



BSC

Motion Technology



Quality
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Company

AS-NZS ISO9002-1994
Lic. QEC 4475
Standards Australia

SPLIT ROLLER BEARINGS

The Plummer
Block Replacement
That is All About Saving
Time and Money



COOPER

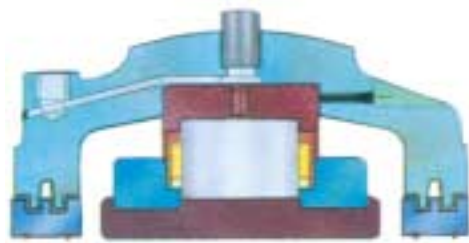
10 GOOD REASONS

to fit Cooper Split Roller Bearings

- 1 All components of the bearing are split axially in two places so the bearing and the housing are fitted to the shaft radially.**
ADVANTAGE: This permits the bearing to be fitted without disturbing other components which may be mounted on that shaft between the bearing and shaft end.
- 2 All internal wearing surfaces of the bearing can be inspected using only a socket head screw key and without disturbing any of the components which may be mounted along the shaft.**
ADVANTAGE: Because of the ease of inspecting these wearing surfaces, it is possible to obtain the maximum life from the bearing only replacing it when it has, in fact, fatigued to a point where it can no longer be relied upon. This ability to inspect the bearing makes it possible for its replacement to be planned by observing the rate at which the bearing is fatiguing.
- 3 The only tools required are two sizes of socket head screw keys, a hardwood block and hammer or resin hammer.**
ADVANTAGE: No expensive or special equipment, such as a hydraulic pump and hydraulic nuts are needed. Minimum time of assembly and disassembly is achieved.
- 4 Dimensionally interchangeable with Standard Plummer Blocks (SN/SNA) up to 5 1/2" & 140mm shaft (see Table opposite).**
ADVANTAGE: In difficult, inaccessible location when it is necessary to replace the bearing in an SN housing, this can be achieved by replacing the whole unit with a Cooper split roller bearing without the shaft having to be lifted or the other mountings on the shaft being disturbed. This is because the base to centre line and bolt centres are the same for both types.
- 5 The inner race is clamped to the shaft and does not rely upon the tapered adaptor sleeve to obtain the necessary fit on the shaft.**
ADVANTAGE: The correct internal running clearance of the bearing is assured because the risk of expanding the inner race excessively and so removing the necessary diametral clearance is eliminated. Also removed is the risk of the bearing being left loose on the shaft because no longer is there a dependence on the tapered sleeve being adjusted correctly into the bearing but by simple measurement of the shaft, the correct fit is assured.
- 6 The expansion or floating of the shaft is accommodated within the bearing and does not rely on the outer race of the bearing sliding within the housing.**
ADVANTAGE: Excessive axial loading resulting from the resistance of the bearing to move axially within the housing is eliminated, so removing unnecessary load on the locating bearing which in turn increases its operating life.
- 7 The self aligning feature is provided between the OD of the Cartridge and the ID of the Pedestal ensuring uniform, consistent and so minimal clearance between the shaft and the housing.**
ADVANTAGE: The sealing of the bearing is more effective which improves the bearing life through reduced ingress of foreign matter to the bearing.
- 8 The bearing and shaft can be lifted away from the pedestal without exposing the bearing.**
ADVANTAGE: This sub-assembly can be removed without the bearing being exposed so that it is kept clean while work is being carried out on other parts of this sub-assembly. By keeping the bearing clean, its life is significantly extended.
- 9 The bearing is made up of six major components.**
ADVANTAGE: As each of these six components are fitted separately, the weight of the largest of these six components is much less than the solid bearing. This makes for easier handling and may completely eliminate the need for lifting tackle which would be necessary in the case of a solid bearing.
- 10 The position of the inner race relative to the outer race of the locating bearing is always constant.**
ADVANTAGE: By fitting Cooper bearing to a grooved portion of the shaft, it is possible to guarantee constant and precise location of the shaft relative to the framework on which the housing is mounted.

