

Self-Lube® product range

NSK manufactures several ranges of mounted units. These include Self-Lube®, our recognised standard, and recently introduced ranges such as Silver-Lube®, Life-Lube® and Molded-Oil™ units. In each type, there are two basic components, the insert and the housing.

Self-Lube® bearing inserts

The Self-Lube® bearing insert, commonly known as a wide inner ring bearing, is designed to suit the wide range of housings offered by NSK in the Self-Lube® bearing family and is also suitable for applications where the user's own housing is preferred.

They are basically deep-groove ball bearings, to the popular 6200 series configuration, with integral design features making them more functional and versatile than standard ball bearings. The radial internal clearance is C3 for standard bearing inserts and bearings can be offered with either parallel or spherical outside diameter outer rings with the latter being the type fitted in the bearing unit. The integral design features of the bearing insert, such as shaft locking, sealing and lubrication, are explained in the following pages.

Self-Lube® bearing units

The range of Self-Lube® bearing units offers a wide choice of cast iron, pressed steel, synthetic rubber, thermoplastic or stainless steel housings fitted with spherical outside diameter Self-Lube® bearing inserts. They will generally accommodate initial housing misalignment up to 0.030 radians but are not recommended for running misalignment in excess of 0.001 radians.

The general housing types are pillow blocks, flange units, take-up units, cartridge units and hanger units. Choice is very much determined by the requirements of the application, although the aesthetic appearance of the machine design is often an important consideration. Self-Lube® units have been designed to meet the needs of both criteria.

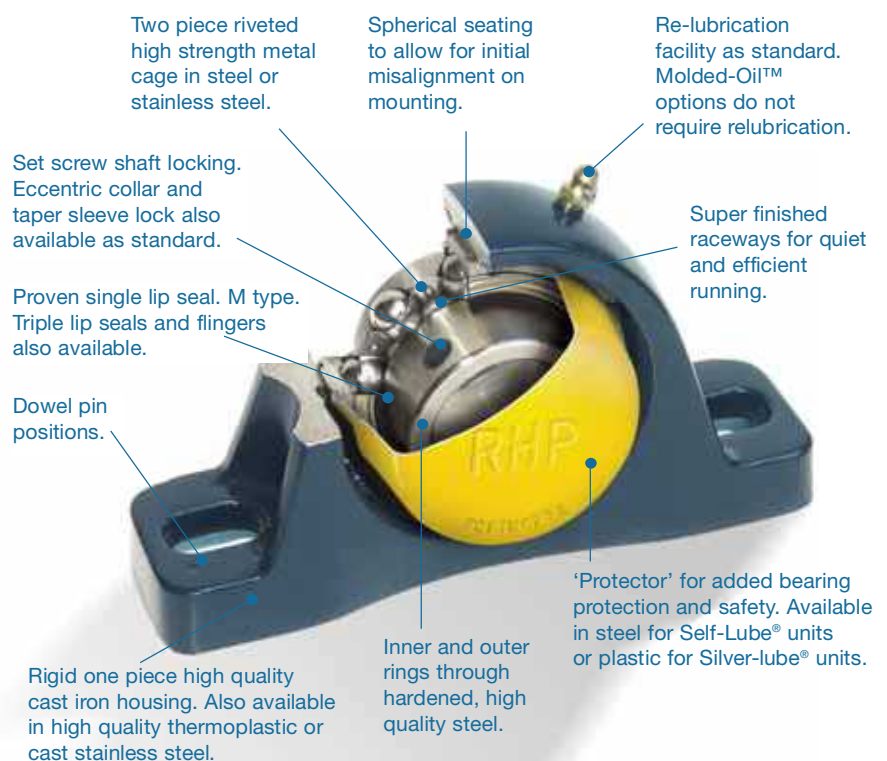
- Cast iron unit castings are made from high-quality cast iron, and finished on unmachined surfaces with an electrostatic air-drying paint.
- Pressed steel housings are made from mild steel strip, and are zinc plated.
- Thermoplastic housings are moulded in highgrade PBT, a high quality thermoplastic polyester resin.
- Stainless steel housings are made from austenitic stainless steel castings (SCS13).

Additional products

NSK recognises the need for 'tailor made' solutions and is always willing to help customers who have a requirement for something out of the ordinary.

Dynamic load ratings

The NSK dynamic load ratings given in this catalogue and the relationship between these and bearing fatigue life are based on ISO standard 281.



Bearing load ratings and endurance

Basic dynamic radial load rating C_r

This is defined as the load that can be applied to the bearing to give a basic L_{10} rating life of one million revolutions. This is the life associated with 90% reliability which has been found by experience to be acceptable for normal engineering bearing applications. The majority of the bearings attain a much longer life and the median life is approximately five times the L_{10} life. Ratings for each series are given in the bearing tables and are used to calculate life for radial loads of constant magnitude and direction.

Equivalent dynamic radial load P_r

For applications where axial and radial loads are present they must be converted into a single equivalent radial load P_r and calculated as follows, where:

F_r = actual radial load (N)
 F_a = actual axial load (N)
 Y = axial factor from table 18.2
 C_{or} = basic static load rating
 C_r = dynamic radial load rating
 f_o = axial load factor

Note: Axial load F_a must not exceed 0.5 C_{or} . Select f_o from table 18.1 for the appropriate bearing insert.

