

The following is a typical assembly sequence of a pedestal or flange mounted bearing and is included to allow engineers using this catalogue to understand the assembly process of the Cooper bearing and to allow them to produce relevant documentation for their own machines, which may require this information. A full set of assembly instructions is usually packaged with each standard bearing, for use by the fitters. If non-standard bearings are to be used, and/or a different assembly sequence is required for the application, specific assembly instructions can be supplied on request.

The illustrations use a pedestal mounted unit as an example.

## Preliminary Notes

Bearings must be disassembled before assembling into position.

Unwrap the bearing parts, remove the outer race halves (if supplied assembled around other parts), and separate the halves of the cage (if required). Various cage jointing methods are used depending on size and series of bearing. Undo the clamping ring screws and remove the clamping rings from the inner race.

Remove the preservative from all surfaces of all the parts.

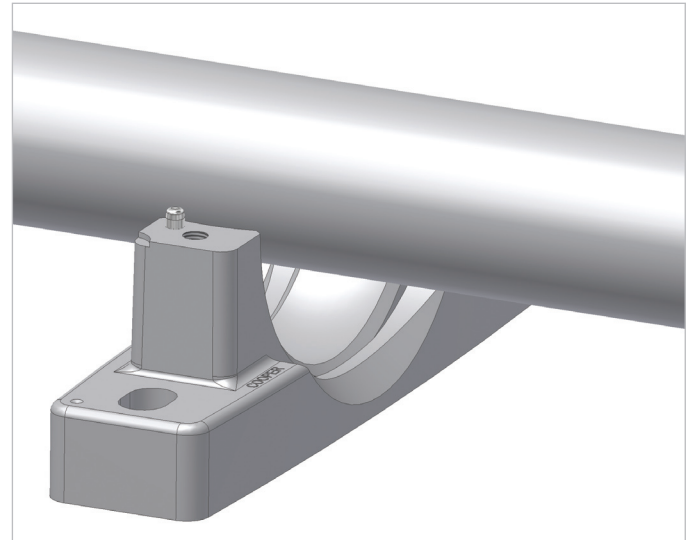
All bearing and housing components (with the exception of pressed steel-, die cast- and plastic cages) are marked with matching numbers or letters on each half. Ensure that the match marks on the halves are the same and are placed together on each component when the bearing is assembled.

Even though cage halves are not necessarily match-marked, they must not be mixed, as the rollers are graded into sets.

Complete roller bearings are interchangeable between similar Cooper cartridges. Individual parts should not be interchanged. Cartridges are interchangeable between standard outer housings provided that standard clearances are specified.

## Step 1 – Housing Base

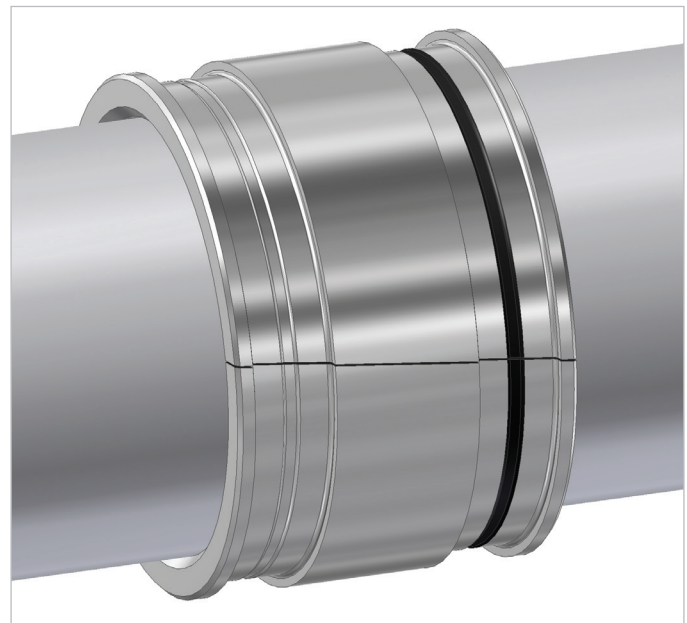
Place the pedestal base or flange lower half into position. If the precise location of the housing is predetermined it may be bolted into position. Generally, pedestal bases may require slight movement at a later stage in order to accurately position the shaft.



*Note: The pedestal base is not shown in most of the illustrations that follow, for clarity of other details.*

## Step 2 – Inner Race

Lightly oil the shaft with thin machine oil, then remove the excess with a clean wiper. Place the inner race at the correct position on the cleaned shaft. Soft packing on the joint faces, or feeler gauges, should be used to ensure that the joint gaps are approximately equal. Inner races of expansion bearings are usually set centrally with the outer race, but in cases of significant axial expansion there may be a deliberate offset. (This is usually up to a maximum of 10% of the roller length, but may be more in the case of special types of bearing).

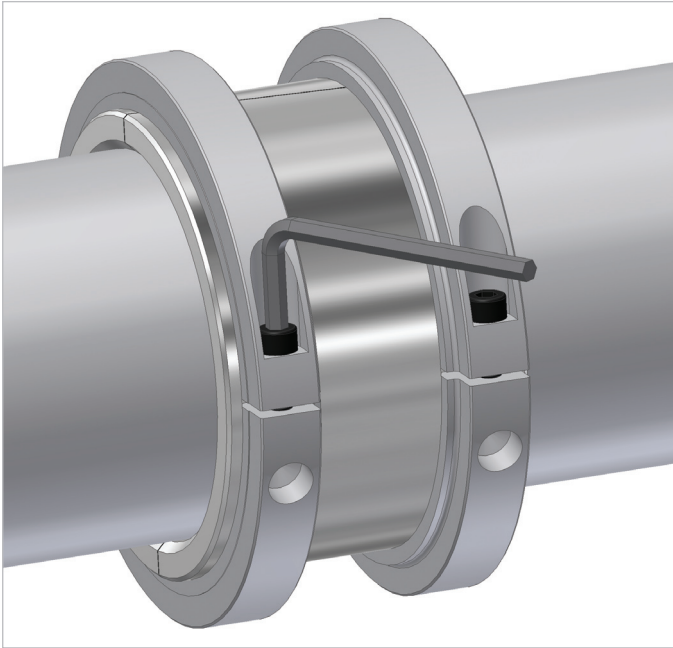


# INSTALLATION AND ASSEMBLY

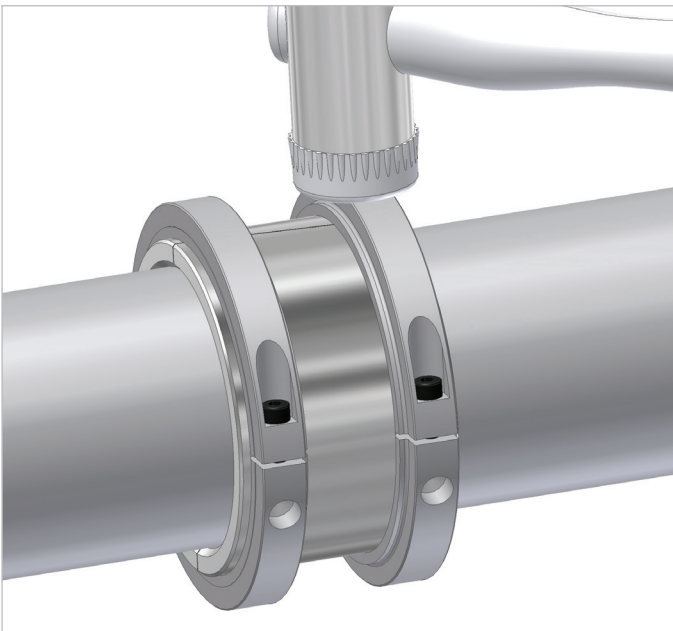
## ASSEMBLY INSTRUCTIONS

### Step 3 – Clamping Rings

Fit the clamping rings with joints at approximately 90° to the inner race joints (45° in the case of large bearings with 4-part clamping rings). Progressively tighten all clamping ring screws.



Tap down each half of the inner race and clamping rings all around the shaft using a soft-faced hammer, or insert a hardwood block between a steel hammer and the bearing parts. Retighten the clamping ring screws. Repeat until screws remain fully tight. Tightening torques are listed on pages 156 to 160.



