

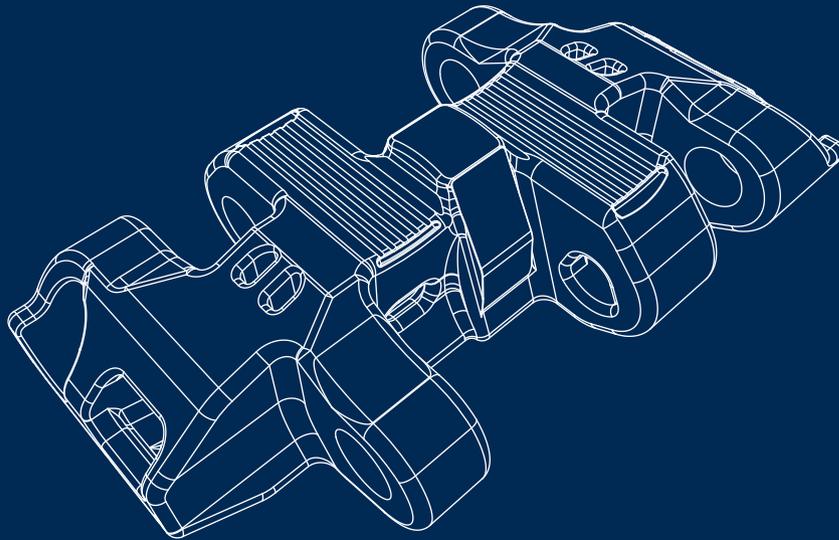
EXCEL™ Replacement parts for Liebherr® Hydraulic Excavators



FLS

Improve performance with our spare parts for Liebherr® Hydraulic Excavators

Discover the difference our re-engineered spare wear parts can make in your existing equipment to increase performance and decrease maintenance.



Key benefits

- Increase durability
- Increase longevity
- Consistent high quality
- Reduce maintenance and downtime

Extraordinary components do not happen by accident

EXCEL™ bronze bushings and components perform better because our standards are higher.

Higher tensile strength

Tin is the most expensive ingredient in the metallurgy of bronze alloys, but it creates tougher bushings that last longer. We use the maximum percentage of tin to increase your profits. We certify our crusher bronze to the top end of the CDA specification for tin.

Uniform lead distribution

During casting, we use an innovative technique that distributes lead and other alloy grains uniformly. We then use a unique chilling process that ensures the uniform distribution is locked in. Our dedication to lead distribution means that when you use EXCEL™ cast alloys, there is less friction and more defense against heat build-up. In short, our bushings and other cast parts last longer and have fewer problems.



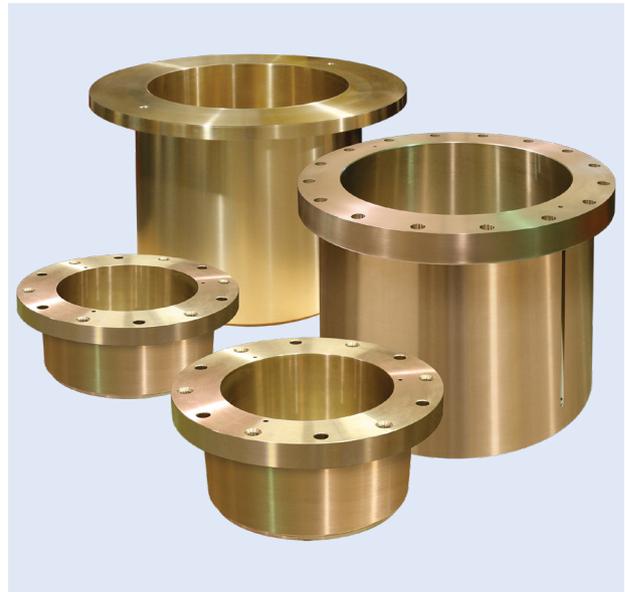
Standard bronze pour from furnace to ladle in our foundry for EXCEL parts, located in Pekin, Illinois, USA

Optimum concentricity

Our competitors are content with bushings that are close enough to concentric. We create perfectly concentric bushings using a unique pinch turning method during machining and cut the inside and outside diameters simultaneously. This process guarantees that your bushings are concentric with no weak spots or deformities and lowers the risk of hot spots.

