



# **Mining Mobile Plant Crawler Systems**

**Our Innovation. Your Advantage.**





# What We Do

From pit to port, we specialise in wear parts and services for mining equipment including ground engaging tools, mining buckets, crawler systems and wear monitoring systems.



## Registered Trademarks.

All company names, logos, product names, and identifying marks used throughout this publication are the property of their respective trademark owners. They are used for descriptive purposes only and are protected by the relevant laws of the countries in which the trademarks are registered.



# Why work with us? We'll work with you to understand your operational challenges and provide the smartest solutions with.



## Experience and Knowledge

With over 100 years' experience in the foundry business and with world-class manufacturing facilities located globally, Bradken has the knowledge, expertise and capability to produce fully machined cast iron and steel products from a mass of 0.5 kg (1.1 lbs) up to and over 30,000 kg (65,000 lbs).

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## Safety

Bradken products provide comprehensive safety features to reduce risk during installation, operation and maintenance.

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## Reducing Costs and Increasing Productivity

Bradken products have been designed and engineered to optimise operational performance and aim to provide our customers with lowered Total Cost of Ownership (TCO).

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## Innovation and Design

Leveraging our expertise and experience in wear materials with our innovative technical teams, Bradken can supply unique and tailored packages to deliver high performing solutions.

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## Support Services

Global mining and resources companies partner with Bradken because they know we will leverage our extensive design, engineering and in-field support services to solve their specific operational challenges.

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## Local Sales and Support Networks

Bradken's global sales and distribution networks supply the world's major mining and industrial regions.

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## Sustainability and Environment

Bradken is committed to reducing its impact on the environment through a comprehensive and targeted sustainability plan.

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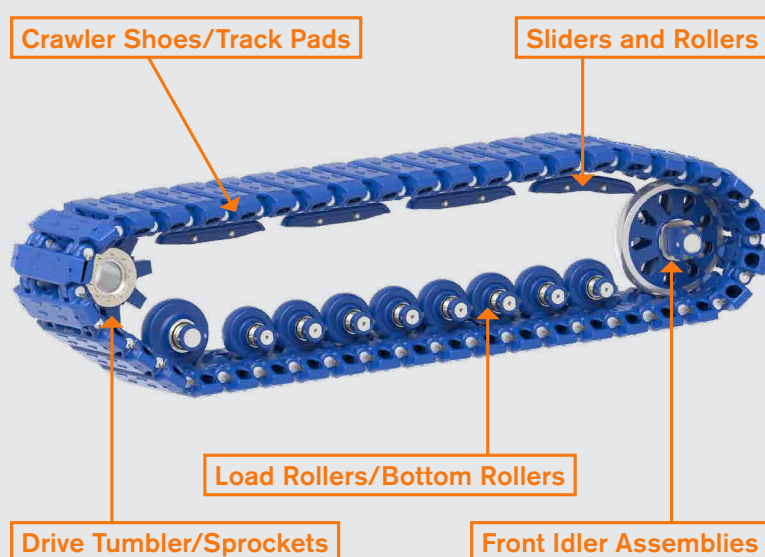


## Equal Opportunities

We value diversity and inclusion in the workplace. We seek to recruit, develop and retain the most talented people from diverse cultures, perspectives, skills and experiences within our workforce.

# Product Overview

Our reputation for providing high quality, dependable products has been proven over decades of supplying to mining markets around the world. Today, Bradken is one of the largest manufacturers of undercarriage for mining machines over 250T.