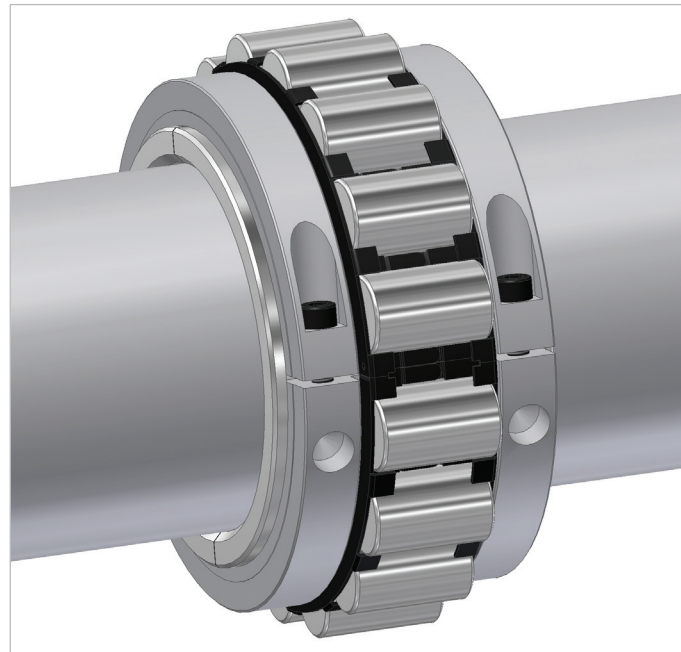
Check that there are approximately equal gaps at both joints of the inner race.

Check that there are approximately equal joints at both (or all 4) joints of each clamping ring.

### Step 4 – Cage and Rollers

Coat the bore of the cage and roller assembly with grease and lightly cover the inner race assembly (fitted to the shaft) all over with grease for protection.

Assemble the cage (complete with rollers) around the inner race. The two halves of the cage are fixed together by various means depending on size and series of bearing. (Further details are to be found in the assembly leaflets supplied with the bearing, or details of the joint of a particular size and series of cage can be supplied on request).



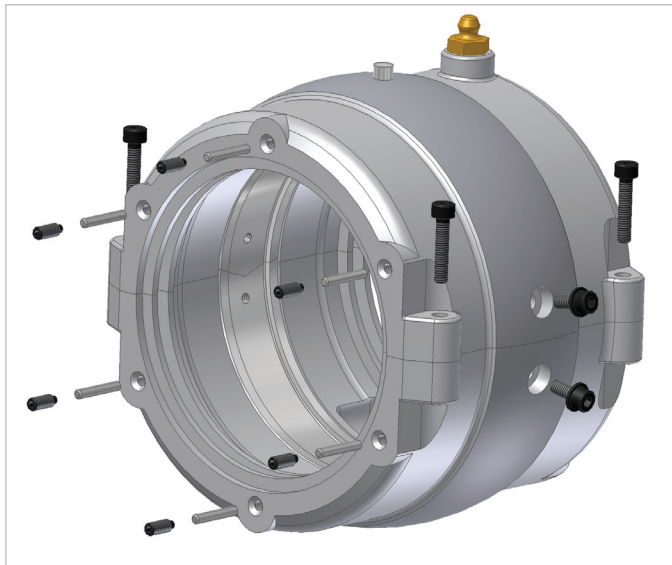
### Step 5 – Cartridge and Outer Race Sub-Assembly

Place the half outer race with the lubrication hole in the top half of the cartridge and the second half outer race into the lower half of the cartridge. Ensure that the ends of the outer race project from the cartridge joint face by equal amounts.

All lipped outer races must be clamped axially. Side screws 'A' are fitted to all GR cartridges. Side rods 'B' are fitted to some sizes only.



Radial screws 'C' and washers are fitted to both EX and GR cartridges of larger sizes only.



#### EX Cartridges:

Just enter radial screws 'C' (where fitted, complete with washers) into the corresponding outer race holes, but do not tighten. Place the two half cartridges together, complete with half outer races, and fully tighten the joint screws 'D'. Fully tighten the radial screws 'C'.

#### Cartridges for Lipped Outer Races (GR and Special Types):

Just enter radial screws 'C' (where fitted, complete with washers) into the corresponding outer race holes, but do not tighten. Place the two half cartridges together, complete with outer races, and fully tighten the joint screws 'D'. Enter the side rods 'B' (where fitted) and side screws 'A'. Progressively and fully tighten the side screws 'A' and radial screws 'C' (where fitted).

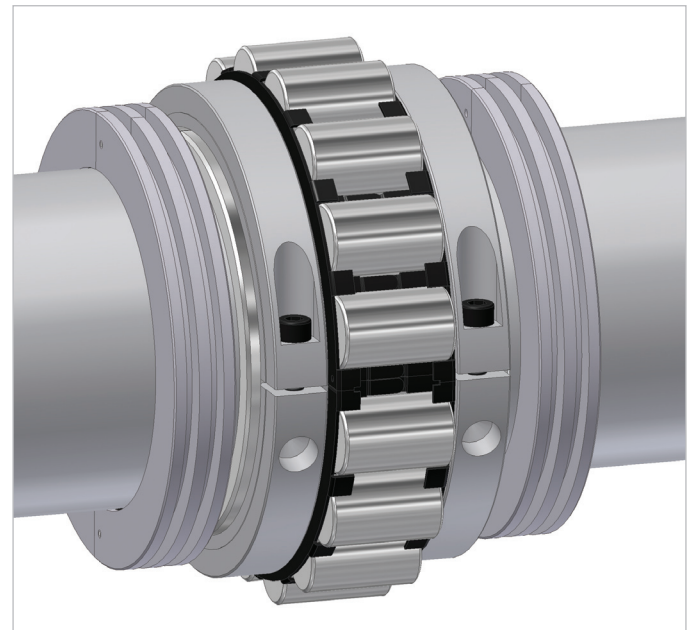
#### All types:

Inject grease to fill the grease passages. Remove joint screws 'D' and separate cartridge halves, taking care that the outer race halves do not fall out of position in their respective half-cartridges.

## Step 6 – Seals

If the unit is to be fitted with aluminium triple labyrinth (ATL) seals, fit them onto the shaft as follows:

Separate the ATL seal halves by driving out the two jointing pins. Lubricate the 'O' rings in the bore with grease. Reassemble on the shaft by compressing the 'O' rings of both halves sufficiently to allow the jointing pins to be reinserted, and reinsert the pins. Note: ATL seals are able to slide along the shaft once assembled.



Felt seals should be soaked in oil before fitting into the cartridge end bores. Most types of seal other than triple labyrinth seals and SRSRP seals are fitted into the cartridge end bores before assembling the cartridge into position.

## Step 7 – Lubrication

Coat the inside of the cartridge, cage and rollers and all seals with grease (See page 161 for correct quantity). For speeds over 150,000mm dn (shaft diameter in mm multiplied by shaft speed in rpm) approximately 40% of the grease used should be applied to the bearing parts and the remainder applied to the inside of the cartridge. This is to avoid excessive churning of grease when running at high speed.

# INSTALLATION AND ASSEMBLY

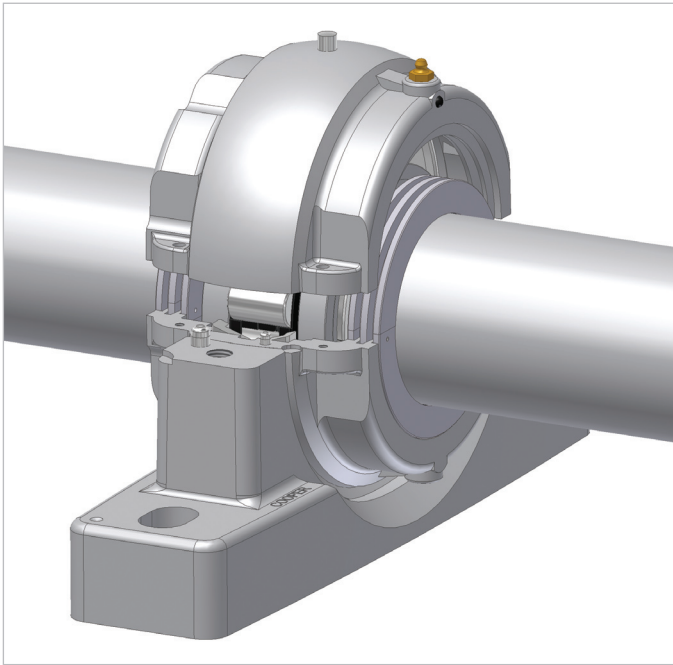
## ASSEMBLY INSTRUCTIONS

### Step 8 – Cartridge

Lubricate the spherical seating of the bottom half of the cartridge with grease.