Porosity-free/uniform grain structure

We begin preparing for casting by selecting the highest grade pure raw materials. The unique centrifugal casting technique that we use produces a tighter, denser grain structure in the alloy and eliminates nearly all gas pockets. What does this mean to you? The cast alloys you buy from us last longer and have significantly fewer defects.

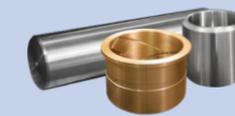
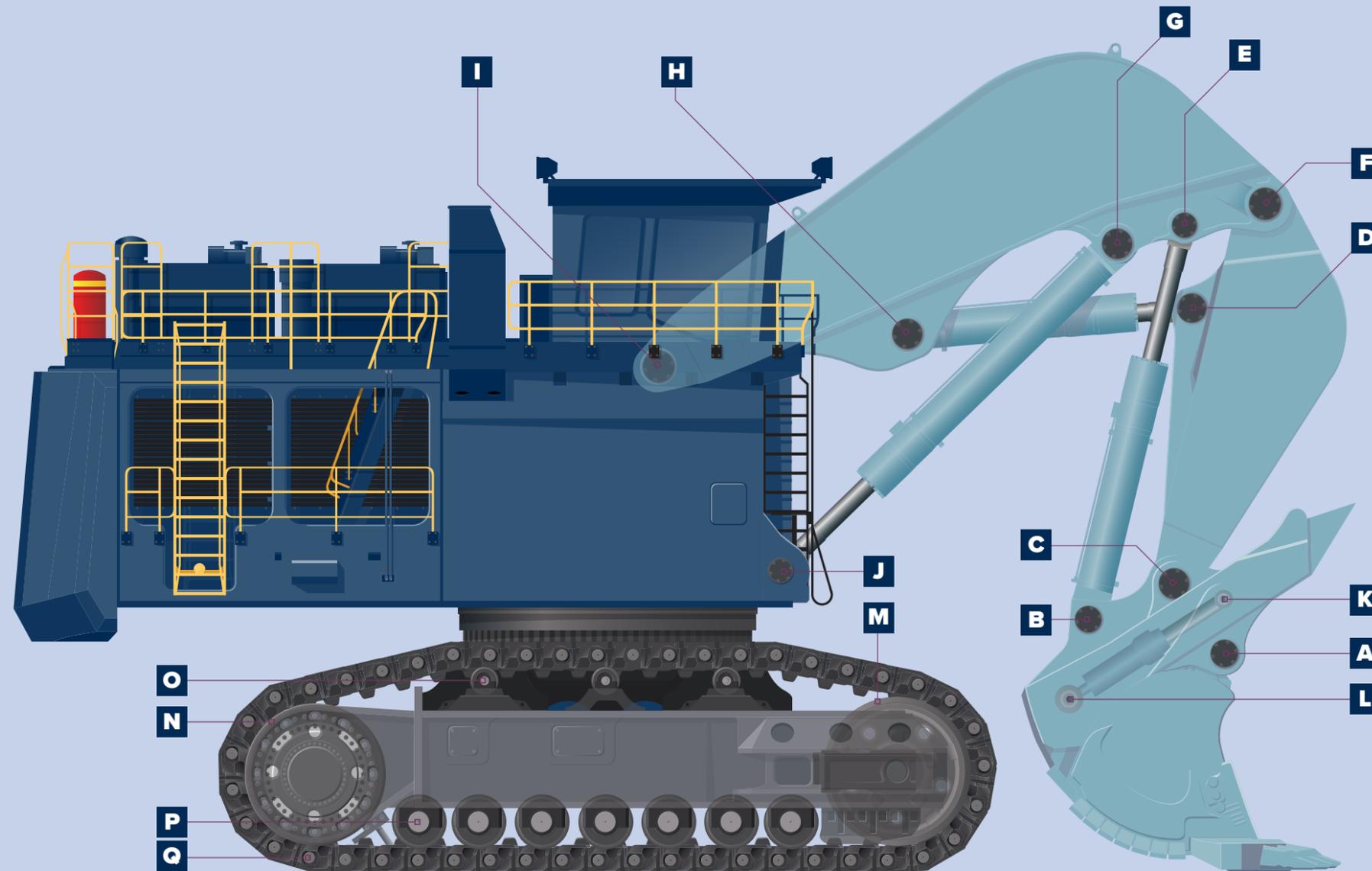