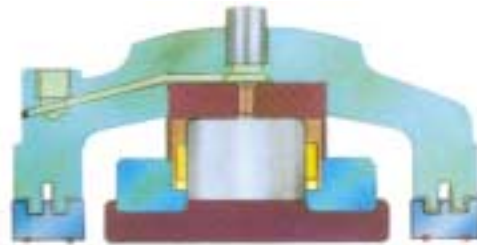
TYPES OF BEARINGS

Split Roller Bearings simplify design, reduce assembly and down-time.



FIXED (GR)*

For combined radial and axial load.



EXPANSION (EX)*

For radial loads only, permits axial movement of shaft.

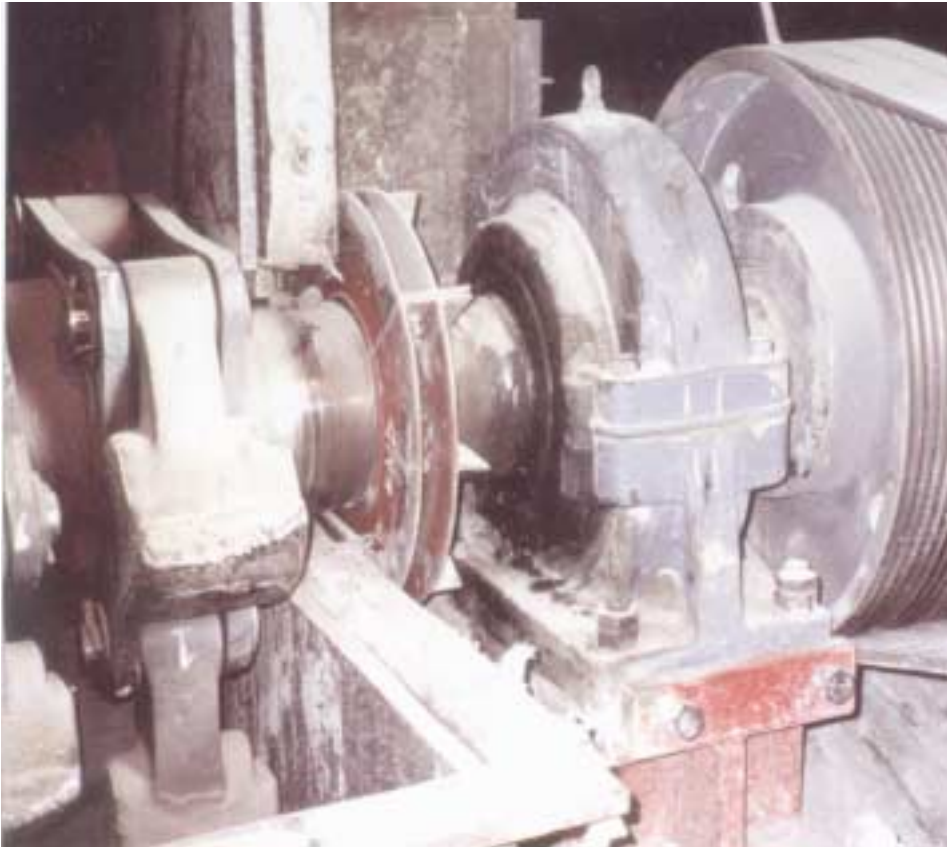
- HIGHER SPEED CAPABILITY WHEN COMPARED TO SPHERICAL ROLLER BEARINGS.
- HIGH LOAD RATINGS ALLOW FOR EFFECTIVE BEARING DESIGN LIFE.

