



FORMARK

HARDENED STEEL BUSHES

FORMARK.CO.NZ

HARDENED-STEEL BUSHES

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KEY FEATURES

- ★ Suited for high impact applications
- ★ Require grease lubrication
- ★ Made with central, spiral or custom grease grooves
- ★ High wear and deformation resistance
- ★ Higher ultimate tensile strength than SAE 1045

COMMON APPLICATIONS

- + Attachments
- + Earth moving equipment
- + Excavators
- + Farm machinery
- + Hydraulic cylinders
- + Mining equipment

MATING MATERIAL RECOMMENDATIONS

Physical Properties	Unit	Value
Surface roughness	µm	<0.8
Surface Hardness	HB	>600

OPERATING PERFORMANCE

Dry	● ○ ○ ○ ○ ○	Not Recommended
Oil Lubricated	● ● ● ○ ○ ○	Fair
Grease Lubricated	● ● ● ● ● ○ ○	Good
Fresh Water	● ○ ○ ○ ○ ○	Not Recommended
Salt Water	● ○ ○ ○ ○ ○	Not Recommended

BEARING PROPERTIES

Physical Properties	Condition	Metric Values	Imperial Values
Maximum Contact Pressure	Sliding	50 N/mm ²	7300 psi
Operating temperature	Min	-50 °C	-58 °F
Operating temperature	Max	150 °C	302 °F
Maximum sliding speed	Lubricated	0.1 m/s	20 fpm
Maximum PV factor	Lubricated	1.5 N/mm ² x m/s	43000 psi x fpm
Coefficient of friction	Lubricated		0.2 F

SIX REASONS WHY OUR BUSHES ARE WORLD-CLASS

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1 LONG LIFE SPAN

All Formark Case-Hardened Bushes are hardened to achieve a **54-60 HRC surface hardness**. Formark bushes can last multiple times the life of other non-hardened bushes.

4 REDUCED JOURNAL WEAR

Formark bushes are finished with a smooth grind. This ensures a **uniform lubrication** distribution in operation and reduced wear on pins.



2 REDUCE BREAKAGES

Formark bushes are machined from a bearing steel with extra-high tensile strength, **even higher than the common 1040 and 1045 steels** used by many. This reduces the chance of breakages that cause damage and downtime.

5 EASY & TIGHT FITMENT

Formark bushes are made with a 1.5 mm chamfer to make it **easy inserting** them into housings using either a press fit or freeze fit. Our bushes are made with a precise oversize amount to ensure a **secure interference fit**.



3 CORROSION FREE

All Formark bushes come **oil coated and individually wrapped in plastic**. This ensures your bushes remain corrosion free before fitment.

6 3RD PARTY QUALITY-CONTROLLED

Formark has a quality control team independent of the production team **to ensure reliability**.

METRIC BUSHES



Internal **Central** Grease Grooves
External **Central** Grease Grooves

ID Tolerance: +0.1mm to +0.15mm
OD Tolerance: +0.0mm to +0.05mm
Length: -0.5mm to 0.0mm



Code	ID Pin Size	OD	Long
HSB25X35X25	25	35	25
HSB25X35X32	25	35	32
HSB25X35X38	25	35	38
HSB28X36X40	28	36	40
HSB30X38X40	30	38	40
HSB30X38X50	30	38	50
HSB30X40X30	30	40	30
HSB30X40X35	30	40	35
HSB30X40X40	30	40	40
HSB30X40X45	30	40	45
HSB30X45X30	30	45	30
HSB30X45X40	30	45	40
HSB31.75X38X25	31.75	38	25
HSB31.9X44X50	31.9	44	50
HSB32X38X25	32	38	25
HSB35X45X30	35	45	30
HSB35X45X35	35	45	35
HSB35X45X40	35	45	40
HSB35X45X45	35	45	45
HSB35X45X50	35	45	50
HSB35X45X60	35	45	60
HSB38X48X35	38	48	35
HSB38X48X40	38	48	40
HSB38X48X45	38	48	45
HSB38X48X55	38	48	55
HSB38.1X45X30	38.1	45	30
HSB40X48X40	40	48	40
HSB40X50X25	40	50	25
HSB40X50X30	40	50	30
HSB40X50X35	40	50	35
HSB40X50X40	40	50	40
HSB40X50X45	40	50	45
HSB40X50X50	40	50	50
HSB40X50X63	40	50	63
HSB40X50X80	40	50	80
HSB40X55X60	40	55	60
HSB45X55X25	45	55	25
HSB45X55X30	45	55	30
HSB45X55X35	45	55	35
HSB45X55X40	45	55	40
HSB45X55X45	45	55	45

