# Stainless Square Flanged Bearing
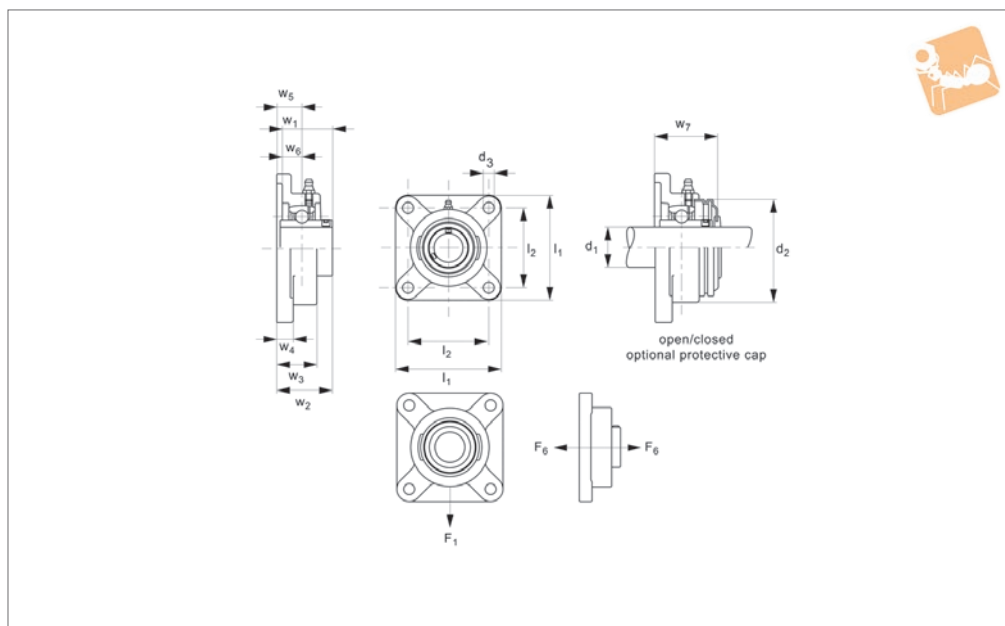## four point flange



## L1872

## Material

Stainless steel (AISI 304), with smooth surfaces. Bearing stainless steel (440C) with 2RS seals, lubricated with food grade grease (USDA approved).

## Technical Notes

Self-aligning bearing units.
Temperature range for bearings: -15°C to +120°C.
Resistant to a moisture and a wide range of aggressive chemicals.
For optional shaft end caps add suffixes:
-CO for one open protective cap (with seal) for through shafts
-CC for closed protective cap for shaft ends.

## Tips

Shaft retention with two set screws (at 120° offset).
Used with h6 tolerance shafts (see our part no.s L1770-L1776).
Maximum housing loads measured @ 20°C.

| Order No. | $d_1$ for h6 | $l_1$ | $d_2$ | $d_3$ | $l_2$ | $w_1$ | $w_2$ +0.3\|-0 | $w_3$ | $w_4$ | $w_5$ | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L1872.012 | 12 | 86 | 12 | 64 | 31.0 | 33.3 | 25.5 | 12.0 | 15 | 0.66 | 54 |
| L1872.015 | 15 | 86 | 12 | 64 | 31.0 | 33.3 | 25.5 | 12.0 | 15 | 0.64 | 54 |
| L1872.017 | 17 | 86 | 12 | 64 | 31.0 | 33.3 | 25.5 | 12.0 | 15 | 0.63 | 54 |
| L1872.020 | 20 | 86 | 12 | 64 | 31.0 | 33.3 | 25.5 | 12.0 | 15 | 0.61 | 0.71 |
| L1872.025 | 25 | 95 | 12 | 70 | 34.1 | 35.8 | 27.0 | 14.0 | 16 | 0.82 | 60 |
| L1872.030 | 30 | 108 | 12 | 83 | 38.1 | 40.2 | 30.5 | 14.0 | 18 | 1.31 | 70 |
| L1872.035 | 35 | 116 | 14 | 92 | 42.9 | 44.4 | 33.5 | 14.5 | 19 | 1.41 | 80 |
| L1872.040 | 40 | 130 | 16 | 102 | 49.2 | 51.2 | 36.0 | 14.5 | 21 | 1.89 | 88 |
| L1872.045 | 45 | 137 | 16 | 105 | 49.2 | 52.2 | 38.0 | 15.5 | 22 | 2.32 | 95 |
| L1872.050 | 50 | 143 | 16 | 111 | 51.6 | 54.6 | 40.0 | 15.0 | 22 | 2.65 | 100 |
| L1872.055 | 55 | 162 | 19 | 130 | 55.6 | 58.4 | 44.0 | 20.0 | 25 | 4.06 | 110 |
| L1872.060 | 60 | 175 | 19 | 143 | 65.1 | 68.7 | 48.0 | 20.0 | 29 | 5.48 | 120 |