Calculate $\frac{f_o F_a}{C_{or}}$ and obtain the value of Y from table 18.2.

Calculate P_r where:

$$P_r = F_r$$

or

$$P_r = 0.56 F_r + Y F_a$$

Use whichever P_r value is the greatest.

Relationship between load and life

Having determined the equivalent load P_r the nominal L_{10} bearing life is calculated as follows:

$$L_{10} \text{ life in hours} = \left(\frac{C_r}{P_r} \right)^3 \times \frac{10^6}{60n}$$

where n = bearing operating speed (rev/min).

Alternatively, by using the loading ratio $\frac{C_r}{P_r}$ the bearing L_{10} life can be estimated by reading off directly from the tables on page 9 under the appropriate speed column.

Basic static load rating C_{or}

This value is calculated in accordance with ISO standard 76. Ratings for each series are given in the bearing tables.

Static equivalent radial load P_{or}

When static axial and radial loads are applied to a bearing these must be converted to an equivalent static radial load P_{or} where:

F_{or} = actual static radial load (N)
 F_{oa} = actual static axial load (N)

Calculate P_{or} where:

$$P_{or} = F_{or}$$

or

$$P_{or} = 0.6 F_{or} + 0.5 F_{oa}$$

Use whichever P_{or} value is greater, but this value **should not exceed** the bearing static radial load rating C_{or} .

Service factors

It is customary when calculating bearing life to include application factors which allow for fluctuations in loading that occur in service, and from experience the following may be used as a guide.

For steady and light shock loads multiply load by 1.2 to 1.5.

For moderate shock loads multiply load by 1.7 to 2.0. When selecting the size of bearing for a given load, the calculated life should conform to the L_{10} lives shown in the next column:

- Machines in use 8 hours/day – not fully utilised – 10,000 to 20,000 hours
- Machines in use 8 hours/day – fully utilised – 20,000 to 30,000 hours.
- Machines in use 24 hours/day – 40,000 to 80,000 hours.
- Machines in seasonal use – 4,000 to 8,000 hours.

Limiting loads

The axial load F_{oa} must not exceed half the basic static load rating C_{or} . Housing strengths must also be considered as a limiting factor - see detail on page 19.

Table 18.1

Basic bearing insert	f_o
1017	13.1
1020	13.1
1025	13.9
1030	13.8
1035	13.8
1040	14.0
1045	14.1
1050	14.4
1055	14.3
1060	14.3
1065	14.4
1070	14.4
1075	14.7
1080	14.6
1085	14.7
1090	14.5
3095	13.6

Table 18.2

$\frac{f_o F_a}{C_{or}}$	Y
0.172	2.30
0.345	1.99
0.689	1.71
1.03	1.55
1.38	1.45
2.07	1.31
3.45	1.15
5.17	1.04
6.89	1.00

Examples of bearing calculations

Example 1

What nominal life can be obtained from NP55 with a steady radial load $F_r = 3900\text{N}$ at speed of 1500 rev/min? The dynamic load rating C_r of the unit from page 25 is 43500N. Since the bearing is not subject to axial load the equivalent load $P_r = F_r$ according to the formula on page 7. Therefore applying the service factor of 1.2 for a steady load.

$$P_r = F_r \times 1.2 = 3900 \times 1.2 = 4680\text{N}.$$

From page 7,
 L_{10} life in hours

$$\begin{aligned} &= \left(\frac{C_r}{P_r} \right)^3 \times \frac{10^6}{n \times 60} \\ &= \left(\frac{43500}{4680} \right)^3 \times \frac{10^6}{1500 \times 60} \\ &= 8923 \text{ hours} \end{aligned}$$

Alternatively, using the loading ratio tables on page 9 an approximate life can be obtained by locating the nearest $\frac{C_r}{P_r}$ value in the appropriate rev/min column.

$$\text{Therefore } \frac{C_r}{P_r} = \frac{43500}{4680} = 9.29$$

Under the 1500 rev/min column the nearest $\frac{C_r}{P_r}$ value is 9.65 which gives an approximate life of 10000 hours.

Example 2

With a radial load $F_r = 2940\text{N}$ and an axial load $F_a = 1470\text{N}$ at 300 rev/min with moderate shock present, what nominal L_{10} life can be obtained from unit reference SF40?

The dynamic radial load rating C_r of the unit from page 39 is 29100N and the static load rating C_{or} is 19900N. Since the bearing is subject to radial and axial loads we have to establish the equivalent load P_r according to page 7.