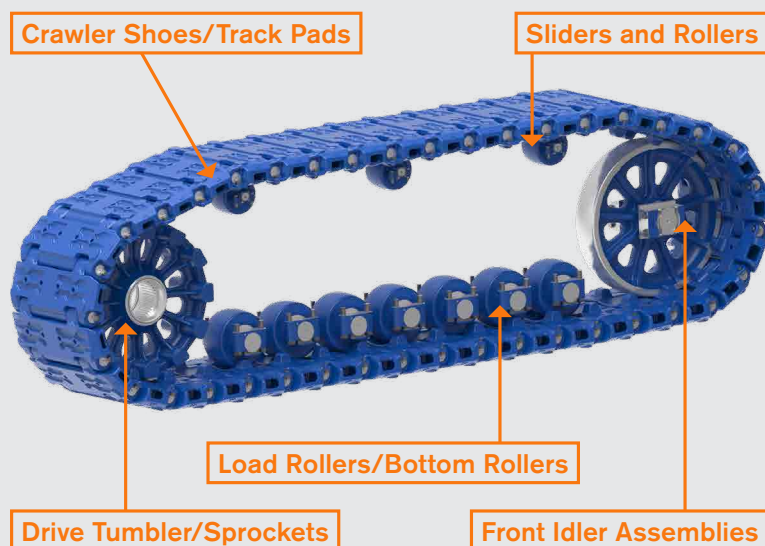
## Electric Rope Shovel

### P&H® Electric Rope Shovel:

2800XPA, 2800XPB, 2800XPC, 4100A, 4100C, 4100XPB, 4100XPC, 4100BOSS, 4100DELTA.

### Caterpillar® Electric Rope Shovel:

7295/BE295, 7495/BE495, 7495HD, 7495HR, 7495HF.



## Hydraulic Excavator

### Hitachi® Hydraulic Excavator:

EX2500/EX2600, EX3600, EX5500/EX5600, EX8000.

### Komatsu® Hydraulic Excavator:

PC3000, PC4000, PC5500, PC7000, PC8000.

### Caterpillar® Hydraulic Excavator:

6030/RH120E, 6040/RH170, 6050/RH200, 6060/RH340, 6090/RH400.

### Liebherr® Hydraulic Excavator:

R996B, R9800.



**Bradken designs  
and manufactures  
undercarriage solutions  
for mining class Electric  
Rope Shovels and  
Hydraulic Excavators.**

**Our reputation for high  
quality dependable  
products has been proven  
over decades of supplying  
to mining markets  
around the world.**

# Manufacturing Compatibility

We design and manufacture all critical undercarriage products, in our dedicated foundry.



With over 100 years' experience in foundry operations, Bradken's wealth of knowledge and expertise enables us to offer our customers high quality, reliable products that have been designed with an intimate understanding of the casting process.

Bradken's wholly owned, state of the art foundry in Xuzhou, China was purpose-built in 2011 for the production of crawler shoes. It has the capability to produce fully machined and assembled products covering a range of undercarriage parts for the 250T hydraulic excavators up to the 1400T electric rope shovels.

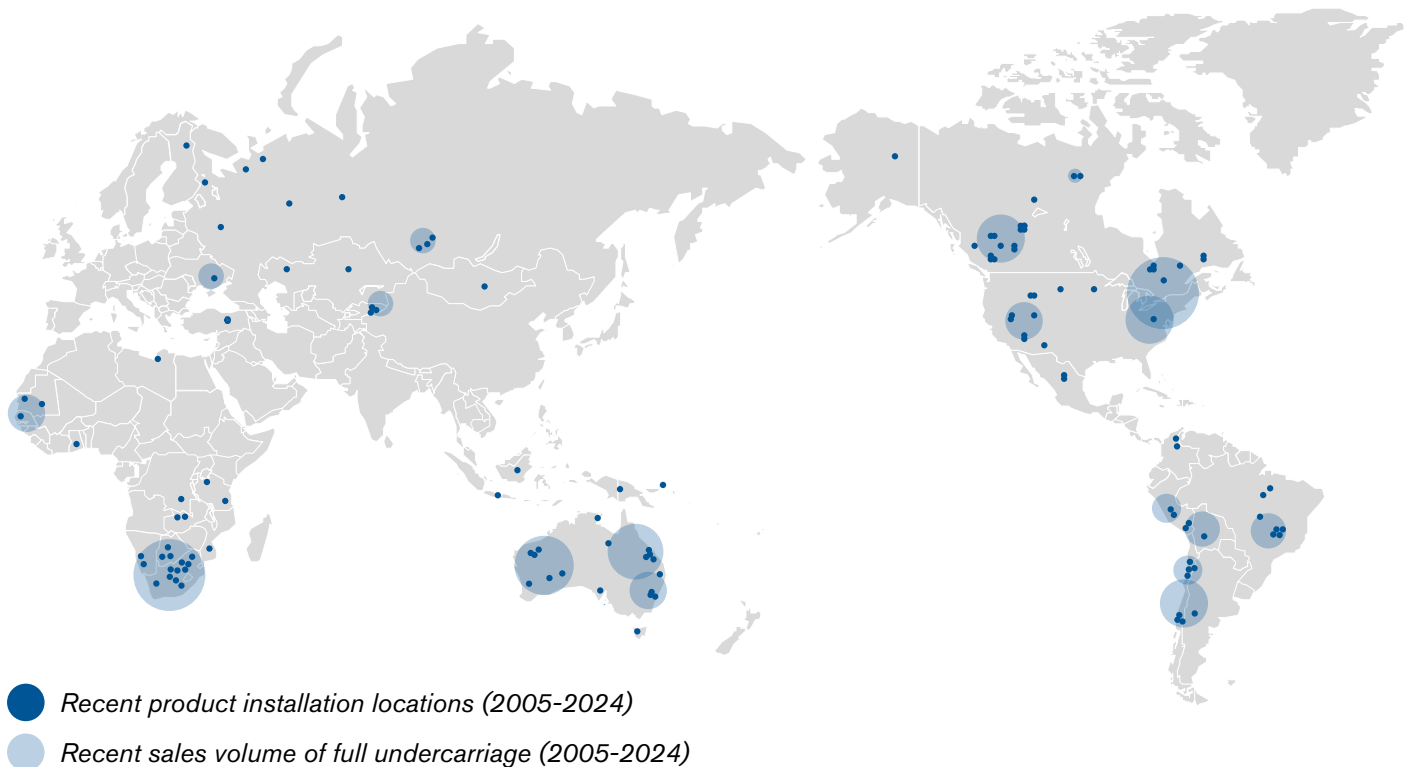
This dedicated manufacturing facility includes:

- Automated pouring capacity, with the capability to produce up to 15,000 mining class cast crawler shoes p.a.
- 8T electric arc furnace with AOD (Argon Oxygen Decarburisation) refinement.
- Highly controlled heat treatment process.
- CNC machining and induction hardening.
- Laser scanning dimensional quality control.
- Dedicated fabrication shop for roller and idler assembly and testing.
- All Bradken facilities accredited to ISO9001:2015.

# Global Reach

Over the past 40+ years we've designed, manufactured and supplied more than 250,000 crawler shoes for mining customers globally.

## Undercarriage installations globally\*



**R996B Liebherr®**

**WA, Australia**  
Hard Rock, Iron Ore Mine



**PC8000 Komatsu®**

**British Columbia, Canada**  
Copper Mine



**P&H® 4100XPC**

**Arizona, USA**  
Hard Rock, Copper Mine



**CAT® 7495 HD**

**Brazil, South America**  
Hard Rock, Copper Mine



**Hitachi® EX2500**

**East Kalimantan, Indonesia**  
Coal Mine



**CAT® 6060**

**West Africa**  
Hard Rock, Gold Mine



**CAT® 6040**

**Queensland, Australia**  
Coal Mine



**Hitachi® EX5500**

**British Columbia, Canada**  
Coal Mine



**Komatsu® PC5500**

**Chile, South America**  
Hard Rock, Copper Mine



**P&H® 2800 XPB**

**British Columbia, Canada**  
Hard Rock, Copper Mine

\*Amount based on Bradken sales to global customers from 2005-2023.

# Extreme Conditions

Bradken's mining products can be found in the harshest regions in the world. By focusing on our customers' requirements we are able to offer effective, site-specific solutions, employing superior components that minimise the effects of extreme environment conditions.



## Extreme Temperature

Bradken's undercarriage components are designed to withstand the extreme mining conditions of the Arctic regions (Russia, Canada, Mongolia and Kazakhstan) where temperatures can drop to -60°C.

Bradken's proprietary alloys and processes maximise impact strength and toughness over a wide range of operating temperatures.

While our alloys ensure reliable performance in extreme temperatures, we also carefully select our lubricants for our range of rollers and idlers.



## Extreme Corrosion

Extremely corrosive conditions such as those experienced in sulphurous volcanic geologies, particularly when water combines with volcanic fines to create a corrosive slurry, can adversely affect the life of undercarriage components.

Bradken's precision-machined components and sealed-for-life rollers minimise ingress of detrimental material, and Bradken uses only the highest quality alloys to ensure component durability in corrosive environments.