Code	ID Pin Size	OD	Long
HSB45X55X50	45	55	50
HSB45X55X55	45	55	55
HSB45X60X40	45	60	40
HSB45X60X50	45	60	50
HSB45X60X60	45	60	60
HSB45X62X40	45	62	40
HSB50X60X30	50	60	30
HSB50X60X32	50	60	32
HSB50X60X35	50	60	35
HSB50X60X40	50	60	40
HSB50X60X45	50	60	45
HSB50X60X50	50	60	50
HSB50X60X55	50	60	55
HSB50X60X60	50	60	60
HSB50X60X70	50	60	70
HSB50X60X80	50	60	80
HSB50X60X90	50	60	90
HSB50X65X50	50	65	50
HSB50X65X60	50	65	60
HSB50X65X70	50	65	70
HSB55X65X45	55	65	45
HSB55X65X50	55	65	50
HSB55X65X55	55	65	55
HSB55X65X60	55	65	60
HSB55X65X70	55	65	70
HSB55X68X45	55	68	45
HSB55X70X60	55	70	60
HSB55X70X70	55	70	70
HSB60X70X50	60	70	50
HSB60X70X60	60	70	60
HSB60X70X70	60	70	70
HSB60X70X80	60	70	80
HSB60X75X50	60	75	50
HSB60X75X60	60	75	60
HSB60X75X65	60	75	65
HSB60X75X70	60	75	70
HSB60X75X75	60	75	75
HSB60X75X80	60	75	80
HSB60X80X50	60	80	50
HSB60X80X65	60	80	65
HSB60X80X80	60	80	80

METRIC BUSHES (CONTINUED)



Internal **Spiral** Grease Grooves
External **Central** Grease Grooves

ID Tolerance: +0.15mm to +0.2mm
OD Tolerance: +0.12mm to +0.17mm
Length: -0.5mm to 0.0mm



Code	ID Pin Size	OD	Long
HSB65X75X50	65	75	50
HSB65X75X65	65	75	65
HSB65X75X75	65	75	75
HSB65X80X50	65	80	50
HSB65X80X60	65	80	60
HSB65X80X65	65	80	65
HSB65X80X80	65	80	80
HSB70X80X50	70	80	50
HSB70X80X80	70	80	80
HSB70X85X50	70	85	50
HSB70X85X60	70	85	60
HSB70X85X70	70	85	70
HSB70X85X80	70	85	80
HSB70X85X85	70	85	85
HSB71X86X70	71	86	70
HSB71X86X80	71	86	80
HSB75X85X60	75	85	60
HSB75X85X80	75	85	80
HSB75X85X100	75	85	100
HSB75X90X60	75	90	60
HSB75X90X70	75	90	70
HSB75X90X80	75	90	80
HSB75X90X90	75	90	90
HSB75X90X100	75	90	100
HSB80X90X60	80	90	60
HSB80X90X70	80	90	70
HSB80X95X50	80	95	50
HSB80X95X60	80	95	60
HSB80X95X65	80	95	65
HSB80X95X70	80	95	70
HSB80X95X80	80	95	80
HSB80X95X90	80	95	90

Code	ID Pin Size	OD	Long
HSB80X95X100	80	95	100
HSB80X100X75	80	100	75
HSB80X100X100	80	100	100
HSB85X95X50	85	95	50
HSB85X95X80	85	95	80
HSB85X100X75	85	100	75
HSB85X100X85	85	100	85
HSB85X100X100	85	100	100
HSB90X100X100	90	100	100
HSB90X100X110	90	100	110
HSB90X105X50	90	105	50
HSB90X105X62	90	105	62
HSB90X105X70	90	105	70
HSB90X105X80	90	105	80
HSB90X105X100	90	105	100
HSB90X105X110	90	105	110
HSB90X105X128	90	105	128
HSB90X106X90	90	106	90
HSB90X106X105	90	106	105
HSB90X110X80	90	110	80
HSB90X110X100	90	110	100
HSB90X110X120	90	110	120
HSB95X110X75	95	110	75
HSB95X110X100	95	110	100
HSB100X115X85	100	115	85
HSB100X115X100	100	115	100
HSB100X115X120	100	115	120
HSB100X116X100	100	116	100
HSB100X116X115	100	116	115
HSB100X120X90	100	120	90
HSB100X120X100	100	120	100
HSB100X120X130	100	120	130