First, we establish the value of $\frac{f_o F_a}{C_{or}}$

$$\frac{f_o F_a}{C_{or}} = \frac{14.0 \times 1470}{19900} = 1.03$$

Using this value, from table 18.2 we establish a value for $Y = 1.55$. From page 7 we then calculate the value of P_r

$$P_r = 2940\text{N}$$

or

$$P_r = 0.56 (2940) + 1.55 (1470) = 3925\text{N}$$

Using the greater value of P_r and applying an application factor of 1.7 (page 7) for moderate shock loads:

$$\begin{aligned} P_r &= 3925 \times 1.7 \\ &= 6673\text{N} \end{aligned}$$

From page 7:

L_{10} life hours

$$\begin{aligned} &= \left(\frac{C_r}{P_r} \right)^3 \times \frac{10^6}{60n} \\ &= \left(\frac{29100}{6673} \right)^3 \times \frac{10^6}{60 \times 300} \\ &= 4607 \text{ hours} \end{aligned}$$

Alternatively, using the loading ratio tables on page 9, an approximate life can be obtained by locating the nearest C_r/P_r value in the appropriate rev/min column. Therefore, $C_r/P_r = 29100/6673 = 4.36$. Under the 300 rev/min column page 9 the nearest value is 4.48 which gives an approximate life of 5000 hours.

Housing strength

To check the housing strength for example 2 when the axial load $F_a = 1470\text{N}$ and applying an application factor of 1.7 then:

$$\text{Axial load} = 1470 \times 1.7 = 2499\text{N}$$

From page 19 we see that the maximum axial loads for the above unit are:

$$0.45 C_{or} \text{ in one direction, and}$$

$$0.25 C_{or} \text{ in the opposite direction.}$$

Calculating these two maximum axial loads that may be applied to housing:

$$0.45 \times 19900 = 8955$$

$$0.25 \times 19900 = 4975$$

From the above it can be seen that the housing will support the axial load of 2499N in either direction.

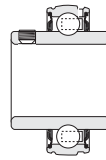
Therefore, the unit above is satisfactory for the loading conditions stated.

Note It is advisable to shoulder the shaft for high axial loads.

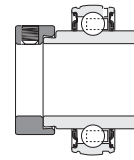
Standard unit references

Insert Type

Housing Type



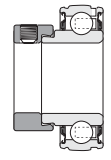
1000G



1000DECG



1200G



1200ECG

Cast iron one piece



Page

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24
30
32NP
SL
MPNP-DEC
SL-DECNP-A
SL-ANP-EC
SL-EC36
36SNP
CNPSNP-DEC
CNP-DECSNP-A
CNP-ASNP-EC
CNP-EC38
40SF
MSF

SF-DEC

SF-A

SF-EC

44
46SFT
MSFT

SFT-DEC

SFT-A

SFT-EC



50

LFTC

LFTC-DEC

LFTC-A

LFTC-EC



52

FC

FC-DEC

FC-A

FC-EC



54

MFC

56
58ST
MST

ST-DEC

ST-A

ST-EC



62

BT

BT-A

BT-EC

64
66SLC
MSC

SLC-DEC

SLC-A

SLC-EC

68
68SCHB
SCH

Pressed steel two piece



70

SLFE

SLFE-DEC

SLFE-A

SLFE-EC



72

SLFT

SLFT-DEC

SLFT-A

SLFT-EC



74

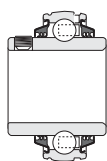
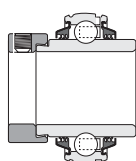
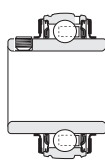
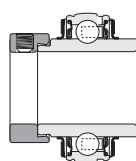
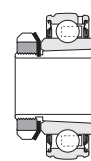
SLFL