## Extreme Abrasion

The majority of the world's mining regions face abrasive wear due to the quantity and nature of mineral fines on site. Rock dust, combined with water creates an abrasive slurry that plays a significant part in accelerating wear and reducing undercarriage service life.

Bradken's induction hardening processes achieve greater case depth than competitor products, resulting in greater wear life of these components. Our proprietary, through-hardened alloy, offers an alternative unique to Bradken undercarriage products, prolonging shoe life in systems that have sufficient space for interconnecting parts to wear. Finally, all Bradken undercarriage designs are optimised to maximise wear face contact areas, minimising contact pressure and reducing the detrimental effect of abrasive wear.

## Extreme Ground Conditions

Bradken has experience in undercarriage solutions for high traction and high flotation applications. Bradken can tailor the designs to suit your site specific needs via consultation with a local Bradken representative.





**By focusing on our customers' undercarriage requirements we are able to offer effective, site specific solutions, that provide superior performance with minimal maintenance.**

# Electric Rope Shovel Crawler Shoes

Bradken's Electric Rope Shovel (ERS) range of crawler shoes and undercarriage components was developed to provide improved performance.



**P&H® Electric Rope Shovel** 2800XPA, 2800XPB, 2800XPC, 4100A, 4100C, 4100XPB, 4100XPC, 4100BOSS, 4100DELTA.



**Caterpillar® Electric Rope Shovel** 7295/BE295, 7495/BE495, 7495HD, 7495HR, 7495HF.

## Reliability

Bradken ERS crawler shoes feature either induction hardened alloy or austenitic manganese steel providing superior wear resistance and increased service life for any mining application.

## Machine Availability

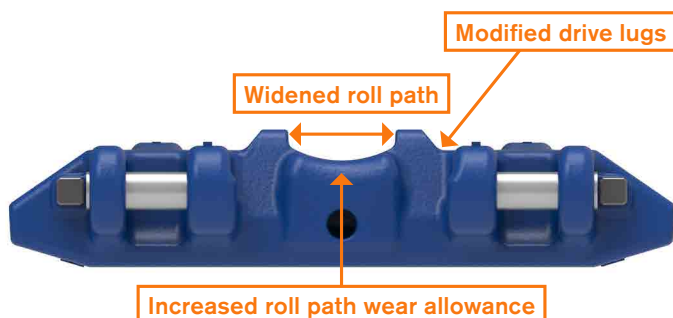
High toughness connecting pins are manufactured from induction hardened NiCrMo steel, resulting in reduced pin failures and unscheduled downtime thus increasing machine availability.

## Determined to Perform

At Bradken we are determined to extend your ERS undercarriage to the next milestone. Using new design initiatives like Bradken's pre-hardening process, or the wide roller path solution, we align our customers' undercarriages to fit with planned maintenance outages thus reducing the Total Cost of Ownership (TCO) and machine downtime.


## OEM and Beyond

Bradken Direct Replacement Product (DRP) crawler shoes are interchangeable with OEM components meaning they can be easily integrated as replacement parts into existing OEM track systems. If exceeding the current OEM offering to increase machine availability and reduce cost is appealing to you, Bradken has a range of innovative undercarriage offerings readily available and the capability to design and manufacture products to meet your specific needs.



Bradken's wide roller path solution is designed to significantly extend wear life while reducing maintenance demands.





**If you purchased an Electric Rope Shovel undercarriage for P&H® or CAT® (Bucyrus) machines between 1982 and 2014 it was most likely cast in a Bradken foundry. We take pride in our long-standing history and ownership of our cast track shoe product.**



# Hydraulic Excavator Crawler Shoes

Bradken's range of Hydraulic Excavator crawler shoes offer significant advantages over traditional designs.



**Hitachi® Hydraulic Excavator** EX2500/EX2600, EX3600, EX5500/EX5600, EX8000.



**Komatsu® Hydraulic Excavator** PC3000, PC4000, PC5500, PC7000, PC8000.



**Caterpillar® Hydraulic Excavator** 6050/RH200, 6060/RH340, 6090/RH400.

## Reliability

State of the art design, materials selection and manufacturing processes equate to dependable performance. Even in the worn condition, our shoes are designed to incorporate superior factors of safety, so that overload failure is less likely. This gives users confidence to change parts on condition rather than hours alone.