XL40 bronze components

Liebherr® Hydraulic Shovel

R994™, R994B™, R9350™, R996™, R996B™, R9800™

Component identification



Pins and bushings

- | | |
|---|--|
| A Back wall and bottom bucket | G Boom and hoist cylinder |
| B Back wall and bucket tilt cylinder | H Boom and crowd cylinder |
| C Stick and back wall | I Boom and frame |
| D Stick and crowd cylinder | J Hoist cylinder and frame |
| E Boom and bucket tilt cylinder | K Dump cylinder and bottom bucket |
| F Boom and shovel stick | L Dump cylinder and back wall |

Undercarriage components

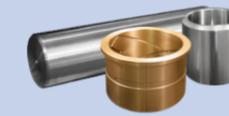
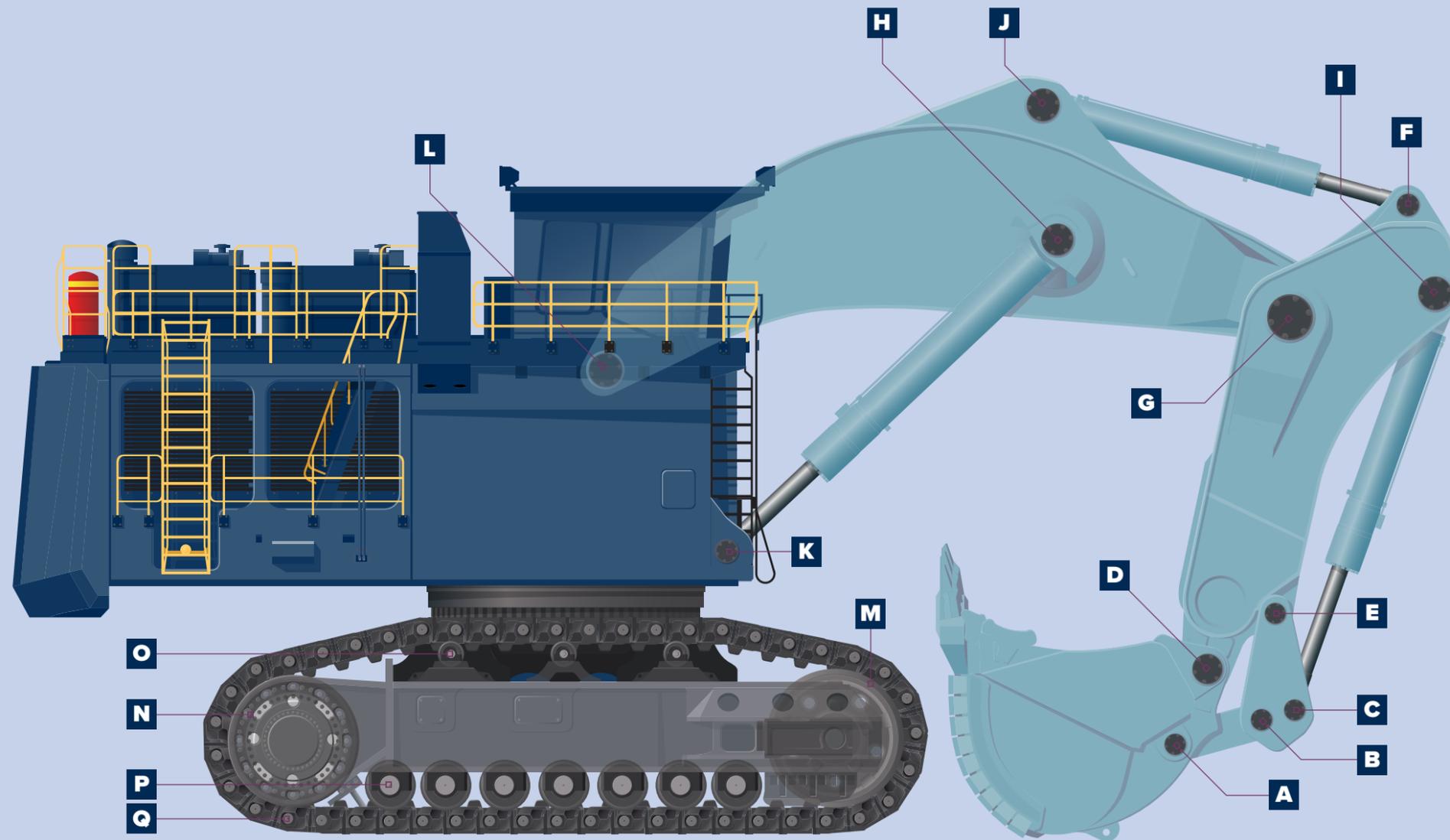


