

COOPER ROLLER BEARINGS: IMPROVING PERFORMANCE AND CONTROLLING COST

Cooper is a worldwide presence in marine engineering support. Its innovative products and expertise feature in ships ranging from waterjet-driven passenger, cargo and support vessels to powered-from-amidships minesweepers.

With sales offices in the UK, USA, China, India and Germany, Cooper offers strength in innovation plus a century of experience in the application of split-to-the-shaft roller bearings to marine propulsion, and to many other shipboard, transport and loading activities.

COOPER SPLIT-TO-THE-SHAFT BENEFITS

Simpler to install, inspect, maintain and remove

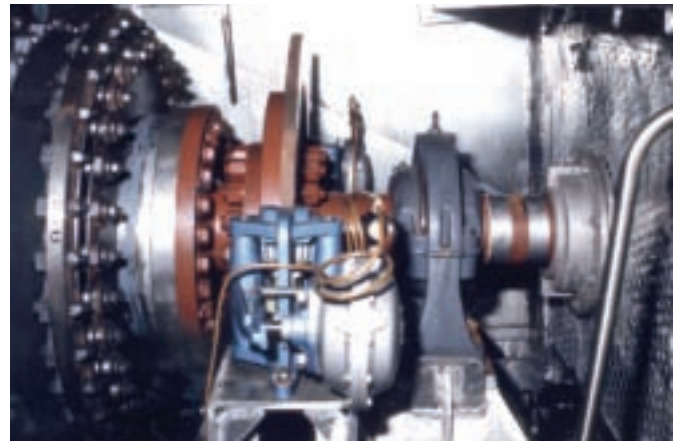
Every circular part of a Cooper bearing can be unbolted into two halves. This means the shaft and any nearby equipment can be left in place while the bearing is opened up for inspection, dismantled or reassembled.



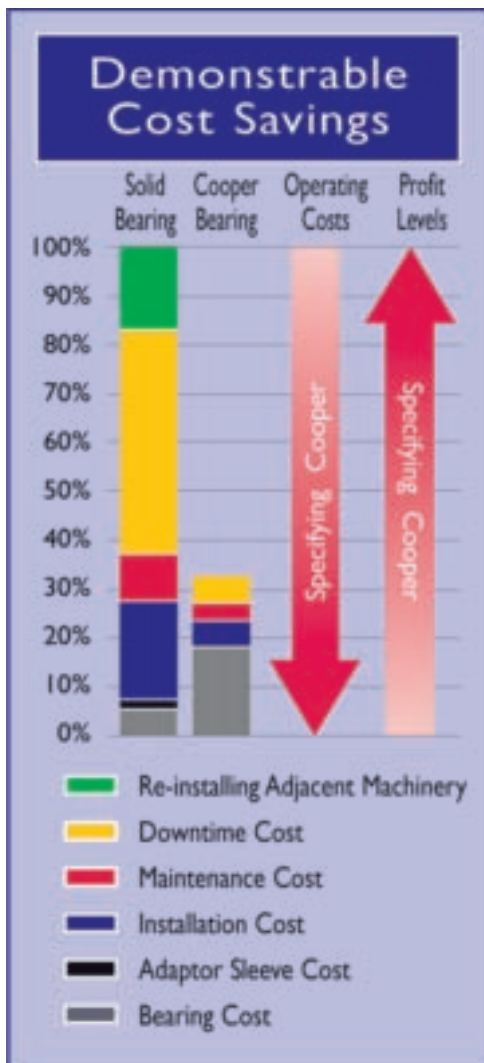
A Cooper bearing showing the split feature

Greater freedom for designers

With Cooper, there is really no such thing as a 'trapped' bearing position. The designer has the freedom to plan a layout without constantly worrying that bearings will be difficult to install or service.



Cooper bearing in a trapped position on a waterjet drive



Lower through life costs

The split-to-the-shaft design also typically means a lower installation cost, and offers easier and quicker maintenance.

The diagram compares the lifetime cost of a typical Cooper split-to-the-shaft bearing to that of a non-split bearing.

In addition, the split bearing parts, being generally lighter than their non-split equivalents, are easier to handle. This can have important health & safety benefits.

