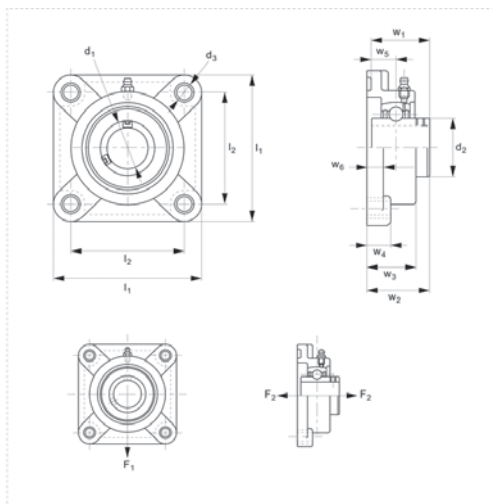




Thermoplastic Square Flanged Units

four point flange

Bearing Mounts



L1877

BEARING MOUNTS

Material

Thermoplastic (PBT) housing, with smooth surfaces. Stainless steel bearings (440C) with 2RS seals and sleeves for fixing bolts. Bearing lubricated with food grade grease.

Technical Notes

Self-aligning bearing units.

Temperature range for bearings: -15°C to +120°C.

Resistant to a wide range of chemicals. Provide good protection against bacterial contamination.

Open and closed protection caps available (see our part L1869).

Tips

Shaft retention with two set screws (at 120° offset).

Used with h6 tolerance shafts (see our part no.s L1770-L1776).

For protective end caps see L1879.

Order No.	d_1 for h6	l_1	w_1	w_2	w_3	w_4	w_5	w_6	d_2	Weight kg
L1877.020	20	86	31.0	36.3	27.8	13.4	12.7	18.0	29.0	0.30
L1877.025	25	95	34.0	36.7	28.0	14.3	14.3	17.0	34.0	0.36
L1877.030	30	107	38.1	41.4	31.5	14.3	15.9	19.2	40.5	0.51
L1877.035	35	118	42.9	46.9	34.8	15.5	17.5	21.5	48.0	0.75
L1877.040	40	130	49.2	53.2	37.5	17.0	19.0	23.0	53.0	0.98

Order No.	d_3	l_2	Speed rpm	Static radial bearing load C_0 kN max.	Housing load F_1 kN max.	Axial load F_2 kN max.
L1877.020	11	63.5	7400	5.3	1.6	0.7
L1877.025	11	70.0	6200	6.3	1.7	0.7
L1877.030	11	83.0	5300	9.0	2.3	1.1
L1877.035	13	92.0	4500	12.3	3.1	1.3
L1877.040	14	102.0	4000	14.3	3.1	1.5



Housing material options

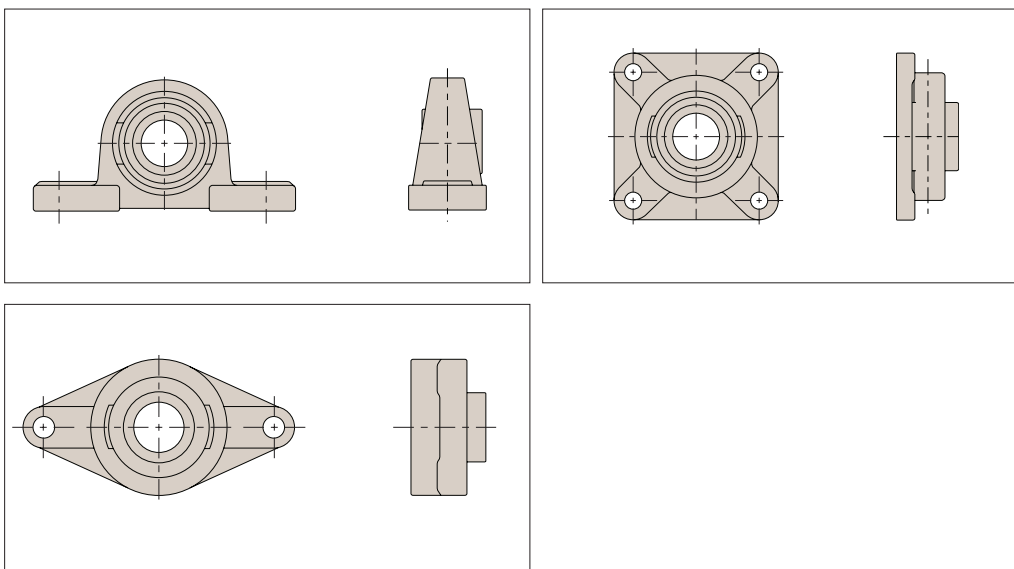


Cast iron housing
Standard version, passivated and painted $\varnothing 12-120\text{mm}$.

Stainless steel housing
Stainless AISI 304, $\varnothing 12-60\text{mm}$.

