



SALES SYLLABUS

Commercial Team

Internal use only

2025 - Revision 1

Table of Contents

[Our Story](#)

[The Mining Overview & Where Geographe Sits](#)

[Mining Process](#)

[Mining Fleet Overview](#)

[Supported OEM Models](#)

[Targeted Product Range](#)

[Component Roles](#)

[Manufacturing Process of a Pin](#)

[Manufacturing Process of a Bush](#)

[Excavator Location Breakdown](#)

[Excavator - Enhanced Performance Part Offerings](#)

[Dozer Location Breakdown](#)

[Dozer - Enhanced Performance Part Offerings](#)

[Loader Location Breakdown](#)

[Loader - Enhanced Performance Part Offerings](#)

[Haul Truck Location Breakdown](#)

[Haul Truck Components Available](#)

[Haul Truck - Enhanced Performance Part Offerings](#)

[Haul Truck - Specialised Tooling Available](#)

[Frequently Asked Questions](#)



Our Story

Where It Started

Founded by Neville Hyder and named after the Geographe region of Western Australia, Geographe began in 1968 as a small engineering business focused on repairing farming equipment.

Driven by a commitment to making equipment safer and longer-lasting, we soon expanded into the mining industry, developing improved gates, drill components, and other critical parts.

As our reputation grew, so did our capabilities. We evolved into a full-service manufacturer supplying parts to the mining, oil & gas, transport, defence, and aerospace sectors. Our team expanded to include skilled draftsmen, in-house metallurgists, client service experts, and technical specialists, reflecting our dedication to engineering excellence and solving real-world challenges.

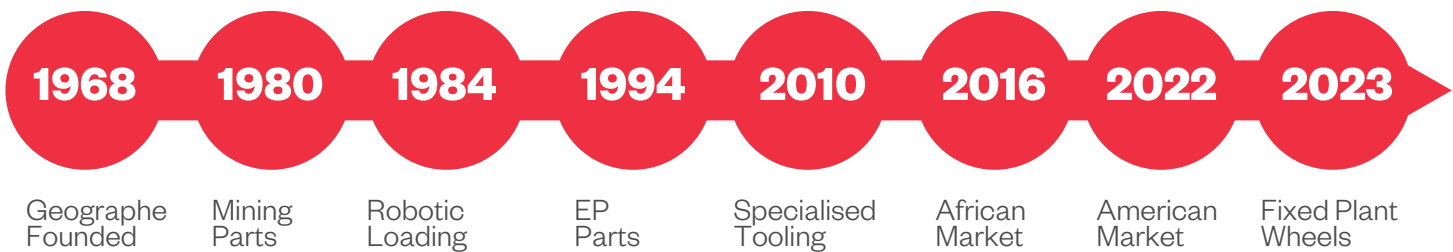
Solving Global Mining Challenges


Now led by Neville's grandson, Sam Hyder (CEO), Geographe is a third-generation, privately-owned business committed to improving productivity, safety, and reliability across global mining operations.

With a team of over 150 professionals, we aim to be the world's leading provider of Enhanced Performance Wear Parts.

Our focus is on Asset Optimisation. We offer a combination of replacement parts, enhanced performance parts, and Specialised Tooling, supported by deep expertise in precision engineering, manufacturing, system integration, gear production, and client relationship management. Partnering with Geographe means gaining access to practical, data-driven solutions that extend machine uptime and improve safety during maintenance.

Geographe Timeline



 [Learn more about our history here](#)

Where We're Heading

Geographe is committed to delivering meaningful, sustainable change not just through engineered solutions, but through our community engagement and partnerships. We're proud to support the local communities in which we operate, striving to implement solutions that respond to real-world needs.

More than just a supplier, Geographe is a dedicated partner, working toward a safer, more efficient, and more inclusive future for the industry and the people we serve.

The Mining Overview & Where Geographe Sits



Mining Process



- Large drills create accurately placed holes into the rock face.
- The pattern and depth of the holes are carefully planned based on the geological conditions and desired fragmentation.
- Presplit holes, typically drilled on an angle, may be used to create a clean face for easier excavation.



- Explosives are loaded into the drilled holes.
- The explosives are detonated in a controlled sequence to break the rock into manageable sizes.
- Precise timing and placement of explosives are crucial for efficient fragmentation and minimising environmental impact.



- After blasting, the site is covered with broken rock, which excavators gather for haul trucks.
- Different sizes of excavators are used in mining: smaller ones are agile for confined spaces and precision tasks, while larger models offer greater power and reach for transporting large amounts of material.



- Haul trucks transport up to 360 tonnes of mined materials like ore and coal from excavation sites to processing plants or disposal locations.
- They are crucial for efficient material movement in mining operations. Cycle distances between the excavator and processing plant can range from short hauls to over 10 kilometers.



- The processing plant separates commercially valuable minerals from the mined ore, creating a concentrated product ready for further refining or sale.
- This involves various processes like crushing, grinding, sizing, and separation techniques.
- The goal is to maximise the recovery of valuable minerals while minimising waste.



**Mining for
Beginners**



**How an Iron Ore
Mine Works**

Mining Fleet Overview

Haul Trucks

Haul trucks are large, off-road dump trucks specifically designed for moving massive amounts of material in mining and heavy-duty construction. They are a critical part of mining operations, with capacities ranging from 90 to 360 tonnes.



Loaders

Loaders are commonly used for loading trucks, pushing materials, and clearing work areas. They offer good mobility and flexibility, making them suitable for various tasks and locations within the mine.



Dozers

Dozers are used to move, push, and level soil, debris, and other materials at the worksite, and to construct and maintain haul roads and safety berms.



Graders

Graders are used to maintain haul roads, ensuring they remain smooth, stable and safe for heavy equipment. Its long, adjustable blade is used to fine-grade surfaces, control dust, manage drainage and reduce tyre wear and equipment stress.



Backhoe & Shovel Excavators

Excavators are used in surface mining for tasks such as digging, trenching, and loading trucks with overburden (soil and rock layers covering valuable mineral deposits), offering a maximum load of up to 100 tonnes.

What is the difference between a backhoe and a shovel?

The bucket faces backwards on a backhoe and forwards on a shovel.



Supported OEM Models

Haul Trucks



Caterpillar	773, 777*, 785*, 789*, 793*, 797, MT4400*, MT6300* and AD55(Underground)
Komatsu	HD785*, HD1500, 630E, 730E*, 830E*, 930E* and 960E

Excavators



Caterpillar	6020, 6030, 6040, 6050, 6060 and 6090
Komatsu	PC1000, PC1100*, PC1250*, PC1650, PC1800, PC2000, PC3000, PC4000*, PC5500* and PC8000*
Hitachi	EX1100*, EX1200*, EX1800, EX1900*, EX2000, EX2500*, EX2600*, EX3500*, EX3600*, EX5500*, EX5600* and EX8000*
Liebherr	R994*, R996*, R9200, R9250*, R9350*, R9400*, R9600 and R9800*

Loaders



Caterpillar	980, 988, 992*, 993, 994*, R1300(Underground), R1600(Underground), R1700(Underground), R2800(Underground) and R2900*(Underground)
Komatsu	WA500, WA600, WA800, WA900*, WA1200*, L1350, L1850, L2350 and WE1850

Dozers



Caterpillar	D9, D10* and D11*
Komatsu	WA600

Graders



Caterpillar	16H, 16M, 18M and 24M
--------------------	-----------------------

* Targeted Model

Targeted Product Range

What is meant by targeted products

Geographe has developed a system to maintain focus on our highest potential products and markets. Our product targeting system intends to focus on what provides the highest value to our core clients, fulfils our purpose and supports our continued expansion into global markets.

The Targeted Product List is defined by a set of machine models and types. The list is reviewed, confirmed and maintained by our Product Management Team, who form part of our Product Development and Innovations Department.

This system ensures we're investing in the products that have the most alignment with:

1

Our Purpose: Challenging you to expect more from yourself and your assets.

2

Core Customer: A decision-maker with technical skills who prioritises reliable service, uptime, and desires a long-term partnership.

3

Hedgehog: With Enhanced Performance (EP) part growth, mining fleet parts, and profitable mines.

Untargeted product range

The Untargeted Product Range includes products that Geographe will continue to offer. However, these products must meet the 'win/win' criteria, ensuring mutual benefits for both the customer and Geographe. The 'win/win' criteria include achieving minimum profit margins, the ability to deliver on time, and minimising potential disruptions to the business.

Product range adjustments

Products may transition in and out of the Targeted Product Range based market conditions and other commercial factors. Examples include the release of new OEM machine models or increasing international demand for specific products. This flexibility allows Geographe to adapt to market dynamics and maintain a competitive edge.



Component Roles

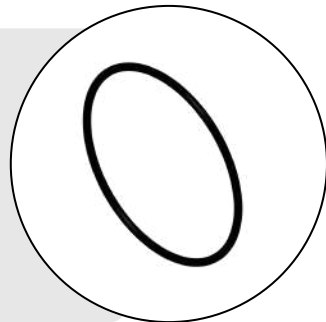
Pins

Pins act as pivots, allowing for rotation and articulation between various components. For example, pins connect the stick to the bucket, allowing the excavator to dig and release, similar to an elbow joint.



Seals

Seals act as a barrier, preventing grease or hydraulic oil from leaking out of the joints which keep the pins and bushes running smoothly whilst keeping contaminants like dirt, water and debris from entering.



Spherical Bearings

Spherical bearings allow for movement in multiple axes and angular misalignment. Used in parts such as 793F dogbones/suspension, it's role is similar to that of a shoulder joint.



Ball Studs

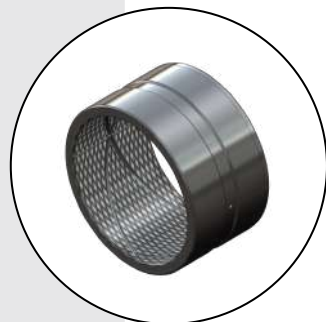
Ball studs are used to connect various steering components in the steering linkage of Caterpillar Haul Trucks. Oversized ball studs are available for replacement when the bore is worn or damaged.



Bushes

Bushes are cylindrical sleeves that reduce friction and wear between two parts, like a pin and a bucket. Bushes act as a bearing surface, allowing for rotational movement between components while minimising friction and wear.

Bushes are typically made from high-strength steel or bronze, and are often fitted by freezing via liquid nitrogen to shrink in size before inserting into the bore.



Types of Pins

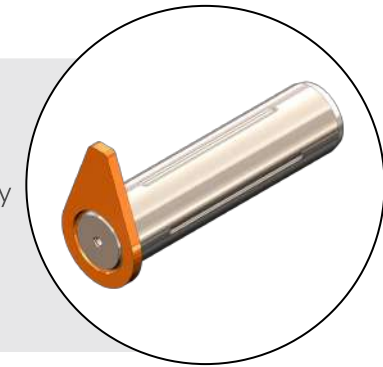
Floating Pins

Floating digger pins, on the other hand, allow for some movement within the attachment, enabling better force distribution, smoother operation, and reduced stress on the excavator's linkage



Fixed Pins

Fixed digger pins have a head which are directly welded or bolted to the bucket. They offer stability and durability, making them suitable for heavy-duty applications and minimizing wear on the bucket's attachment points..



Cartridge Pins

Cartridge pins are designed in a way that the bearing, pin, lubricant, and seals are contained within a single component that needs no routine maintenance. The issue is that the seals can fail without warning, resulting in premature failure and unplanned machine downtime.



Manufacturing Process of a Pin

1

Raw Material Received

Raw material is received where sizing and material/heat certificates are checked before being received into stock.



2

Raw Material is Face/Centred

The raw material is first processed in a milling machine, like the Okuma MA-600HB, which faces it to create a smooth, flat surface and then centers it, forming a conical hole for workpiece support in later operations.



3

Material Machined into a Pin

The material is taken to a lathe such as Okuma Multus U5000, a 5-axis CNC lathe loaded by the Fanuc R2000 robotic arm.



Manufacturing Process of a Pin

4

Heat Treated

The pin undergoes induction hardening by passing an alternating current through a copper coil, creating an electromagnetic field that induces eddy currents in the metal.

These currents heat the surface to 950 degrees due to resistance. The pin is then quenched in a glycol/water mix, causing a phase transformation to form a hard but brittle martensite layer. To relieve brittleness, the pin is tempered in an oven at around 180 degrees.



5

Ground

The heat treated pin is now taken to the Shigiya GN30B where it'll be loaded in by the robotic arm to be ground to the required outer dimensions. The robotic arm will then move it across to the spray booth where it will be sprayed with a preservative to ensure it doesn't surface rust.



6

Final Inspection

The completed pins are sent to the climate-controlled Inspection department, maintained at 21-23 degrees. Under our 9001 accreditation, all items from the production facility are inspected for completeness and accuracy to the drawings before departure.



Manufacturing Process of a Bush

1

Raw Material Received

Raw material is received where sizing and material/heat certificates are checked before being received into stock.



2

Material Machined into a Bush

The material is taken to a lathe such as Okuma Multus U5000, a 5-axis CNC lathe loaded by the Fanuc R2000 robotic arm.



3

Heat Treated

The bush will now be taken to one of two heat treatment plants to be gas carburised, which takes around 24 hours. The first is an inline automated fluid bed heat treatment plant comprising four high-temperature furnaces, a preheat furnace, two temper ovens, and a 4 thousand-liter quench tank.

