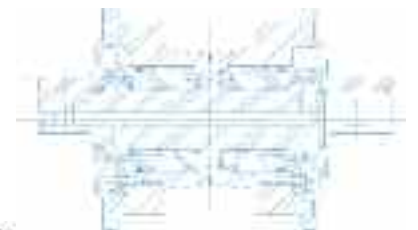
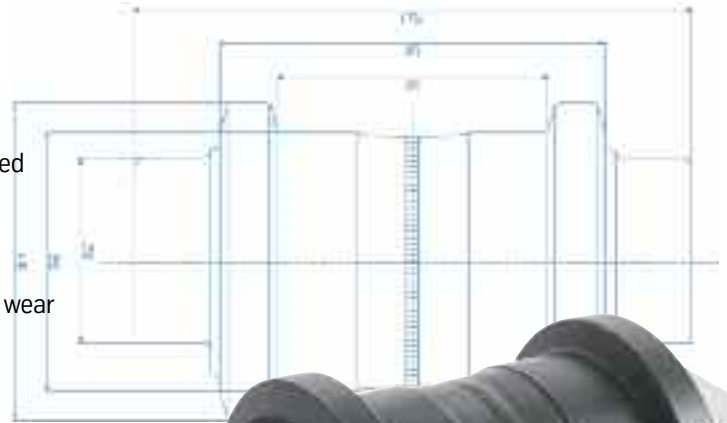
Rollers feature reinforced flanges and have been designed and manufactured for longer life in the most severe applications.

Berco's **differential quenching** or **through hardening** processes upgrade mechanical properties for increased wear life, superior structural support and resistance to deformation.

Berco's exclusive seal groups help to ensure lifetime lubrication for extended life and to reduce your costs.

Berco offers a complete range of rollers to meet your work environment requirements.

- Hot forged in two halves to obtain best internal grain texture (higher resistance)
- Specific medium alloyed boron steel for high hardenability
- Heat treatment of the roller shell guarantees superior hardened depth (hardness >50 HRC) and rail wear resistance, while maintaining internal shell surfaces (in contact with hubs and bushings) hardness at 40 HRC, for extreme resistance to fatigue and shock stresses caused by the most severe applications
- Induction hardening and superior finishing of the shafts
- Large bearing and bushings area for high resistance to radial loads
- Sizeable oil capacity and perfect sealing
- Berco heavy duty seal groups (Cromium Vanadium cast iron type with surface hardness HRC 65) ensure anti-wear, anti-sizing and anti-rusting properties
- Berco exclusive artic type seal groups ensure excellent performance up to -40°C
- Maintenance free, for longer life and perfect operation under any working condition
- Precision designed and carefully manufactured for perfect alignment, perfect fit of bushings and final assembly of the components



CLASS D9N/R

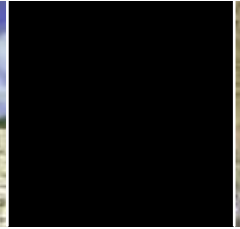
Pitch: 240 mm - 9.44"

CLASS D275

Pitch: 240 mm - 9.44"

CLASS D10N/R (PC800)

Pitch 260 mm - 10¹/₄"



IDLER GROUPS

Berco track Idler Groups are manufactured for superior wear resistance. Whether cast, forged or fabricated, Berco idlers provide superior structural support.

Special heat treatment ensure proper hardness level, providing long wear resistance. Berco "duo cone" seal groups ensure lifetime lubrication eliminating idler maintenance and reducing operating costs.

Berco offers a complete variety of idler groups to meet your work environment requirements.

- Heavy duty ring-rolled rail rims
- Low alloyed boron steels with certified hardenability based on Berco specification (fabricated version)
- Induction hardened rail surface diameter
- High tread surface hardness (HRC > 50)
- Minimum hardened depth 8 mm
- Tempered to resist cracking and chipping
- Idlers can be supplied alone or fully assembled with brackets, adjuster and tensioning device
- Precision design and accurately machined for proper fit, higher reliability and longer life

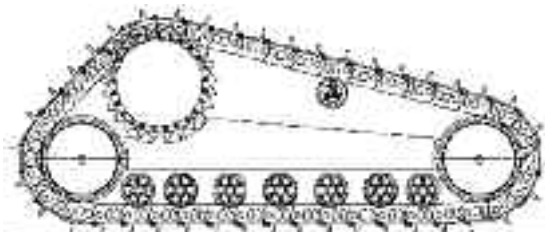
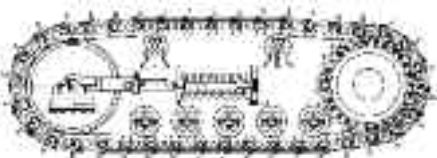
TENSIONING DEVICE

For the higher class machines, a hydraulic unit replaces the standard spring assembly. It is connected to the machine power unit and to an accumulator through special hydraulic valves. Accurate cylinder shell, piston design and hi-pressure seals ensure maintenance free operation.

TRACK SHOES

In extreme applications, products with exceptional properties are needed. To satisfy the needs of these highly demanding customers, Berco has also developed a range of **forged** shoes. A fully automated forging line, employing a 32.000 ton press, followed by machining and heat treat processes, deliver a product with the greatest mechanical and wear resistance properties. Berco offers the widest variety of track shoes and track shoe options (clipped corners, open center, etc.) to meet the requirements of every work environment.