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Liebherr® Hydraulic Backhoe

R994™, R994B™, R9350™, R996™, R996B™, R9800™

Component identification



Pins and bushings

- | | |
|-----------------------------------|------------------------------------|
| A Link and bucket | G Boom and stick |
| B Link and link | H Boom and hoist cylinder |
| C Link and bucket cylinder | I Bucket cylinder and stick |
| D Bucket and stick | J Boom and stick cylinder |
| E Link and stick | K Frame and hoist cylinder |
| F Stick and stick cylinder | L Boom and frame |

Undercarriage components



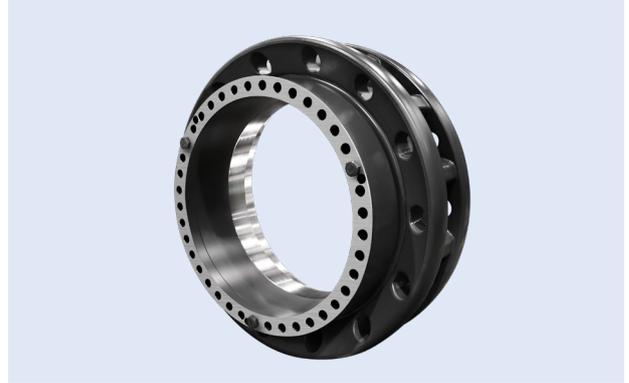
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Premium components



Idler

Our induction hardened idlers are stronger and last longer than conventional idlers. Every idler is made with precision using our premium bronze bushings and mechanical face seals.



Drive tumbler

The track lug on our drive tumbler has been precision-engineered to reduce backlash.

In addition to it working better, the tumbler lasts longer because of our unique manufacturing process. We optimise the metallurgical composition of the drive tumbler so that it holds up better against wear, and then we put it through an induction hardening process to maximise its strength.



Lower and upper rollers

Unlike conventional rollers, we forge the body of our rollers from a single piece of steel and then put them through a unique induction hardening process, eliminating welded-joint fracture as a failure mode. We complete the rollers with our premium bronze bushings and mechanical face seals. The finished product is one that is engineered for maximum strength.



Track shoes

Track shoes bear an extreme weight load, so we make ours stronger than conventional track shoes. We use only the highest quality materials because they last longer. When your track shoes can better support your equipment, you can go further between maintenance shutdowns.

Our standard track shoes are made with high quality manganese steel. We also have heavy duty and custom alloy metallurgical options available to meet the specific demands of your mine.