PLUMMER BLOCK TO COOPER UNIT INTERCHANGEABILITY

UNIT No. SN(SNA)	SHAFT DIA. (IN)	2 BOLT HOLE BASE	BOLT CENTRE IDENTICAL	SHAFT C. HEIGHT IDENTICAL	COMPLETE* UNIT NUMBER	SHAFT DIA. (MM)	COMPLETE* UNIT NUMBER
SN509	1½	YES	YES	YES	01 BCP 108	40	01 BCP 40mm
SN510	1¾	YES	NO + 44mm	NO + 10mm	01 BCP 112	45	01 BCP 45mm
SN511	2	YES	YES	YES	01 BCP 200	50	01 BCP 50mm
SN513	2¼	YES	YES	YES	01 BCP 204	60	01 BCP 60mm
SN515	2½	YES	YES	YES	01 BCP 208	65	01 BCP 65mm
SN516	2¾	YES	YES	YES	01 BCP 212	70	01 BCP 70mm
SN517	3	YES	YES	YES	01 BCP 300	75	01 BCP 75mm
SN518	3¼	YES	YES	YES	01 BCSNC 518-304	80	01 BCSNC 518-80mm
SN520	3½	YES	YES	YES	01 BCP 308	90	01 BCP 90mm
SN522	4	YES	YES	YES	01 BCP 400	100	01 BCP 100mm
SN524	4¼	YES	YES	YES	Adaptor Necessary	110	01 BCSNC 524-110mm
SN526	4½	YES	YES	YES	01 BCSNC 526-408	115	01 BCSNC 526-115mm
SN528	5	YES	YES	YES	01 BCSNC 528-500	125	01 BCSNC 528-125mm
SN530	5¼	YES	YES	YES	Adaptor Necessary	135	01 BCSNC 530-135mm
SN532	5½	YES	YES	YES	01 BCSNC 532-508	140	01 BCSNC 532-140mm

ALSO AVAILABLE FOR SHAFT DIAMETERS UP TO 63 INCH, 1600MM.

*Add suffix EX or GR to complete unit number to specify expansion or fixed type, e.g. 01BCP108 EX (expansion) or 01BCP200 GR (fixed).



Proven Return on Investment

In the case of one long term Cooper customer: a heavy duty clinker breaker application in the cement industry utilising solid bearings was undergoing bearing replacement every six months, each changeout took 32 man hours with the downtime at 16 hours. Production loss was quoted at \$18,750 per hour, this alone totalled a production loss cost to the customer of \$300,000 per bearing changeout. The total cost per year for this customer was \$627,375.

The bearings were then replaced with Cooper 03 BCP 180mm GR bearings and installation time was cut to four hours. Production time increased and production loss costs reduced to \$37,500. The result was an instant saving of \$268,100.