This allows for processes such as gas carburising, normalising, quenching and tempering, and stress relieving.



Manufacturing Process of a Bush

3

Heat Treated - Alternative

The other option for the bush is the fully autonomous Ipsen gas carbonization plant which takes around 24 hours. The bush will be placed on a tray that is fed along the conveyor. Firstly it is pre-heated to 400 degrees. It then goes through to a controlled atmosphere furnace which is where the carburizing happens. It then travels through a diffuse, drops down into a 5000 litre agitator oil tank. From there it goes through a 3-stage washer then finally through a temper oven and out through cooling fans.



4

Ground

The heat-treated bush is now taken to the CVG9, where it'll be loaded in by the robotic arm to be ground to the required outer dimensions. The robotic arm will then move it across to the spray booth, where it will be sprayed with a preservative to ensure it doesn't surface rust.



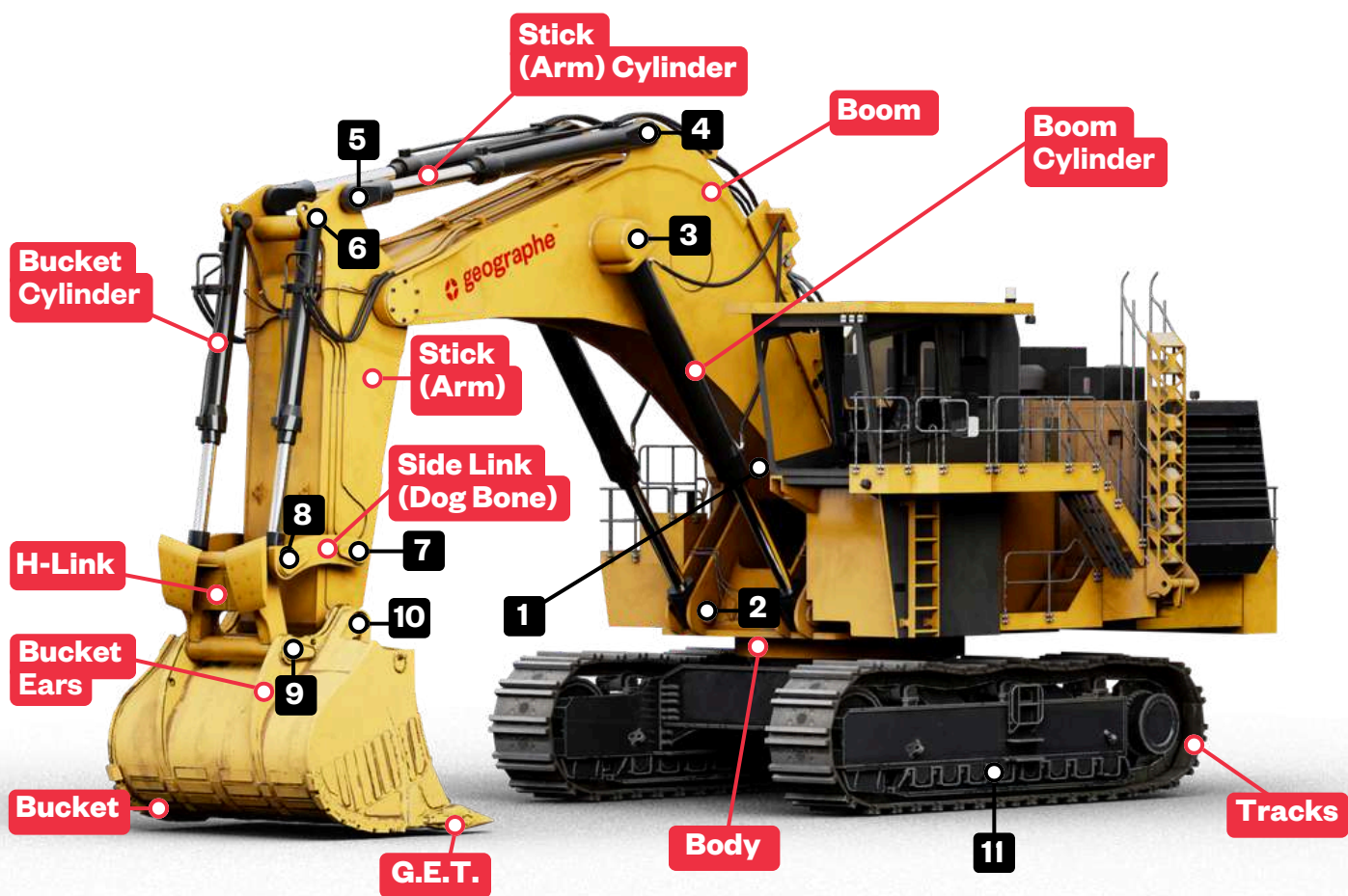
5

Final Inspection

The completed pins are sent to the climate-controlled Inspection department, maintained at 21-23 degrees. Under our 9001 accreditation, all items from the production facility are inspected for completeness and accuracy to the drawings before departure.



Excavator Location Breakdown



Component Locations

Item	Component Description
1	Body to Boom
2	Body to Boom Cylinder
3	Boom Cylinder to Boom
4	Boom to Stick Cylinder
5	Stick Cylinder to Stick
6	Stick to Bucket Cylinder
7	Stick to Link
8	Bucket Cylinder to Link to Upper Link
9	Link to Bucket / Lower Link / Rear Bucket
10	Stick to Bucket / Front Bucket
11	Track Pins

**View Full Range
of Excavator Parts**

[Click Here](#)

Excavator - Enhanced Performance Part Offerings

Featured Part: The Top Hat Bush

In standard Hitachi excavators, the presence of separate bushes and thrust plates can cause wear on cap screw bolt heads, making thrust plate removal during replacements more challenging. Worn bolt heads may lead to the dislodgement of the thrust plate, which can damage the bucket-stick mounting surfaces.

To address this issue, Geographe has developed the Top Hat Bush with a Cross Hatch grease groove, enhancing grease distribution. Additionally, the phosphating process ensures optimal lubrication during initial startup and protects against shelf storage deterioration.

This design is significantly stronger as it is crafted from a single piece of material, making it resistant to movement under dynamic load conditions.



Safer work environment for maintenance teams by reducing additional hot works.



Increase fleet uptime with efficient ease of fitment, reducing time and associated labour costs.



Cross Hatch grease groove for improved grease disbursement and phosphating aids first start-up lubrication and shelf storage protection.



Significantly stronger due to being manufactured from one piece of material meaning it is not prone to movement under dynamic load conditions.

Top Hat Bush Location

Geographe Top Hat Bushes offers a stronger solution to standard Hitachi Bush and thrust plate arrangements, decreasing premature wear, and decreasing movement under dynamic load conditions.

Geographe Top Hat Bush Kits are available for the following Hitachi Excavator models: **EX1200, EX1900, EX2500, EX2600, EX3500, EX3600, EX5500, EX5600, and EX8000**, as well as Top Hat Bush Kits available for Caterpillar **6020B** Excavators.



Standard OEM Bush and Thrust Plate to suit HIT EX5500



Enhanced Performance integrated Top Hat Bush Assembly to suit Hitachi EX5500



Excavator - Enhanced Performance Part Offerings

Hitachi Excavators



Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
EX3600	Bucket	Top Hat Bucket Refurb Kit	<ul style="list-style-type: none"> The Hitachi excavator faces a weakness with separate thrust plates, prompting mine sites to address it by welding the plates directly to the machine. The welding ultimately affected the component's strength and resulted in accelerated wear. Use of hot works causes significant safety concerns such as excess noise pollution. 	<ul style="list-style-type: none"> Increased ease of fitment, reducing time and labour costs. Reduces high-risk work and machine downtime. Increased strength by being manufactured from one piece of material; making it not prone to movement under dynamic load conditions. Cross Hatch grease groove improves grease disbursement.
EX3600	Stick to Bucket	Top Hat Bush Kit		
EX5500	Bucket	Top Hat Bucket Bush Kit		
EX5500	Stick to Bucket	Top Hat Stick to Bucket Kit		

Enhanced Performance Top Hat Bush Kits are also available for Hitachi EX1200, EX1900, EX2500, EX2600, EX3500, EX5600 and EX8000.

Liebherr Excavators



Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
R994 R995 R996 R9200 R9250 R9350 R9400 R9800		All Liebherr Excavator Bushes are Enhanced.	<ul style="list-style-type: none"> Excavators are prone to high levels of wear due to the harsh working conditions. Harsh working conditions in addition with OEM's minimal case depth of 0.015 - 0.020mm resulted in extended fleet downtime for the bushes to be removed & reinstalled. 	<ul style="list-style-type: none"> Increased fleet up-time. Increased wear resistance with a 100x in case depth. Decreased extended downtime for installations and removals. Reduces unnecessary labour costs

Excavator - Enhanced Performance Part Offerings

Caterpillar Excavators



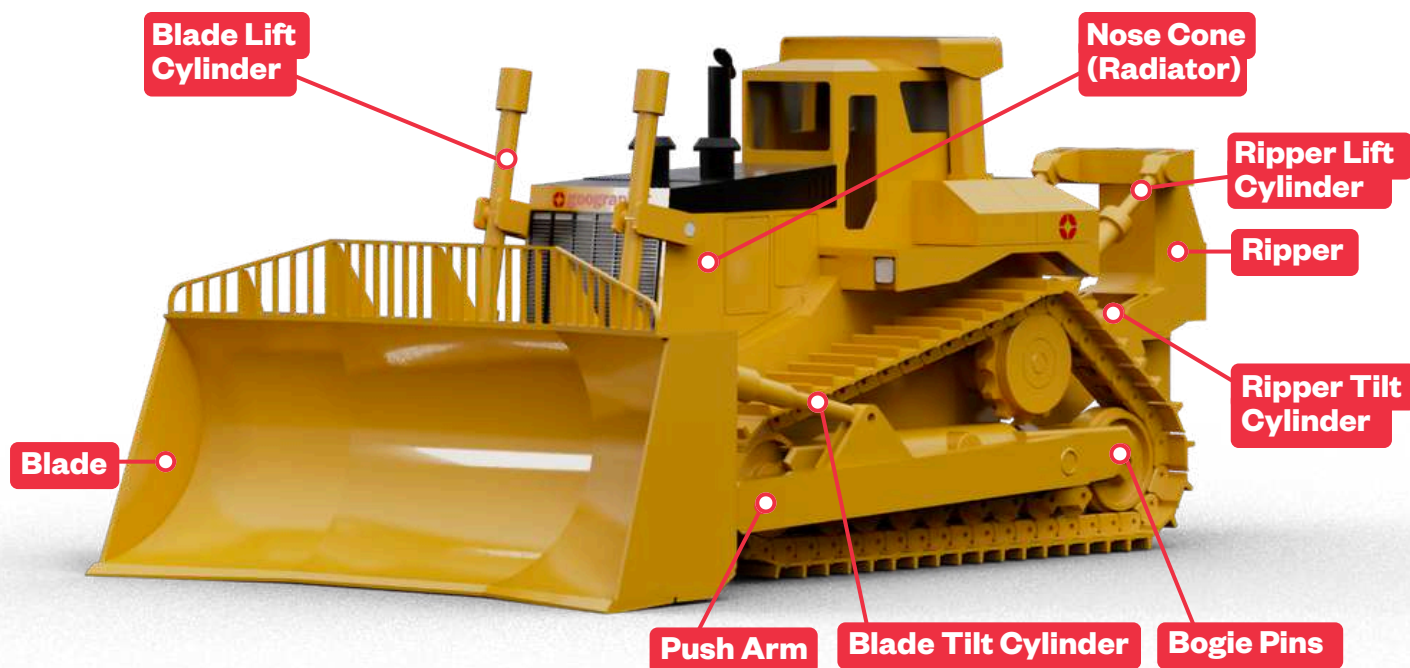
Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
6020B		Top Hat Bucket Kit (Frame to Boom 11542666)	<ul style="list-style-type: none">• The OEM bushings were created from bronze with a small diameter flanged thrust face. In certain environments, this can be insufficient for the loading conditions resulting in accelerated wear on the thrust faces, posing concerns for durability and longevity.• The lack of seals in the standard arrangement exposes the bushings to contaminants and abrasive materials, exacerbating the wear rate and decreasing the longevity of the components.	<ul style="list-style-type: none">• Increased ease of fitment, reducing time and associated labour costs.• No hot work is required, reducing high-risk work and machine downtime associated with gouging, welding, and line boring.• Part is significantly stronger due to being manufactured from one piece of material meaning it is not prone to movement under dynamic load conditions.
6020B		Top Hat Bucket Kit (Boom to Stick 11542667)		
6020B		Top Hat Bucket Kit (Stick to Bucket 11542668)		

Enhanced Performance Top Hat Bush

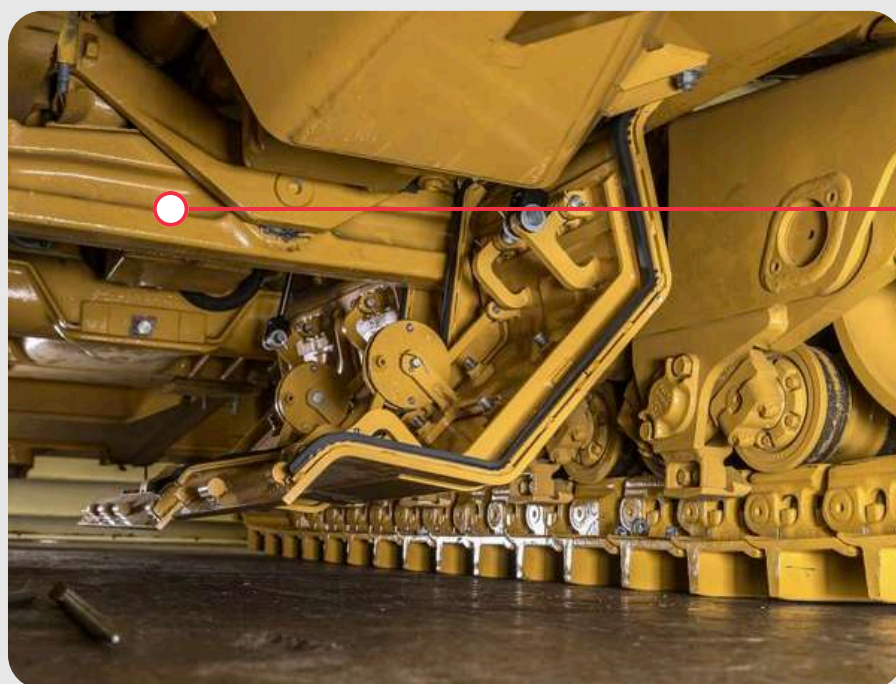
Geographe Top Hat Bushes offers a stronger solution to standard Caterpillar Top Hat Bush, decreasing premature wear, and decreasing movement under dynamic load conditions.