Place the bottom half of the cartridge on top of the bearing and rotate 180° into the pedestal base or half-flange.

Place the top half of the cartridge on top of the bottom half, close the cartridge and fully tighten the joint screws. Lubricate the spherical seating with grease.

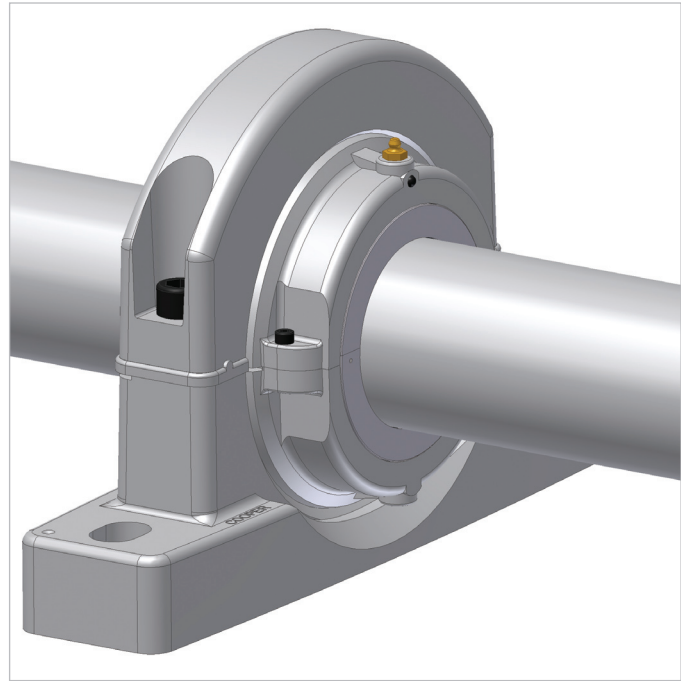


### Step 9 – Housing

If not already done, tighten the bolts fixing the pedestal base or lower flange half into position.

Place the pedestal cap or flange top half into position. If it is safe to do so, running the shaft for a time without the outer housing joint screws fully tightened will help the bearing to accurately align.

Fully tighten the joint screws.



Shaft Diameter d (mm)	Bearing reference	Clamping ring screw (1)			Cartridge joint screw (1)			Cartridge radial screw (1)			Side screw (1)			Pedestal joint screw (1)			Flange joint screw (1)		
		Screw size	Key size A/F (mm)	Torque (2) (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)
35	01 B 35M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M8x45	6	26	M8x40	6	26
40	01 B 40M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M8x45	6	26	M8x40	6	26
45	01E B 45M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M8x45	6	26	M8x40	6	26
50	01E B 50M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M8x45	6	26	M8x40	6	26
	02 B 50M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M10x55	8	52.5	M10x45	8	52.5
55	01E B 55M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M10x55	8	52.5	M10x45	8	52.5
60	01E B 60M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M10x55	8	52.5	M10x45	8	52.5
	02 B 60M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M12x65	10	90	M12x55	10	90
65	01E B 65M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M10x55	8	52.5	M10x45	8	52.5
	02 B 65M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M12x65	10	90	M12x55	10	90
70	01E B 70M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M12x65	10	90	M12x55	10	90
	02 B 70M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
75	100 B 75M	M3x16	2.5	2	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M10x55	8	52.5	M10x45	8	52.5
	01E B 75M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M12x65	10	90	M12x55	10	90
	02 B 75M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
80	01E B 80M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
	02 B 80M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
85	100 B 85M	M4x20	3	4.5	M4x25	3	3.5	-	-	-	M4x10	2	2.0	M12x65	10	90	M12x55	10	90
	01E B 85M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
	02 B 85M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
90	01E B 90M	M5x25	4	8.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
	02 B 90M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
95	01E B 95M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
100	100 B 100M	M4x20	3	4.5	M5x25	4	6.5	-	-	-	M4x10	2	2.0	M16x65	14	225	M12x55	10	90
	01E B 100M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
	02 B 100M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M20x80	17	420	M16x65	14	225
	03 B 100M	M10x45	8	70	M10x45	8	52.5	-	-	-	M6x10	3	7.8	M16x75	14	225	-	-	-
105	01E B 105M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
	02 B 105M	M6x25	5	15	M6x25	5	11	-	-	-	M4x10	2	2.0	M20x80	17	420	M16x65	14	225

(1) All screws are metric coarse thread, grade 12.9

(2) For vertical shaft or high thrust applications the clamping ring screw torque should be increased by up to 20%

# INSTALLATION AND ASSEMBLY

## SCREW SIZES, WRENCH SIZES AND TORQUES

Shaft Diameter (mm)	Bearing reference	Clamping ring screw (1)			Cartridge joint screw (1)			Cartridge radial screw (1)			Side screw (1)			Pedestal joint screw (1)			Flange joint screw (1)		
		Screw size	Key size A/F (mm)	Torque (2) (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)
110	100 B 110M	M5x25	4	8.5	M6x25	5	11	-	-	-	M4x10	2	2.0	M16x65	14	225	M16x65	14	225
	01 B 110M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M16x65	14	225
	02 B 110M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	03 B 110M	M10x45	8	70	M10x45	8	52.5	M10x30	8	35	M6x10	3	7.8	M16x75	14	225	-	-	-
115	01 B 115M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M16x65	14	225
	02 B 115M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
120	100 B 120M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M16x65	14	225
	01 B 120M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	02 B 120M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
	03 B 120M	M10x45	8	70	M10x45	8	52.5	M10x30	8	35	M6x10	3	7.8	M16x75	14	225	-	-	-
125	01 B 125M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	02 B 125M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
130	100 B 130M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M16x65	14	225
	01 B 130M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	02 B 130M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
	03 B 130M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M16x75	14	225	-	-	-
135	01 B 135M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
140	100 B 140M	M6x25	5	15	M6x25	5	11	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	01 B 140M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	02 B 140M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x100	19	712
	03 B 140M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	-	-	-
145	02 B 145M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x100	19	712
150	100 B 150M	M6x25	5	15	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x80	17	420	M20x80	17	420
	01 B 150M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
	02 B 150M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x100	19	712
	03 B 150M	M10x45	8	70	M10x45	8	52.5	M10x30	8	35	M10x16	5	30	M20x100	17	420	-	-	-
155	01 B 155M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
	02 B 155M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x100	19	712



Shaft Diameter d (mm)	Bearing reference	Clamping ring screw (1)			Cartridge joint screw (1)			Cartridge radial screw (1)			Side screw (1)			Pedestal joint screw (1)			Flange joint screw (1)		
		Screw size	Key size A/F (mm)	Torque (2) (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)
160	01 B 600-160M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M20x100	17	420
	01 B 160M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M16x65	14	225	M20x100	17	420
	02 B 600-160M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x100	19	712
	02 B 160M	M10x45	8	70	M10x45	8	52.5	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 160M	M12x55	10	120	M12x55	10	90	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
170	01 B 608-170M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M16x65	14	225	M20x100	17	420
	01 B 170M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M16x65	14	225	M20x100	17	420
	02 B 170M	M10x45	8	70	M10x45	8	52.5	-	-	-	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 170M	M12x55	10	120	M12x55	10	90	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
175	01 B 175M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M16x65	14	225	M20x100	17	420
	02 B 175M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
180	01 B 180M	M8x30	6	35	M8x30	6	26	-	-	-	M6x10	3	7.8	M16x65	14	225	M20x100	17	420
	02 B 180M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 180M	M12x55	10	120	M12x55	10	90	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
190	01 B 190M	M8x30	6	35	M8x30	6	26	M10x20	8	35	M6x10	3	7.8	M16x65	14	225	M24x100	19	712
	02 B 190M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 190M	M12x55	10	120	M12x55	10	90	M12x40	10	60	M10x16	5	30	M24x100	19	712	-	-	-
200	01 B 200M	M8x30	6	35	M8x30	6	26	M10x20	8	35	M6x10	3	7.8	M16x65	14	225	M24x100	19	712
	02 B 200M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 200M	M12x55	10	120	M12x55	10	90	M12x40	10	60	M10x16	5	30	M24x100	19	712	-	-	-
220	01 B 220M	M10x45	8	70	M10x45	8	52.5	M10x20	8	35	M6x10	3	7.8	M16x65	14	225	M24x100	19	712
	02 B 220M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
	03 B 220M	M16x65	14	300	M16x75	14	225	M12x40	10	60	M10x16	5	30	M20x100	17	420	-	-	-
230	01 B 230M	M10x45	8	70	M10x45	8	52.5	M10x20	8	35	M6x10	3	7.8	M16x65	14	225	M24x100	19	712
	02 B 230M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M6x10	3	7.8	M20x100	17	420	M24x120	19	712
240	01 B 240M	M10x45	8	70	M10x45	8	52.5	M10x20	8	35	M6x10	3	7.8	M20x80	17	420	M24x100	19	712
	02 B 240M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	03 B 240M	M16x65	14	300	M16x75	14	225	M12x40	10	60	M10x16	5	30	M20x100	17	420	-	-	-
250	01 B 250M	M10x45	8	70	M10x45	8	52.5	M10x20	8	35	M6x10	3	7.8	M20x80	17	420	M24x100	19	712
	02 B 250M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	03 B 250M	M16x65	14	300	M16x75	14	225	M12x40	10	60	M10x16	5	30	M20x100	17	420	-	-	-

