

**HOFMANN
ENGINEERING**

HOFMANN TRACKPADS

INDUCTION HARDENED
ALLOY STEEL

ALLOY STEEL

MANGANESE

Designed to Excel ...
Engineered to Outlast

Since 1969 Hofmann Engineering has provided specialist engineering services to Australia's industry leaders.

Quality Assurance accreditation by Bureau Veritas complements our total quality culture.

Our commitment to continuous quality improvement touches every aspect of our products, services and customer support.

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1) INDUCTION HARDENED ALLOY STEEL

Highest Wear Resistance and Strength

- HITACHI (manufactured exclusively for Hitachi)
- LIEBHERR
- O&K (TEREX)
- KOMATSU

Hofmann Engineering's Hydraulic Excavator Trackpads are made from High Alloy Cast Steel and are Induction Hardened to provide the ultimate in life and performance for the large amount of traveling these machines need to do.



2) ALLOY STEEL

Good Strength and Stretch Resistance

- BUCYRUS
- MARION

Alloy steel trackpads are used as they do not require deformation to increase hardness, The alloy properties have been chosen to ensure minimal deformation in working areas of the trackpad. To improve wear resistance and strength these pads can be induction hardened.



3) MANGANESE

Cost Effective

- P&H

Manganese trackpads are now only used by P&H. They provide a cost effective material that gives good toughness and work hardening properties. Hofmann Engineering also offers interchangeable P&H pads in induction hardened alloy steel for those customers looking for longer life.

Hofmann Induction Hardened Alloy Steel Trackpads provides the ultimate in wear resistance and toughness that modern technology can at present offer. This is why tracked earth moving equipment that requires long travel life uses this technology almost exclusively.

Hofmann Engineering also offers Alloy Steel and Manganese trackpads that are interchangeable with the OEM. For customers looking for that extra performance, these can be upgraded to induction hardened alloy steel trackpads.

1. DESIGN & DRAWING

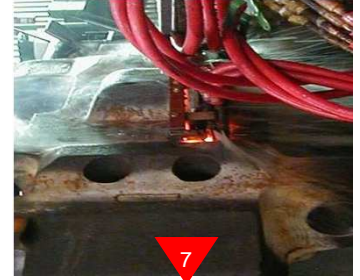
Our team of highly trained Engineers will prepare plans from your existing Trackpads or new designs can be made to fit your requirements. 3-D modeling using Solidworks and Finite Element Analysis (FEA) are used to optimise design performance.



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7. INDUCTION HARDENING RUNNING PATH

A detailed explanation of Induction Hardening is shown on the next page. Note that manganese trackpads can not be induction hardened due to their material properties.



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2. SPECIFICATION DEVELOPMENT

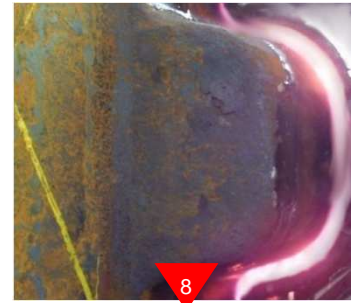
Detailed specifications are prepared to cover the complete manufacturing process from start to finish. A Portable Coordinate Measuring Arm is used to aid precise product development and inspection.



2

8. INDUCTION HARDENING DRIVE LUGS

Distortion due to wear is reduced, resulting in longer effective lifespan of the drive lugs and the drive tumbler, and hence effectively the entire undercarriage.



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3. CASTING

We have a number of foundries world-wide that work to our precise specifications in supplying our pad castings. Hofmann personnel manage, audit and inspect each step of the casting process.



3

9. INDUCTION HARDENING BORES

Combined with hardened pins, wear resistance is greatly increased, resulting in an overall lower wear rate.



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4. QUENCH AND TEMPERING

Alloy steel trackpads are quenched and tempered which results in an excellent combination of mechanical properties.



4

10. TEMPERING

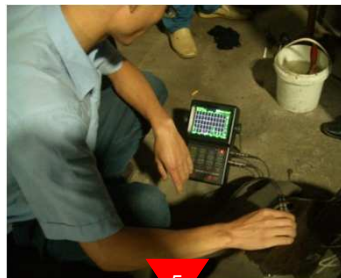
Trackpads are tempered after Induction Hardening to improve impact strength and durability in induction hardened zone.



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5. CASTING INSPECTION

Thorough inspection of the castings is undertaken so as to ensure no less than a top quality product for our customers.



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11. FINAL INSPECTION

Trackpad castings are fully dimensionally inspected including UV crack detection to ensure highest quality standards are met.



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6. CNC MACHINING

Trackpad Bores are Precision finish machined on our state of the art range of Dörries Scharmann CNC Machining Centres.



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12. PACKING & DESPATCH

Trackpads are painted and palletized for transport and despatched according to the customers order.



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INDUCTION HARDENING OF TRACKPADS

The main advantage of induction hardened trackpads, pins, rollers and drive tumblers is improved wear resistance and increased resistance to plastic deformation. In addition to that, by Induction Hardening, we are generating compressive stresses in the surface of the part and that increases fatigue resistance. By selecting the right material and hardness for individual components, wear can be controlled even further.