Dozer Location Breakdown



Underneath the Dozer



Equaliser Bar

**View Full Range
of Dozer Parts**

[Click Here](#)



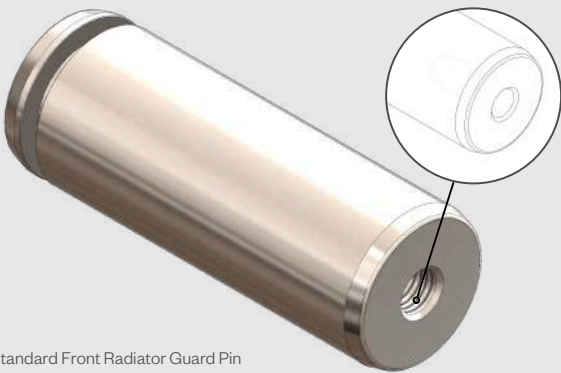
Dozer - Enhanced Performance Part Offerings

Caterpillar Dozers

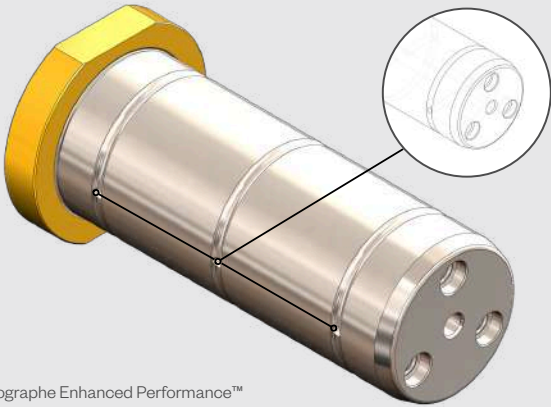


Machin e	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
D10T	Blade Tilt	Blade Tilt Greaseable Pin Kit (11541731)	<ul style="list-style-type: none">Excessive play between composite bushes and non-greased pins in the steering joint led to premature wear.Standard artic cylinder pins are prone to seizing and wear, especially in harsh grader applications.Premature wear contributed to increased maintenance frequency and safety risks during changeouts.	<ul style="list-style-type: none">Greased components increase operational life.Less downtime during maintenance.Improved up-time and grader productivity.Safer maintenance process for maintenance staff.
D11T	Blade Tilt	Blade Tilt Greaseable Pin Kit (11541735)		
D10T	Nose Cone	Front Radiator Frame to Nose Cone Greaseable Pin Assembly (11541235)		
D11T	Nose Cone	Front Radiator Frame to Nose Cone Greaseable Pin Assembly (11544345)		
D10T	Nose Cone	Rear Radiator Frame / Guard (Nose Cone) Colleted Pin Assembly (11541238)		
D11T	Nose Cone	Rear Radiator Frame / Guard (Nose Cone) Colleted Pin Assembly (11544349)		

Optimal grease distribution, enhanced performing dozers

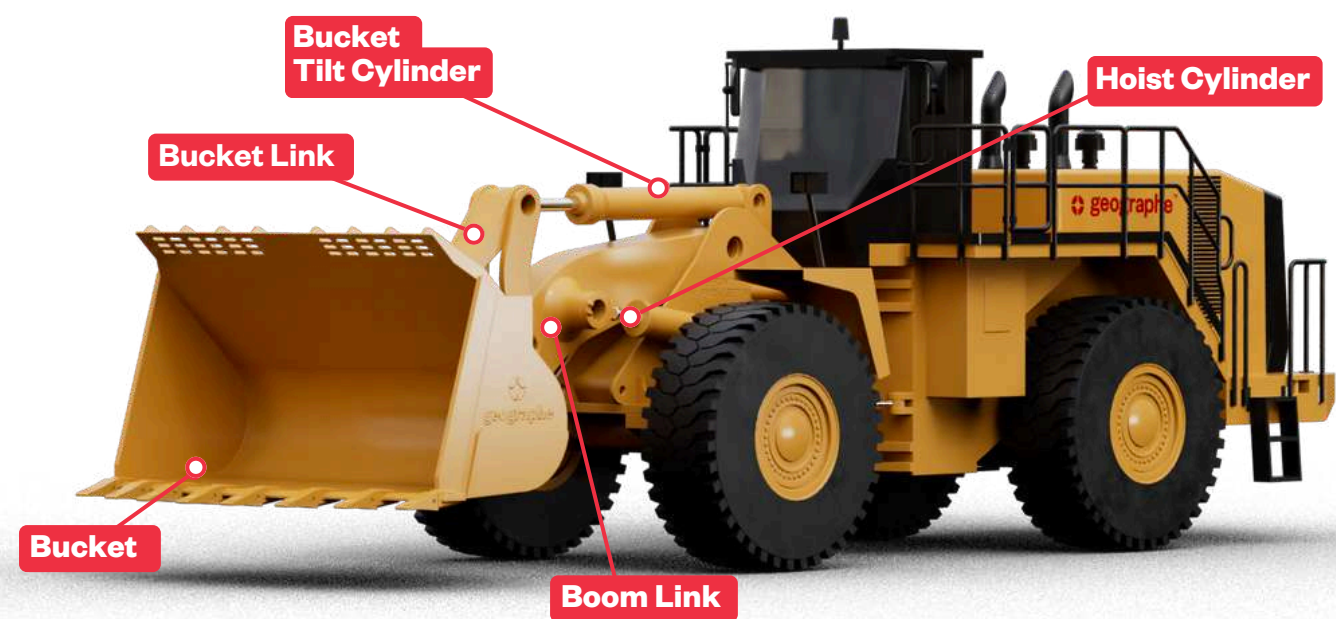


Standard Front Radiator Guard Pin
OEM Ref 2330888

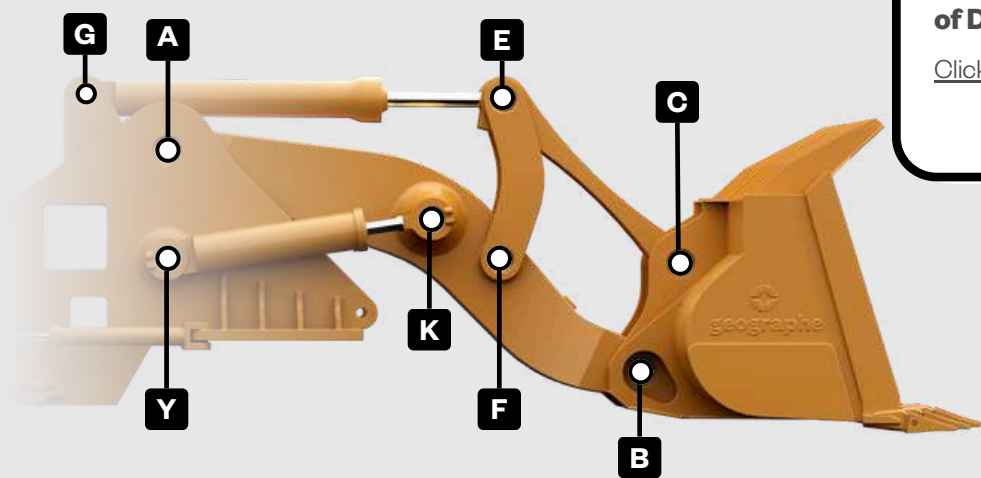


Geographe Enhanced Performance™
Greaseable Front Radiator Pin

Loader Location Breakdown



Pin Locations Up Close



Pin Location	Pin Location Description
A	Front Frame to Boom
B	Boom to Bottom Bucket
C	Link to Top Bucket
E	Tilt Cylinder to Bucket Link


Pin Location	Pin Location Description
F	Boom to Boom Link
G	Front Frame to Tilt Cylinder
K	Lift Cylinder to Boom
Y	Front Frame to Lift Cylinder


Loader- Enhanced Performance Part Offerings


Featured Part: The 992G Solid Pin Kit


One of the primary issues associated with OEM standard oil-filled cartridge pins is their propensity to leak. While the design is intended to provide lubrication and reduce friction, it can lead to seal failures and subsequent oil leakage. This leakage not only compromises the effectiveness of the pin but can also lead to contamination of surrounding components and the work environment.

To solve the premature wear in both, bushes and cartridge pins, Geographe designed the Enhanced Performance (EP) Solid Pin Conversion Kit (SPK), with re-designed bush features and mating parts. The SPK has a greased design that significantly reduces the chance of leakage and catastrophic failure. Created to improve the time taken during changeouts, the SPK offers a cost-effective solution to premature failures experienced with the original oil-filled pin set up.

- 

Faster more efficient pivot joint parts changeouts.
Ease of dismantling due to inclusion of seals, where possible, to prevent dirt and moisture ingress.
- 

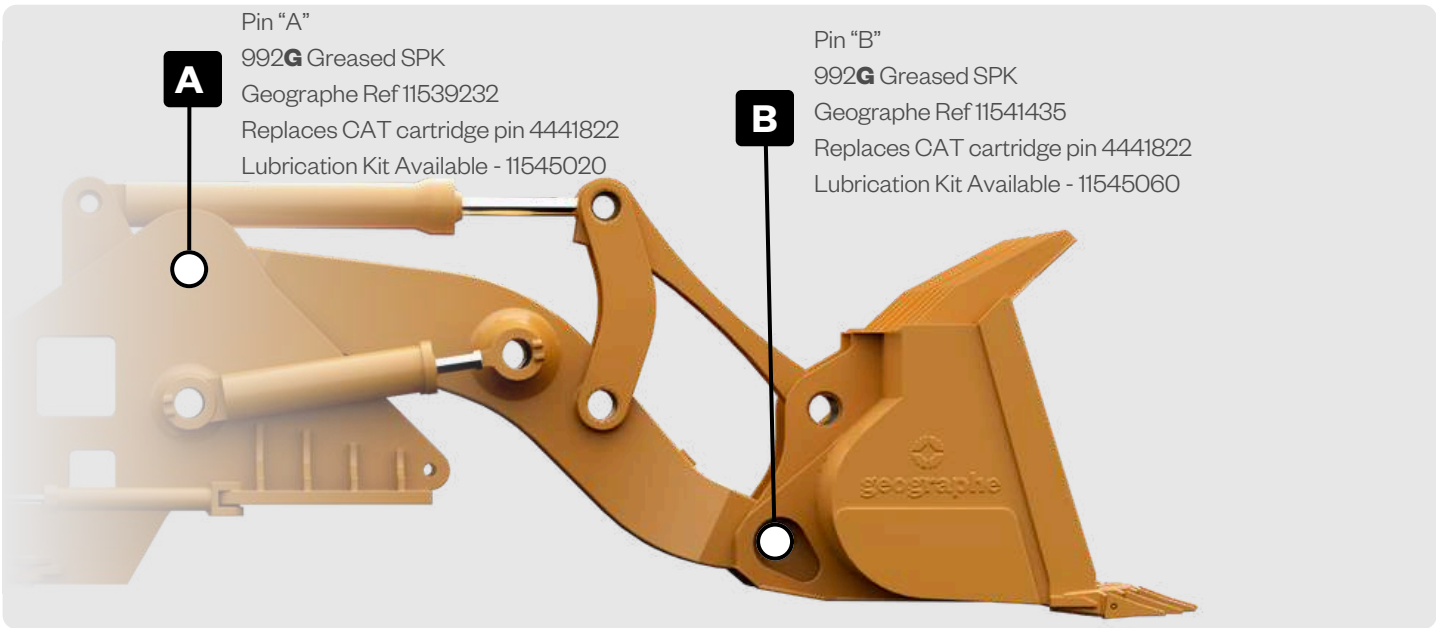
Decrease in extended downtime during maintenance events.
- 

Reduction in corrosion & friction at start-up, due to bush phosphate coating.
- 

Increased operational life through grease lubrication and enhanced components.