(1) All screws are metric coarse thread, grade 12.9

(2) For vertical shaft or high thrust applications the clamping ring screw torque should be increased by up to 20%

# INSTALLATION AND ASSEMBLY

## SCREW SIZES, WRENCH SIZES AND TORQUES

Shaft Diameter (mm)	Bearing reference	Clamping ring screw (I)			Cartridge joint screw (I)			Cartridge radial screw (I)			Side screw (I)			Pedestal joint screw (I)			Flange joint screw (I)		
		Screw size	Key size A/F (mm)	Torque (2) (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)
260	01 B 1000-260M	M10x45	8	70	M10x45	8	52.5	M10x20	8	35	M6x10	3	7.8	M20x80	17	420	M24x100	19	712
	01 B 260M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 260M	M12x55	10	120	M12x55	10	90	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	03 B 260M	M16x65	14	300	M16x75	14	225	M12x40	10	60	M10x16	5	30	M20x100	17	420	-	-	-
270	01 B 270M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
275	01 B 275M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
280	01 B 280M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 280M	M16x65	14	300	M16x75	14	225	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	03X B 280M	M20x80	17	560	M20x100	17	420	M12x40	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 280M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
290	01 B 290M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	03 B 290M	M20x80	17	560	M20x100	17	420	M12x55	10	60	M10x16	5	30	M20x100	17	420	-	-	-
300	01 B 300M	M10x45	8	70	M10x45	8	52.5	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 300M	M16x65	14	300	M16x75	14	225	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	03 B 300M	M20x80	17	560	M20x100	17	420	M12x55	10	60	M10x16	5	30	M20x100	17	420	-	-	-
320	01 B 320M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 320M	M16x65	14	300	M16x75	14	225	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	03 B 320M	M20x80	17	560	M20x100	17	420	M12x55	10	60	M10x16	5	30	M24x120	19	712	-	-	-
330	01 B 330M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 330M	M16x65	14	300	M16x75	14	225	M10x30	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
340	01 B 1300-340M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	01 B 340M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 340M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 340M	M24x100	19	950	M20x100	17	420	M12x40	10	60	M16x25	8	125	M24x100	19	712	-	-	-
350	01 B 350M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	02 B 350M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
360	01 B 1400-360M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x120	19	712
	01 B 360M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	02 B 360M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 360M	M24x100	19	950	M20x100	17	420	M12x40	10	60	M16x25	8	125	M24x100	19	712	-	-	-
	03X B 360M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M10x16	5	30	M24x120	19	712	-	-	-





# INSTALLATION AND ASSEMBLY

## SCREW SIZES, WRENCH SIZES AND TORQUES

Shaft Diameter d (mm)	Bearing reference	Clamping ring screw (1)			Cartridge joint screw (1)			Cartridge radial screw (1)			Side screw (1)			Pedestal joint screw (1)			Flange joint screw (1)		
		Screw size	Key size A/F (mm)	Torque (2) (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)	Screw size	Key size A/F (mm)	Torque (Nm)
380	01 B 380M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	02 B 380M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03 B 380M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M10x16	5	30	M24x120	19	712	-	-	-
390	01 B 390M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
400	01 B 400M	M12x55	10	120	M12x55	10	90	M10x25	8	35	M10x16	5	30	M20x100	17	420	M24x100	19	712
	02 B 400M	M16x65	14	300	M16x75	14	225	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03 B 400M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M10x16	5	30	M24x120	19	712	-	-	-
420	01 B 420M	M12x55	10	120	M12x55	10	90	M12x25	10	60	M10x16	5	30	M20x80	17	420	-	-	-
	02 B 420M	M16x65	14	300	M16x75	14	225	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 420M	M24x100	19	950	M20x100	17	420	M12x40	10	60	M16x25	8	125	M24x120	19	712	-	-	-
440	01 B 440M	M12x55	10	120	M12x55	10	90	M12x25	10	60	M10x16	5	30	M20x80	17	420	-	-	-
	02 B 440M	M16x65	14	300	M16x75	14	225	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 440M	M24x100	19	950	M20x100	17	420	M12x40	10	60	M16x25	8	125	M24x120	19	712	-	-	-
460	01 B 460M	M12x55	10	120	M12x55	10	90	M12x25	10	60	M10x16	5	30	M20x80	17	420	-	-	-
	02 B 460M	M16x65	14	300	M16x75	14	225	M12x35	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	03E B 460M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M16x25	8	125	M24x120	19	712	-	-	-
	03X B 460M	M24x100	19	950	M20x100	17	420	M16x65	14	150	M10x16	5	30	M24x120	19	712	-	-	-
480	01 B 480M	M12x55	10	120	M12x55	10	90	M12x25	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 480M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
	03X B 480M	M24x100	19	950	M20x100	17	420	M16x65	14	150	M10x16	5	30	M24x120	19	712	-	-	-
500	01 B 500M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 500M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
	03 B 500M	M24x100	19	950	M20x100	17	420	M16x65	14	150	M10x16	5	30	M24x120	19	712	-	-	-
530	01 B 530M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 530M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
	03 B 530M	M24x100	19	950	M20x100	17	420	M16x65	14	150	M10x16	5	30	M24x120	19	712	-	-	-
560	01 B 560M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 560M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
	03E B 560M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M16x25	8	125	M24x120	19	712	-	-	-
580	01 B 580M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 580M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
600	01 B 600M	M16x65	14	300	M16x75	14	225	M12x30	10	60	M10x16	5	30	M20x100	17	420	-	-	-
	02 B 600M	M20x80	17	560	M20x100	17	420	M12x35	10	60	M10x16	5	30	M24x120	19	712	-	-	-
	03E B 600M	M24x100	19	950	M20x100	17	420	M12x55	10	60	M16x25	8	125	M24x120	19	712	-	-	-

(1) All screws are metric coarse thread, grade 12.9

(2) For vertical shaft or high thrust applications the clamping ring screw torque should be increased by up to 20%

# INSTALLATION AND ASSEMBLY

## GREASE QUANTITIES FOR INITIAL LUBRICATION

### GREASE QUANTITIES FOR INITIAL LUBRICATION

The quantity of grease required on initial assembly is dependent upon operating speed and temperature.

If the operating temperature is below 80°C the quantity of grease may be determined directly according to bearing reference and operating speed from the following table.

If the operating temperature is above 80°C, a 25% pack of

grease should be used regardless of speed (refer to the right hand column of the table).

With a 'full pack' of grease the space within the cartridge (i.e. surrounding the bearing components) in the assembled unit is completely filled with grease.

The table assumes normal density grease (about 0.85g/cm<sup>3</sup>).

Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
35	01 B 35M	1312	0.06	1312	2625	0.05	2625	3937	0.03	3937	5249	0.02	5249	0.02
40	01 B 40M	1312	0.06	1312	2625	0.05	2625	3937	0.03	3937	5249	0.02	5249	0.02
45	01E B 45M	984	0.09	984	1969	0.07	1969	2953	0.05	2953	3937	0.03	3937	0.02
50	01E B 50M	984	0.09	984	1969	0.07	1969	2953	0.05	2953	3937	0.03	3937	0.02
	02 B 50M	984	0.15	984	1969	0.11	1969	2953	0.08	2953	3937	0.05	3937	0.04
55	01E B 55M	787	0.15	787	1575	0.11	1575	2362	0.08	2362	3150	0.05	3150	0.04
60	01E B 60M	787	0.15	787	1575	0.11	1575	2362	0.08	2362	3150	0.05	3150	0.04
	02 B 60M	787	0.21	787	1575	0.16	1575	2362	0.11	2362	3150	0.07	3150	0.05
65	01E B 65M	787	0.15	787	1575	0.11	1575	2362	0.08	2362	3150	0.05	3150	0.04
	02 B 65M	787	0.21	787	1575	0.16	1575	2362	0.11	2362	3150	0.07	3150	0.05
70	01E B 70M	656	0.18	656	1312	0.14	1312	1969	0.09	1969	2625	0.06	2625	0.05
	02 B 70M	656	0.30	656	1312	0.23	1312	1969	0.15	1969	2625	0.10	2625	0.08
75	100 B 75M	656	0.15	656	1312	0.11	1312	1969	0.08	1969	2625	0.05	2625	0.04
	01E B 75M	656	0.18	656	1312	0.14	1312	1969	0.09	1969	2625	0.06	2625	0.05
	02 B 75M	656	0.30	656	1312	0.23	1312	1969	0.15	1969	2625	0.10	2625	0.08
80	01E B 80M	562	0.30	562	1125	0.23	1125	1687	0.15	1687	2250	0.10	2250	0.08
	02 B 80M	562	0.45	562	1125	0.34	1125	1687	0.23	1687	2250	0.15	2250	0.11
85	100 B 85M	573	0.22	573	1145	0.17	1145	1718	0.11	1718	2291	0.07	2291	0.06
	01E B 85M	562	0.30	562	1125	0.23	1125	1687	0.15	1687	2250	0.10	2250	0.08
	02 B 85M	562	0.45	562	1125	0.34	1125	1687	0.23	1687	2250	0.15	2250	0.11
90	01E B 90M	562	0.30	562	1125	0.23	1125	1687	0.15	1687	2250	0.10	2250	0.08
	02 B 90M	562	0.45	562	1125	0.34	1125	1687	0.23	1687	2250	0.15	2250	0.11



Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
95	01E B 95M	492	0.36	492	984	0.27	984	1476	0.18	1476	1969	0.12	1969	0.09
100	100 B 100M	492	0.36	492	984	0.27	984	1476	0.18	1476	1969	0.12	1969	0.09
	01E B 100M	492	0.36	492	984	0.27	984	1476	0.18	1476	1969	0.12	1969	0.09
	02 B 100M	492	0.60	492	984	0.45	984	1476	0.30	1476	1969	0.20	1969	0.15
	03 B 100M	492	1.20	492	984	0.90	984	1476	0.60	1476	1969	0.40	1969	0.30
105	01E B 105M	492	0.36	492	984	0.27	984	1476	0.18	1476	1969	0.12	1969	0.09
	02 B 105M	492	0.60	492	984	0.45	984	1476	0.30	1476	1969	0.20	1969	0.15
110	100 B 110M	437	0.36	437	875	0.27	875	1312	0.18	1312	1750	0.12	1750	0.09
	01 B 110M	437	0.51	437	875	0.38	875	1312	0.26	1312	1750	0.17	1750	0.13
	02 B 110M	437	0.90	437	875	0.68	875	1312	0.45	1312	1750	0.30	1750	0.23
	03 B 110M	437	1.40	437	875	1.05	875	1312	0.70	1312	1750	0.46	1750	0.35
115	01 B 115M	437	0.51	437	875	0.38	875	1312	0.26	1312	1750	0.17	1750	0.13
	02 B 115M	437	0.90	437	875	0.68	875	1312	0.45	1312	1750	0.30	1750	0.23
120	100 B 120M	394	0.49	394	787	0.37	787	1181	0.25	1181	1575	0.16	1575	0.12
	01 B 120M	394	0.60	394	787	0.45	787	1181	0.30	1181	1575	0.20	1575	0.15
	02 B 120M	394	1.20	394	787	0.90	787	1181	0.60	1181	1575	0.40	1575	0.30
	03 B 120M	437	1.40	437	875	1.05	875	1312	0.70	1312	1750	0.46	1750	0.35
125	01 B 125M	394	0.60	394	787	0.45	787	1181	0.30	1181	1575	0.20	1575	0.15
	02 B 125M	394	1.20	394	787	0.90	787	1181	0.60	1181	1575	0.40	1575	0.30
130	100 B 130M	394	0.49	394	787	0.37	787	1181	0.25	1181	1575	0.16	1575	0.12
	01 B 130M	394	0.60	394	787	0.45	787	1181	0.30	1181	1575	0.20	1575	0.15
	02 B 130M	394	1.20	394	787	0.90	787	1181	0.60	1181	1575	0.40	1575	0.30
	03 B 130M	394	1.40	394	787	1.05	787	1181	0.70	1181	1575	0.46	1575	0.35
135	01 B 135M	358	0.78	358	716	0.59	716	1074	0.39	1074	1432	0.26	1432	0.20
140	100 B 140M	358	0.64	358	716	0.48	716	1074	0.32	1074	1432	0.21	1432	0.16
	01 B 140M	358	0.78	358	716	0.59	716	1074	0.39	1074	1432	0.26	1432	0.20
	02 B 140M	358	1.40	358	716	1.05	716	1074	0.70	1074	1432	0.46	1432	0.35
	03 B 140M	358	2.00	358	716	1.50	716	1074	1.00	1074	1432	0.66	1432	0.50
145	02 B 145M	358	1.40	358	716	1.05	716	1074	0.70	1074	1432	0.46	1432	0.35



# INSTALLATION AND ASSEMBLY

## GREASE QUANTITIES FOR INITIAL LUBRICATION

Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
150	100 B 150M	328	1.02	328	656	0.77	656	984	0.51	984	1312	0.34	1312	0.26
	01 B 150M	328	0.90	328	656	0.68	656	984	0.45	984	1312	0.30	1312	0.23
	02 B 150M	328	1.40	328	656	1.05	656	984	0.70	984	1312	0.46	1312	0.35
	03 B 150M	328	2.70	328	656	2.03	656	984	1.35	984	1312	0.89	1312	0.68
155	01 B 155M	328	0.90	328	656	0.68	656	984	0.45	984	1312	0.30	1312	0.23
	02 B 155M	328	1.40	328	656	1.05	656	984	0.70	984	1312	0.46	1312	0.35
160	01 B 600-160M	328	0.90	328	656	0.68	656	984	0.45	984	1312	0.30	1312	0.23
	01 B 160M	303	1.00	303	606	0.75	606	909	0.50	909	1211	0.33	1211	0.25
	02 B 600-160M	328	1.40	328	656	1.05	656	984	0.70	984	1312	0.46	1312	0.35
	02 B 160M	303	1.40	303	606	1.05	606	909	0.70	909	1211	0.46	1211	0.35
	03 B 160M	303	3.60	303	606	2.70	606	909	1.80	909	1211	1.19	1211	0.90
170	01 B 608-170M	303	1.00	303	606	0.75	606	909	0.50	909	1211	0.33	1211	0.25
	01 B 170M	281	1.20	281	562	0.90	562	844	0.60	844	1125	0.40	1125	0.30
	02 B 170M	303	2.00	303	606	1.50	606	909	1.00	909	1211	0.66	1211	0.50
	03 B 170M	303	3.60	303	606	2.70	606	909	1.80	909	1211	1.19	1211	0.90
175	01 B 175M	281	1.20	281	562	0.90	562	844	0.60	844	1125	0.40	1125	0.30
	02 B 175M	281	2.00	281	562	1.50	562	844	1.00	844	1125	0.66	1125	0.50
180	01 B 180M	281	1.20	281	562	0.90	562	844	0.60	844	1125	0.40	1125	0.30
	02 B 180M	281	2.00	281	562	1.50	562	844	1.00	844	1125	0.66	1125	0.50
	03 B 180M	281	4.20	281	562	3.15	562	844	2.10	844	1125	1.39	1125	1.05
190	01 B 190M	246	1.40	246	492	1.05	492	738	0.70	738	984	0.46	984	0.35
	02 B 190M	246	2.70	246	492	2.03	492	738	1.35	738	984	0.89	984	0.68
	03 B 190M	246	5.40	246	492	4.05	492	738	2.70	738	984	1.78	984	1.35
200	01 B 200M	246	1.40	246	492	1.05	492	738	0.70	738	984	0.46	984	0.35
	02 B 200M	246	2.70	246	492	2.03	492	738	1.35	738	984	0.89	984	0.68
	03 B 200M	246	5.40	246	492	4.05	492	738	2.70	738	984	1.78	984	1.35
220	01 B 220M	219	1.40	219	437	1.05	437	656	0.70	656	875	0.46	875	0.35
	02 B 220M	219	3.60	219	437	2.70	437	656	1.80	656	875	1.19	875	0.90
	03 B 220M	219	6.90	219	437	5.18	437	656	3.45	656	875	2.28	875	1.73
230	01 B 230M	219	1.40	219	437	1.05	437	656	0.70	656	875	0.46	875	0.35
	02 B 230M	219	3.60	219	437	2.70	437	656	1.80	656	875	1.19	875	0.90



Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
240	01 B 240M	197	2.00	197	394	1.50	394	591	1.00	591	787	0.66	787	0.50
	02 B 240M	197	4.20	197	394	3.15	394	591	2.10	591	787	1.39	787	1.05
	03 B 240M	197	8.10	197	394	6.08	394	591	4.05	591	787	2.67	787	2.03
250	01 B 250M	197	2.00	197	394	1.50	394	591	1.00	591	787	0.66	787	0.50
	02 B 250M	197	4.20	197	394	3.15	394	591	2.10	591	787	1.39	787	1.05
	03 B 250M	197	8.10	197	394	6.08	394	591	4.05	591	787	2.67	787	2.03
260	01 B 1000-260M	197	2.00	197	394	1.50	394	591	1.00	591	787	0.66	787	0.50
	01 B 260M	179	2.00	179	358	1.50	358	537	1.00	537	716	0.66	716	0.50
	02 B 260M	197	4.20	197	394	3.15	394	591	2.10	591	787	1.39	787	1.05
	03 B 260M	197	8.10	197	394	6.08	394	591	4.05	591	787	2.67	787	2.03
270	01 B 270M	179	2.00	179	358	1.50	358	537	1.00	537	716	0.66	716	0.50
275	01 B 275M	179	2.00	179	358	1.50	358	537	1.00	537	716	0.66	716	0.50
280	01 B 280M	179	2.00	179	358	1.50	358	537	1.00	537	716	0.66	716	0.50
	02 B 280M	179	4.80	179	358	3.60	358	537	2.40	537	716	1.58	716	1.20
	03X B 280M	179	10.00	179	358	7.50	358	537	5.00	537	716	3.30	716	2.50
	03E B 280M	179	10.00	179	358	7.50	358	537	5.00	537	716	3.30	716	2.50
290	01 B 290M	164	2.00	164	328	1.50	328	492	1.00	492	656	0.66	656	0.50
	03 B 290M	164	11.00	164	328	8.25	328	492	5.50	492	656	3.63	656	2.75
300	01 B 300M	164	2.00	164	328	1.50	328	492	1.00	492	656	0.66	656	0.50
	02 B 300M	164	5.40	164	328	4.05	328	492	2.70	492	656	1.78	656	1.35
	03 B 300M	164	11.00	164	328	8.25	328	492	5.50	492	656	3.63	656	2.75
320	01 B 320M	151	2.76	151	303	2.07	303	454	1.38	454	606	0.91	606	0.69
	02 B 320M	151	6.60	151	303	4.95	303	454	3.30	454	606	2.18	606	1.65
	03 B 320M	151	12.00	151	303	9.00	303	454	6.00	454	606	3.96	606	3.00
330	01 B 330M	151	2.76	151	303	2.07	303	454	1.38	454	606	0.91	606	0.69
	02 B 330M	151	6.60	151	303	4.95	303	454	3.30	454	606	2.18	606	1.65
340	01 B 1300-340M	151	2.76	151	303	2.07	303	454	1.38	454	606	0.91	606	0.69
	01 B 340M	141	3.00	141	281	2.25	281	422	1.50	422	562	0.99	562	0.75
	02 B 340M	141	7.20	141	281	5.40	281	422	3.60	422	562	2.38	562	1.80
	03E B 340M	141	15.00	141	281	11.25	281	422	7.50	422	562	4.95	562	3.75



# INSTALLATION AND ASSEMBLY GREASE QUANTITIES FOR INITIAL LUBRICATION

Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
350	01 B 350M	141	3.00	141	281	2.25	281	422	1.50	422	562	0.99	562	0.75
	02 B 350M	141	7.20	141	281	5.40	281	422	3.60	422	562	2.38	562	1.80
360	01 B 1400-360M	141	3.00	141	281	2.25	281	422	1.50	422	562	0.99	562	0.75
	01 B 360M	131	3.00	131	262	2.25	262	394	1.50	394	525	0.99	525	0.75
	02 B 360M	141	7.20	141	281	5.40	281	422	3.60	422	562	2.38	562	1.80
	03E B 360M	141	15.00	141	281	11.25	281	422	7.50	422	562	4.95	562	3.75
	03X B 360M	141	15.00	141	281	11.25	281	422	7.50	422	562	4.95	562	3.75
380	01 B 380M	131	3.00	131	262	2.25	262	394	1.50	394	525	0.99	525	0.75
	02 B 380M	131	7.80	131	262	5.85	262	394	3.90	394	525	2.57	525	1.95
	03 B 380M	131	16.20	131	262	12.15	262	394	8.10	394	525	5.35	525	4.05
390	01 B 390M	123	3.60	123	246	2.70	246	369	1.80	369	492	1.19	492	0.90
400	01 B 400M	123	3.60	123	246	2.70	246	369	1.80	369	492	1.19	492	0.90
	02 B 400M	123	9.00	123	246	6.75	246	369	4.50	369	492	2.97	492	2.25
	03 B 400M	131	16.20	131	262	12.15	262	394	8.10	394	525	5.35	525	4.05
420	01 B 420M	116	4.20	116	232	3.15	232	347	2.10	347	463	1.39	463	1.05
	02 B 420M	116	9.60	116	232	7.20	232	347	4.80	347	463	3.17	463	2.40
	03E B 420M	116	21.60	116	232	16.20	232	347	10.80	347	463	7.13	463	5.40
440	01 B 440M	109	4.20	109	219	3.15	219	328	2.10	328	437	1.39	437	1.05
	02 B 440M	109	9.60	109	219	7.20	219	328	4.80	328	437	3.17	437	2.40
	03E B 440M	116	21.60	116	232	16.20	232	347	10.80	347	463	7.13	463	5.40
460	01 B 460M	109	4.20	109	219	3.15	219	328	2.10	328	437	1.39	437	1.05
	02 B 460M	109	9.60	109	219	7.20	219	328	4.80	328	437	3.17	437	2.40
	03E B 460M	109	24.60	109	219	18.45	219	328	12.30	328	437	8.12	437	6.15
	03X B 460M	104	24.60	104	207	18.45	207	311	12.30	311	414	8.12	414	6.15
480	01 B 480M	104	4.80	104	207	3.60	207	311	2.40	311	414	1.58	414	1.20
	02 B 480M	104	10.20	104	207	7.65	207	311	5.10	311	414	3.37	414	2.55
	03X B 480M	109	24.60	109	219	18.45	219	328	12.30	328	437	8.12	437	6.15
500	01 B 500M	98	4.80	98	197	3.60	197	295	2.40	295	394	1.58	394	1.20
	02 B 500M	98	10.80	98	197	8.10	197	295	5.40	295	394	3.56	394	2.70
	03 B 500M	98	30.00	98	197	22.50	197	295	15.00	295	394	9.90	394	7.50



