

# CAPABILITY STATEMENT

# TABLE OF CONTENTS

3	Our Story
3	Our Company
4	What We Offer
4	In Brief
5	Our Stock
5	Models Supported
5	Online Shop
6	Quality
7	Quality Insurance & Testing
8	Quality Control – Chemical Analysis
9	Quality Control – Hardness Testing
10	Quality Control – Microstructural Examination
11	Carburised Bushes – The Final Product
12	Why Carburised Bushes?
13	RH 340/CAT6060 Bucket and Stick
14	RH340/CAT6060 Boom
15	EX3500/EX3600 Bucket
16	EX5500/EX5600 Bucket
17	EX5500/EX5600 H Links
18	Liebherr 994 Bucket
19	Liebherr 996 Bucket
20	Liebherr 996 Shift Levers
21	Liebherr 9800 Buck
22	Were To Find Us



# OUR STORY

Advanced Performance Industries was created in 2018. After creating Josho's line-boring in 2010, we realised the need for a high-quality cost-effective supplier of aftermarket pins & bushes to suit large hydraulic excavators. Working closely with customers to make modifications required to increase the pin & bush life.

# OUR COMPANY

At API we strive to supply high quality carburised and Mn bronze bushes & induction hardened forged 4340 pins to suit large hydraulic excavators to achieve optimised performance & component life.

# WHAT WE OFFER

Pins & bushes that go above & beyond OEM supplied parts

## Bushes:

API bushes are case carburised using the same process and hardness as OEM bushes. However, the depth of hardness is up to 1mm deeper per side compared to OEM bushes.

API have added an extra 5 grease holes in each bush and opened the holes up from 5mm diameter to 10mm diameter for maximum lubrication distribution.

Cross hatching has been added for extra lubrication distribution.

API have increased the interference fit to the outside diameter of some bushes to eliminate bushes walking out or spinning.

## Pins:

API Pins are forged 4340 inductions hardened with 8mm side depth of hardness, by using the 4340 forged material it eliminates

Flexing/bending/snapping of pins, works especially well for the upper H link pin on the 6060 which is renowned for bending/snapping.

## IN BRIEF

Updated cross hatching, larger diameter lube holes, deeper carburising penetration and higher hardness, improved tolerances for better assembly and increased performance, chamfered lead edges to allow easier installation of bushes.

Working with clients to ensure changes can be made when required weather to extend life or ease of fitment, we are here to listen & make design changes as required.



# OUR STOCK

At API we are committed to hold a large range of stock on hand in our Mackay branch, with over 200-line items on hand ready for same day dispatch or same day delivery in the Mackay region. This is to help reduce downtime & supply issues to ensure the least amount of downtime.

## MODELS SUPPORTED

### Liebherr

- 994
- 996
- 9800

### Cat

- 6030
- 6040
- 6050
- 6060

### Hitachi

- Ex1200
- Ex1900
- Ex2600
- Ex3600
- Ex5600
- EX8000

### Others

- Truck Body pivot bushes
- Grader bushes
- Track shoe bushes
- Dozer Blade Bushes

## ONLINE STORE

API has an online store!

[www.advancedpi.com.au](http://www.advancedpi.com.au)

This enables customers 24-hour 365-day access to parts purchasing, supply & availability when required.

With easy navigation from any device anytime!

# QUALITY

The Quality of these parts are second to none, with over 4000 pins and bushes sold into the Bowen Basin and Western Australia in buckets, booms, sticks, H links, tipping links and have not had one warranty claim to date.

BMA Have been using API bushes in most of their off-site repaired buckets, booms and sticks for the past 3 years and have had great success with no failures.

Newlands Coal have been using our bushes in their digger fleet for the past 18 Months with huge success.

Peabody Coppabella and Moorvale Mines have been using our pins and bushes for the past 3 years with success and zero failures.