Geo Description	OEM Ref for Kit	Geo Ref for Kit
Front Frame To Boom (Pin "A") Replacement Kit (With Lock Upgrade)	2289569 KIT-A / EPMOD	11540968
Front Frame To Boom (Pin "A") Oil Cartridge Pin To Greased Solid Pin Conversion Kit	4441822 SPK-A / EPMOD	11539232
Boom To Bucket (Pin "B") Replacement Kit (With Lock Upgrade)	2289569 KIT-B / EPMOD	11540969
Boom To Bucket (Pin "B") Oil Cartridge Pin to Greased Solid Pin Conversion Kit	4441822 SPK B /EPMOD	11541435
Link To Bucket (Pin "C") Replacement Kit (With Lock Upgrade)	2289569 KIT-C / EP	11540970
Front Frame To Lift Cylinder Pin "Y" Replacement Kit (With Lock Upgrade)	1448300 KIT-Y / EPMOD	11541436

992G Enhanced Performance (EP) Greased Solid Pin Kit (SPK)





Loader- Enhanced Performance Part Offerings


Featured Part: The 992K Solid Pin Kit


One of the primary issues associated with oil-filled cartridge pins is their propensity to leak. While the design is intended to provide lubrication and reduce friction, it can lead to seal failures and subsequent oil leakage. This leakage not only compromises the effectiveness of the pin but can also lead to contamination of surrounding components and the work environment.

To solve the premature wear in both, bushes and cartridge pins, Geographe designed the Enhanced Performance (EP) Solid Pin Kit (SPK), with re-designed bush features and mating parts. The SPK has a greased design that significantly reduces the chance of leakage and catastrophic failure. Created to improve the time taken during changeouts, the SPK offers a cost-effective solution to premature failures experienced with the original oil-filled pin set up.

- 

Faster more efficient pivot joint parts changeouts.
Ease of dismantling due to inclusion of seals, where possible, to prevent dirt and moisture ingress.
- 

Decrease in extended downtime during maintenance events.
- 

Reduction in corrosion & friction at start-up, due to bush phosphate coating.
- 

Increased operational life through grease lubrication and enhanced components.

Geo Kit Description	OEM Ref for Kit	Geo Ref for Kit
Front Frame To Boom (Pin "A") Oil Cartridge Pin To Greased Solid Pin Conversion Kit	4441822 SPK A / EPMOD	11539232
Boom To Bucket (Pin "B") Oil Cartridge Pin To Greased Solid Pin Conversion Kit	4596731 KIT / EPMOD	11539211
Lift Cylinder To Boom (Pin "K") Oil Cartridge Pin to Greased Solid Pin Conversion Kit	5980498 KIT / EPMOD	11539210
Front Frame To Lift Cylinder (Pin "Y") Oil Cartridge Pin to Greased Solid Pin Conversion Kit	5980498 KIT / EPMOD	11539210

992K Enhanced Performance (EP) Greased Solid Pin Kit (SPK)

Pin "A"

992**K** Greased SPK

Geographe Ref 11539232

Replaces CAT cartridge pin 4441822

Lubrication Kit Available - 11545020

Pin "K"

992**K** Greased SPK

Geographe Ref 11539210

Replaces CAT cartridge pin 316-6134

Lubrication Kit Available - 11545056

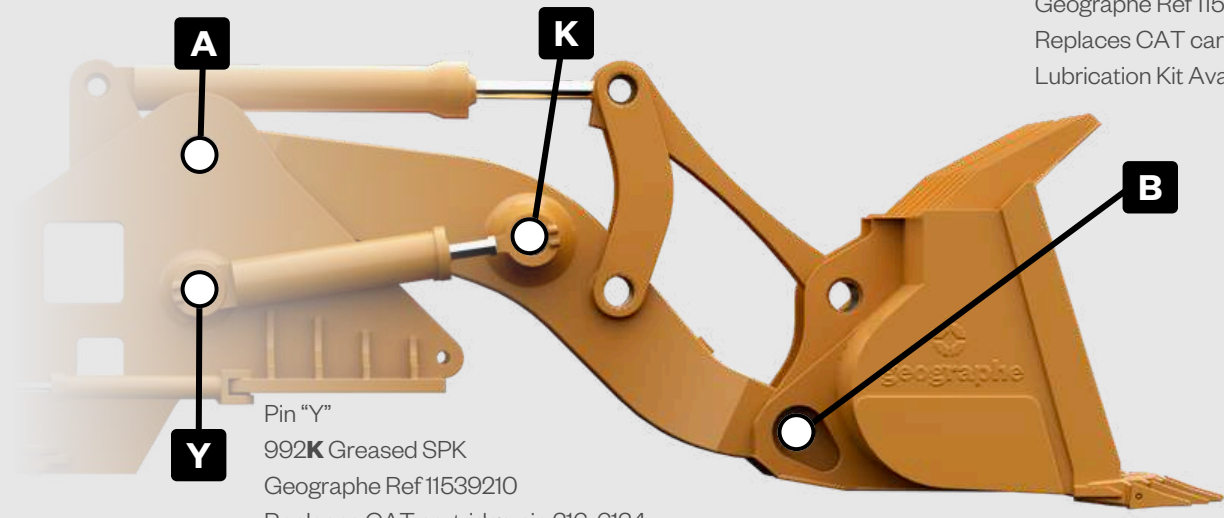
Pin "B"

992**K** Greased SPK

Geographe Ref 11539211

Replaces CAT cartridge pin 311-1898

Lubrication Kit Available - 11537270



Pin "Y"

992**K** Greased SPK

Geographe Ref 11539210

Replaces CAT cartridge pin 316-6134

Lubrication Kit Available - 11545055

Loader- Enhanced Performance Part Offerings

Featured Part: The WA1200 GPA

Geographe was approached by a Western Australian Tier 1 mining customer with a challenge they were facing with standard OEM oil-filled pins. These pins were reported to fail prematurely and leak, causing pin seizure, and contributing to costly extended downtimes to remove the components.

The occurrence was becoming a challenge, with the customer reporting that over 12 months, they had to replace 20 failed pins. The standard oil-filled boom-to-bucket pins experience high loads and would undergo pre-start warm-up procedures.

Geographe collaborated with the Tier 1 mining customer to solve premature wear by designing the Enhanced Performance (EP) Greaseable Pin Assembly (GPA), with re-designed grease distribution, reducing the occurrence of premature pin seizing and eliminating the pre-start warm-up procedure.

The GPA has a greased design that significantly reduces the chance of premature wear failures and leakages. Created to improve the time taken during change-outs, the GPA effectively solves the challenge the Tier 1 miner was facing with a cost-effective solution.



Reduces labour costs and risks to maintenance personnel due to eliminating premature failures.



Reduction in premature failures due to continuous grease lubrication.



Reduction in friction at start-up.

Optimal Performance due to bushings having spiral grooving and cross-hatching that allows even grease distribution.



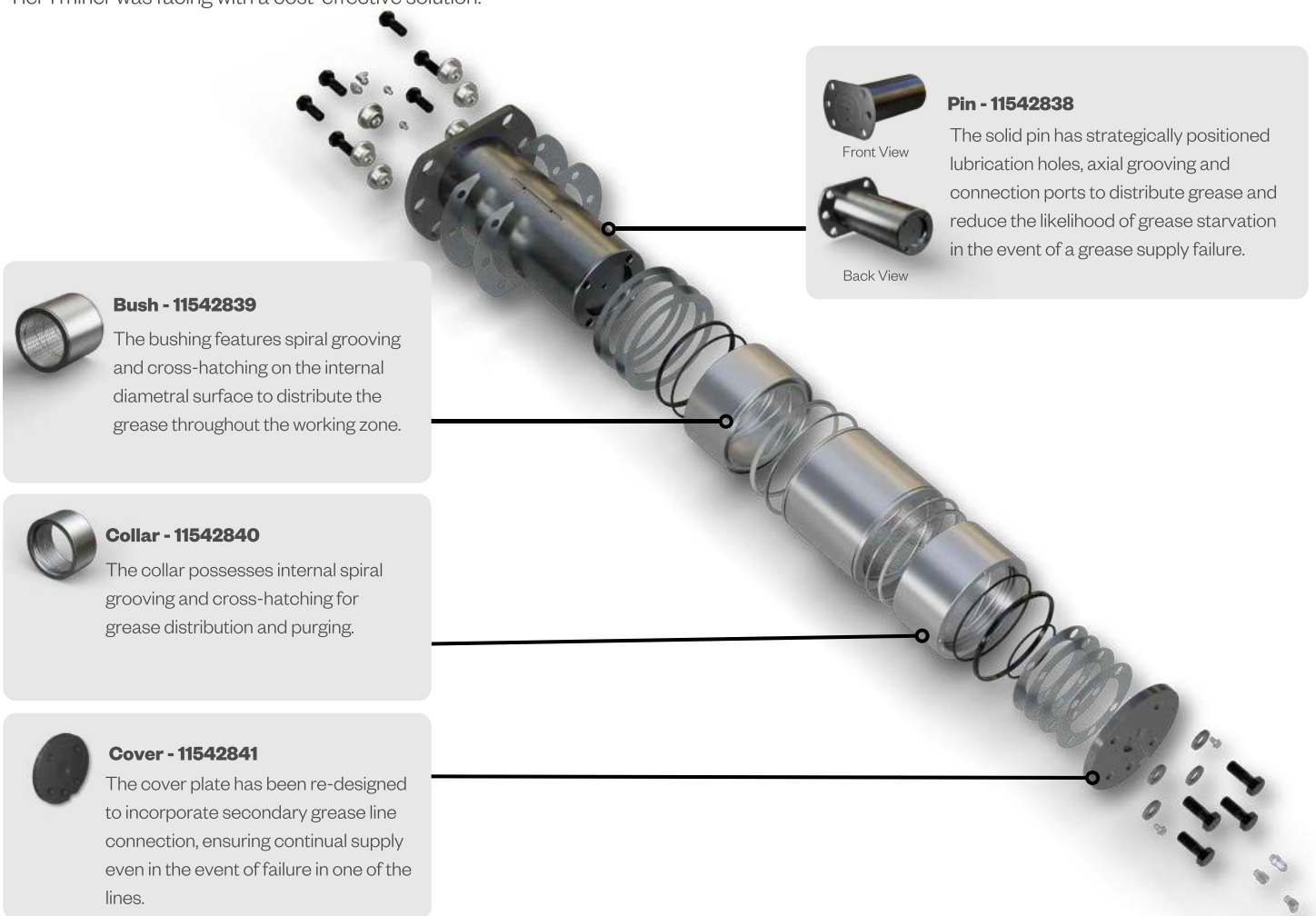
Increased operational life through grease lubrication and enhanced components.

Front Frame to Boom GPA

Suit Komatsu WA1200 Loaders

OEM: 42C7011284KITEPMOD

Geographe Ref No: 11542843



Loader - Enhanced Performance Part Offerings

Caterpillar Loaders

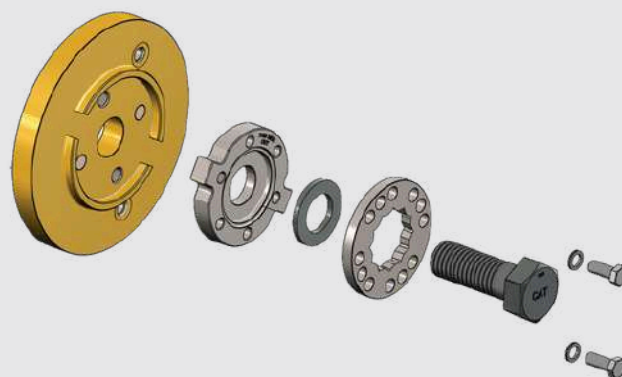


Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
992G/K	Front Frame to Boom	Front Frame To Boom (Pin "A") Oil Cartridge Pin To Greased Solid Pin Conversion Kit (11539232)	<ul style="list-style-type: none"> Bushings and cartridge pins are critical components in various heavy machinery, however, their design has led to various issues that affect both operational efficiency, as well as maintenance costs. One of the primary issues associated with oil-filled cartridge pins is their propensity to leak. This leakage not only compromises the effectiveness of the pin but can also lead to contamination of surrounding components and the work environment 	<ul style="list-style-type: none"> Decrease in extended downtime during maintenance events. Reduction in corrosion & friction at start-up, due to bush phosphate coating. Faster more efficient pivot joint parts changeouts. Ease of dismantling due to inclusion of seals, where possible, to prevent dirt and moisture ingress. Increased operational life through grease lubrication and enhanced components.
992G	Boom to Bucket	Boom To Bucket (Pin "B") Oil Cartridge Pin to Greased Solid Pin Conversion Kit (11541435)		
992K	Front Frame to Lift Cylinder	Front Frame to Lift Cylinder (Pin "Y") Oil Cartridge Pin to Greased Solid Pin Conversion Kit (11539210)		
992K	Boom to Bucket	Boom To Bucket (Pin "B") Oil Cartridge Pin To Greased Solid Pin Conversion Kit (11539211)		
992K	Lift Cylinder to Boom	Lift Cylinder To Boom (Pin "K") Oil Cartridge Pin to Greased Solid Pin Conversion Kit (11539210)		