A hardened case depth of 15mm or more is selected as these parts can be subjected to excessive wear before replacement and this assists in preventing case crushing.

We offer induction hardening of drive lugs, roller surfaces and Pin bores. Alternatively bores can be fitted with case hardened bushes (carburised to 3mm). Pins are normally made of either 4140 or 4340 and are quenched, tempered and induction hardened to required depth. Case Carburised Pins are available for extreme working conditions where the pins have proved to be wearing excessively.



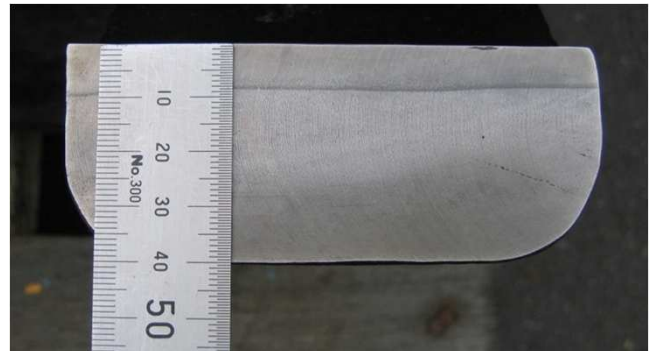
Running surface case depth 17.5 mm



Note: Case Contour






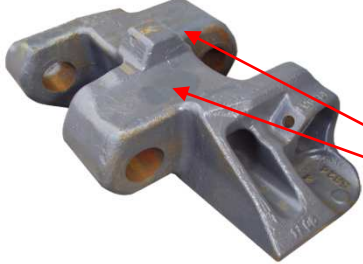
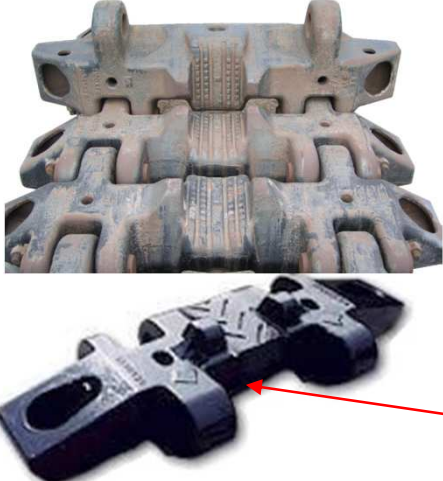
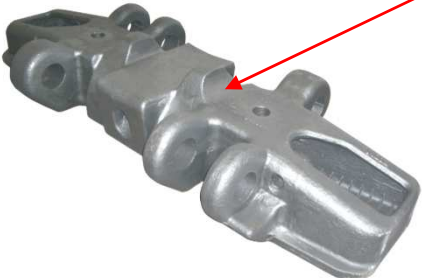
Driving lug case depth 13 mm



Bore hardened to 8.5 mm

Trackpads that are to be induction hardened are made from a high alloyed steel that is first normalised and tempered. The trackpads are then quenched and tempered which results in an excellent combination of mechanical properties.

HOFMANN TRACKPADS

<p style="text-align: center;"><u>Komatsu</u></p> <ul style="list-style-type: none"> • PC3000 • PC8000 		<p>Induction Hardened Alloy Steel. Induction Hardened bores, Roller path and Drive Lug.</p>
<p style="text-align: center;"><u>Hitachi</u></p> <p>All manufactured exclusively for Hitachi</p> <ul style="list-style-type: none"> • EX 2500 • EX 3600 • EX 5500 <p>Modified Heavy pads can be made for extreme working conditions & applications.</p>		<p>Induction Hardened Alloy Steel. Induction Hardened bores, Roller path and Drive Lug.</p>
<p style="text-align: center;"><u>O & K</u></p> <ul style="list-style-type: none"> • RH120C • RH120E • RH170E • RH200 		<p>Induction Hardened Alloy Steel. Induction Hardened bores, Roller path and Drive Lug.</p>
<p style="text-align: center;"><u>Liebherr</u></p> <ul style="list-style-type: none"> • 994 • 995 • 996 		<p>Induction Hardened Alloy Steel. Induction Hardened bores, Roller path and Drive Lug.</p> <div style="border: 1px solid red; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Offset Roller path for smooth operation.</p> </div>
<p style="text-align: center;"><u>P&H</u></p> <ul style="list-style-type: none"> • 2300 • 2800 • 4100A • 4100XPB DELTA® 		<p>Cast Manganese, Work Hardening</p> <p>For extra life these can be offered in the Hofmann Deep Engaging style which are interchangeable with the P&H DELTA® pads.</p> <p>For ultimate performance these can be supplied in Induction hardened Alloy Steel.</p> <div style="border: 1px solid red; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Deep Engagement style</p> </div>
<p style="text-align: center;"><u>Bucyrus/Marion</u></p> <ul style="list-style-type: none"> • BE 495 Shovel • BE Drills • Marion 301 		<p>Alloy Steel quench and tempered with manganese welded in bushes .</p> <p>These can also be offered with Induction Hardened bores, Roller path and Drive Lug.</p>