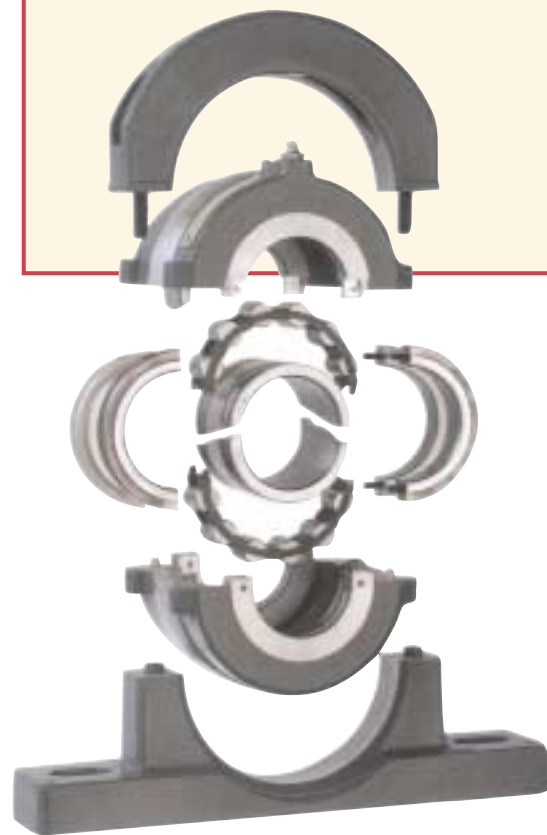
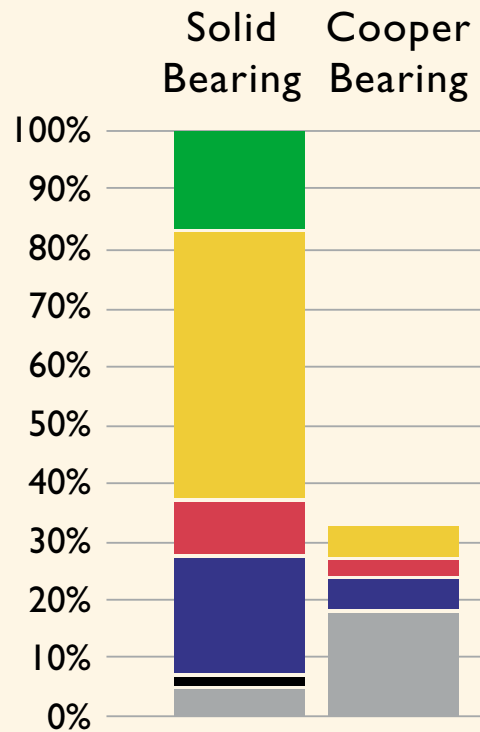
On Going Long Term Benefits

In four years, the original Cooper bearing has not been changed. This is due to the customers' preventative maintenance programme, ease of inspection combined with the superior concentric sealing and the quality of the Cooper product.

At the time these costs were compiled, this customer was saving nearly \$625,000 per machine per year. The level of saving increases on a monthly basis, proving that even in the toughest operating conditions, a Cooper split roller bearing is a guaranteed return on investment.

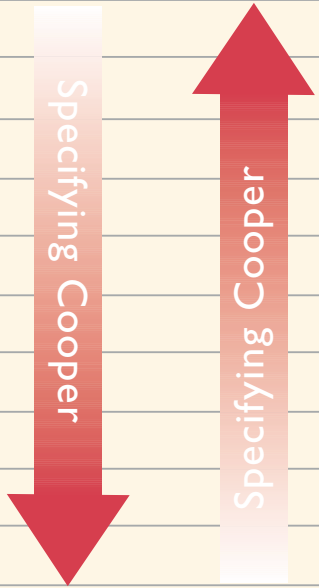
The top photograph shows the clinker breaker with guards removed for photographic purposes.

Solid Bearing Versus Cooper Bearing



Cooper Split Bearing Costs

Operating Costs Profit Levels



- Re-installing adjacent machinery
- Downtime cost
- Maintenance cost
- Installation cost
- Adapter sleeve cost
- Bearing cost

Evaluate Your Own Cost Saving Potential Using Cooper Bearings

COST SAVING COMPARISON

	Typical example shown in blue	Current Bearing	Cooper Bearing
1	Cost of bearing	\$4,487	\$7,937
2	Estimated time of bearing change	16 hours	2 hours
3	Number of people to replace bearing	2	2
4	Maintenance cost per person, per hour	\$38	\$38
5	Production loss cost per hour	\$18,750	\$18,750
6	Crane rental per hour (average cost)	\$500	N/A

TO FIND THE COST SAVINGS:

A	labour cost for Outage (Line 2 x line 3 x line 4)	\$1,200	\$150
B	Production loss for Outage (Line 5 x line 2)	\$300,000	\$37,500
C	Labour cost plus Production Loss (Line A plus line B)	\$301,200	\$37,650
D	Equipment rental for Outage (Line 6 x line 2)	\$8,000	N/A
E	Bearing + labour + Production loss + Crane rental cost (line 1 plus line C plus line D)	\$313,687 (per 6 months)	\$45,587
COMPARISON DIFFERENCE		\$627,375	\$45,587
ANNUAL TOTAL SAVINGS		-	\$581,787