Replacement Kits Also Available with Upgraded Locking Plate

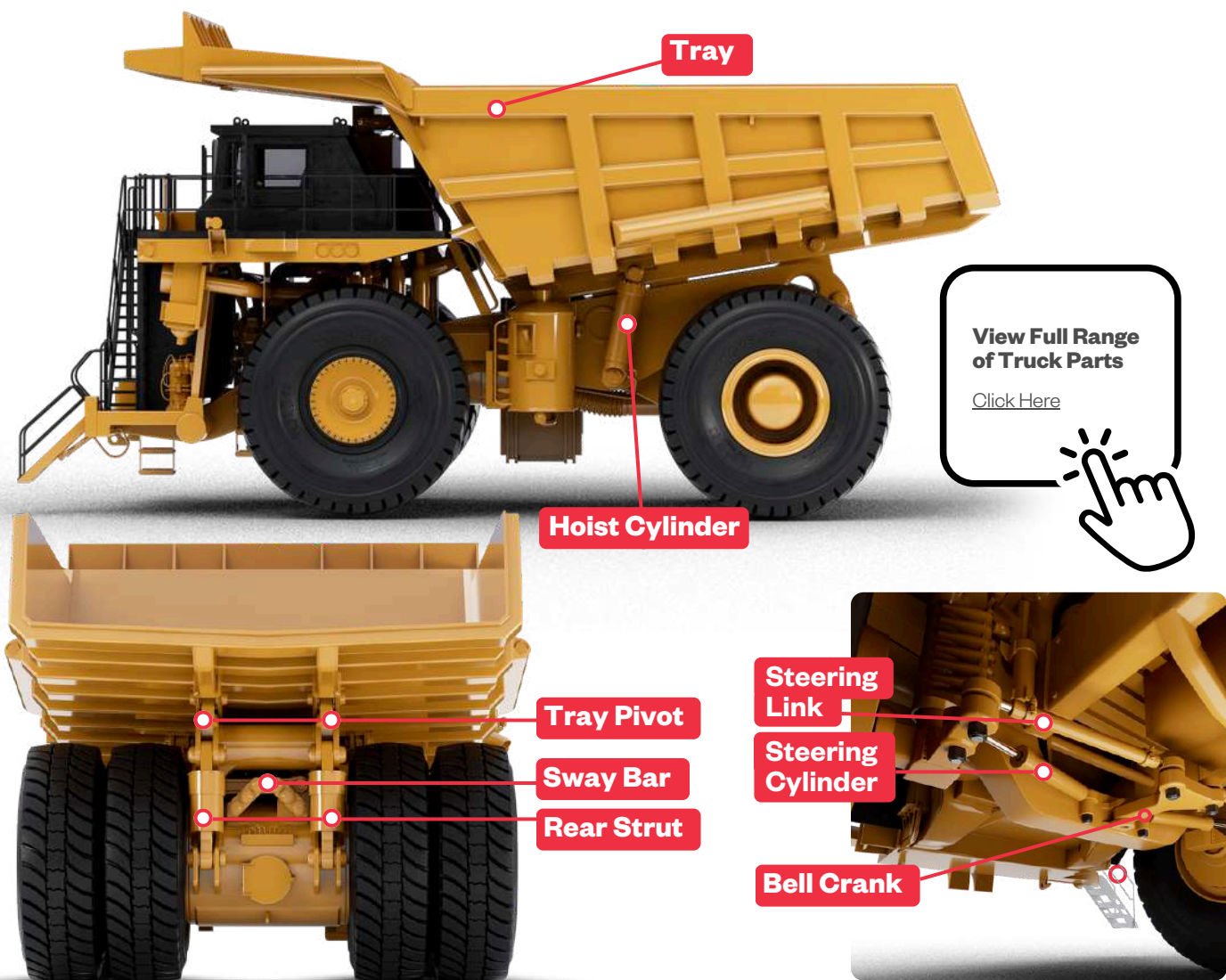
It has been reported that the standard central M36 bolt are prone to becoming loose over time leading to premature failures. Working with the confines of the existing componentry, Geographe developed a locking system to prevent the M36 bolt from coming loose, available in Replacement Kits.

The lock system has a modified retainer plate, a tabbed plate and a lock ring, including some additional hardware. The tabbed plate engages in slots in the retainer plate. Once the M36 bolt is tightened to the final torque, the lock ring is fitted over the bolt head and secured in place with 2x M12 bolts.



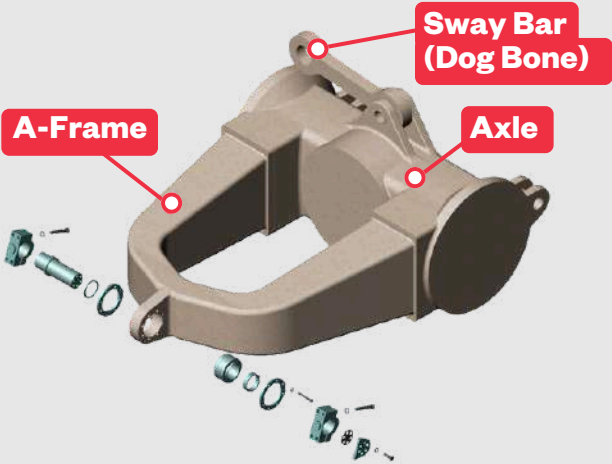
11540945 - Upgraded Locking Plate Kit

Haul Truck Location Breakdown

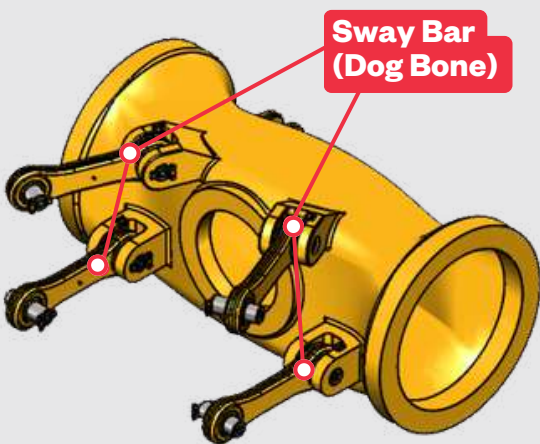


Underneath the Haul Truck

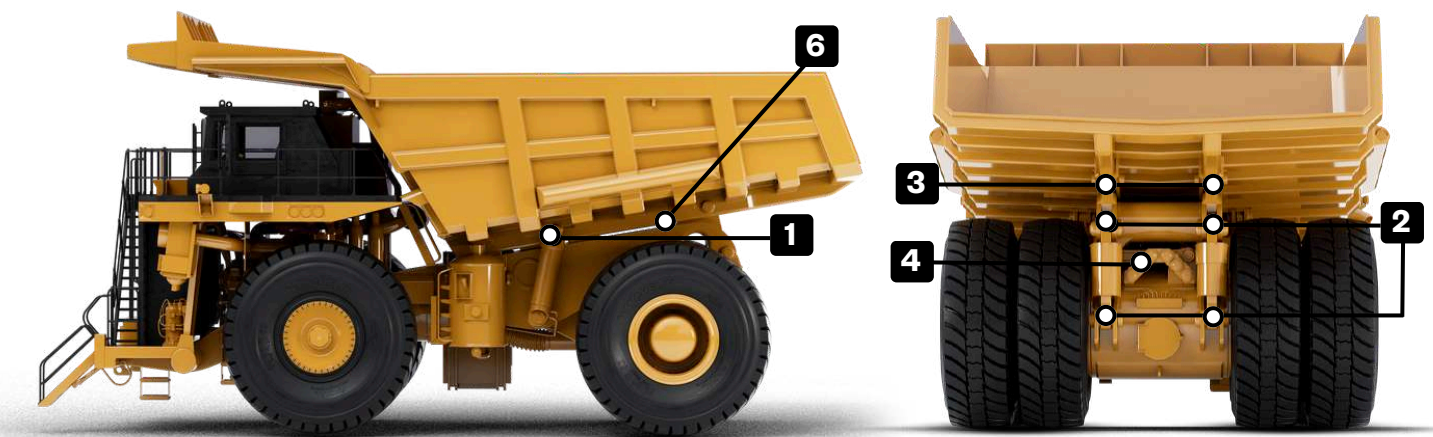
For models 777, 785, 789, 793C/D



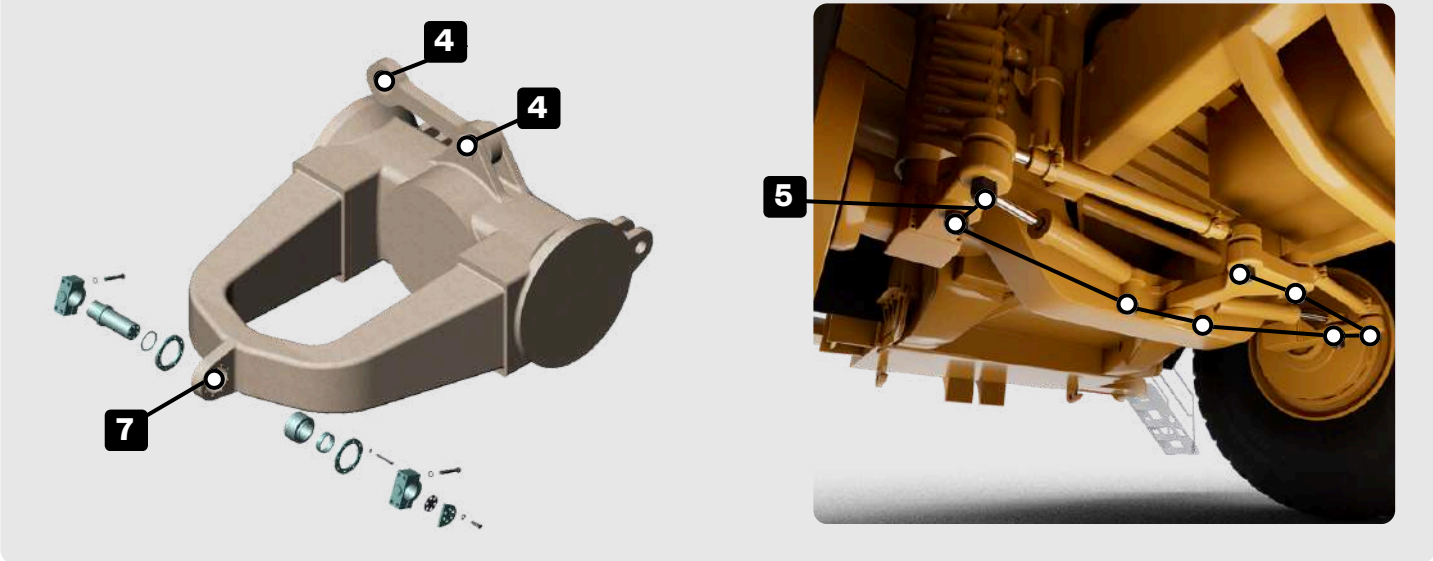
For model 793F



Haul Truck Components Available



Underneath the Haul Truck



Component Locations

Item	Component Description
1	Hoist Cylinder Pins
2	Rear Strut Pins and Bushes
3	Tray Pivot Pins and Bushes
4	Sway Bar Pins and Bearings
5	Ball Studs, Socket Assemblies and Steering Link Assemblies
6	Tray Pads
7	A-Frame Pins and Bearings

Haul Truck - Enhanced Performance Part Offerings

Featured Part: The CPA (What is it?)

Rear strut, rear suspension, and sway bar pins on CAT 7-Series and Komatsu haul trucks are known to seize in operation. This makes removal difficult, often requiring:

- Hot work permits for thermal lancing
- Tyre removal to prevent damage to the surrounding components during thermal lancing
- Increased labour and safety risks

Geographe's Colleted Pin Assembly (CPA) was developed to solve this issue, without requiring any modifications to critical machine components, with its barrel-style pin and two tapered collet design.



How the CPA Offers Superior Quality



Watch Video Here

During Installation

- The collets are positioned on the pin and slide up a tapered section as they are fastened.
- This causes them to expand and apply outward pressure to the frame bores, ensuring a secure and seated fit.

During Removal

- Retaining bolts are removed and reinserted into threaded jacking holes on each collet.
- As the bolts are tightened, the collets release from the taper and disengage the pin.
- No heat, no tyre removal, and no extra personnel required.

Overall Cost Effectiveness

- OEM Pins: Seized pins often require extra work to remove, such as thermal lancing, which costs between \$2,000- \$4,000 per 12-hour shift, only considering extra labour and support staff. In addition, rear strut changeouts can take up to 3 days of downtime per truck, depending on pin seizure severity.
- The **CPA**: Since it prevents seizing, so there's no need for costly and long removal methods like thermal lancing, meaning mine sites could save up to \$4,000 per seized rear strut pin by switching to CPA. For a fleet of 10 trucks, this could lead to savings of up to \$500,000, depending on repair frequency.

Improved Injury Prevention

- OEM Pins: Working with difficult-to-remove OEM pins can increase the risk of worker injuries, which can lead to costly medical bills, compensation claims, and extended downtime.
- The **CPA**: Easier and safer to install, reducing physical strain on workers and minimising the chance of injury. Potentially avoiding costs up to \$1 million per workplace injury, including medical costs and lost work hours.

Haul Truck - Enhanced Performance Part Offerings

Featured Part: The CPA (Continued)

NOTE: You don't need to make any modifications to the critical parts of the machine to fit the EPMOD version.



Safer work environment for maintenance teams by reducing hot works (for rear strut pins).