| Order No. | $w_6$ | $w_7$ | Speed rpm | Dyn. load C kN max. | Static bearing load $C_0$ kN max. | Housing load $F_1$ kN max. | Housing load $F_6$ kN max. | Torque screw to Nm | Set screw size |
|---|---|---|---|---|---|---|---|---|---|
| L1872.012 | 12.7 | 37.8 | 4800 | 10.1 | 6.8 | 86 | 36 | 8.5 | M 6x1 |
| L1872.015 | 12.7 | 37.8 | 4800 | 10.1 | 6.8 | 86 | 36 | 8.5 | M 6x1 |
| L1872.017 | 12.7 | 37.8 | 4800 | 10.1 | 6.8 | 86 | 36 | 8.5 | M 6x1 |
| L1872.020 | 12.7 | 37.8 | 4800 | 10.1 | 6.8 | 86 | 36 | 8.5 | M 6x1 |
| L1872.025 | 14.3 | 39.9 | 4000 | 11.0 | 8.0 | 130 | 50 | 8.5 | M 6x1 |
| L1872.030 | 15.9 | 44.4 | 3400 | 15.3 | 11.5 | 130 | 60 | 8.5 | M 6x1 |
| L1872.035 | 17.5 | 48.2 | 3000 | 20.1 | 15.6 | 130 | 70 | 20 | M 8x1 |
| L1872.040 | 19.0 | 54.4 | 2600 | 22.8 | 18.2 | 140 | 78 | 20 | M 8x1 |
| L1872.045 | 19.0 | 55.9 | 2400 | 25.7 | 20.8 | 200 | 90 | 40 | M 10x1,25 |
| L1872.050 | 19.0 | 59.8 | 2200 | 27.5 | 23.7 | 200 | 100 | 40 | M 10x1,25 |
| L1872.055 | 22.2 | 62.6 | 1800 | 34.0 | 25.5 | 255 | 125 | 40 | M 10x1,25 |
| L1872.060 | 25.4 | 72.9 | 1600 | 41.0 | 31.5 | 315 | 155 | 40 | M 10x1,25 |