## Machine Availability

Over the years, mine operations have experienced unscheduled downtime that is related to failure of connecting pins and hardware – even leading to crawler shoe failure. Bradken has applied the same design review principles to these aspects of our products ensuring there is no “Weakest Link”.

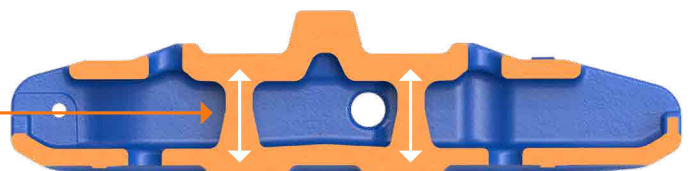
## Operational Safety

Matched material, hardness and wear surface profiles of the mating components minimise in-field maintenance requirements. Less frequent replacement of components reduces likelihood of safety incidences occurring.

## OEM Interchangeability and Processes

Bradken's products can be installed with the OEM products and OEM procedures. This is particularly beneficial to help deplete existing spares on site and not having to develop and train staff in new installation procedures.

Bradken's 'Pillar of Strength' prevents crushing of the roller path increasing service life.







# Hydraulic Excavator Crawler Shoes

Bradken's innovative range of Evolution<sup>®</sup> induction hardened crawler shoes was developed to overcome the safety and reliability shortfalls of traditional designs for OEM Hydraulic Excavator platforms.



**Caterpillar<sup>®</sup> Hydraulic Excavator 6030/RH120E, 6040/RH170, 6050/RH200.**

## Reliability

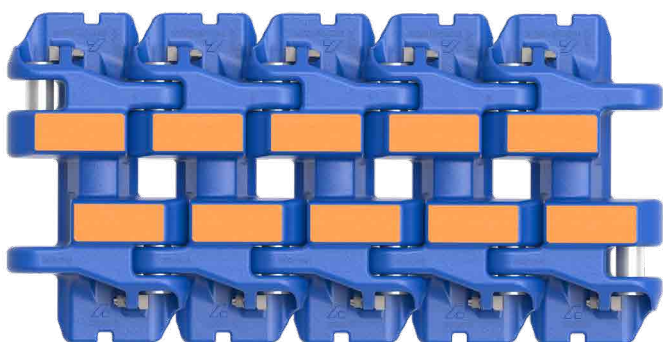
With induction hardened pin bores and greater contact area, Bradken has eliminated the requirement for crawler shoe bushes; the leading cause of crawler shoe failure observed for other designs. Bradken's 'Continuous Roller Path' and other design enhancements provide superior strength and support to critical areas. Bradken's crawler shoes deliver consistent and dependable performance, especially in the worn condition and under extreme applications, giving our customers the confidence to schedule condition-based maintenance while minimising the risk of unplanned downtime events.

## Increased Service Life

Bradken's Evolution<sup>®</sup> induction hardened range of undercarriages incorporate enhanced designs that improve safety and reliability compared with previous OEM designs. Bradken's 'Continuous Roller Path' and increased pin bore contact were designed using our induction-hardening alloy to deliver increased service life and reduced safety risks associated with deformation, spalling and cracking.