SLFL-DEC

SLFL-A

SLFL-EC

76
78LPB
LPBRLPB-DEC
LPBR-DECLPB-A
LPBR-ALPB-EC
LPBR-EC

**T1000G****T1000DECG****1000GFS****1000DECGFS****1000KG**

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Page

TNP
TSL
TMPTNP-DEC
TSL-DECNP-FS
SL-FS
MP-FSNP-DECFS
SL-DECFSNP1000-K
MP1000-K

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TSNP
TCNPTSNP-DEC
TCNP-DECSNP-FS
CNP-FSSNP-DECFS
CNP-DECFSTSF
TMSF

TSF-DEC

SF-FS
MSF-FS

SF-DECFS

MSF1000-K

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TSFT
TMSFT

TSFT-DEC

SFT-FS
MSFT-FS

SFT-DECFS

MSFT1000-K

48

TLFTC

TLFTC-DEC

LFTC-FS

LFTC-DECFS

TFC

TFC-DEC

FC-FS

FC-DECFS

TMFC

MFC-FS

TST
TMST

TST-DEC

ST-FS
MST-FS

ST-DECFS

MST1000-K

60

TBT

BT-FS

TSLC
TMSC

TSLC-DEC

SLC-FS
MSC-FS

SLC-DECFS

TSCHB
TSCHSCHB-FS
SCH-FS

TSLFE

TSLFE-DEC

SLFE-FS

SLFE-DECFS

TSLFT

TSLFT-DEC

SLFT-FS

SLFT-DECFS

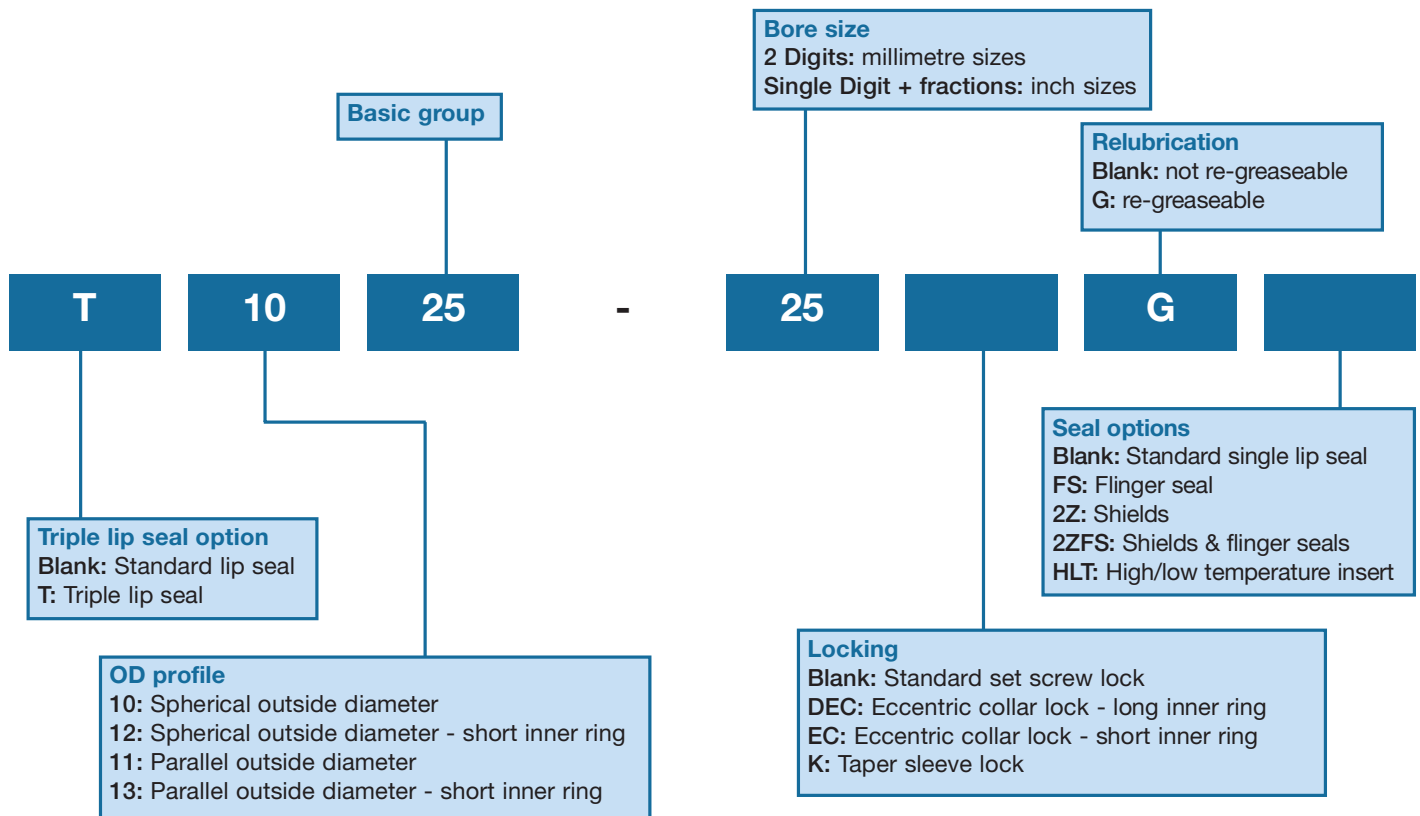
TSLFL

TSLFL-DEC

SLFL-FS

SLFL-DECFS

Standard Self-Lube® insert references



List of common prefixes and suffixes

Prefixes

- B** Unit or bearing insert supplied without locking collar.
- J** Grease groove on the side of the bearing insert nearest to the locking device.
- T** Triple lip sealed bearing insert.

Suffixes

- A** Unit fitted with set screw lock insert with flush inner ring on one side.
- C4** Radial clearance greater than C3.
- CG** Parallel outside diameter insert with grease groove and snap ring fitted.
- DEC** Eccentric collar lock with extended inner ring.
- DL** Double locking inner ring – 4 set screws (2 each end).
- EC** Eccentric collar lock with flush inner ring on one side.
- FS** Bearing insert fitted with flinger seals.
- G** Bearing insert having re-lubrication facility.
- HLT** High and low temperature bearing insert.
- K** Bearing insert with tapered bore.
- L** Larger than normal unit for the basic bore size.
- P** Housing fitted with 1/8" BSP grease nipple (standard is 1/4" UNF).
- R** Smaller than normal unit for the basic bore size.

Self-Lube® product range

Under the heading of Self-Lube® bearings there are two basic products: the Self-Lube® bearing insert and the Self-Lube® bearing unit.

Self-Lube® bearing unit

The range of Self-Lube® bearing units offer a wide choice of cast iron, pressed steel or synthetic rubber housings fitted with the full range of spherical outside diameter Self-Lube® bearing inserts. They will accommodate initial housing misalignment up to 0.030 radians but are not recommended for running misalignment in excess of 0.001 radians.

The general housing types are pillow blocks, flange units, take-up units, cartridge units and hanger units. Choice is very much determined by the requirements of the application, although the aesthetic appearance of the machine design is often an important consideration. Self-Lube® units have been designed to meet the needs of both criteria.