Subtract the value of line E on the left from the value of line E on the right to establish the savings achieved by specifying Cooper



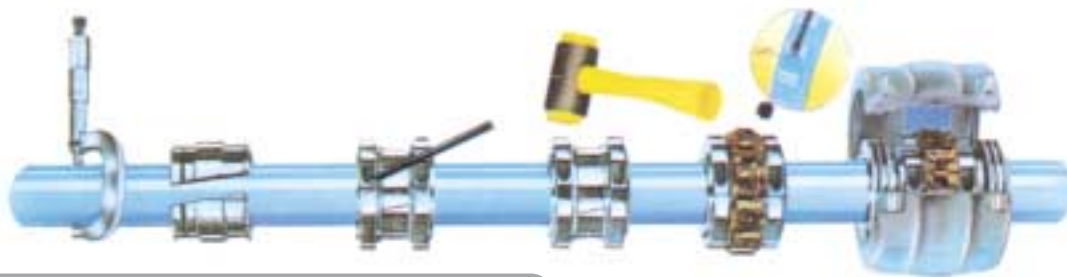
The left hand picture is another typical trapped application, in this instance, a conveyor headshaft. The accessibility benefits and cost saving potential of the Cooper 'Totally split to the shaft' bearing can be readily appreciated from these photographs.

All Cooper split to the shaft roller bearings minimise downtime and reduce maintenance hours. Easy assembly and full technical support as standard.

BSC Motion Technology has been a master distributor for bearings since 1958. As such we can offer a total service package that includes a standard range of stock & comprehensive technical support.

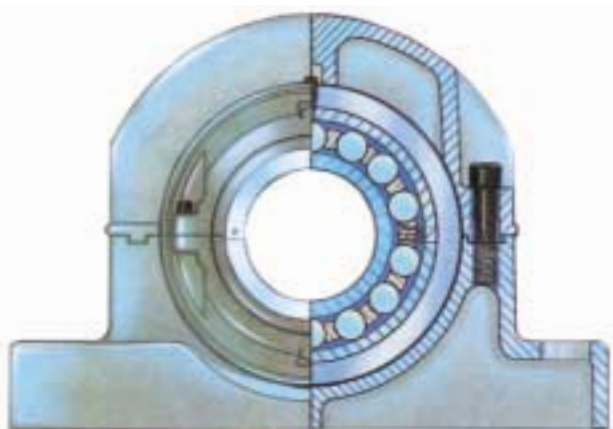


A Supplier of Competitive Advantage



ASSEMBLY

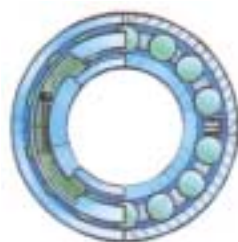
1. Clean the shaft and check diameter, roundness and parallelism. Lightly oil.
2. Position the matched halves of the inner race.
3. Fit the clamping rings with joints at 30 degrees to the inner race joints - tighten screws with key and pipe extension.
4. Tap down the race and clamping rings using a hammer and a block - re-tighten screws. Repeat until all bearing parts are fully seated. Ensure a gap at both joints.
5. Clip the roller cage halves around the inner race and coat with grease as required.
6. Install the Aluminium Triple Labyrinth Seals (NOTE: when limited access to the shaft exists, install seals first.)
7. Close the cartridge and tighten joint screws. Lubricate spherical seating (Molykote® GN PLUS paste or similar).



PEDESTAL

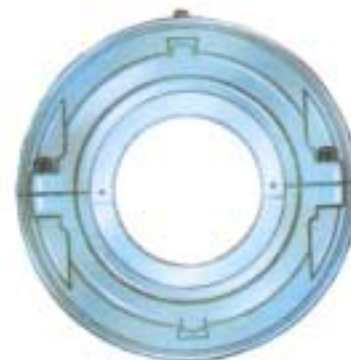
Ring design and registered joint permits high load in any radial direction.