- Low alloyed boron steels with certified hardenability based on Berco specification
- Through hardened and stress relieved for high strength and resistance to bending and breakage
- Surface hardness HRC 47 for superior wear resistance and longer life
- Precision designed and carefully manufactured for proper fit



CLASS D375 (PC1100)
Pitch 280 mm - 11"

CLASS D11N/R
Pitch 317,5 mm - 12¹/₂"



SPROCKETS

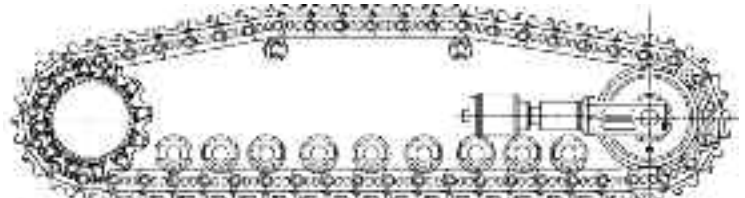
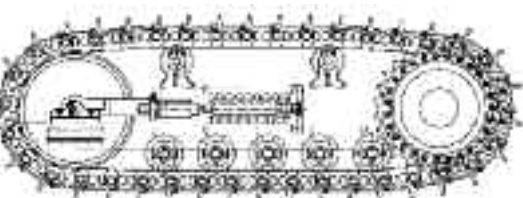
Deep induction hardened and excellent depth pattern on entire tooth profile provide long wear life. Either from cast steel or from hot forging, Berco sprockets guarantee maximum resistance and durability even in the most severe applications. Accurate machining of hubs and flanges provide perfect interchangeability.

- Cast steel or hot forged steel for optimum internal grain flow
- Single Shot Induction hardening for high surface hardness (HRC > 50)
- Effective hardened depth 4÷10 mm at HRC45
- Specific low alloyed boron steel (low alloyed steel for cast version) for high hardenability
- Tempered to resist cracking and chipping
- Optimized design to reduce stress concentration areas
- Uneven tooth design extends wear life
- Accurate machining of the mounting surfaces ensures best performance
- Sprockets, sprocket rims and bolt-on type

SEGMENTS

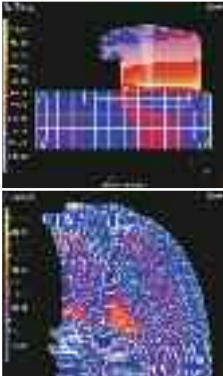
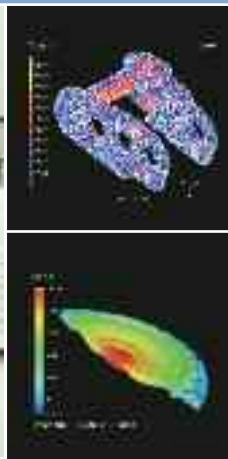
Segments are through hardened for improved wear resistance. High, surface depth and core hardness mean Berco segments provide long wear life, resistant to bending, breakage and maximum hardware retention. The bolt-on design reduces your machine downtime.

- Hot forged for optimum internal grain flow
- Through hardened for high surface hardness (HRC > 50) and tough core (HRC 45)
- Specific low alloyed boron steel for high hardenability
- Precise design and accurate machining of the mounting surfaces ensures best performance



D475 (PC1800)
Pitch 317,5 mm - 12¹/₂"

300 TON CLASS EXCAVATOR
Pitch 350 mm - 13.78"



MAKING A SUPERIOR PRODUCT

ADDING VALUE TO YOUR BUSINESS

State-of-the-art 3D modeling, **Finite Element Analysis (FEM)** and Rapid Prototyping enables to design, optimize and evaluate a component before it is built.

Artificial Intelligence techniques are currently being developed to automatically inspect 100% of components. **Reliability Test** on components are carried out to determine life and performance in a variety of field applications.

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 (also at **extreme temperatures** $-70^{\circ}\text{C} \div 250^{\circ}\text{C}$) on materials and components.

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**.

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

Berco adds value not only to the products but also to **Your Business**.



STATE OF THE ART PRODUCTION

With a capacity of over **250,000 tons** of finished product, Berco manufactures more than **180,000 track chains**, **6,000,000 track shoes**, **1,300,000 rollers** and **320,000 idlers** and **sprockets** per year.

Track links are forged, quenched, tempered, machined and induction hardened on the rail surface. Bushings are turned and drilled in double spindle lathes, case hardened, ground and superfinished (lapped) for longer seal life.

Track shoes are either hot rolled or forged for optimum internal grain flow and stronger core resistance, through hardened and stress relieved for perfect geometry and excellent resistance to bending.

Complete track chains are then assembled in a fully automatic transfer line (Berco Design) where all important parameters (torque, lubrication, seals positioning, etc.) are monitored.

Rollers are forged in two halves, welded in automated welding stations, through hardened, machined and finally assembled with shafts, hubs, collars and seal groups.

Sprockets are forged for optimum internal grain flow and stronger core resistance, machined and induction hardened on the entire tooth profile.

Idlers are fabricated by automated welding of hot rolled rail rims (one piece) with heat treated forged hub and high resistance side plates. Painting completes the process while final inspection on the finished products guarantees the **Total Quality** of all components.

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**.

HEAT TREATED TO TREAT YOU EVEN BETTER

Quality materials and **state-of-the-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**.

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ISO 9001 Cert. n. 0029/2
ISO 9001 Cert. n. 1327/0
ISO 9001 Cert. n. 0092/2



ISO 14001 Cert. n. 0009A/0



All manufacturers's names, numbers, symbols and descriptions are used for reference purposes only. All parts listed are of Berco original production. The specifications and processes described in this brochure are subject to change without notice



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