The castings are made from high-quality cast iron, and finished on unmachined surfaces with an electrostatic air-drying paint.

Pressed steel housings are made from mild steel strip, and are zinc plated. Rubber housings are moulded in antistatic nitrile rubber.

Self-Lube® Protector

The Self-Lube® Protector is designed to protect the machine operator from the dangers of rotating shaft ends and the external surfaces of the bearing from contamination.

The protector is made from good quality mild steel and coated with enamel paint making it robust, attractive and long lasting. It is easy to fit and can be removed without breakage or deformation thus allowing it to be refitted time after time.

Standard Self-Lube® inserts with spherical outside diameters have a 'groove' in the outer ring on the opposite side from the grease groove. The protector has two claws which locate through the casting loading slots into the 'groove' in the outer ring. This provides a very secure lock and makes the Protector difficult to dislodge. The user of Self-Lube® units is not required to purchase special bearings or provide any additional locking device in order to obtain this secure safety feature.

The Protector can be removed by inserting a form of lever device into a small hole in one of the claws and exerting slight pressure outwards. This disengages the claw from the outer ring 'groove'. A replaceable cover for the hole is provided.



Sealing

Single lip seal

The standard Self-Lube® sealing arrangement consists of a nitrile and fabric-sealing element sandwiched between two metal pressings. This has been successfully proven over the years on a wide variety of applications.

The 'S' type seal incorporates further design developments. The nitrile seal (black in colour) is bonded to a strong steel former which is firmly secured in the bearing outer ring. The flexible sealing lip contacts the fine ground finish of the inner ring to give low friction with effective sealing.

Flinger seal

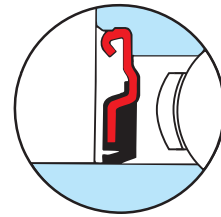
Where extra protection is required without loss of bearing catalogue speed, the 'Flinger seal' is ideal. It consists of a steel flange to which is bonded a flexible nitrile sealing lip. They are offered for the 1000G and 1000DECG types and are identified with the suffix FS (e.g. 1025-25GFS,NP25FS). The flinger is fitted to the inner ring.

Triple lip seal

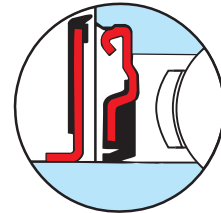
For applications with a degree of contamination, the specially developed RHP triple lip seal is recommended. It consists of a one-piece moulded nitrile seal with three sealing lips, bonded to a protective steel outer pressing which is strongly secured in the outer ring making a highly efficient sealing arrangement. It is not recommended for high speeds. See pages 88 to 90.

Lubrication

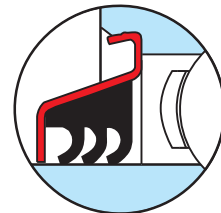
Unit	Unit temperature range	Grease	Supplier
Standard insert	-20°C to +110°C	Alvania S2	Shell
HLT insert	-40°C to 180°C	Kluberquiet BQH72-102	Kluber



Single lip seal (standard)



Single lip seal + flinger seal



Triple lip seal

Shaft locking arrangements

Set screw lock

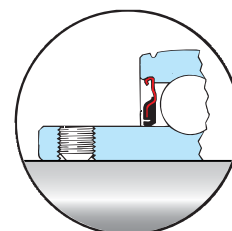
This locking arrangement consists of two knurled cup-point, self-locking, socket-head set screws fitted in the extended inner ring.

For normal loads and moderate speeds simply mount the bearing unit into position and tighten down the set screws to the recommended torque value.

Additional security can be achieved by spot drilling the shaft to accommodate the set screw point. When spot drilling, first remove the set screw and locate the position on the shaft. Select a drill the size of the inner ring threads minor diameter, and drill through this hole into the shaft to the depth of the drill point.

Replace the set screw and tighten onto the shaft in the normal manner.

The recommended tightening torques for the set screws are given on page 18.

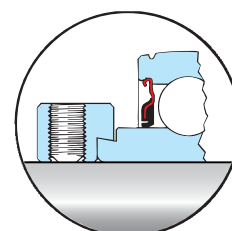


Set screw lock

Eccentric collar lock

This type of lock consists of an eccentric diameter formed on the extended inner ring of the bearing which engages a similarly formed eccentric diameter in the bore of a separate collar. Locking is achieved by turning the collar in the direction of the shaft rotation until the eccentric diameters of both collar and inner ring are fully engaged.

The collar is provided with a blind hole to facilitate tightening when locking the bearing to the shaft. The set screw when tightened to the recommended torque values on page 18 prevents the collar 'backing off' in service.



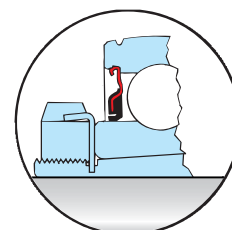
Eccentric collar lock

Taper sleeve lock

This locking arrangement, which incorporates a standard taper adapter sleeve, locknut and lock washer, is recommended when a positive concentric (shaft) lock is required.