**BEARING MOUNTS**

# Bearing Supports from Automotion Components
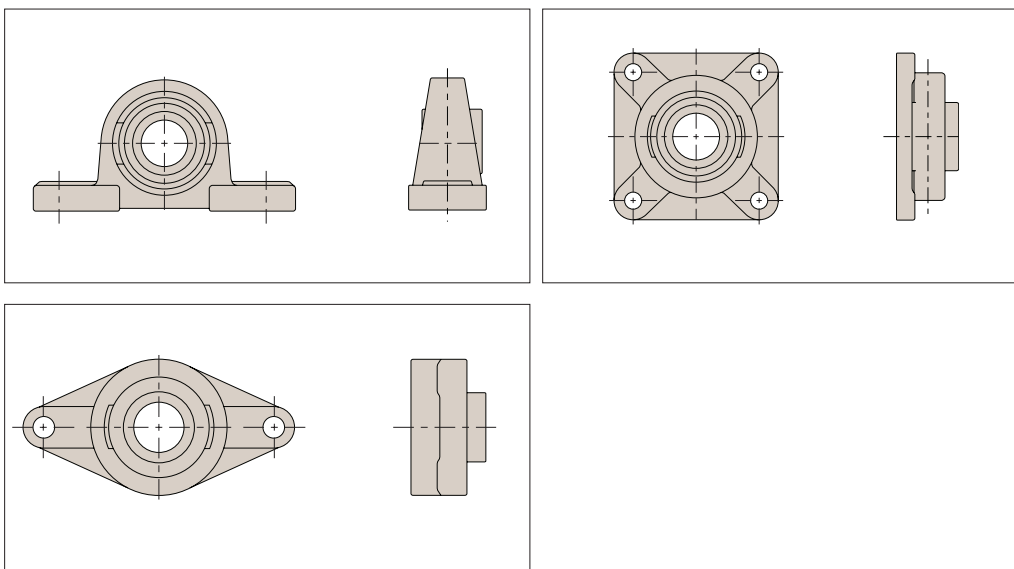
## Housing material options



### Cast iron housing
Standard version, passivated and painted ø12-120mm.

### Stainless steel housing
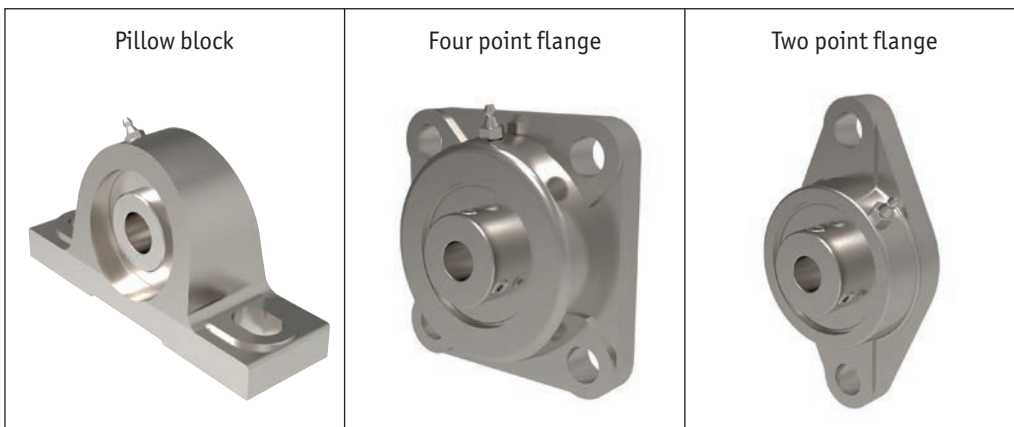Stainless AISI 304, ø12-60mm.

### Thermoplastic housing
Food grade applications, smooth PBT resin material, ø20-40mm.

## Pillow Bearings







Use with Automotion linear shafts L1770-L1774

## Options

| Pillow block | Four point flange | Two point flange |
|---|---|---|
|  |  |  |

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ov-bearing-support-units-overview-tnh-Updated-01-03-2023

## For cast iron housings

- Single row radial contact self-aligning bearings (steel 100Cr6).
- Re-lubricatable.
- Fixing to shaft via set screw.
- Operating temperature range -20° to +100°.

## For stainless & thermoplastic housings

- Single row radial contact self-aligning bearings (stainless steel AISI 440C), stainless steel cage.
- Lubricated with food grade grease.
- Fixing to shaft via set screw.

## Shaft fixing set screw

2 set screws at 120° with hexagon socket and knurled cup point, recommended shaft tolerance h6/h7.

| Set screw | Max. tightening torque (Nm) | Hexagon socket A/F |
|---|---|---|
| M5 x 0,8 | 3,5 | 2,5 |
| M6 x 1 | 5,5 | 3,0 |
| M8 x 1 | 11,5 | 4,0 |
| M10 x 1,25 | 22,0 | 5,0 |
| M12 x 1,25 | 33,0 | 6,0 |
| M14 x 1,5 | 42,0 | 7,0 |
| M16 x 1,5 | 64,0 | 8,0 |
| M18 x 1,5 | 75,0 | 9,0 |
| M20 x 1,5 | 120,0 | 10,0 |
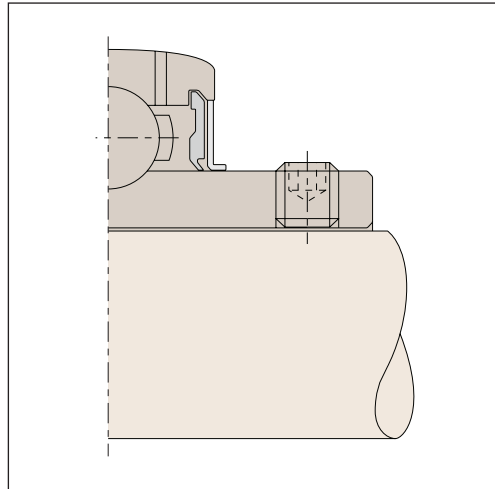
## Lubrication

Our units are lubricated for life. If re-lubrication is necessary (because of severe operating conditions), use a lithium soap base with a viscosity of 100mm$^2$/s at 40°C.

## Installation

Shaft misalignment is compensated to a certain degree by the shaft-aligning bearings.
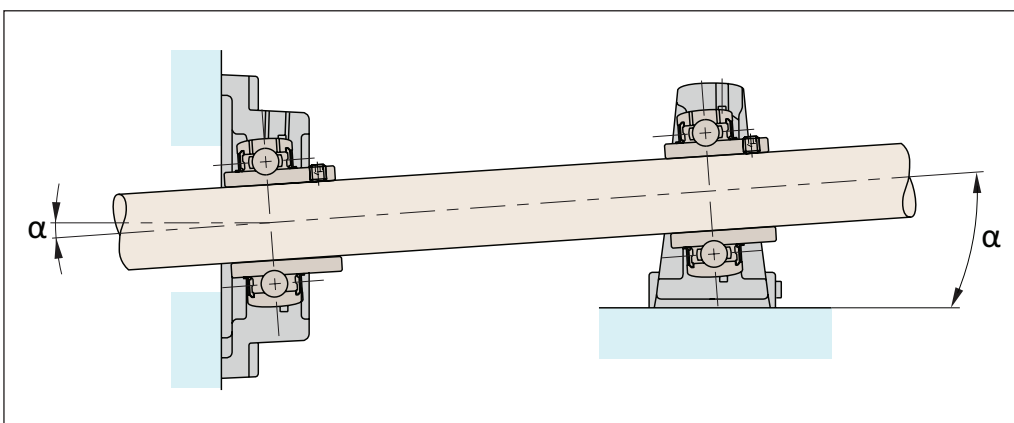
If re-lubrication required