Designed specifically for marine applications: Cooper Z-Line Pedestals

Z-Line Pedestals work with a wide range of Cooper bearings, offering you all the benefits of split construction (see overleaf), with further major advantages where shaft alignment is critical:

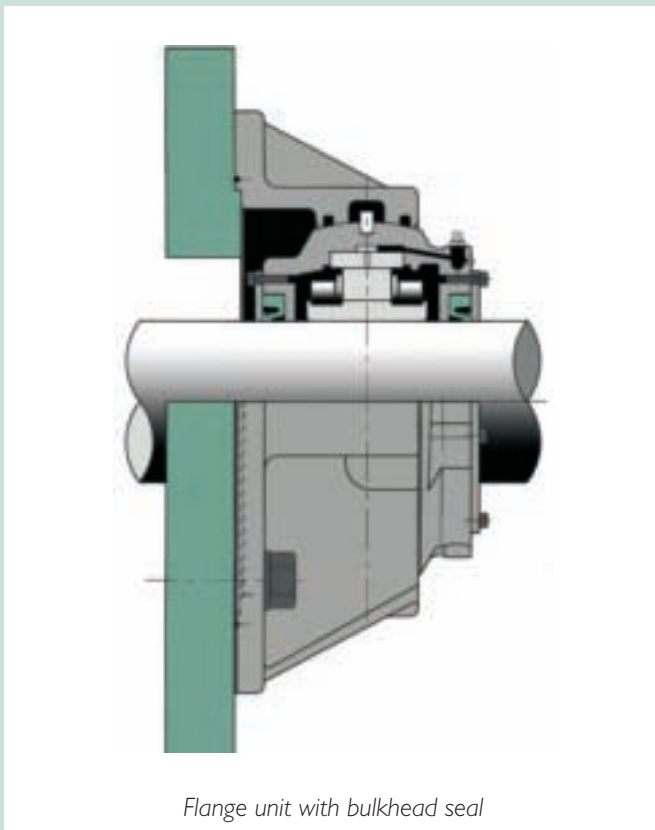
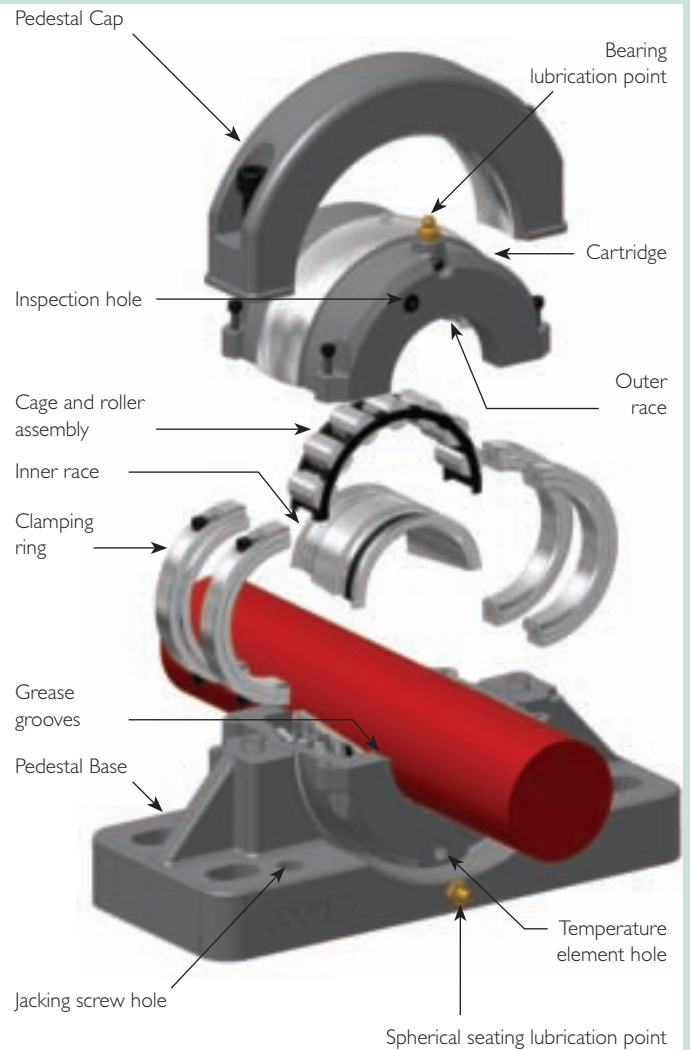
- Spherical cartridge lubrication feature allows extra movement to handle hull flexing
- Flat, solid underside of pedestal base offers perfect surface for chocking compound
- Jacking screws enable simple alignment of bearings along shaft

Saving costs on bulkhead sealing: Cooper Flanges

Flanges allow simple mounting of Cooper bearings on bulkheads, using the same internal bearing components and cartridges.

Here Cooper can offer suitable sealing options so that the housed bearing also functions as a bulkhead seal, bringing a substantial cost saving as this combined unit is generally cheaper than separate bearings and seals.

At the same time, the close proximity of the bearing and seals ensures that problems associated with poor



shaft-seal alignment, inherent when the bulkhead seal is separated from the bearing, are avoided.