When fitting the bearing to the shaft, care must be taken to ensure that the locknut is not over-tightened as this can eliminate the bearing internal clearance, resulting in premature failure. A lockwasher is provided which prevents the locknut 'backing off' when one of the tabs is engaged with the corresponding notch in the locknut. (See below for fitting instructions).

The recommended tightening torques for the locknuts are given on page 18.



Taper sleeve lock

Mounting Self-Lube® adapter sleeve units

1. First bolt the Self-Lube® housing to the equipment and clean the shaft and sleeve bore of any oil or grease.
2. Position the shaft within the unit and tighten up the locknut by hand. If the sleeve assembly turns on the shaft tap the sleeve into the bearing to give a positive grip. Tighten locknut to recommended torque value given on page 18.
3. Where torque spanner facilities are not available a *blunt* drift and *small* hammer may be used to tighten the nut.
4. Check that the bearing rotates freely, to ensure that the internal clearance has not been totally removed and that preload has been avoided.
5. Finally, secure the nut with the appropriate tab on the locking washer. Tighten the nut slightly if necessary but never back the nut off.
6. After 100 hours running it is advisable to check the tightness of the locknut.

Set screw thread and tightening torques

Set screw thread and size

Basic bearing insert reference	Series			
	1000G, 1100, 1200G, 1300		1000DECG, 1100DEC, 1200ECG, 1300EC	
	Inch bore diameters	Metric bore diameters	Inch bore diameters	Metric bore diameters
1017	¼UNF	M6 x 0.75	¼UNF	M6 x 0.75
1020	¼UNF	M6 x 0.75	¼UNF	M6 x 0.75
1025	¼UNF	M6 x 0.75	¼UNF	M6 x 0.75
1030	¼UNF	M6 x 0.75	⅝UNF	M8 x 1.00
1035	⅝UNF	M8 x 1.00	⅝UNF	M8 x 1.00
1040	⅝UNF	M8 x 1.00	⅝UNF	M10 x 1.25
1045	⅝UNF	M8 x 1.00	⅝UNF	M10 x 1.25
1050	⅝UNF	M10 x 1.25	⅝UNF	M10 x 1.25
1055	⅝UNF	M10 x 1.25	⅝UNF	M10 x 1.25
1060	⅝UNF	M10 x 1.25	⅝UNF	M10 x 1.25
1065	⅝UNF	M10 x 1.25	⅝UNF	M10 x 1.25
1070	⅞UNF	M12 x 1.50	⅝UNF	M10 x 1.25
1075	⅞UNF	M12 x 1.50	⅝UNF	M10 x 1.25
1080	⅞UNF	M12 x 1.50	–	–
1085	⅞UNF	M12 x 1.50	–	–
1090	1½UNF	M12 x 1.50	–	–
3095	⅝UNF	M16 x 1.50	–	–

Set screw tightening torques and maximum axial loads

Set screw size	Socket/Allen key size (across flats)	Recommended maximum tightening torque		Set screw maximum axial load	
		newton metres (Nm)	lbf-inches	newtons (N)	lbf
¼UNF	⅛"	6.8	60	2500	560
⅝UNF	⅜"	12.4	110	3500	785
⅝UNF	⅜"	22.6	200	4500	1010
⅞UNF	7/32"	31.6	280	7500	1685
1½UNF	¼"	45.2	400	9000	2025
M6 x 0.75	3mm	5.7	50	2500	560
M8 x 1.00	4mm	12.4	110	3500	785
M10 x 1.25	5mm	27.1	240	5000	1235
M12 x 1.50	6mm	38.4	340	8000	1800

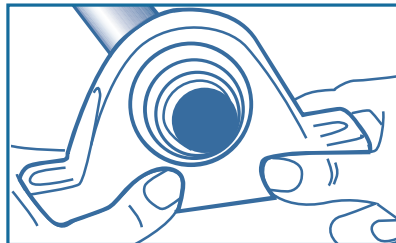
Note: For axial loads in excess of the values listed a shouldered shaft against the face of the inner ring is recommended.

Recommended tightening torques for adapter sleeve units

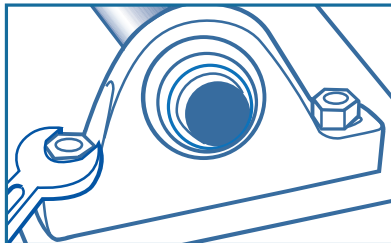
Sleeve bore size	Tightening torques	
	Nm	lbf-ins
20mm, ¾"	30	265
25mm, 1⅝", 1"	40	355
30mm, 1⅞", 1⅝"	50	440
35mm, 1¼", 1⅝"	60	530
40mm, 1⅞", 1½"	65	575
45mm, 1⅞", 1¾"	75	660
50mm, 1⅞", 2"	85	750

Mounting instructions for Self-Lube® bearing units

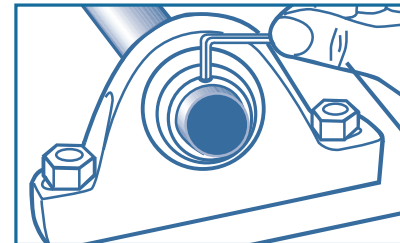
Self-Lube® set screw locking arrangement units