## Proven Capability

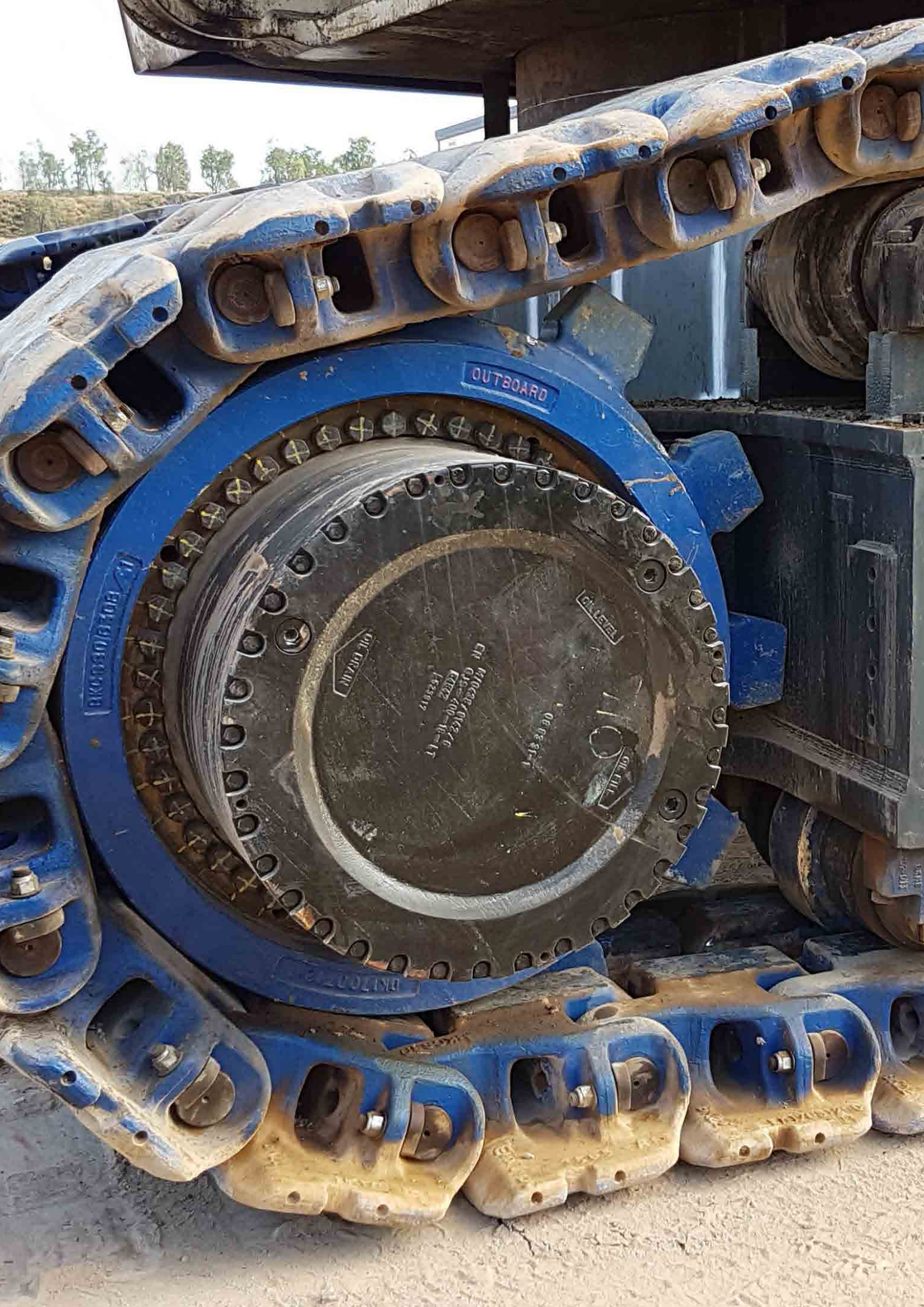
Customer focus, rigorous design, expert metallurgy and materials engineering, and state-of-the-art manufacturing processes are combined by Bradken to deliver our customers undercarriage products that consistently outperform the OEM and other aftermarket competitors.



**Crawler Shoe Top View**

**Continuous Roller Path reduces pressure between the roller and shoe, reducing wear on the product and extending its service life.**

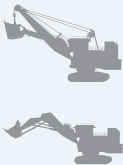



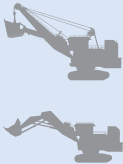



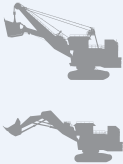




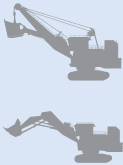

















# Bradken Materials

Bradken offers an extensive range of superior materials and processes to maximise your undercarriage wear life, no matter the terrain.