- 01 Series – 1½"/40mm to 63"/1600mm bore
- 02 Series – 2"/50mm to 58"/1500mm bore
- 03 Series – 4"/100mm to 50"/1250mm bore



BEARING

Roller bearing in halves throughout. Available in three series, 01, 02 and 03. In inch and millimetre sizes from 1½"/40mm bore and larger. Selection is based on I.S.O. (A.F.B.M.A.) method of evaluating anti-friction roller bearings.



CARTRIDGE

Split cartridge shell of close grained cast iron, with spherically machined outside diameter and concentric end bored for felt, split rubber or Triple Labyrinth Seals. Spherical OD provides initial alignment giving equal distribution of load on rollers.

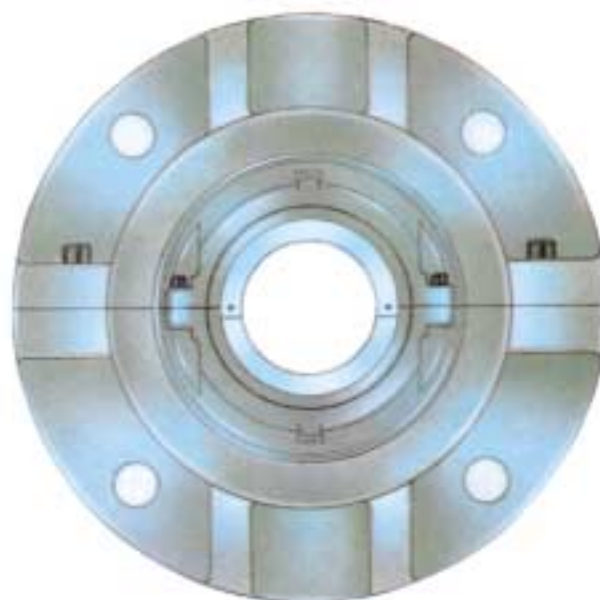


HANGER

Hangers are a compact means of supporting the shafts of screw conveyors and similar equipment. The unit comprises a split roller bearing in a cast iron split housing with threaded boss to facilitate suspension from the conveyor cross-bracing. A swivel fixing at the cross-bracing joint is recommended to provide alignment of the bearings.

Double felts or lipped rubber seals are provided. the aspect of sealing should be carefully considered for each application. Continuous grease feed is sometimes desirable, and provision may be made through the hanger rods.

Sizes range from 1½"/40mm to 4½"/115mm bore.



FLANGE

Unit mounted against a vertical or horizontal face. The mounting face of the flange can be recessed for use with a pilot if required.

- 01 Series – 1½"/40mm to 12"/300mm bore
- 02 Series – 2"/50mm to 12"/300mm bore

SEALING SOLUTIONS



Felt (F)

Made from wool and selected fibres. Felt is the current UK and European standard seal.

(S)

Temperature limits -70°C to +100°C
 Maximum speed 6000dN
 150000mm dN
 Shaft surface finish 1.6 µm Ra



High Temperature Packing (HTP)

A PTFE filament yarn impregnated with graphite and lubricated with silicon. A direct replacement for felt in high temperature applications. Also available silicon free.

Temperature limits -70°C to +260°C
 Maximum speed 6000dN
 150000mm dN
 Shaft surface finish 0.8 µm Ra



Labyrinth grease groove (LAB)

Standard seal for bearings over 300mm. Particularly successful on marine applications. Suitable for low or high speed operation.

Temperature limits As bearing specification
 Maximum speed As bearing specification
 Shaft surface finish 3.2 µm Ra

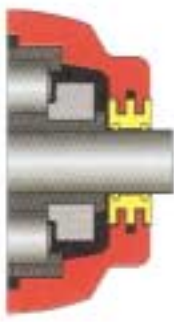


Aluminium Triple Labyrinth (ATL)

Machined aluminium bodied triple labyrinth seal for high speed and general applications. Supplied as standard in USA and Canada.