1. Relieve set screws clear of the bore and slide bearing onto the shaft.

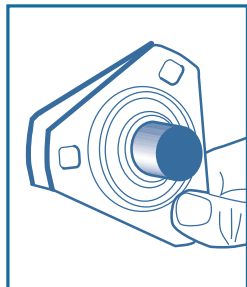


2. Bolt the unit down on to a flat surface but do not over-tighten.

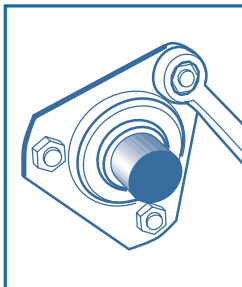


3. Tighten set screws to recommended torque.

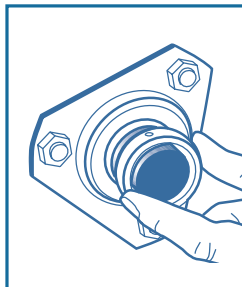
Self-Lube® eccentric collar locking arrangements units



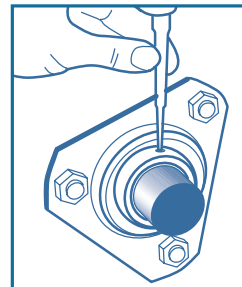
1. Assemble bearing and housing and slide onto the shaft. Do not engage collar.



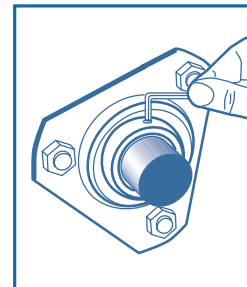
2. Lightly tighten bolts, repeat at other end of shaft and then finally tighten bolts on both sides.



3. Engage the eccentric collar in direction of shaft rotation.



4. Tighten collar with drift pin and small hammer.



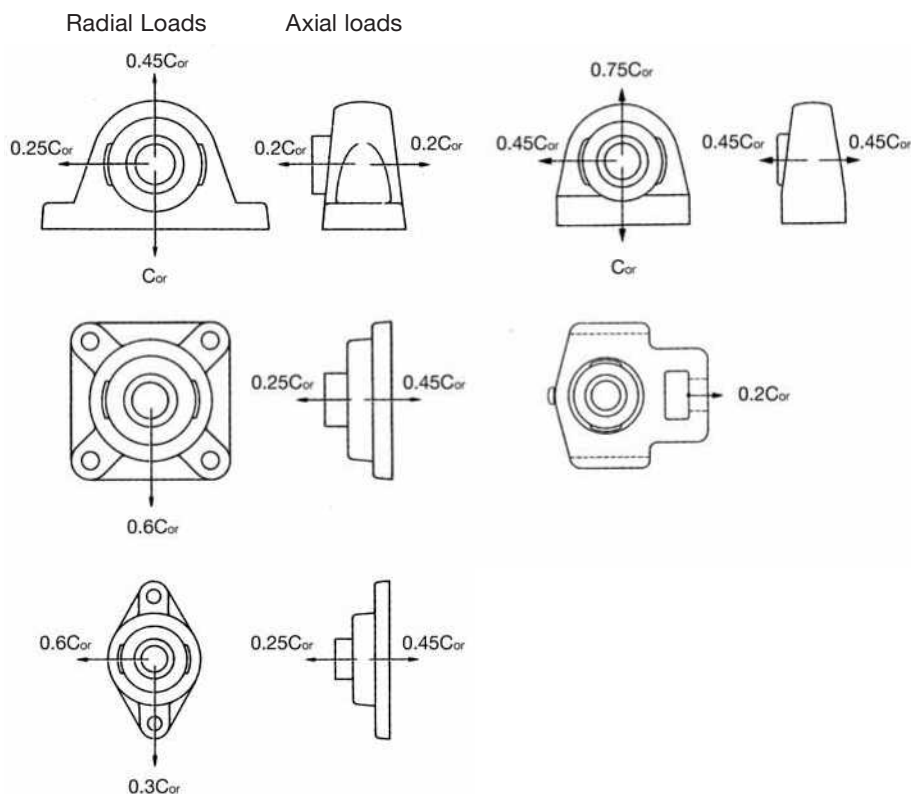
5. Tighten collar set screw to recommended torque.

Maximum recommended steady housing loads

The maximum loads shown adjacent are given as a proportion of the static load rating (C_{or}) of the bearing insert. Where the value of the axial load exceeds the set screw maximum axial holding load listed on page 18, a shoulder on the shaft must be provided against the face of the inner ring.

For shock load conditions additional safety factors must be applied.