METRIC BUSHES (CONTINUED)



Internal **Spiral** Grease Grooves
External **Central** Grease Grooves

ID Tolerance: +0.35mm to +0.40mm
OD Tolerance: +0.25mm to +0.30mm
Length: -0.5mm to 0.0mm

Code	ID Pin Size	OD	Long
HSB110X125X100	110	125	100
HSB110X125X125	110	125	125
HSB110X125X150	110	125	150
HSB120X135X95	120	135	95

IMPERIAL BUSHES

Internal **Central** Grease Grooves
External **Central** Grease Grooves

ID Tolerance: +0.1mm to +0.15mm
OD Tolerance: +0.0mm to +0.05mm
Length: -0.5mm to 0.0mm

Code	ID Pin Size	OD	Long
HSB1X1-3/8X1	1"	1-3/8"	1"
HSB1X1-3/8X1-1/4	1"	1-3/8"	1-1/4"
HSB1-1/4X1-3/4X1-1/2	1-1/4"	1-3/4"	1-1/2"
HSB1-1/4X1-3/4X2	1-1/4"	1-3/4"	2"
HSB1-1/2X1-3/4X1-1/4	1-1/2"	1-3/4"	1-1/4"
HSB1-1/2X1-3/4X2	1-1/2"	1-3/4"	2"
HSB1-1/2X2X1-1/2	1-1/2"	2"	1-1/2"
HSB1-1/2X2X1-3/4	1-1/2"	2"	1-3/4"
HSB1-1/2X2X2	1-1/2"	2"	2"
HSB1-3/4X2-1/4X1-1/2	1-3/4"	2-1/4"	1-1/2"
HSB1-3/4X2-1/4X2	1-3/4"	2-1/4"	2"
HSB2X2-1/2X1-3/4	2"	2-1/2"	1-3/4"
HSB2X2-1/2X2	2"	2-1/2"	2"
HSB2X2-1/2X2-1/2	2"	2-1/2"	2-1/2"
HSB2X2-1/2X3	2"	2-1/2"	3"
HSB2X2-1/2X3-12	2"	2-1/2"	3-1/2"
HSB2-1/4X2-3/4X2	2-1/4"	2-3/4"	2"
HSB2-1/4X2-3/4X2-3/4	2-1/4"	2-3/4"	2-3/4"

Internal **Spiral** Grease Grooves
External **Central** Grease Grooves

ID Tolerance: +0.15 to 0.2 mm
OD Tolerance: +0.12 to 0.17mm
Length: +0.5 to 0.0 mm

Code	ID Pin Size	OD	Long
HSB2-1/2X3X2	2-1/2"	3"	2"
HSB2-1/2X3X2-1/2	2-1/2"	3"	2-1/2"
HSB2-1/2X3X3	2-1/2"	3"	3"
HSB2-3/4X3-1/4X3	2-3/4"	3-1/4"	3"
HSB3X3-1/2X2	3"	3-1/2"	2"
HSB3X3-1/2X3	3"	3-1/2"	3"
HSB3X3-1/2X3-1/2	3"	3-1/2"	3-1/2"
HSB3-1/2X4X3-1/2	3-1/2"	4"	3-1/2"

ID - Inner Diameter
OD - Outer Diameter

Larger sizes available,
please call us for details.

Size may not always be in stock,
please check availability



LEARN ABOUT OUR HARDENED-STEEL CUSTOM PINS



Formark offers custom-made Hardened-Steel Pins for repair engineers and workshops.

Made from high-tensile hard chrome bar our pins are fully-customisable. We offer a wide range of diameters from 25mm up to 160mm with options of custom tapers, lubrication tracks, bolt-holes and cut-to-length.

Our chrome bar is induction hardened to over 59HRC, and is manufactured from quality European mills for exceptional wear resistance.

KEY FEATURES

- ★ Very high hardness and tensile-strength
- ★ Custom-made with bolt holes, chamfers and grease-lines
- ★ Wide range of pin diameters
- ★ Manufactured from induction-hardened chrome bar



FORMARK

CONTACT US

w. formark.co.nz

e. sales@formark.co.nz

p. 0800 367 625

a. 1137 Omahu Road, Hastings
New Zealand, 4175

OUR RANGE IS GROWING ASK FORMARK

FORMARK.CO.NZ