Increase fleet uptime with efficient extraction, which can be removed with a single fitter.



Decreases deviation from safe work procedures.



Collet being fixed in the housing protects the bore from wear and eliminates the need for line boring during changeouts.



OEM	Machine	Location	OEM Ref	Geographe Ref
Caterpillar	773/777	Swaybar	7D3009 EPMODASSY	11536088
Caterpillar	773/777	Swaybar (Greased Version)	7D3009 EPMODASSY2	11541832
Caterpillar	777	Rear Strut	9D2278 EPMODASSY	11536087
Caterpillar	777	Rear Strut (Greased Version)	9D2278 EPMODASSY1	11541825
Caterpillar	785	Rear Strut	1506308 EPMODASSY	11529047
Caterpillar	785/789/793	Swaybar	5T5947 EPMODASSY	11524530
Caterpillar	789/793	Rear Strut	1503772 ASSYEPMOD	11540005
Caterpillar	793F	Rear Suspension	5056560 ASSYEPMOD	11541895
Komatsu	830E	Rear Strut & Sway Bar	EK1326 ASSYEPMOD	11540877
Komatsu	930E	Rear Strut	EJ2846ASSYEPMOD **	11541308

** Line Boring Tooling Kit required

Haul Truck - Enhanced Performance Part Offerings

Featured Part: The Hoist Pin

Caterpillar 7-Series Haul Truck Hoist Cylinder Pins are prone to seizing making extraction very time-consuming. Hot works permits can often be required to lance out the seized pins, increasing personnel required and safety concerns.

Geographe were asked to engineer a solution to this problem. The Enhanced Performance design is a "Greased" version allowing Auto lube to be set up, forcing grease into the "Tray Ears". This can make extraction much easier without the need for hot works.

NOTE: No modifications are required to the machine for fitment of the EPMOD version - Auto Lube lines will need to be run in.



The greasing process enhances safety by eliminating the need for hot works.



Reduced maintenance costs tied to unscheduled repairs.

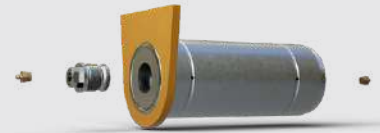


Increases operational hours, minimising downtime and maximising productivity.



Greased Hoist Pin Location

Geographe Greaseable Hoist Pins eliminate the hazards of hot works, allowing for an improved extraction process.



Greased Hoist Pin Assembly to suit Caterpillar 793 Haul Trucks



Watch Video Here

Greaseable Hoist Pins

OEM	Machine	Location	OEM Ref	Geographe Ref
Caterpillar	785/789	Hoist Cylinder	4992600 EPMODASSY1	11541298**
Caterpillar	785/789	Hoist Cylinder	4992600 EPMODASSY	11539997**
Caterpillar	793	Hoist Cylinder	4992596 ASSYEPMOD	11539181**
Caterpillar	793	Hoist Cylinder	4992596 ASSYEPMOD1	11541986**

**Due to the different brands of "Trays" in the field, the greasing distance between the "Tray Ears" can vary, Geographe has alternate greasing distances available to suit customer's requirement.

Also Available Hoist Cylinder Kits and Assemblies

OEM	Machine	Location	OEM Ref	Geographe Ref
Komatsu	830E	Hoist Cylinder	58E-MP-AK040EPMOD	11542216
Komatsu	930E & 960E	Hoist Cylinder	58F-MP-AK040EPMOD	11542347
Komatsu	830E	Hoist Cylinder	TY7320ASSYEPMOD	11541688
Komatsu	930E & 960E	Hoist Cylinder	EH7921ASSY/EPMOD	11541658

Haul Truck - Enhanced Performance Part Offerings

Featured Part: The Ball Stud

Caterpillar haul trucks are known for their rugged durability and ability to handle heavy-duty tasks in the mining industry. However, the ball studs in these trucks can experience premature failure due to several factors, including design shortfalls and poor fitment through compromised repairs to the associated steering components. The condition of the tapered bore receiving the ball stud must be of a quality that results in a high surface contact ratio. When this contact ratio is less than ideal, stress concentrations exist which can lead to fatigue failure.

Geographe paid close attention to material selection and heat treatment specification, the result being a ball stud that has optimised mechanical attributes designed to better cope with impact, fatigue, and ball wear.



High tensile alloy steel combined with surface treatment provides exceptional fatigue resistance.



Increased grease distribution for longer life.



Case hardened for optimal wear resistance.

Our Ball Stud Kits Make it Easy



Streamlined Maintenance: Each kit contains exactly what's needed for specific repairs or routine maintenance, significantly cutting down the time and effort spent sourcing parts.



Ease of Ordering and Inventory Management: Our kits simplify procurement and inventory management by consolidating multiple parts into a single SKU.

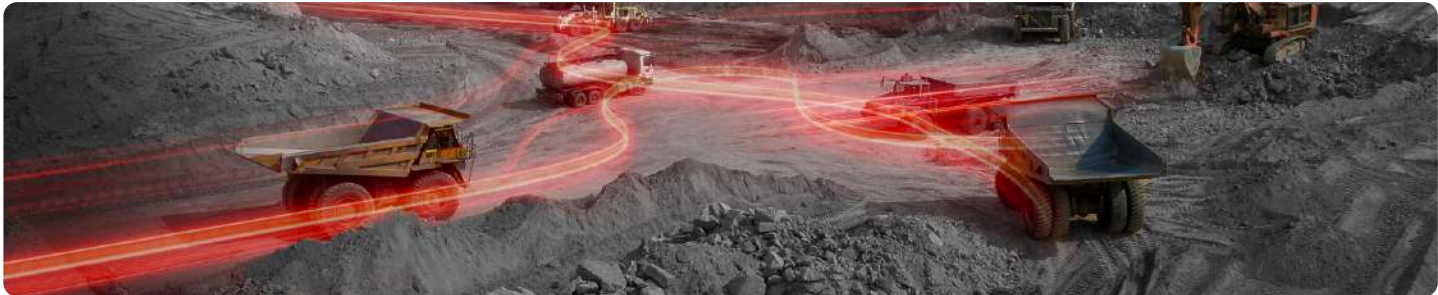


Enhanced Safety: Our kits ensure correct, compatible parts are used every time, minimising malfunctions and maximising safety.



Ball Stud Kits Available

Machine	Description	OEM Ref	Geographe Ref
773/777	EP Ball Stud Kit	3844562 EP / KIT	11543244
785	EP Ball Stud Kit	8X9619 EP / KIT	11510357
789/793	EP Ball Stud Kit	8X9620 EP / KIT	11529608
795/797	EP Ball Stud Kit	4381135 EP / KIT	11543848



Haul Truck - Enhanced Performance Part Offerings

Featured Part: The 793 A-Frame CPA

The A-frame assembly is a crucial component located at the rear of Caterpillar 793C/D haul trucks, connecting the chassis to the rear axle. Operating in demanding and highly stressed environments, the standard A-frame assembly faces significant reliability issues.

A primary concern is the spherical bearing, identified as a high common failure part, which frequently experiences premature failures. These issues, such as the cracking and splitting of the outer race, create substantial maintenance challenges and impact operational efficiency.

Additional failure factors that contribute

- Excessive vibrations caused by uneven surfaces
- Poor lubrication due to temperatures or lube system failures
- Overloading (payload)
- Fine dust/ore particles getting into critical areas that create abrasion and accelerates wear
- Original design limitations

The Geographe Solution

To address the common issues with standard A-Frame assemblies, Geographe developed the Enhanced Performance Colleted Pin Assembly (CPA). The design features expanding collets that lock into custom non-split cap bores, removing the need for shimming and preventing pin movement, reducing corrosion and making disassembly easier.



Reduces labour costs and risk to maintenance personnel due to fewer premature failures.



Decrease in extended downtime during maintenance events.



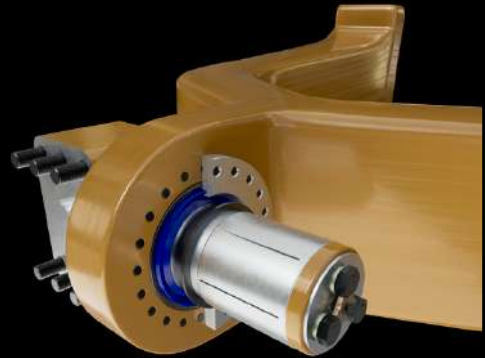
Safer work environment for maintenance teams by eliminating the need for hot works.



Predictable maintenance outcomes, with pin seizure eliminated/reduced.

A-Frame Location

The A-frame is located at the rear of the haul truck, beneath the cargo area, and connects the chassis to the rear axle assembly.

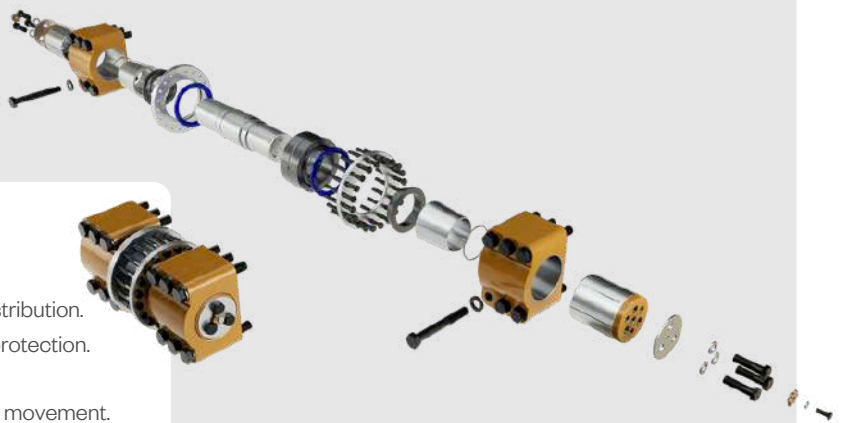


Complete Solution

Supplied as a full kit, Non-split housing caps for Caterpillar 793C/D Haul Trucks.

Key Design Enhancements Overcoming OEM Issues

- **Modified Bearing Design:** For superior strength.
- **Enhanced Lubrication System:** For optimal grease distribution.
- **Integrated Sealing Solution:** For robust contaminant protection.
- **Elimination of Shimming:** For simplified maintenance.
- **Colleted Pin Design:** For secure assembly and reduced movement.



Haul Truck - Enhanced Performance Part Offerings

Featured Part: The Retaining Pin

In Western Australia's Pilbara region, a leading miner faced a significant concern when it came to handling 12kg steel OEM tray sling retaining pins on their Caterpillar 793F haul trucks. Recognising the challenges with the OEM's pin mass, they sought to find a solution by making it lighter for safer and easier handling for all members of the maintenance team.

A metallurgical analysis was performed on the standard OEM pin by one of Geographe's in-house metallurgists. The challenge with the OEM pin is its mass, making it awkward to handle, lift and remove at the height required. This opened an opportunity for improvement.

The Geographe Solution

After analysis, Geographe opted for an alternative high-tensile material to replace the steel used in the OEM design. This material change offered the unique advantage of preserving strength whilst significantly reducing mass.

Further Enhancements

After improving the mass, Geographe decided to improve the handle design. Recognising the importance of ergonomic design to decrease instances of workers experiencing sprains and drops, Geographe's Development Team created an ergonomic removal handle that prioritised safe handling to reduce the risk of on-site injuries. The handle was specifically tailored to the operational requirements of the miner, providing a comfortable grip and minimising strain on workers.

Customer Outcomes

This significant reduction in mass and the introduction of an ergonomic handle resulted in a substantial risk decrease of injuries during pin handling for the miner.



The Lighter pin design is over 40% lighter than the standard OEM Tray Sling Retaining Pin, **decreasing deviation from safe working procedures.**



The ergonomic handle design **allows ease of use, decreasing occurrences of strains and drops.**



11542275

Lightweight Tray Sling Retaining Pin
to suit Caterpillar 793F haul trucks



Haul Truck - Enhanced Performance Part Offerings

Featured Part: The Tray Pivot Kit

The Geographe 793F Tray Pivot Kit is engineered to optimise the performance of pivot joints on Caterpillar 793F haul trucks. Featuring an Enhanced Performance Bush with grease grooving, this upgrade improves lubrication, ensures smoother joint movements, and extends component lifespan, thereby increasing reliability and reducing maintenance needs for your fleet.