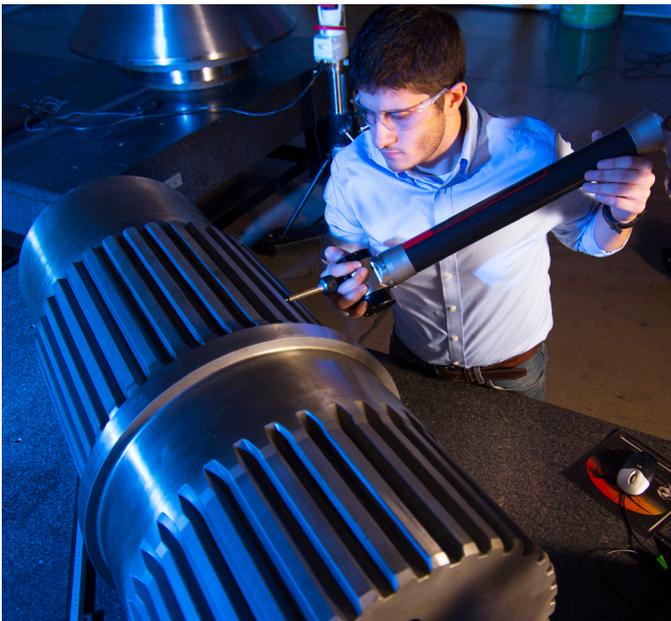
Invest in parts you can rely on!

We know that your success depends on our quality control so we dedicate more time and people to our inspections than any of our competitors. From our strict metallurgical standards and precision machining processes to our exacting inspections, our quality assurance protocols align our processes to produce quality and dependable results. We are ISO 9001 certified, and our program is managed here along with our traceability and record retention. Our procedures allow us to trace any part that we produce, even years later. For each part, we can confirm any possible production details that are needed.

Premium bronze bushings... Simply the best!

A bushing may seem like a simple part, but we have earned our reputation for superior bronze bushings because of our innovative manufacturing process and dedication to providing the highest quality components.

Our Quality Assurance Department scrutinizes every dimension with exacting tolerances to be sure your bushing is perfect in every way, giving your operation an unbelievable value. Less expensive than the OEM, with the highest quality in the business. We stake our reputation on our bronze components.



Re-engineered parts

Original equipment manufacturers often leave room for improvement when it comes to part performance and site-specific considerations on the machines they design. EXCEL™ replacement parts are designed to get you better performance, longer wear life, improved safety, higher quality, complete compatibility and more durability.

The only things you will see less of are maintenance and expense. We have been developing and manufacturing replacement components for more than 80 years, and we have produced a wide line of parts that surpass what you can expect from the equipment manufacturer.

We offer consistent, top-quality spare parts... as always

This is what we do and have been doing more than 80 years. Your machines need to run reliably to keep your business successful. We're here to help keep that equipment operating efficiently.

Premium pins

We are the leading supplier of high quality dipper, handle, bail and equaliser replacement pins in the mining industry. With over eight decades of experience, state-of-the art equipment and our selection of the highest quality raw materials, we manufacture unmatched replacement pins.

Induction hardened pins

Our induction hardened pins have an extended service life because our unique hardening process penetrates the pin deeper than our competitors' pins. Conventional pins have an approximately 12.7 mm (1/2 in) thick hardened layer. Our induction hardening process creates a hardened layer that is deeper and more wear resistant.

Proprietary overlay pins

Our overlay pins are manufactured using an automated process to precisely control the depth that the overlay material penetrates the base metal. The technique we use involves making multiple passes over the pin, adding a small amount of overlay each time. This process keeps the pin strong while adding the versatility that overlay provides. Our pins have the optimal amount of overlay without diluting the base metal. In contrast, other overlay pins on the market are often weaker because the overlay penetrates too far into pin and dilutes the base.

You can trust EXCEL™ overlay pins to stand up to extreme applications. In fact, they last up to five times the life of heat treated pins. The overlay material we use has a hardness of over 60 HRC.