The below repair shops use API bushes & pins for all off site repairs including but not limited to:

- Independent Mining Services
- SMW Group
- Finco Solutions
- 3D Engineering
- CQFMS
- JMS
- Melco Engineering
- Extreme Excavators
- ABC Heavy Engineering
- Bryan Industries
- Forge Engineering





# QUALITY INSURANCE & TESTING

- Manufacturing facilities ISO certified
- All bushes are 100% inspected and have serial numbers for traceability.
- Material certificates and all relevant QA documents for manufacture.
- Regular factory visits for technical review and auditing for compliance to purchase orders and technical specification.
- Material/Quality and Carburising procedure and application inspected, checked and verified by Bureau Veritas in Australia – the following was verified by BV



# QUALITY CONTROL

## Chemical Analysis

- Chemical analysis of hollow bar stock using Optical Emission Spectroscopy (OES) to ensure alloy chemistry is in accordance with ISO 683-11 Grade 20Cr4 or equivalent
- All testing supported by NATA accreditation
- Tight control of the alloying range to meet API's line boring internal QA specification requirements ensures an optimum response to heat treatment and carburising

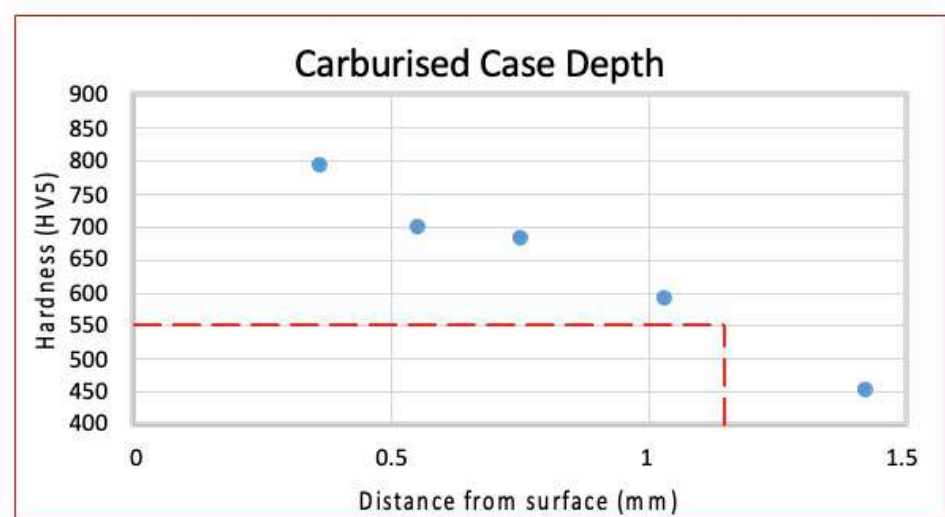


ISO 683-11 Grade20Cr4					
C	Mn	P	S	Si	Cr
0.17/	0.60/	0.035	0.035	0.15/	0.90/
023	0.90	Max	Max	0.40	1.20