Material	Application	Benefits	Conditions
<b>Through Hardened</b> <b>BKC400</b>		<ul style="list-style-type: none"> <li>Consistent uniform wear properties throughout entire metal section.</li> <li>Enables accurate wear prediction.</li> </ul>	 Hard Rock  Coal  Medium Abrasion
<b>Through Hardened Bushed</b> <b>BKC400</b>		<ul style="list-style-type: none"> <li>Consistent uniform wear properties throughout entire metal section.</li> <li>Enables accurate wear prediction.</li> <li>Use at sites with high pin eye wear (stretch).</li> </ul>	 Hard Rock  Coal  Medium Abrasion
<b>Induction Hardened</b> <b>BKCS30</b>		<ul style="list-style-type: none"> <li>Strong wear properties for life of induction hardened layer.</li> <li>Tough, ductile core for maximum impact strength.</li> </ul>	 Hard Rock  Coal  Oil Sands  High Abrasion
<b>Induction Hardened Bushed</b> <b>BKCS30</b>		<ul style="list-style-type: none"> <li>Strong wear properties for life of induction hardened layer.</li> <li>Tough, ductile core for maximum impact strength.</li> <li>Use at sites with high pin eye wear (stretch).</li> </ul>	 Hard Rock  Coal  High Abrasion
<b>Austenitic Manganese Steel</b> <b>BK14</b>		<ul style="list-style-type: none"> <li>Tough work-hardening that arrests the propagation of cracks.</li> <li>Significant hardenability.</li> </ul>	 Hard Rock  Coal  Medium Abrasion
<b>EDH Austenitic Manganese Steel</b> <b>BK14</b>		<ul style="list-style-type: none"> <li>Tough, work-hardening material that arrests the propagation of cracks.</li> <li>Significant hardenability.</li> <li>Pre-hardened roller path.</li> </ul>	 Hard Rock  Coal  Medium Abrasion

# Undercarriage Components

When you order from us, you are ordering direct from the designer and manufacturer.

Bradken offers an extensive range of undercarriage components including:



## Return/Load Rollers

Our rollers feature a one-piece forged shell. This eliminates unscheduled downtime caused by the roller failing due to the shell splitting in half.

The rollers are supplied as a sealed, ready to install unit (including mounting hardware) with the option of oil or a grease filled lubricant. This means the rollers do not have to be fitted to the autolube system (if it exists). High quality seals, bushes, axles and axle retention systems offer dependable service life.



## Front Idlers

Using our detailed understanding of the machine and its operation, the front idler assembly designs are optimised to handle high impact loads and feature improvements to the thrust and bearing surfaces.

No modifications are needed to be made to the track frames however we do recommend that any track frame wear is repaired prior to assembly to prevent uneven loading and premature wear.



## Drive Tumblers

Depending on the platform, Bradken drive tumblers are supplied in either high grade, high quality, induction hardened material or quench and tempered high grade alloy providing increased impact and wear characteristics.

Hardness levels of the wear surfaces are matched to the mating components whilst retaining a ductile core that is able to absorb impact.

CNC machined surfaces and the use of superior quality components ensure that the replacement parts are a consistent fit and are of optimum quality.

**Components are designed, engineered and manufactured to reliably perform in any mining condition, whatever the terrain.**



# Focus on our Customers



## Design and Engineering

Bradken's highly experienced Product Development Team embraces new technologies that enable us to provide our customers with world-class products. Bradken's solutions help our customers achieve the maximum life expectancy from their undercarriage components, which are safer to install and remove.

Typical technologies include:

- FEA – Finite Element Analysis.
- Dynamic motion analysis/contact force analysis.
- Virtual prototyping.
- Solidification simulation.
- Fatigue testing.



## Manufacturing

With over 100 years' experience in foundry operations, Bradken's wealth of knowledge and expertise enables us to offer our customers high quality, reliable products that have been designed with an intimate understanding of the casting process.

Our global network of foundry and manufacturing facilities has the capability to produce fully machined products ranging from 0.5 kg (1.1 lbs) to 30 tonnes (65,000 lbs), covering the full range of undercarriage parts from 250T hydraulic machines up to 1400 T rope shovels.



**Bradken offers customers  
whole-of-life wear solutions  
backed by infield support services.**



## **Wear Monitoring**

Just as mining conditions vary from site to site, so do the wear characteristics of undercarriage components.

Bradken's experienced team offers wear monitoring to assist mine operators and contractors to accurately assess component wear and to predict service life.

An understanding of our customers' operational challenges provides Bradken with the knowledge to customise preventative maintenance strategies to extend component service life, and reduce machine downtime.



## **Support Services**

By focusing on our customers' requirements, we are able to offer effective, site specific solutions, employing superior components that provide extended service life with minimal maintenance.

Our focus is to maximise our customers productivity through quality and superior performance while minimising Total Cost of Ownership (TCO).



# Contact Bradken globally to find a solution for your business.



**Our Innovation. Your Advantage.**

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