α = ± 2°

If no re-lubrication

α = ± 5°

When using protective end caps

α = ± 5°

**Bearing Supports from Automotion Components**

The radial loads of the cast iron bearing supports are limited by the bearings themselves – the housings can withstand the maximum loads.

Please see the part numbers for dynamic and static radial loads. The maximum axial loads are 50% of the maximum static radial loads. The standard bearing have a C3 clearance.

| Bore nominal size (mm) | | Radial bearing clearance (µ) C3 | |
|---|---|---|---|
| Above | Up to | Min. | Max. |
| 10 | 18 | 11 | 25 |
| 18 | 24 | 13 | 28 |
| 24 | 30 | 13 | 28 |
| 30 | 40 | 15 | 33 |
| 40 | 50 | 18 | 36 |
| 50 | 65 | 23 | 43 |
| 65 | 80 | 25 | 51 |
| 80 | 100 | 30 | 58 |
| 100 | 120 | 36 | 66 |
| 120 | 140 | 41 | 81 |

When choosing a suitable bearing size – this depends on the load and speed required.

If the load acts mainly whilst the bearing rotates, then it is a dynamic load, if it acts mainly during no movement or low speeds, then it is a static load.

The maximum for both of these, for each bearing, is shown in the part tables.

**Dynamic equivalent loads:**

For some situations the bearing will have to withstand both radial and axial loads and we then need to calculate an equivalent dynamic load using the following equation:

$$L = X \bullet F_r + Y \bullet F_a \quad (kN)$$

$P$ = Dynamic equivalent load (kN)
$F_r$ = Actual radial load (kN)
$F_a$ = Actual axial load (kN)
$X$ = Radial factor
$Y$ = Axial factor

**Load ratio table 1:**

| $\frac{F_a}{C_{0r}}$ | $e$ | $\frac{F_a}{F_r} \leq e$ | | $\frac{F_a}{F_r} > e$ | |
|---|---|---|---|---|---|
| | | X | Y | X | Y |
| 0,014 | 0,19 | | | | 2,30 |
| 0,028 | 0,22 | | | | 1,99 |
| 0,056 | 0,26 | | | | 1,71 |
| 0,084 | 0,28 | | | | 1,55 |
| 0,110 | 0,30 | 1 | 0 | 0,56 | 1,45 |
| 0,170 | 0,34 | | | | 1,31 |
| 0,280 | 0,38 | | | | 1,15 |
| 0,420 | 0,42 | | | | 1,04 |
| 0,560 | 0,44 | | | | 1,00 |

$e$ = Limiting value
$C_{0r}$ = Radial static load rating (see dimension tables for ball bearing units)

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## Static equivalent loads

For situations where there are radial and axial loads on the static or slow moving bearings:

$$P_0 = X_0 \bullet F_r + Y_0 \bullet F_a \quad (kN)$$

$$P_0 = F_r \quad \text{if} \quad \frac{F_a}{F_r} \leq 0.8$$

$P_0$ = Static equivalent load (kN)
$X_0$ = Static radial factor
$Y_0$ = Static axial factor

For all bearing inserts the following applies:
$X_0$ = 0.6
$Y_0$ = 0.5

Using the ratio **fs,** it can be checked if sufficient static dimensioning for the insert has been ensured:

$$fs = \frac{C_{0r}}{p_0}$$

Some standard values are:

**fs** = 0.7    Minimal demands for running smoothness and rotating movement
**fs** = 1.0    occasional rotating bearing, normal demands for running
**fs** = 2.0    smoothness, high demands for running smoothness

It should be noted that this ratio does not provide any assurance against a break or similar, but instead it is assurance against excessive local deformation in the rolling contact (ball/raceway).

## Calculating bearing life

When calculating bearing life for bearing units, the following applies:

$$L_{10} = \left( \frac{C_r}{p} \right)^3 \quad \textbf{(10}^6 \textbf{ revolutions)}$$

If the bearing life should be specified in hours, the following applies:

$$L_{10h} = \left( \frac{C_r}{p} \right)^3 \bullet \frac{10^6}{60n} \quad \text{(h)}$$

$n$ = speed (min$^{-1}$)

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