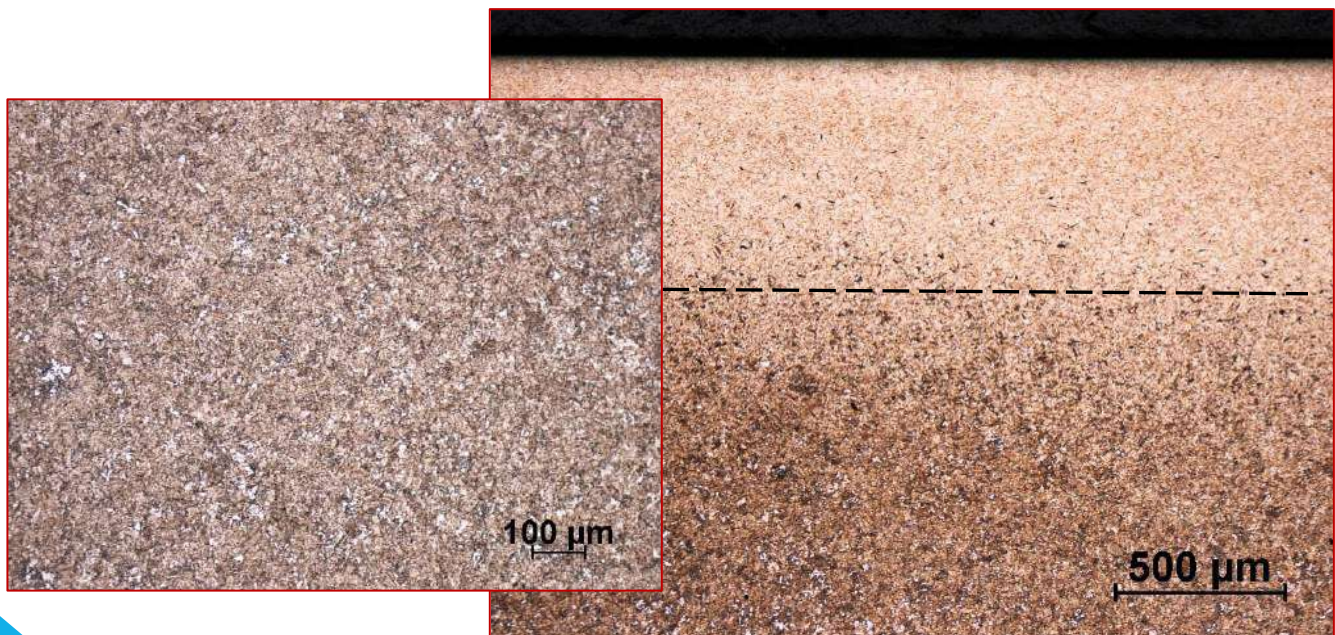
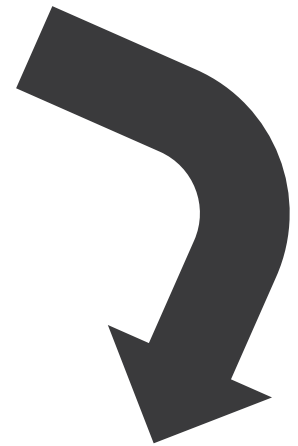
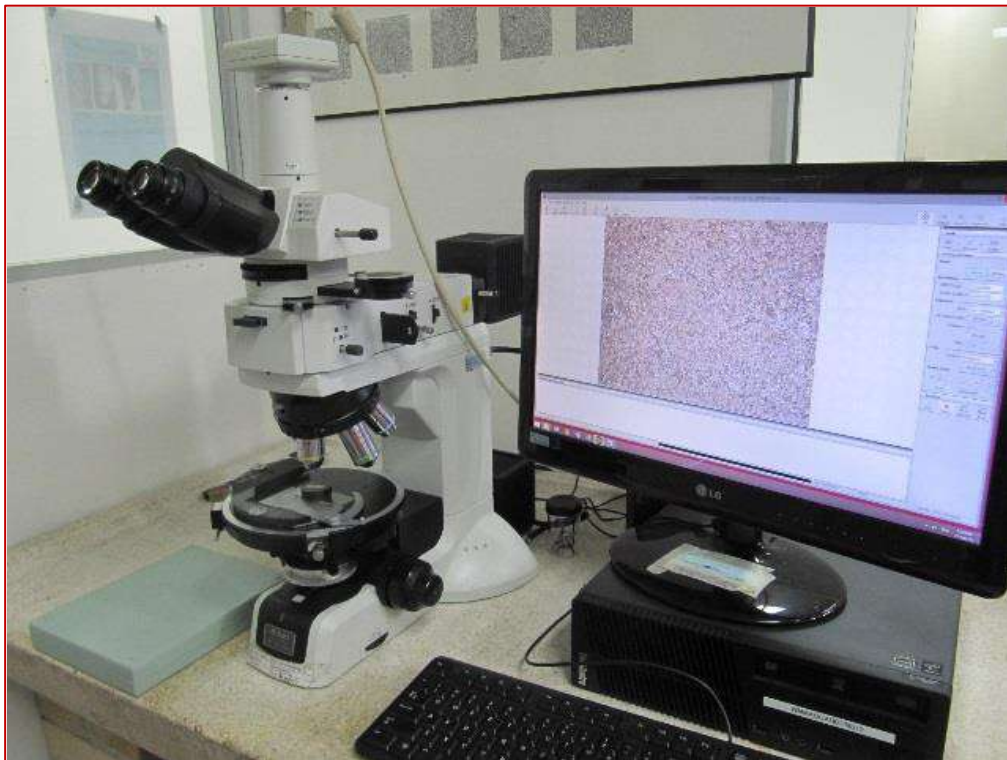
# Hardness Testing

- Control samples routinely checked after carburising to ensure adequate case hardening and case depth
- Automated vickers hardness testing allowing for continuous testing that is accurate and reproducible
- Case Hardness Depth (CHD) measured to satisfy the testing requirements of ISO 18203
- All testing is supported by NATA accreditation



# Microstructural Examination

- Metallographic examination is undertaken to ensure case microstructural features exhibit fine grained martensite with no surface decarburisation
- Core microstructural features also examined. Bushes exhibit a wholly martensitic microstructure for optimum core strength properties.