# INSTALLATION AND ASSEMBLY

## GREASE QUANTITIES FOR INITIAL LUBRICATION

Shaft Diameter d (mm)	Bearing Reference	Speed (rpm) up to	Grease (full pack) (kg)	Speed (rpm)		Grease (75% full pack) (kg)	Speed (rpm)		Grease (50% full pack) (kg)	Speed (rpm)		Grease (33% full pack) (kg)	Speed (rpm) over	Grease (25% full pack) (kg)
				from	to		from	to		from	to			
530	01 B 530M	94	5.40	94	187	4.05	187	281	2.70	281	375	1.78	375	1.35
	02 B 530M	94	11.40	94	187	8.55	187	281	5.70	281	375	3.76	375	2.85
	03 B 530M	98	30.00	98	197	22.50	197	295	15.00	295	394	9.90	394	7.50
560	01 B 560M	89	5.40	89	179	4.05	179	268	2.70	268	358	1.78	358	1.35
	02 B 560M	89	11.40	89	179	8.55	179	268	5.70	268	358	3.76	358	2.85
	03E B 560M	89	36.00	89	179	27.00	179	268	18.00	268	358	11.88	358	9.00
580	01 B 580M	86	6.00	86	171	4.50	171	257	3.00	257	342	1.98	342	1.50
	02 B 580M	86	12.60	86	171	9.45	171	257	6.30	257	342	4.16	342	3.15
600	01 B 600M	82	6.00	82	164	4.50	164	246	3.00	246	328	1.98	328	1.50
	02 B 600M	82	12.60	82	164	9.45	164	246	6.30	246	328	4.16	328	3.15
	03E B 600M	86	38.40	86	171	28.80	171	257	19.20	257	342	12.67	342	9.60



# ROUTINE GREASING

Routine greasing frequency depends on temperature, speed and environment. Grease quantities depend on bearing size. Excessive quantities of lubricant should not be used. Particularly at high speeds, this may result in excessive churning and overheating.

Automatic lubrication systems should be metered to deliver grease at an average rate equivalent to the routine greasing periods and quantities specified.

If it can be done safely, routine greasing should occur while the shaft is rotating to help distribute the grease. Do not mix different types of grease in the bearing.

The table below specifies routine greasing intervals. The shortest greasing interval should be selected to which one or more of the conditions in the table apply. If operating conditions fall outside those listed please contact our technical department for a recommended lubrication interval.

Routine greasing frequency	Operating conditions		
	Temperature	Speed dn (mm)	Environment (3)
100 hours	80°C to 175°C	200,000 to 300,000 (1)	very dirty/ submerged
200 hours	60°C to 80°C	100,000 to 200,000	dusty/splashed
400 hours (2)	Below 60°C	up to 100,000	clean/dry

The following table specifies the required quantity of grease at each routine greasing. Note that 2ml is approximately one shot from a conventional side-lever grease gun. Smaller quantities may be delivered using a push-type gun.

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
35	01 B 35M	4
40	01 B 40M	4
45	01E B 45M	4
50	01E B 50M	4
	02 B 50M	4
55	01E B 55M	4
60	01E B 60M	4
	02 B 60M	4
65	01E B 65M	4
	02 B 65M	4
70	01E B 70M	4
	02 B 70M	4
75	100 B 75M	1*
	01E B 75M	4
80	02 B 75M	4
	01E B 80M	4
85	02 B 80M	4
	100 B 85M	1*
90	01E B 85M	4
	02 B 85M	4
95	01E B 90M	4
	02 B 90M	4
100	01E B 95M	4
	100 B 100M	2
	01E B 100M	4
	02 B 100M	4
105	03 B 100M	4
	01E B 105M	4
110	02 B 105M	4
	100 B 110M	2
115	01 B 110M	4
	02 B 110M	4
	03 B 110M	4
120	01 B 115M	4
	02 B 115M	4
125	100 B 120M	4
	01 B 120M	4
	02 B 120M	4
130	03 B 120M	4
	01 B 125M	4
135	02 B 125M	4
	100 B 130M	4
140	01 B 130M	4
	02 B 130M	4
	03 B 130M	4
145	01 B 135M	4
	100 B 140M	4
	01 B 140M	4
150	02 B 140M	4
	03 B 140M	8
	02 B 145M	4
155	100 B 150M	4
	01 B 150M	4
	02 B 150M	4
	03 B 150M	8

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
105	01E B 105M	4
	02 B 105M	4
110	100 B 110M	2
	01 B 110M	4
	02 B 110M	4
115	03 B 110M	4
	01 B 115M	4
120	02 B 115M	4
	100 B 120M	4
125	01 B 120M	4
	02 B 120M	4
	03 B 120M	4
130	01 B 125M	4
	02 B 125M	4
135	100 B 130M	4
	01 B 130M	4
	02 B 130M	4
140	03 B 130M	4
	01 B 135M	4
145	100 B 140M	4
	01 B 140M	4
	02 B 140M	4
150	03 B 140M	8
	02 B 145M	4
155	100 B 150M	4
	01 B 150M	4
	02 B 150M	4
	03 B 150M	8

(1) Up to bearing maximum in case of 100 Series bearings

(2) For EX bearings and GR bearings used for location only (i.e. no nominal thrust load) this may be extended to 1000 hours. For applications where temperature and operating speed allow for a full pack of grease this may be extended to one year for EX bearings and GR bearings used for location only.

(3) For applications where operating speed and temperature allow for a full pack of grease, regreasing can occur every 400 hours regardless of the working environment.

\* May be increased to 2 if speed is less than 100,000dn (mm), or up to 200,000dn (mm) if operating temperature is less than 80°C.





# ROUTINE GREASING

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
155	01 B 155M	4
	02 B 155M	4
160	01 B 600-160M	4
	01 B 160M	4
	02 B 600-160M	4
	02 B 160M	8
170	03 B 160M	8
	01 B 608-170M	4
	01 B 170M	4
	02 B 170M	8
175	03 B 170M	8
	01 B 175M	4
	02 B 175M	8
180	01 B 180M	4
	02 B 180M	8
	03 B 180M	8
190	01 B 190M	4
	02 B 190M	8
	03 B 190M	16
200	01 B 200M	4
	02 B 200M	8
	03 B 200M	16
220	01 B 220M	4
	02 B 220M	8
	03 B 220M	16
230	01 B 230M	4
	02 B 230M	8

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
240	01 B 240M	8
	02 B 240M	8
	03 B 240M	16
260	01 B 1000-260M	8
	01 B 260M	8
	02 B 260M	8
	03 B 260M	16
270	01 B 270M	8
275	01 B 275M	8
280	01 B 280M	8
	02 B 280M	16
	03X B 280M	16
	03E B 280M	16
290	01 B 290M	8
	03 B 290M	16
300	01 B 300M	8
	02 B 300M	16
	03 B 300M	16
320	01 B 320M	8
	02 B 320M	16
	03 B 320M	24
330	01 B 330M	8
	02 B 330M	16
340	01 B 1300-340M	8
	01 B 340M	8
	02 B 340M	16
	03E B 340M	24
350	01 B 350M	8
	02 B 350M	16

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
360	01 B 1400-360M	8
	01 B 360M	8
	02 B 360M	16
	03E B 360M	24
	03X B 360M	24
380	01 B 380M	8
	02 B 380M	16
	03 B 380M	24
390	01 B 390M	16
400	01 B 400M	16
	02 B 400M	16
	03 B 400M	24
420	01 B 420M	16
	02 B 420M	16
	03E B 420M	24
440	01 B 440M	16
	02 B 440M	24
	03E B 440M	32
460	01 B 460M	16
	02 B 460M	24
	03E B 460M	32
	03X B 460M	32
480	01 B 480M	16
	02 B 480M	24
	03X B 480M	32
500	01 B 500M	16
	02 B 500M	24
	03 B 500M	32

Shaft Diam. d	Bearing Reference	Routine Grease Volume (ml)
530	01 B 530M	16
	02 B 530M	24
	03 B 530M	32
560	01 B 560M	16
	02 B 560M	24
	03E B 560M	32
580	01 B 580M	16
	02 B 580M	24
600	01 B 600M	16
	02 B 600M	24
	03E B 600M	32



# WHAT TO DO WITH YOUR USED BEARING

When a bearing reaches the end of its working life, it doesn't have to be discarded without providing further value. Three options for dealing with end-of-life bearings are outlined below.

## Reconditioning

Cooper offer a reconditioning service for larger bearings. A used bearing is thoroughly cleaned and a detailed report prepared on its condition and the required work required to bring it back to an as-new functional condition. Generally a reconditioned bearing will consist of a combination of remachined components of the original bearing and new components to give the correct clearances.

Reconditioning is generally more economical than manufacture of new bearings, depending upon the amount of work required to the subject bearing, for the following bearings:

<b>01 Series:</b>	320mm/13" bore size and over
<b>02 Series:</b>	320mm/13" bore size and over
<b>03 Series:</b>	160mm/6½" bore size and over
<b>04 Series:</b>	all sizes
<b>Thrust bearings:</b>	all sizes

Cooper are also able to recondition radial and thrust cylindrical bearings of non-Cooper manufacture.