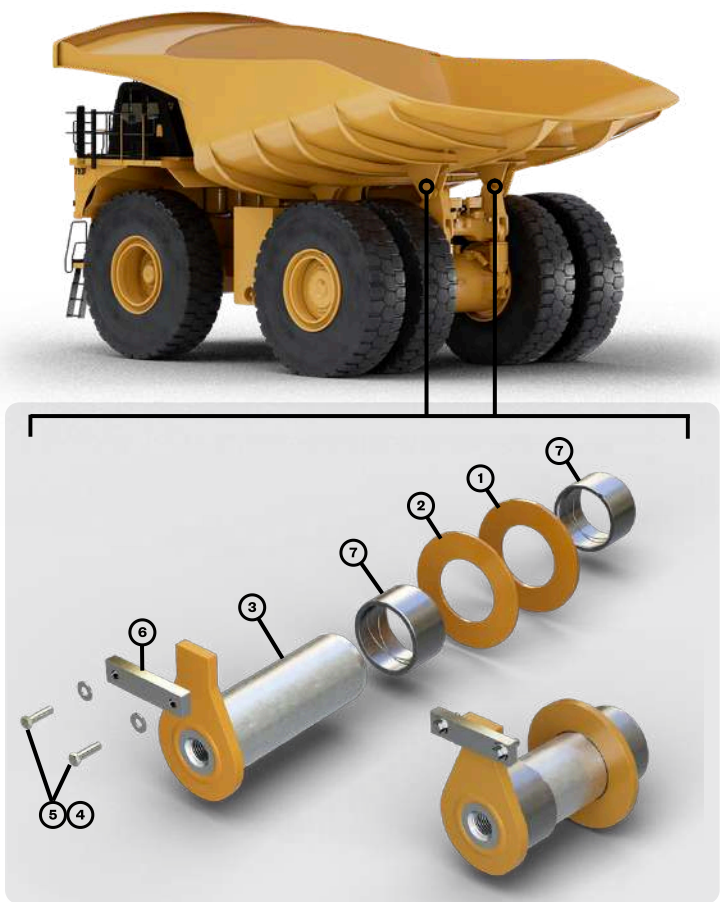
Grease grooving in the bush ensures optimal lubrication, reducing wear and extending the components' lifespan.



Improved durability leading to less frequent maintenance, boosting fleet availability.



The kit enhances pivot joint movements, increasing operational efficiency and reliability.



Standard OEM Bush



11535796 Enhanced Performance
Tray Pivot Bush to suit Caterpillar 793F haul trucks



Tray Pivot Kit


OEM	Machine	Location	OEM Reference	Geographe Reference
Caterpillar	793F	Tray	4684071 EPKIT	11540646


Haul Truck - Enhanced Performance Part Offerings


Featured Part: The Body Pad & Shim Kit

Geographe Body Pad and Shim Kit feature components made from polyurethane, unlike the standard OEM rubber parts. This material upgrade enhances durability and provides superior resistance to abrasive wear, ensuring a longer lifespan and better performance under harsh conditions.

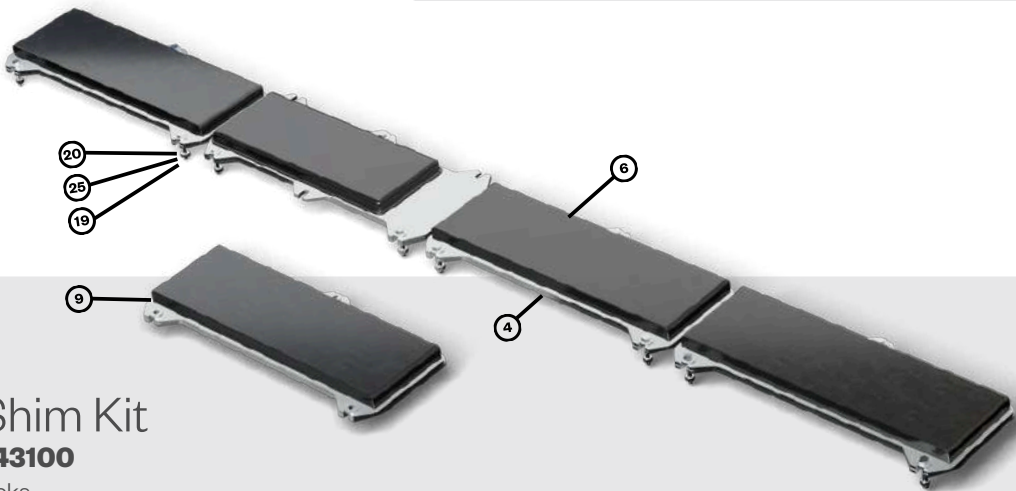


- 

Enhanced Durability and Wear Resistance: Polyurethane significantly increases the lifespan and maintains integrity in abrasive conditions.
- 

Reduced Maintenance Costs: The durable material decreases the frequency of replacements and maintenance needs.
- 

Superior Performance in Harsh Conditions: Polyurethane ensures reliable performance and stability under environmental stress.



Body Pad and Shim Kit

Geographe Reference: **11543100**
to suit Caterpillar 793F haul trucks

Item Ref	Description	OEM Reference	Geographe Reference	Qty
4	Body Pad Steel Shim	8X3046	11526208	30
6	Poly Truck Body Pad Assembly	2197595EP	11514449	8
9	Truck Body Pad Assembly	4574418EP	11541465	2
19	Hi-Tensile Flat Washer	5P1076	11513965	30
20	Lock Nut	6V7687	11539223	24
25	M12 ZP Full Thread Hex Head Bolt	8T4910	11496882	24

Haul Truck - Enhanced Performance Part Offerings

Caterpillar Haul Trucks



Machine	Description	OEM Ref	Geographe Ref
773/777	EP Steering Ball Stud	3844562EP	11537733
785	EP Steering Ball Stud	8X9619EP	11512931
789/793	EP Steering Ball Stud	8X9620EP	11477808
797	EP Steering Ball Stud	4381135EP	11539996

Ball Stud Kits

Machine	Description	OEM Ref	Geographe Ref
773/777	EP Ball Stud Kit	3844562/KIT	11543244
785	EP Ball Stud Kit	8X9619EP/KIT	11510357
789/793	EP Ball Stud Kit	8X9620EP/KIT	11529608
797	EP Ball Stud Kit	4381135EP/KIT	11543848

Oversized Ball Stud Options

Geographe can offer Ball Studs and Ball Stud Kits now featuring Oversized Options up to a 4th oversize that provide unmatched durability and reliability in challenging applications.



Haul Truck - Enhanced Performance Part Offerings

Caterpillar Haul Trucks



Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
773/777	Swaybar	Swaybar CPA 11536088	<ul style="list-style-type: none"> The CAT 7-Series Rear Strut/ Rear Suspension & Sway Bar Pins are prone to seizing making extraction very time consuming with hot works permits required to lance out the pins and tyres needing to be removed. This increases personnel required and increases safety concerns. 	Geographe engineered the Enhanced Performance Colleted Pin Assembly (CPA).
773/777	Swaybar (Greased Version)	Swaybar CPA 11541832		<ul style="list-style-type: none"> Reduces the need for hot works. Increases fleet uptime with efficient extraction.
777	Rear Strut	Rear Strut CPA 11536087		<ul style="list-style-type: none"> Decreases deviation from safe work procedures.
777	Rear Strut (Greased Version)	Rear Strut CPA 11541825		<ul style="list-style-type: none"> Collet being fixed in the housing protects the bore from wear and eliminates the need for line boring on change out.
785	Rear Strut	Rear Strut CPA 11529047		<p>NOTE: No major modifications are required to critical parts of the machine for fitment of the EPMOD version.</p>
785/789/793	Swaybar	Swaybar CPA 11524530		
789/793	Rear Strut	Rear Strut CPA 11540005		
793F	Rear Suspension	Rear Suspension CPA 11541895		
777/785	A-Frame	Colleted A-Frame Kit (11536089)	<ul style="list-style-type: none"> Due to harsh conditions, the Spherical Bearing located in the A-Frame assemblies in CAT 777 & 785 Dump Trucks regularly experiences premature failures due to cracking and eventual splitting of the Outer Race. 	<p>A solution to these failures is the EPMOD A-Frame Spherical Bearing. With a thicker outer shell, it offers increased strength while maintaining complete interchangeability with the OEM. Also utilised the CPA design to incorporate a modified spherical bearing.</p> <ul style="list-style-type: none"> Includes EPMOD A-Frame Spherical Bearing: thicker outer shell, offering increased strength Collet fixed in the housing, protects the bore from wear and eliminates the need for line boring.

Haul Truck - Enhanced Performance Part Offerings

Caterpillar Haul Trucks



Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
785/789	Hoist Cylinder	Greased Hoist Pin Assembly (11541298/11539997)	<ul style="list-style-type: none">The CAT 7-Series Haul Truck Hoist Cylinder Pins are prone to seizing making extraction very time consuming with hot works permits required to lance out the pins, this also increases personnel required and increases safety concerns.	<p>Geographe engineered a "Greased" version allowing auto lube to be set up forcing grease into the "Tray Ears" making extraction much easier without the need for hot works. Due to the different brands of "Trays" in the field, the greasing distance between the "Tray Ears" can vary, Geographe have alternate greasing distances available or we can design to suit your requirement.</p>
793		Greased Hoist Pin Assembly (11539181/ 11541986)		<ul style="list-style-type: none">Increases operational hours, minimising downtime and maximising productivity.Reduces maintenance costs tied to unscheduled repairs.Enhances safety by eliminating the need for hot works, and the associated risksPrevents bore damager reducing the need for welding and line-boring repairs <p>NOTE: No modifications are required to the machine for fitment of the EPMOD version - Auto Lube lines will need to be run in.</p>
793F		Lightweight Tray Sling Retaining Pins (11542275)	<ul style="list-style-type: none">OEM Tray Sling Retaining Pins that are used for maintenance had a mass of 12kg, with an unergonomic handle.Due to the weight of the OEM pins, safe handling was a concern for the maintenance team.	<ul style="list-style-type: none">Lighter pin design decreases deviation from safe working procedures.Ergonomic handle design, allows ease of use, decreasing strains and drops.

Haul Truck - Enhanced Performance Part Offerings

Komatsu Haul Trucks



Machine	Location	Enhanced Performance Parts	Challenges Faced	Improvement Factors
830E	Rear Strut & Sway Bar	Rear Strut & Sway Bar Colleted Pin Assembly (11540877)	<ul style="list-style-type: none"> Komatsu Haul Truck Rear Strut Pins are prone to seizing making extraction very time consuming with hot works permits required to lance out the pins and tyres needing to be removed. Increasing personnel required and increasing safety concerns. 	Geographe engineered the Enhanced Performance Colleted Pin Assembly (CPA).
830E	Rear Strut & Sway Bar	Colleted Pin Assembly Installation & Removal Tool (11541846)		<ul style="list-style-type: none"> Reduces the need for hot works. Increases fleet uptime with efficient extraction. Decreases deviation from safe work procedures.
930E	Rear Strut	Rear Strut Colleted Pin Assembly (11541308)		<ul style="list-style-type: none"> Collet being fixed in the housing protects the bore from wear and eliminates the need for line boring on change out.
930E	Rear Strut	Colleted Pin Assembly Installation & Removal Tool (11543515)		NOTE: No major modifications are required to critical parts of the machine for fitment of the EPMOD version.
830E	Hoist Cylinder	Greaseable Hoist Pin Kit (11542216)	<ul style="list-style-type: none"> Komatsu Haul Truck Hoist Cylinder Pins are prone to seizing making extraction very time consuming with hot works permits required to lance out the pins. Increasing personnel required and increasing safety concerns. 	Geographe engineered a "Greased" version allowing for auto lubrication to be set up forcing grease into the "Tray Ears" making extraction much easier without the need for hot works.
930E/960E	Hoist Cylinder	Greaseable Hoist Pin Kit (11542347)		<ul style="list-style-type: none"> Increases operational hours, minimising downtime and maximising productivity. Reduces maintenance costs tied to unscheduled repairs. Enhances safety by eliminating the need for hot works, and the associated risks. Geographe EP Greaseable Hoist Pins help prevent such damage, reducing the need for welding and line-boring repairs. <p>NOTE: No modifications are required to the machine for fitment of the EPMOD version - Auto Lube lines will need to be run in.</p>

Haul Truck - Specialised Tooling Available

Featured Part: The BSBIRT

In the demanding and rugged terrains where mining trucks operate, routine maintenance is critical yet challenging. After collaborating with Fortescue Metals Group, Geographe identified another significant bottleneck in the maintenance of Caterpillar haul truck fleets - the installation and removal of the Split Shell Bearing (with Ball Stud) into the Steering Cylinder/Rod Eye.

Geographe engaged its in-house Product Development Team to find a suitable design that would eliminate the need for multiple tools and impacts allowing for efficient and safe Split Shell Bearing and Ball Stud changeouts.

The Ball Stud Bearing Installation and Removal Tool (BSBIRT) is a custom-designed tool that comprises a machined Body, Attachments and Hydraulic Cylinder configurable to remove or install the Split Shell Bearing/Ball Stud assembly, as required.



BSBIRT **promotes and prioritises the safety and wellbeing of personnel**, to create more productive environments.



Minimises downtime associated with maintenance and repairs, further contributing to cost efficiency.



Increased overall safety practices by minimising potential manual handling injuries whilst hammering the components.

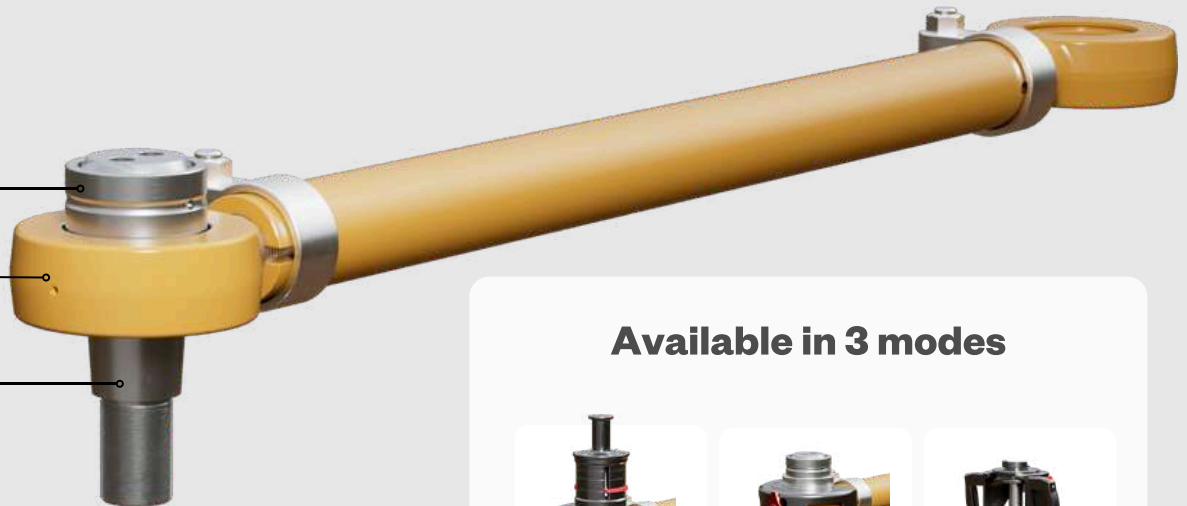
How does it work?