Surface finish

No matter what type of pin you need, the surface finish of our pins exceeds industry standards. We accomplish this by focusing more time on each pin and applying more passes than our competitors. Then every pin goes through an inspection process to make sure that the finish meets our strict standards. The fine finish that we achieve is free of pores and extends the life of the pin. For our overlay pins, this attention to the finish also makes sure that the overlay application is the full depth of the mating contact surfaces.

Customised designs

All our pins and bushings can be customised to your specifications and requirements. As a standard, we adhere to tight tolerances, and any dimensional tolerances that you require can be accommodated. Whether you have specific maintenance objectives that you are concerned about or want to discuss extreme loads and environments, our pin and bushing experts will work with you to engineer exactly what you are looking for. All customisation is available for single pins and sets of mated pins and bushings.

Mated pins and bushings

Take full advantage of our expertise in applied mining and engineering, and use our mated pins and bushings together. We are confident that our mated pins and bushings will stand up to the mining industry's heaviest demands. These pin and bushing sets can be designed and produced specifically for custom, extreme applications using a variety of materials that maximise performance.



Welded Head



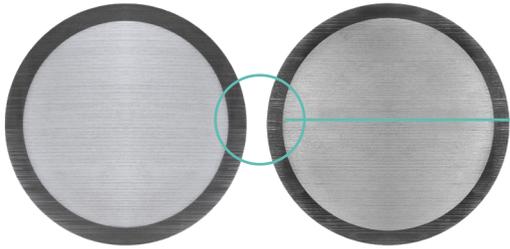
Dual Collar



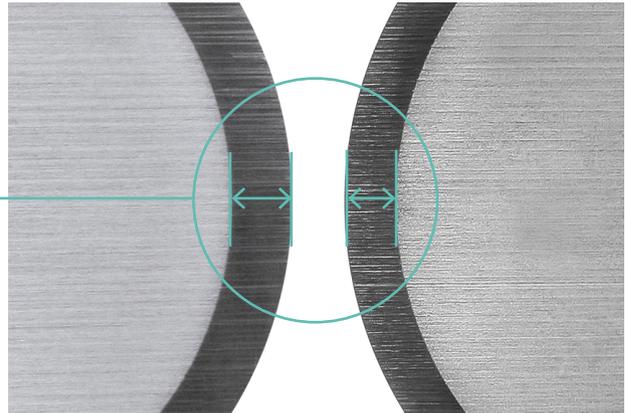
Machined Head

Induction hardened pins

- Provides outstanding service life
- Greater penetration than the competition

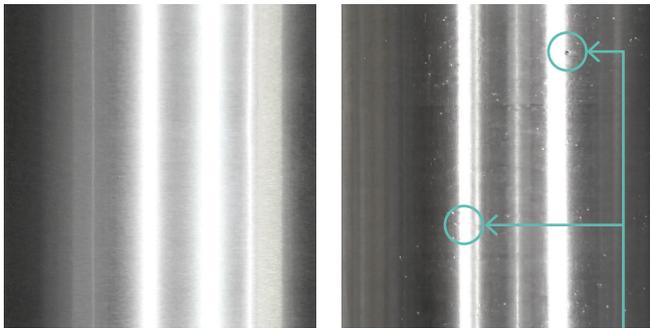


Deeper hardening. 1/2" to 5/8" (12.7-15.88mm)



EXCEL hardening

Conventional depth



EXCEL finish

Unacceptable finish

Our surface finish exceeds industry standards

- More passes applied than the competition
- Fine surface finish provides extended life
- Ensures full-depth overlay application with mating contact surfaces
- 100% Inspected