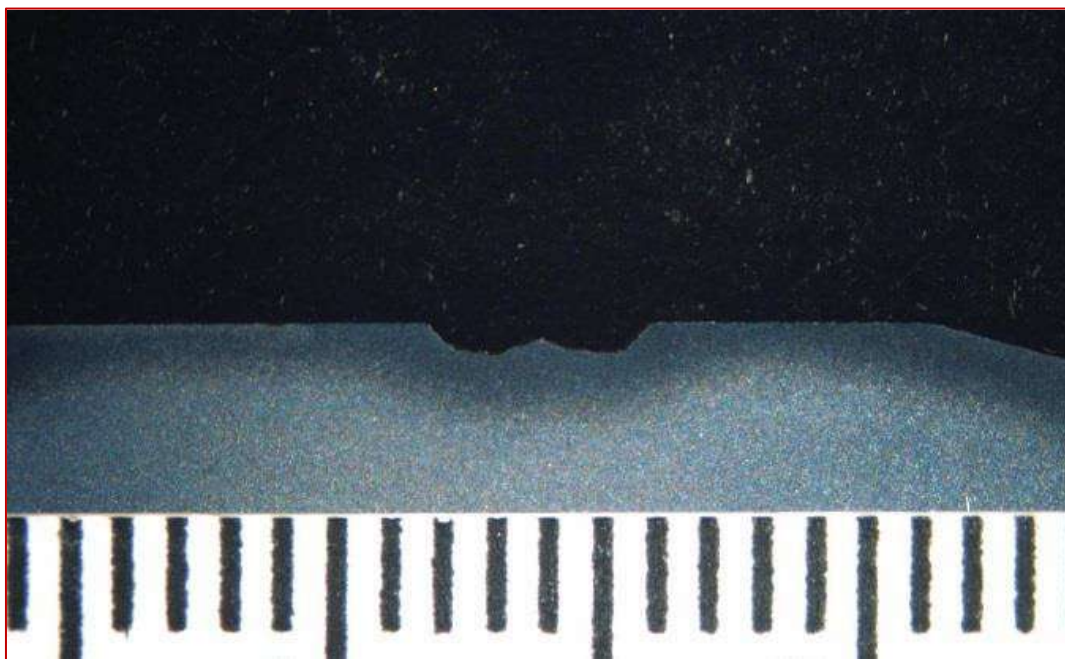
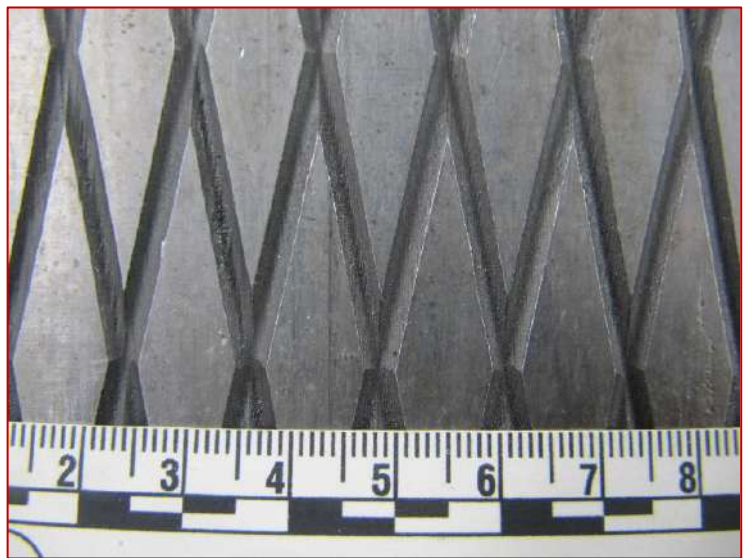