Housing strength limits



Tolerances and speeds

Inner ring bore tolerances - Set screw and eccentric collar types

Nominal bore diameter d				Tolerances			
mm above	incl.	inch above	incl.	high	low	high	low
10	18	0.3937	0.7087	+15	0	+6	0
18	31.750	0.7087	1.2500	+18	0	+7	0
31.750	50.800	1.2500	2.0000	+21	0	+8	0
50.800	80	2.0000	3.1496	+24	0	+9	0
80	100	3.1496	3.9370	+28	0	+11	0

Outer ring outside diameter tolerances

Nominal outside diameter d		Tolerances			
mm above	incl.	0.001mm units		0.0001 inch units	
		high	low	high	low
30	50	0	-11	0	-4
50	80	0	-13	0	-5
80	120	0	-15	0	-6
120	150	0	-18	0	-7
150	180	0	-25	0	-10
180	250	0	-30	0	-12

Housing tolerances for parallel outside diameter inserts - series 1100, 1100DEC, 1300 and 1300EC

Nominal housing bore	Stationary outer ring				Rotating outer ring			
	Housing tolerance ISO H7				Housing tolerance ISO N7			
	0.001mm units		0.0001 inch units		0.001mm units		0.0001 inch units	
	high	low	high	low	high	low	high	low
40	+25	0	+10	0	-8	-33	-3	-13
47	+25	0	+10	0	-8	-33	-3	-13
52	+30	0	+12	0	-9	-39	-4	-15
62	+30	0	+12	0	-9	-39	-4	-15
72	+30	0	+12	0	-9	-39	-4	-15
80	+30	0	+12	0	-9	-39	-4	-15
85	+35	0	+14	0	-10	-45	-4	-18
90	+35	0	+14	0	-10	-45	-4	-18
100	+35	0	+14	0	-10	-45	-4	-18
110	+35	0	+14	0	-10	-45	-4	-18
120	+35	0	+14	0	-10	-45	-4	-18
125	+40	0	+16	0	-12	-52	-5	-20
130	+40	0	+16	0	-12	-52	-5	-20
140	+40	0	+16	0	-12	-52	-5	-20
150	+40	0	+16	0	-12	-52	-5	-20
160	+40	0	+16	0	-12	-52	-5	-20

Shaft tolerances and permissible speeds

Basic bearing insert	Shaft dia.		Max. speed rev/min	High loads - high speeds				Max. speed rev/min	Normal applications				Max. speed rev/min	Light loads - low speeds			
				Shaft tolerance ISO h6					Shaft tolerance ISO h7					Shaft tolerance ISO h9			
	mm	inches		0.001mm units high	low	0.0001 inch units high	low		0.001mm units high	low	0.0001 inch units high	low		0.001mm units high	low	0.0001 inch units high	low
1017	12-17	½-1¼ ₁₆	7000	0	-11	0	-4	5000	0	-18	0	-7	2000	0	-43	0	-17
1020	20	¾	6700	0	-13	0	-5	4200	0	-21	0	-8	1700	0	-52	0	-20
1025	25	1¾ ₁₆ -1	6250	0	-13	0	-5	3600	0	-21	0	-8	1350	0	-52	0	-20
1030	25-30	7⁄8-1¼	5300	0	-13	0	-5	3100	0	-21	0	-8	1100	0	-52	0	-20
1035	30-35	1⅛-1⅞ ₁₆	4500	0	-16	0	-6	2700	0	-25	0	-10	900	0	-62	0	-24
1040	35-40	1⅜-1⅞ ₁₆	4000	0	-16	0	-6	2400	0	-25	0	-10	750	0	-62	0	-24
1045	40-45	1½-1¾	3700	0	-16	0	-6	2200	0	-25	0	-10	600	0	-62	0	-24
1050	45-50	1⅝-2	3400	0	-16	0	-6	1950	0	-25	0	-10	500	0	-62	0	-24
1055	50-55	1⅞-2⅜ ₁₆	3100	0	-19	0	-7	1800	0	-30	0	-12	450	0	-74	0	-29
1060	55-60	2⅛-2⅞ ₁₆	2800	0	-19	0	-7	1600	0	-30	0	-12	400	0	-74	0	-29
1065	65	2½	2600	0	-19	0	-7	1500	0	-30	0	-12	350	0	-74	0	-29
1070	60-70	1⅞-2¼ ₁₆	2450	0	-19	0	-7	1400	0	-30	0	-12	300	0	-74	0	-29
1075	65-75	2¼ ₁₆ -2⅝ ₁₆	2300	0	-19	0	-7	1300	0	-30	0	-12	280	0	-74	0	-29
1080	75-80	2⅝ ₁₆ -3¼	2150	0	-19	0	-7	1200	0	-30	0	-12	250	0	-74	0	-29
1085	80-85	3⅞ ₁₆ -3⅞ ₁₆	2000	0	-22	0	-9	1100	0	-35	0	-14	220	0	-87	0	-34
1090	85-90	3⅞ ₁₆ -3½	1900	0	-22	0	-9	1050	0	-35	0	-14	200	0	-87	0	-34
3095	95-100	3 15⁄16-4	1600	0	-22	0	-9	1000	0	-35	0	-14	180	0	-87	0	-34

For most applications the standard set screw lock is more than satisfactory. Whenever eccentric collar units are used it is recommended that shaft tolerances in the high loads column be adopted. Whenever taper adapter sleeve locking arrangements are used, shaft tolerances in the light loads column can be adopted. When operating conditions are very severe (for example, in case of heavy vibration or shock) a light interference fit may be required between the shaft and bearing bore diameter.

Housing tolerances for bearing units - series FC, MFC, SLC and MSC

Bearing unit reference	Housing tolerance	
	Stationary housing	Rotating housing
SLC MSC	ISO H7	ISO N7
FC MFC	ISO H7	ISO H7