Porosity

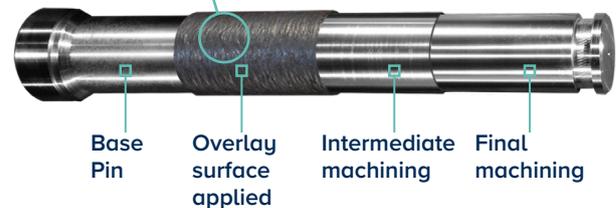
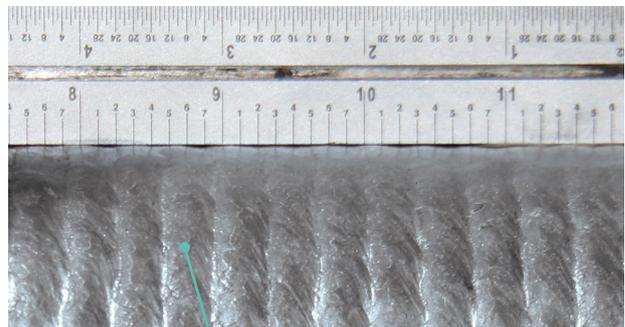
EXCEL proprietary overlay pins

Setting new standards throughout the mining industry

Our pins are manufactured using an automated process to precisely control the depth of penetration of proprietary overlay material to the base metal. This technique allows for the application of the optimal amount of overlay material without further dilution of the base metal which is commonly found in other overlay pins on the market.

Multi-pass overlay penetration is the key

- Soft core retains toughness, adds versatility
- Our pins stand up to extreme applications
- Proprietary overlay material with hardness ranged at 60+ hrc
- Surface finish exceeds industry standards



Working with you to optimise performance

Our engineering and technical experts work directly with customers to solve problems in innovative ways. We partner with operations around the world to develop customised solutions for lasting performance in critical equipment. We get our hands dirty and spend the time needed to fully understand the issues you are facing. Once we have first-hand knowledge of the situation, our design engineering team goes to work to bring new thinking to the table and offer application-specific solutions designed for your operation.



Deep engaging track pad

- Robust center strut to resist back-bending
- Thicker, tougher alloy steel drive lug cross sections to halt fractures and reduce wear
- Optimized cavity and quench holes to ensure proper material grain structure
- Compatible roll path geometry means no custom rollers required

Deep Engaging Full Undercarriage

- Faceted drive tumbler reduces premature wear and extends correct engagement life
- Deep engaging tumbler
- No side frame modifications required