# CARBURISED BUSHES

## Final Product

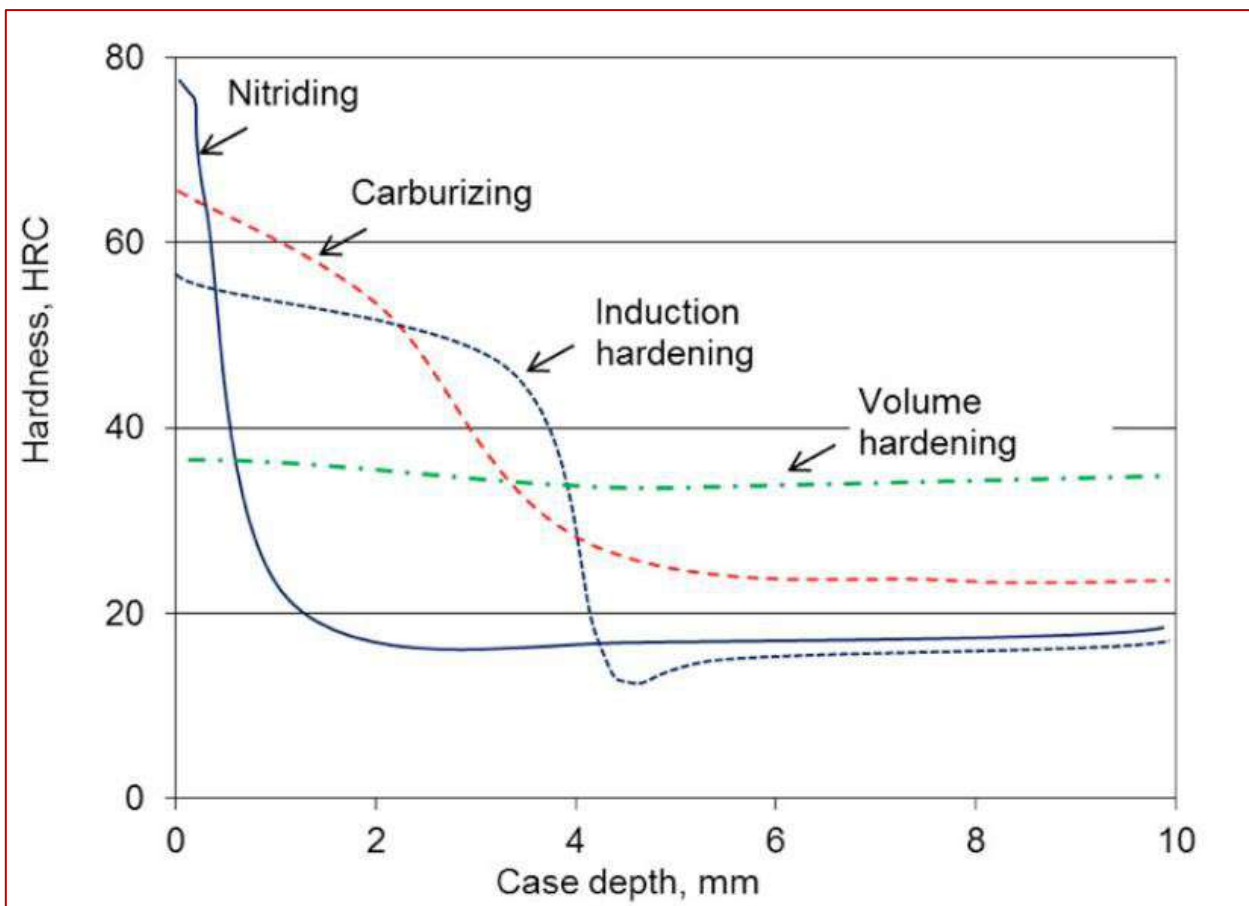
- Bushes with machined oil grooves and optimised groove configuration and depth ensuring a continuous hardened case for superior wearing properties.





# WHY CARBURISED BUSHES?

- Carburising offers an optimum combination of high surface hardness (>60HRC) and case depth, with sufficient core hardness ensuring bushes are both high wearing and high strength.
- The smooth hardness gradient following carburising minimises residual stresses commonly seen with other selective hardening process which can exhibit a sharp case/core hardness transition.



Graph Showing Hardness vs Case Depth (1)

# RH 340/CAT6060 BUCKET & STICK





# RH 340/CAT6060 BOOM





# EX3500/EX3600 Bucket





# EX5500/EX5600 Bucket





# EX5500/EX5600 H Links





# Liebherr 994 Bucket





# Liebherr 996 Bucket





# Liebherr 996 Shift Levers





# Liebherr 9800 Buck







## **Find Us**

26 Len Shield Street  
Paget Mackay, QLD 4740

## **Enquiries**

[sales@advancedpi.com.au](mailto:sales@advancedpi.com.au)

## **Contact**

Josh Patroni 0458 814 820  
Chris Shore 0488 927 667

## **Website**

[www.advancedpi.com.au](http://www.advancedpi.com.au)