Further important Cooper benefits in marine applications

- Inspection holes for in-place measurement of shaft axial position
- Tapped holes for temperature and vibration sensors
- Cast aluminium alloy, stainless steel, ductile iron or grey iron housing construction
- Special (EXILOG) bearing construction to handle significant axial expansion, as in long shafts or under extreme temperature variation

IMPORTANT SPLIT-TO-THE-SHAFT BENEFITS

See overleaf

Robust bearing-housing units in a wide range of materials

A wide range of pillow blocks and flanges is available, in materials ranging from cast aluminium alloy and stainless steel to ductile or grey iron.

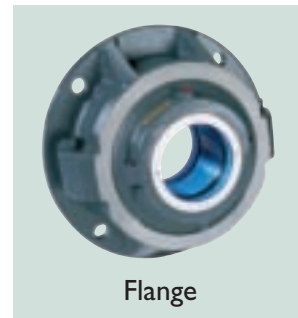
A Cooper flange provides a simple way of mounting a bearing to a bulkhead, which has the added benefit of providing, very economically, a bulkhead seal.



Large bore pedestal



Small bore pedestal

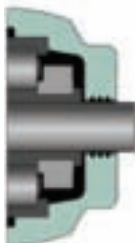


Flange

Choose a sealing solution to meet your exact needs

Cooper offers a wide range of effective seals to meet different operational conditions.

Grease groove (LAB)

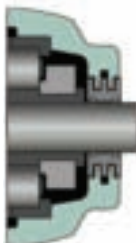


Suitable for high or slow speed operations.

Particularly successful in marine applications.

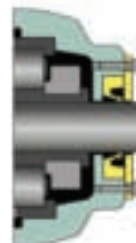
Standard for Cooper tapered roller bearings.

Aluminium triple labyrinth (ATL) High temperature version (ATL HT) Low temperature version (ATL LT)



Machined aluminium bodied triple labyrinth seal for high speed and general applications. ATL supplied as standard sealing arrangement in USA and Canada. ATL HT and ATL LT are fitted with O rings of different materials.

Spring-loaded single lip with retaining plate (SRSRP) High pressure version (SRSRP 40M)

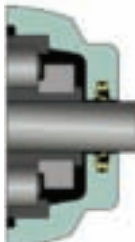


Suitable for severe splash or completely submerged conditions.

The standard version is suitable for up to 2m of water.

The high pressure version is suitable for up to 40m of water.

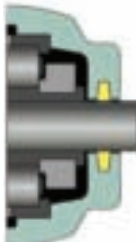
Synthetic rubber single lip (SRS) High temperature version (SRS HT) Low temperature version (SRS LT)



Suitable for wet but not submerged conditions.

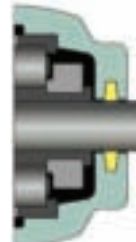
Can be used for improved lubricant retention by mounting lip inwards.

Felt (F)



Standard in UK and Europe for most Cooper bearings in general industry applications.

High Temperature Packing (HTP)



A direct replacement for felt in high temperature applications or for use in fire-resistant bulkheads.

COOPER BEARINGS GROUP

UK, Europe, South America, Asia, Australia and the Middle East

Cooper Roller Bearings Company Ltd.
Wisbech Road
Kings Lynn, Norfolk, PE30 5JX
United Kingdom
Tel: +44 (0) 1553 763447
Fax: +44 (0) 1553 761113
Email: CoopersalesUK@kaydon.com

USA, Canada, Mexico and Central America

The Cooper Split Roller Bearing Corp.
5365 Robin Hood Road, Suite B
Norfolk, VA 23513
USA.
Tel: +1 (1) 757 460 0925
Fax: +1 (1) 757 464 3067
Email: CoopersalesUS@kaydon.com

Germany

Cooper Geteilte Rollenlager GmbH.
Postfach 100 423
Oberbenrader Str. 407
47704 Krefeld GERMANY
Tel: +49 (0) 2151 713 016
Fax: +49 (0) 2151 713 010
Email: CoopersalesDE@kaydon.com

People's Republic of China

Cooper Bearings Group Beijing.
Room 909, Canway Building Tower I
No 66, Nanlishi Road, Xicheng District,
Beijing
PRC 100045
Tel: +86 (0) 10 68080803
+86 (0) 10 68080805
+86 (0) 10 68080806
Fax: +86 (0) 10 68080801
Email: CoopersalesCN@kaydon.com