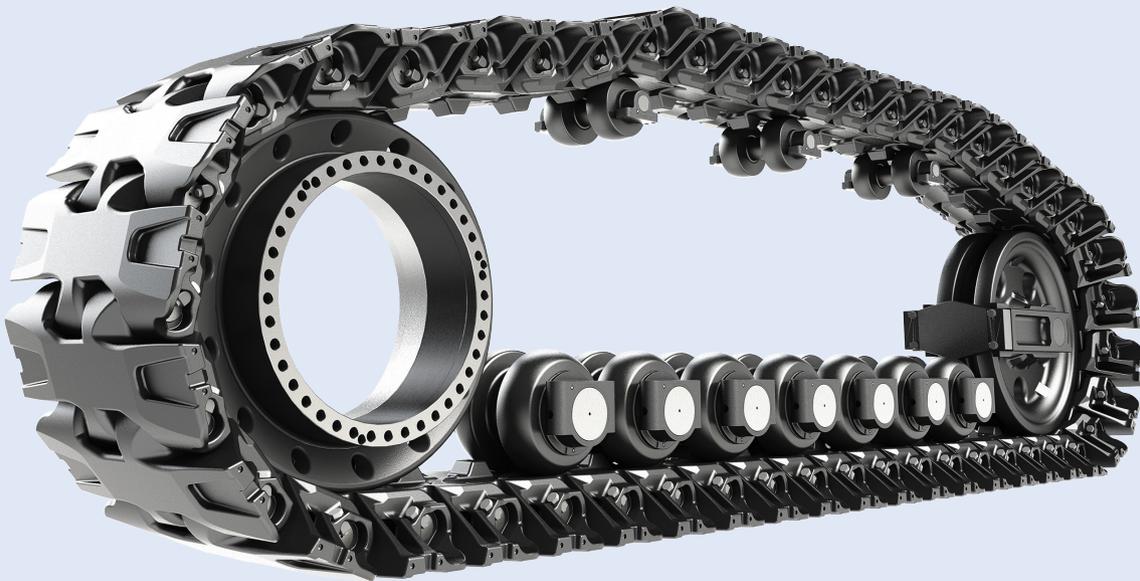
Conventional
two-piece track pad



Excel custom
one-piece track pad

Custom track pad

- Excel offers manganese steel pads to suit application-specific needs
- A solid-cast drive lug drives the track chain, eliminating the use of a weak, hollow bushing
- The pad and link are a single, integrated casting, instead of a bolt-on pad



Undercarriage offerings

- Custom heavy-duty integral link undercarriage for R9350
- Added wear-ability on standard 1-pin track pads
- Deep engaging tracks for R996
- Forged one-piece rollers
- Manganese track pads for durability in hard rock applications

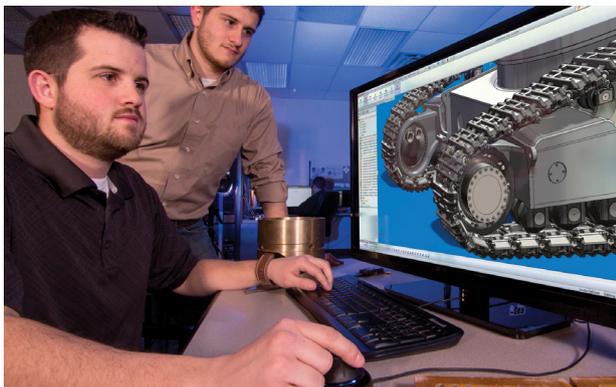
Making a difference through engineering and unbeatable service

We offer superior parts. Then we go a step further by backing our parts with a team of specialists to answer your technical questions and work with you in the field to get your equipment working better than new.

Engineering you can count on

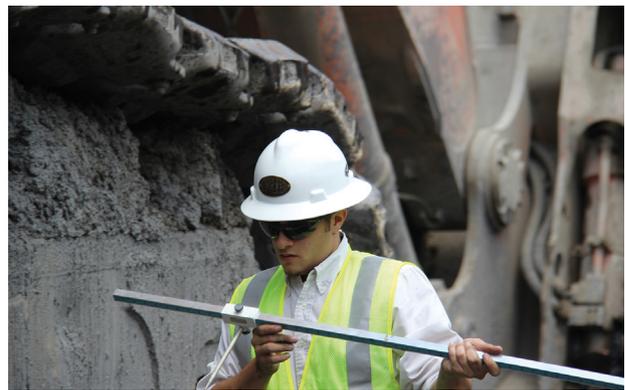
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Yes, we use state-of-the-art, 3D-based design technology. But we also take advantage of the experience of former miners and quarry engineers who are on our staff and feedback from customers like you to make sure that what we are designing is relevant in the real world. We have been developing and manufacturing replacement components for more than 80 years, and we have produced a wide line of parts that surpass what you can expect from the equipment manufacturer.



Dependable field service

Our field service team is here to take care of you. We want to hear about any problems that you encounter in the field and will show up to help you resolve them. Many of our new part designs have come about as we work with customers to find solutions to common problems.



Sales and technical support

We have you covered with world-class service before, during and after the sale. Whether you need help finding a part for your application, have a custom request, need a metallurgical analysis or need any other technical assistance, we are here to help. Our talented and accessible team of design engineers and technical service engineers are ready to offer support because your time is too valuable to spend trying to find answers on your own.





"Our customers need replacement parts that operate in harsh environments. For this reason, we demand metallurgically sound castings produced through the careful control of chemistry and processing parameters for our replacement parts. Our promise is to provide our customers with the highest quality components."

MIKE BERGERHOUSE
Senior Metallurgical Engineer
FLSmidth Inc. - Pekin Operations

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