## Failure Analysis

Cooper offer a failure analysis service for all sizes of bearing, of any age. Where appropriate, we will offer advice on fitting practices, lubrication regime, or modifications to the mounting arrangements to help improve future bearing life.

Bearings sent for analysis may be reconditioned, recycled or returned as appropriate.

Please inform Cooper if you wish to use this service, before returning bearings to one of our sites. A small charge may be made depending on requirements.

## Recycling

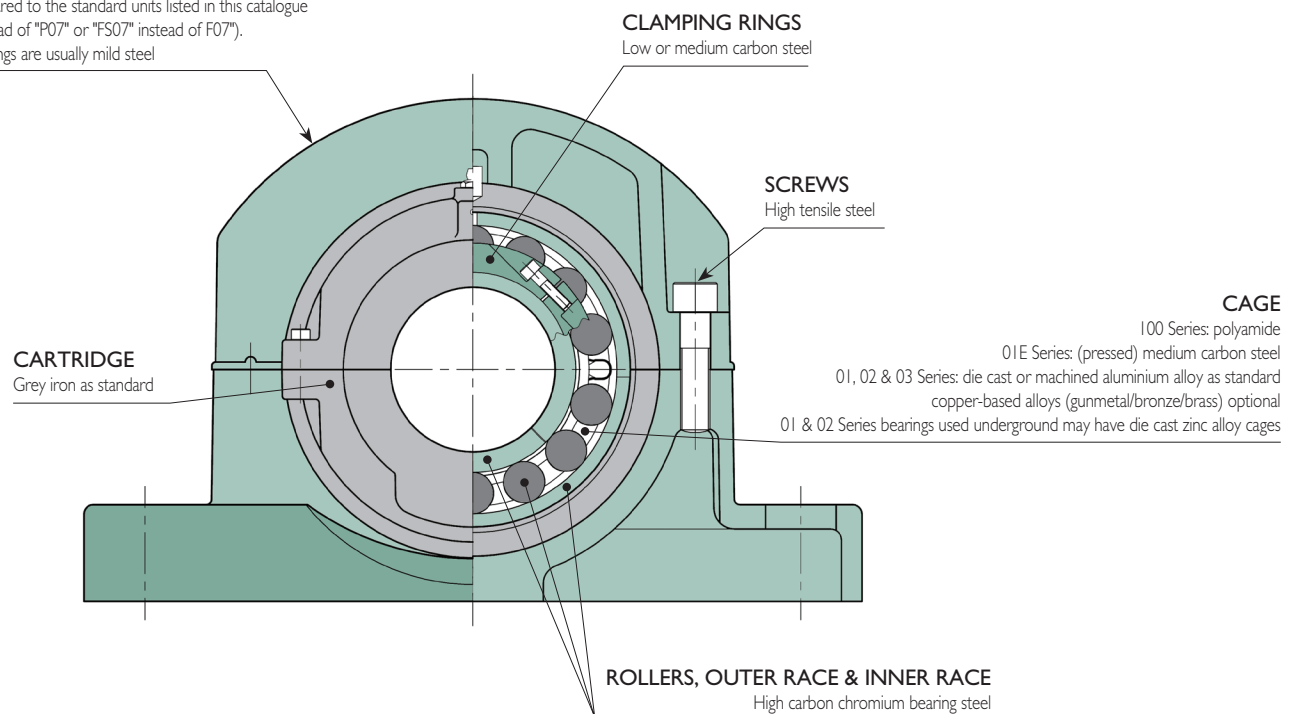
The materials used in a Cooper bearing unit are almost completely recyclable. The diagram below helps to identify the various materials used in standard and popular optional versions of Cooper bearings so that they can be segregated as required.

### OUTER HOUSING

Grey iron or ductile iron as standard.

Cast steel housings will usually have the letter 'S' inserted into their reference compared to the standard units listed in this catalogue (e.g. "PS07" instead of "P07" or "FS07" instead of "F07").

Fabricated housings are usually mild steel



## PROBLEM: OVERHEATING

Possible Cause	Solution
Shaft oversize. Bearing running tight	Provide shaft with correct tolerance. Contact Cooper technical department.
Aluminum triple labyrinth seal rubbing	Seal bore and labyrinth should be greased during installation.
Housing overpacked with grease or oil level too high	Bearing will purge excess grease through seals. Oil lubrication - reduce level to just below cage.
Wrong type of grease or oil causing lubricant breakdown.	Consult reliable lubricant manufacturer for proper type of lubricant or contact Cooper technical department.
Low oil level. Insufficient grease.	Oil level should be just below cage outside diameter. Add proper grease.
Inner race rubbing against seals.	Check clamping ring screws to make sure inner race is tight on the shaft. Make sure the expansion bearing is mounted properly with rollers positioned centrally on outer race.
Incorrect shaft alignment	Recheck alignment.
Bearing selected with inadequate internal clearance for high temperature operation.	Contact Cooper technical department.
Oil lubrication hole blocked. Grease passage blocked.	Inspect and clean holes. Refill to proper level.
Two fixed bearings on common shaft.	Remove one bearing and replace with an expansion bearing.
Pinching of bearing.	Make sure entire area of pedestal base is supported.
Bearing cartridge not aligned.	Lubricate cartridge spherical with anti-seize compound. With pedestal cap in place and cap bolts loose, rotate or run shaft a few revolutions while under load. Re-tighten cap bolts.

## PROBLEM: NOISY BEARING

Possible Cause	Solution
Foreign matter or corrosive agent entering bearing.	Remove and inspect bearing and seals. Clean and re-lubricate bearing and seals.
Pinching of bearing.	Make sure entire area of pedestal base is supported.
Undersize shaft.	Measure shaft for proper fit. Refer to page 14.
Inner race rubbing against seals.	Check clamping ring screws to make sure the inner race is tight on shaft. Make sure the expansion bearing is mounted correctly with roller positioned centrally on the outer race.
Improper mounting of bearing.	Inspect bearing. Check that all match marks coincide. If parts are damaged, replace with new bearing.
Aluminum triple labyrinth seal rubbing	Seal bore and labyrinth should be greased during installation.
Low oil level. Insufficient grease.	Oil levels should be just below cage outside diameter. Add correct grease.

## PROBLEM: NOISY BEARING (CONTINUED)

Possible Cause	Solution
Wrong type of grease or oil causing lubricant breakdown.	See lubrication section or contact Cooper technical department.
Bearing selected with incorrect internal clearance.	Contact Cooper technical department.
Shaft does not contain a fixed bearing.	Remove one expansion bearing and replace with fixed bearing.
Two fixed bearings on common shaft.	Remove one and replace with an expansion bearing.
Unbalanced load.	Re-balance machine.
Bearing exposed to vibration while machine is idle.	Examine bearing for brinelling separated by the distance equal to spacing of rollers. Replace bearing. Rotate shaft at least once every two weeks to prevent brinelling.

## PROBLEM: VIBRATION

Possible Cause	Solution
Foreign matter or corrosive agent entering bearing.	Remove and inspect bearing and seals. Clean and re-lubricate bearing and seals.
Pinching of bearing.	Make sure the entire area of the pedestal base is supported.
Shaft undersize.	Measure shaft for proper fit. Refer to page 14.
Unbalanced load.	Re-balance machine.
Flat on roller due to skidding.	Replace bearing. Consult Cooper technical department if problem persists.
Improper mounting of bearing.	Inspect bearing. Check that all match marks coincide. If parts are damaged, replace with new bearing.
Bearing cartridge not aligned.	Lubricate cartridge spherical with anti-seize compound. With pedestal cap in place and cap bolts loose, rotate or run shaft a few revolutions while under load. Re-tighten cap bolts.
Excessive clearance in bearing resulting in vibration.	Use bearing with recommended internal clearance.
Failure to clean bearing before assembly.	Remove and carefully clean bearing and re-assemble with correct lubrication.

## PROBLEM: BEARING LOOSE ON SHAFT

Possible Cause	Solution
Clamping rings not tightened sufficiently.	Make sure clamping rings are fully tightened. Refer to assembly procedure.
Undersize shaft.	Measure shaft for proper fit. Refer to page 14.
Shaft out of round or not parallel.	Measure shaft. Refer to page 14.