(S)

Temperature limits -20°C to +100°C
 Maximum speed Bearing maximum
 Shaft surface finish 3.3 µm Ra



Triple Labyrinth with Viton rubber cord insert (TL HT)

Suitable for high speed and high temperature applications.

(S)

Temperature limits -20°C to +175°C
 Maximum speed Bearing maximum
 Shaft surface finish 3.2 µm Ra



Neoprene rubber triple labyrinth (NTL)

For applications with a maximum speed of 3300rpm. Can be used where an explosive or corrosive atmosphere prevents the use of aluminium.

(S)

Temperature limits -20°C to +100°C
 Maximum speed 7000dN
 177000mm dN
 Shaft surface finish 3.2 µm Ra



Synthetic nitrile rubber single lip (SRS)*

For wet but not submerged applications. Can be used to retain bearing lubricant by mounting lip innermost. *High and low temperature versions also available.

(S)

Temperature limits -20°C to +100°C
 Maximum speed 6000dN
 150000mm dN
 Shaft surface finish 0.8 µm Ra



Single lip with spring loaded retaining plate (SRS RP)

Suitable for severe splash or completely submerged applications. Two grades are available, one operates in up to 2 metres of fluid the other up to 30 metres.

Temperature limits -20°C to +100°C
 Maximum speed 6000dN
 150000mm dN
 Shaft surface finish 0.4 µm Ra



Combination Rubber Lip & Triple Labyrinth (TAC)

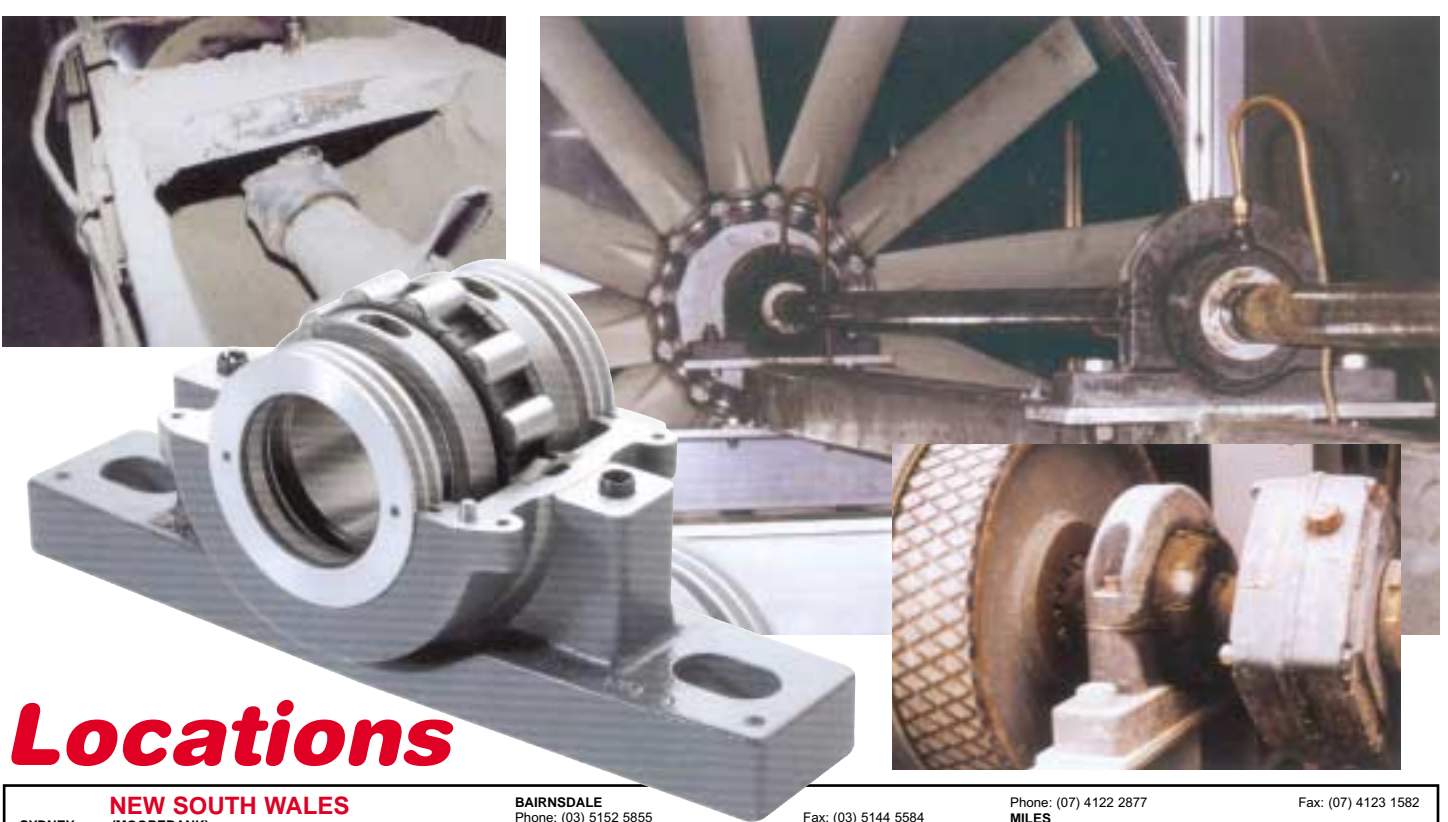
Top of the range sealing for applications operating in extreme dusty or dirty environments.