The custom body fits over the steering cylinder/rod eye and utilises a hydraulic cylinder with specific attachments to apply pressure for removing and installing the split shell bearing.

Split Shell Bearing
(Bearing Race)

Rod Eye
(Steering Cylinder)

Ball Stud



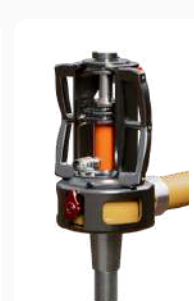
Available in 3 modes



Removal



Setting



Installation

Haul Truck - Specialised Tooling Available

Featured Part: The BSRT

Fitters face a challenging 12-hour process to remove studs from bell cranks and front spindles, often requiring hot works or risky methods. The Ball Stud Removal Tool (BSRT) developed by Geographe, in collaboration with Fortescue Metals Group, offers a safer, more efficient solution.

This patented hydraulic tool minimises the need for hot works and hammering, addressing the critical issue of seized ball studs in Caterpillar haul trucks.

The BSRT enhances maintenance procedures and reduces costly downtime, making it essential for mining operations.



Reduces labour costs from prolonged fleet downtime due to traditional removal practices .



Minimises downtime associated with maintenance and repairs, further contributing to cost efficiency.



Increased overall safety practices by minimising the need for thermal lancing, hammering and grinding to remove seized ball studs .



Reduces occurrences of slippage with the BSRT's two-part split retainers, securely locking the tool into place.



The Ball Stud Removal Tool Comes in 3 Kit Variations

- BSRT to suit CAT 777 trucks
- BSRT Mk2 is available to CAT 785, 789, and 793 trucks
- Extended Life Brake Pack (ELBP) Kit for CAT 793 trucks

 **Quick Guide to Fitting**

	BSRT Kit (11542115)	BSRT Mk2 Kit (11544610)	ELBP Kit (11545125)
To Suit	CAT 777	CAT 785, 789 & 793	CAT 793
Designed to Release	<ul style="list-style-type: none">• Six studs on the standard steering arm.	<ul style="list-style-type: none">• Six studs on standard steering arm.• Two centre steering arm studs on 793 haul trucks fitted with ELBP.	<ul style="list-style-type: none">• Four studs on ELBP outer steering arm. <p>IMPORTANT: This Kit CANNOT be used on CAT 793 Haul Trucks with standard steering arms</p>
Kit Contents	<ul style="list-style-type: none">• Retainer Assembly• Removal tool body design and rating certificate.• Hi-Force® Hydraulic cylinder rated to 20T.• Hydraulic cylinder certificate of test and conformity.• Cylinder Spacer Assembly 23 thickness• Cylinder Spacer Assembly 45 thickness• Laminated user manual.• BSRT usage log.• Customised waterproof wheeled Pelican™ case	<ul style="list-style-type: none">• Retainers and blade.• Removal tool body design and rating certificate.• Hi-Force® Hydraulic cylinder rated to 50T / 10,000 PSI.• Hydraulic cylinder certificate of test and conformity.• Hydraulic cylinder adaptor to suit CAT 785 trucks.• Laminated user manual.• BSRT usage log.• Customised waterproof wheeled Pelican™ case.	<ul style="list-style-type: none">• Retainer and blade.• ELBP Removal tool body design and rating certificate.• Hi-Force® Hydraulic cylinder rated to 50T / 10,000 PSI.• Hydraulic cylinder certificate of test and conformity.• Laminated user manual.• BSRT usage log.• Customised waterproof wheeled Pelican™ case.

**CHALLENGING YOU
TO EXPECT MORE
FROM YOURSELF
& YOUR ASSETS**



See it in Action

Frequently Asked Questions

What is Enhanced Performance?

Enhanced Performance (EP) parts are specifically engineered to solve common challenges mine sites face, optimising the performance, durability, and efficiency of machinery used in mining operations. Enhanced Performance parts incorporate advanced materials, innovative designs, and rigorous testing by enhancing the current design, offering superior resistance to wear, corrosion, and impact, resulting in extended service life and reduced downtime to achieve operational excellence.

What is an EP MOD part?

An EP MOD part is an enhanced Geographe replacement item that also may require the machine to be modified for correct installation.

What is Specialised Tooling?

Specialised Tooling refers to the development and production of custom tooling that has the sole purpose of improving safety and reducing the time it takes to install and remove mining equipment components. Designed for OEM mining machines and manufactured in quality-accredited facilities to ISO-9001 standards, Specialised Tooling brings significant safety benefits and cost savings to maintenance operations.

What are Replacement Parts?

Geographe Replacement Parts™ are designed and engineered to be equal to that of the Original Equipment Manufacturer (OEM). They are available as individual parts, part assemblies or complete kits, all offered with the equivalent OEM warranty.

What is a Replacement MOD or Modified Part?

Whenever a part is referred to as Mod or Modified, it means it is a Geographe developed product that differs from the standard OEM design, that may require a modified part or modification to the machine to complete fit up.

What is Asset Optimisation?

Asset Optimisation is at the heart of Geographe's service offerings. Recognising that every piece of machinery is an investment, Geographe works closely with clients to ensure that their assets deliver the best possible return. Through a combination of innovative design, high-quality repairs, and timely spare parts supply, we ensure that machinery operates at its optimal efficiency, reducing overall operating costs and maximising profitability for our clients.

What is critical parts of a machine?

Critical parts of a machine typically include components like the engine, transmission, hydraulic systems, bearings, gears, and wear parts such as cutting tools or conveyor belts. These parts are essential for the machine's operation and require regular inspection, maintenance, and timely replacement to ensure optimal performance and prevent costly downtime in mining operations.

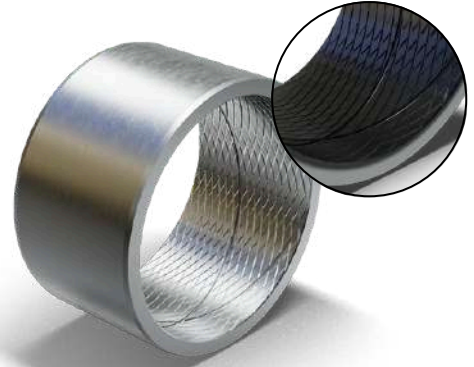
What is Cross Hatching and why do we add it?

Cross hatching is a net like series of shallow grooves evenly spaced around the inner circumference of a bush. These grooves provide a place for grease to collect, thus creating a more even and consistent lubrication barrier between the pin and bush contact surfaces.

Frequently Asked Questions

What is Grease Grooving and why we add it?

Deep figure 8 grease grooving has been introduced to improve lubrication coverage compared to a bush with no grooves, or only single radial grooves. The figure 8 pattern encourages grease to travel along the contact surfaces as the pivot joint actuates (rotates back and forth). *Note that the ultimate arrangement is to combine cross hatching with deep figure 8 grooving.



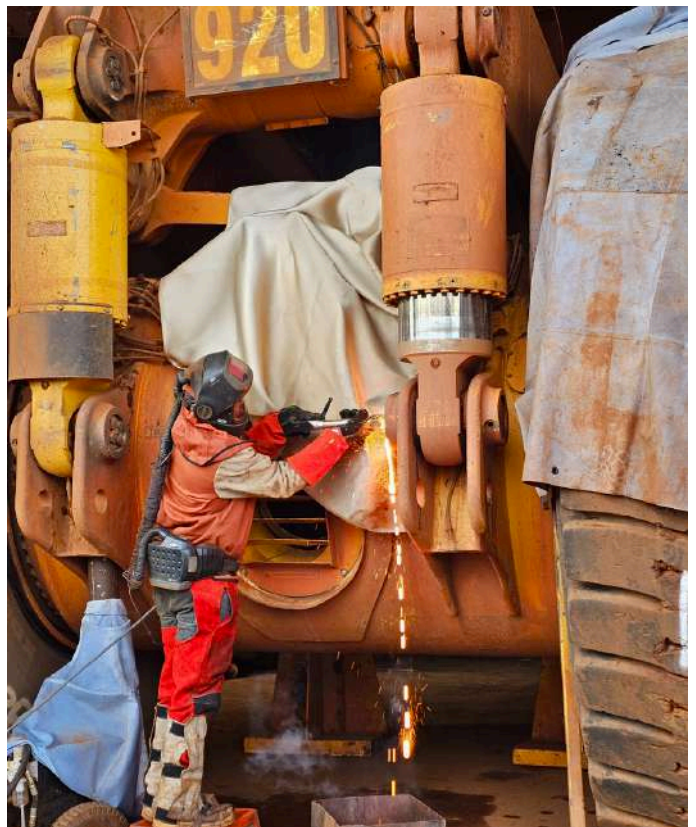
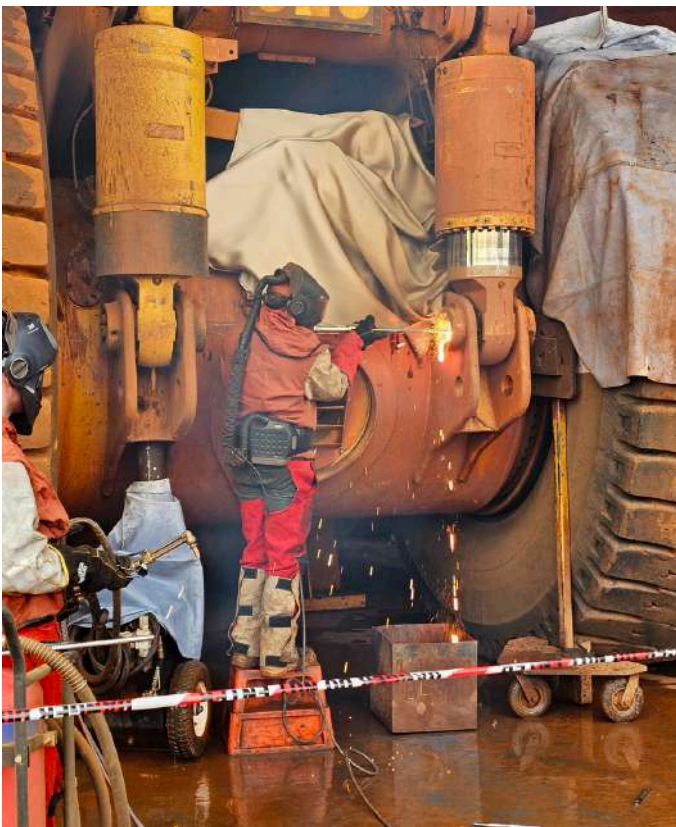
What is Line Boring? See it in Action

Line boring involves securing a line boring machine to the component, using its boring bar with cutting tools to enlarge and align worn-out holes, while technicians measure and adjust to maintain precision; this meticulous process ensures proper fit and alignment of heavy machinery parts in mining operations, crucial for reliability and longevity.

What is Thermal Lancing and what are the hazards associated with it?

Thermal lancing (hot works) is a cutting process that uses a mix of oxygen and fuel to create a high-temperature flame for cutting through metal or other materials. It involves using a thermal lance, which is essentially a long steel tube. This method is commonly used in mining to remove worn or seized components from earthmoving equipment. While it can be effective, thermal lancing comes with a range of safety risks. These include excessive noise, respiratory hazards, the potential for serious burns and eye injuries, toxic fumes, and fire dangers, all of which put workers at risk and can lead to costly downtime.

At Geographe, we design solutions to help reduce reliance on high-risk processes like thermal lancing. With tooling such as the Ball Stud Removal Tool (BSRT), which improves safety, cuts down excessive downtime, and streamlines maintenance procedures.



Pictured: Thermal Lancing being conducted on site to remove seized collet pin from the back of a Komatsu haul truck




All manufacturers names, numbers, symbols and descriptions are used for reference purposes only.

It is not implied that any part listed is the product of the OEM.

Geographe™ and its  symbol are a registered trademark in Australia of Geographe Enterprises Pty Ltd.

Geographe® and its  symbol are registered in the U.S. Patent and Trademark Office by Geographe Enterprises Pty Ltd.

Geographe® and its  symbol are a registered Trademark Details/ Détails De La Marque De Commerce in Canada by Geographe Enterprises Pty Ltd.

ABN 65 008 754 596.
CRA BN 796931822 RT0001

geographe.com.au
geographe.us

Head Office Address:

480 Abernethy Road,
Kewdale, Perth,
Western Australia
6105.

**DESIGNED
TO DELIVER.**