Brazil

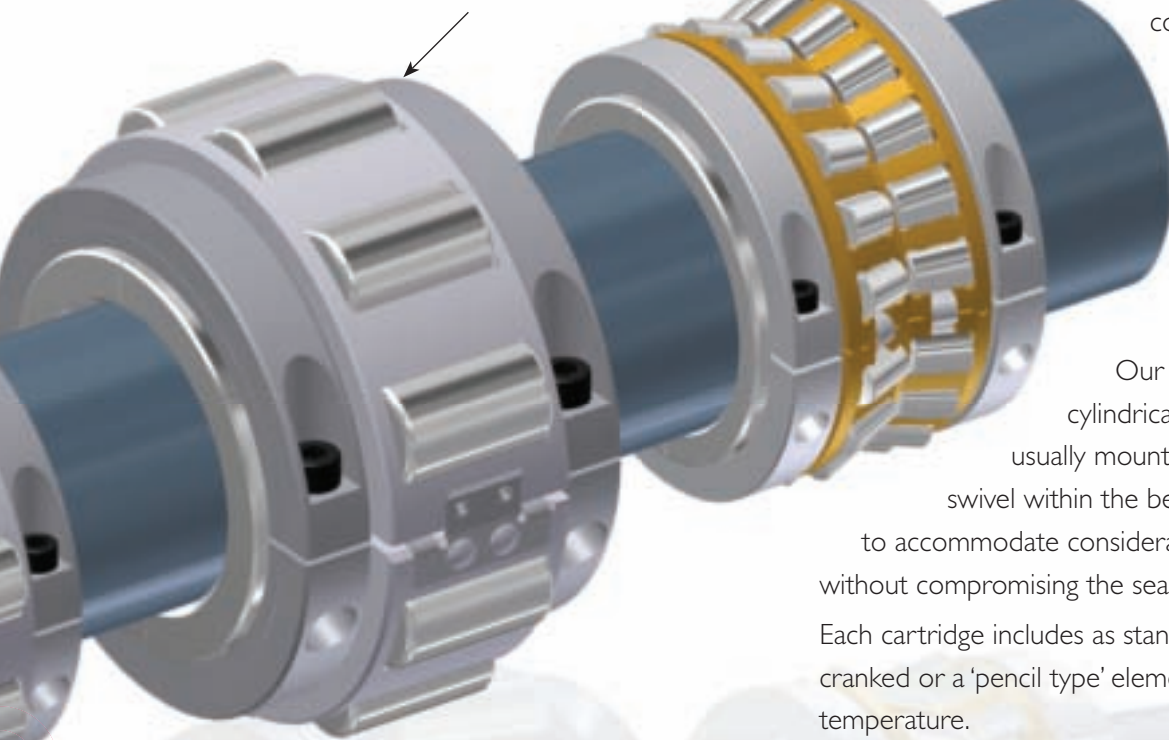
Cooper do Brasil Ltda.
Caixa Postal 66.105
CEP 05.314-970, Brasil
Tel: +55 (0) 11 3022 3706
Tel: +55 (0) 11 9156 2500
Email: CoopersalesBR@kaydon.com

India

Cooper Roller Bearings Company Ltd.
Wisbech Road
Kings Lynn, Norfolk, PE30 5JX
United Kingdom
Tel: +91 (0) 9820180089
Email: CoopersalesIN@kaydon.com

03 Series: for extra heavy duties

Designed to handle extreme loading conditions, of the type met for example by icebreakers, the 03 Series is the heavyweight of Cooper's standard bearings.



IDTB Series split tapered roller bearings: coping with thrust in powertrains

Marine shafts often undergo high transient axial loading caused by temperature gradients, hull movement or reactions in couplings. These medium-angle split tapered bearings are an ideal solution. The two rows of opposed rollers can handle axial loading from either direction, in addition to radial loading.

Our tapered bearings, like our cylindrical split roller bearings, are usually mounted in a cartridge that can swivel within the bearing housing, enough to accommodate considerable shaft misalignment without compromising the seal.

Each cartridge includes as standard a hole for a cranked or a 'pencil type' element to monitor bearing temperature.

Cooper: helping to avoid many of the problems of sleeve bearings

- Uncomplicated shaft design: plain parallel and unhardened
- No expensive steps in shaft alignment, bearing installation or bearing maintenance
- Simple grease lubrication: no oil pumps or filters to malfunction
- No oil starvation during start-up, run-down or pump failure
- No cooling system needed



Cooper split tapered roller bearings handle radial loading plus axial loading from either direction.

Marine Inspectorate approvals and other standards

- Lloyds Type Approval for Split cylindrical roller bearings, housings and seals – 100, 01 & 02 Series BCP (pillow block units) & BCF (flanged units) 35mm to 600mm bore size for main and auxiliary machinery.