(S)

Temperature limits -20°C to +100°C
 Maximum speed 6000dN
 150000mm dN
 Shaft surface finish 0.8 µm Ra

(S) Standard Stock Sealing Options

NOTE: Shaft surface finish shown is the recommended shaft finish for optimum performance.



Locations

NEW SOUTH WALES

SYDNEY (MOOREBANK)
 Phone: (02) 9824 2099 Fax: (02) 9824 2143
ALEXANDRIA
 Phone: (02) 9698 1188 Fax: (02) 9698 1077
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 Phone: (02) 6772 5511 Fax: (02) 6772 8881
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COOTAMUNDRA
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NARROMINE
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 Phone: (02) 4954 6877 Fax: (02) 4954 6861
NOWRA
 Phone: (02) 4421 3233 Fax: (02) 4421 2632
NYNGAN
 Phone: (02) 6832 1577 Fax: (02) 6832 2094
ORANGE
 Phone: (02) 6362 3555 Fax: (02) 6362 5272
PORT MACQUARIE
 Phone: (02) 6581 0300 Fax: (02) 6581 0311
TAMWORTH
 Phone: (02) 6765 4822 Fax: (02) 6765 6648
TAREE
 Phone: (02) 6552 3699 Fax: (02) 6551 0474
WAGGA WAGGA
 Phone: (02) 6925 3711 Fax: (02) 6925 2613
WALGETT
 Phone: (02) 6828 1500 Fax: (02) 6828 1395
WEE WAA
 Phone: (02) 6795 0320 Fax: (02) 6795 4358
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NHILL
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SALE
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 Phone: (03) 9311 4138 Fax: (03) 9310 2177
SWAN HILL
 Phone: (03) 5032 9444 Fax: (03) 5033 1143
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 Phone: (03) 5722 2787 Fax: (03) 5722 2868
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PORT LINCOLN
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PRINGLES AG-PIUS-CLEVE
 Phone: (08) 8628 2150 Fax: (08) 8628 2537
SADDLEWORTH
 Phone: (08) 8848 4292 Fax: (08) 8848 4151
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