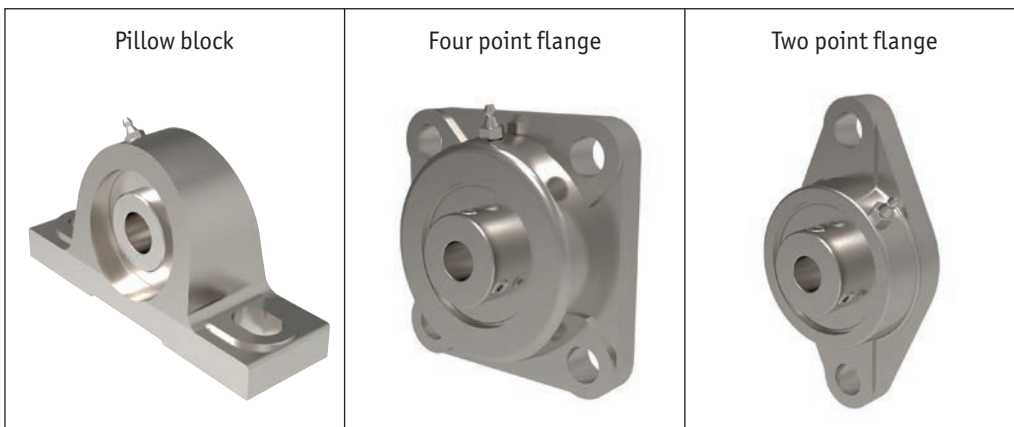
Thermoplastic housing
Food grade applications, smooth PBT resin material, $\varnothing 20-40\text{mm}$.

Pillow Bearings



Use with Automation linear shafts L1770-L1774

Options



Bearing Supports from Automation Components



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 $+100^{\circ}$.

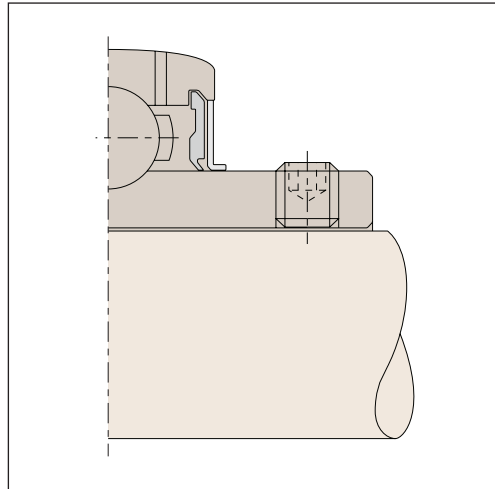
For stainless & thermoplastic housings

- 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

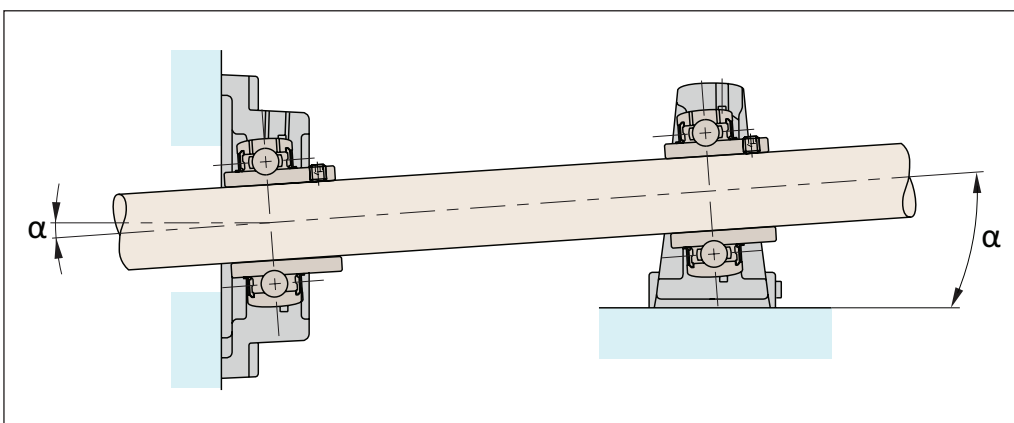


Lubrication

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 $100\text{mm}^2/\text{s}$ at 40°C .

Installation

Shaft misalignment is compensated to a certain degree by the shaft-aligning bearings.



If re-lubrication required

$$\alpha = \pm 2^{\circ}$$

If no re-lubrication

$$\alpha = \pm 5^{\circ}$$

When using protective end caps

$$\alpha = \pm 5^{\circ}$$



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:

$$L = X \cdot F_r + Y \cdot F_a \text{ (kN)}$$

- 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)



Static equivalent loads

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

$$P_0 = X_0 \cdot F_r + Y_0 \cdot F_a \text{ (kN)}$$

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

P_0 = Static equivalent load (kN) For all bearing inserts the following applies:

X_0 = Static radial factor $X_0 = 0.6$

Y_0 = Static axial factor $Y_0 = 0.5$

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:

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

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

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

n = speed (min^{-1})