- ABS, DNV, Germanischer Lloyd and RINA routinely asked to approve jobs on a case-by-case basis
- ISO 9001 & ISO 14001 certified



MARINE INDUSTRY



COOPER
SPLIT ROLLER BEARINGS

Cooper bearings: through-life propulsion performance that starts at the design stage

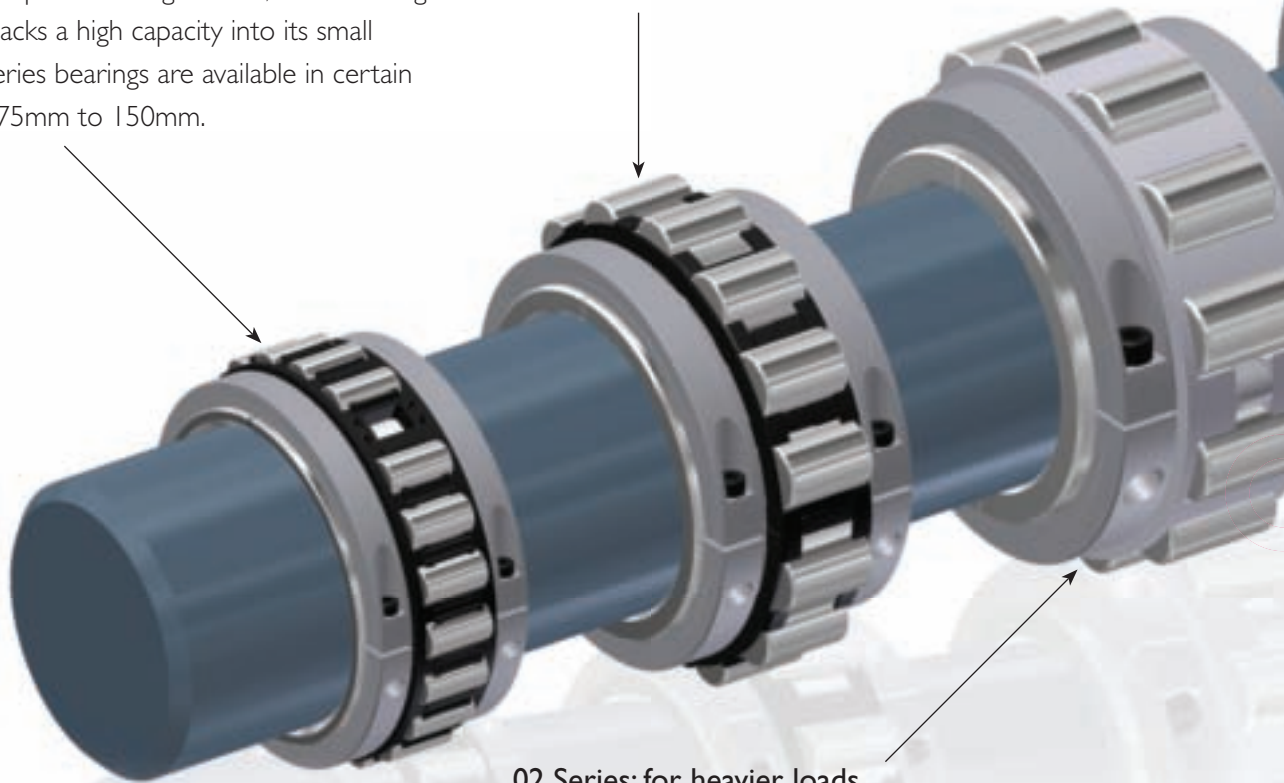
Greater freedom for the designer, better functionality, simpler installation and replacement, massive savings over the longer term. That's the Cooper offer. It's firmly based on the time- and space-saving benefits of split-to-the-shaft units plus exceptional alignment flexibility and the superior seal integrity this leads to.

100 Series: for today's high-speed shafts

Today's propulsion shafts can be high speed and light in weight, and are increasingly made of carbon fibre. Compact and lightweight, the 100 Series bearing is designed for high speeds and light loads, with no danger of skidding, yet packs a high capacity into its small envelope. 100 Series bearings are available in certain bore sizes from 75mm to 150mm.

01 Series: for medium loads and a wide range of speeds

These robust units can handle the majority of load and speed conditions encountered with propulsion shafts. They are our most popular bearings in such applications.



02 Series: for heavier loads

A rugged bearing for more demanding applications. The 02 bearing is frequently found in the 'locating' bearing position and on heavier shafting.



Cooper bearing on a marine generator drive during inspection



Cooper bearings on a long shaft

ALL BEARINGS OFFER THE FULL COOPER