Flanged Y-bearing units

Designs

SKF flanged Y-bearing units are available as standard in a wide variety of designs. The standard assortment includes flanged Y-bearing units with housings made of:

- composite material (→ **fig. 1**)
- grey cast iron (→ **fig. 2**)
- pressed sheet steel (→ **fig. 3**)

They are located on the shaft via the inner ring of the insert bearing with either:

- grub (set) screws
- an eccentric locking collar
- an adapter sleeve

The Y-bearing can be sealed with either:

- the standard integral seal
- the standard integral seal and an additional flinger
- the highly efficient multiple seal

For additional information about Y-bearings, refer to the section *Y-bearings*, starting on **page79**.

Flanged Y-bearing units available from stock are listed in the product tables. Other units can be assembled by ordering the parts separately. The tables on **pages 168** to **169** show the wide variety of combinations of Y-bearings and flanged housings.

Fig. 1

Fig. 2

Fig. 3

Flanged Y-TECH units

Flanged Y-TECH units have housings made of composite material. They were developed for bearing arrangements that must operate reliably in difficult environments for extended periods without maintenance. There are two standard series available:

- FYK series (→ **fig. 4**) with a square flange and four bolt holes
- FYTBK series (→ **fig. 5**) with an oval flange and two bolt holes

For additional information about Y-TECH flanged units for the food industry, refer to **page 252**.

Flanged Y-TECH units in the FYK series are fitted with Y-bearings in the:

- YAR 2-2F series, unit designation suffix TF
- YAR 2-2RF series, unit designation suffix TR

These units, which are attached to the shaft with grub screws, are in the standard SKF assortment.

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Flanged Y-bearing units with a cast housing

Flanged Y-bearing units with a cast housing can be relubricated through a grease fitting in the housing. This makes them especially suitable for bearing arrangements that operate under any of the following conditions:

- high levels of contamination
- high speeds
- high temperatures
- relatively heavy loads

Three different housing designs are available:

- FY and FYJ series with a square flange and four holes for attachment bolts (→ **fig. 6**)
- FYC series with a round flange and four holes for attachment bolts (→ **fig. 7**)
- FYT, FYTB and FYTJ series with an oval flange and two holes for attachment bolts (→ **fig. 8**).

Flanged Y-bearing units with a pressed steel housing

Flanged Y-bearing units with a pressed steel housing are designed for simple applications with limited loads and speeds. The two-part housing, which has no provision for relubrication, is ordered separately from the insert bearing, making a large number of combinations possible.

The flanged housings made of pressed steel are available in three different series:

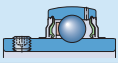
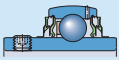
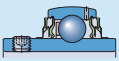
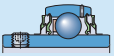
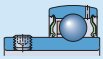
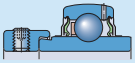
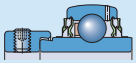
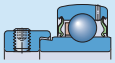
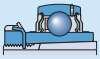
- PF series with a round flange and three or four square holes for attachment bolts (→ **fig. 9**)
- PFD series with a triangular flange and three square holes for attachment bolts (→ **fig. 10**)
- PFT series with an oval flange and two square holes for attachment bolts (→ **fig. 11**).

Fig. 9

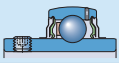
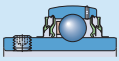
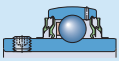
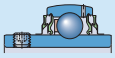
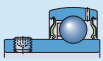
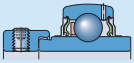
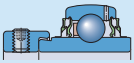
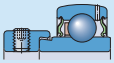
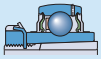
Fig. 10

Fig. 11

Flanged Y-bearing units

Flanged Y-bearing unit	Housings of composite material		Cast housings			
						
Y-bearings	**FYK 5(00)**	**FYTBK 5(00)**	**FY 5(00)**	**FYJ 5(00)**	**FYM 5(00)**	**FYT 5(00)**
YAR 2-2F 	**FYK .. TF** 20–40 mm 3/4–1 1/2 in.[1]	**FYTBK .. TF** 20–35 mm 3/4–1 1/4 in.[1]	**FY .. TF** 12–65 mm 1/2–2 15/16 in.	**FYJ .. TF** 20–100 mm 3/4–2 1/2 in.[1]	**FYM .. TF** 1 7/16–3 in.	**FYT .. TF** 1/2–2 3/16 in.
YAR 2-2RF 	**FYK .. TR** 20–40 mm 3/4–1 1/2 in.[1]	**FYTBK .. TR** 20–35 mm 3/4–1 1/4 in.[1]	**FY .. TR** 20–60 mm 3/4–2 1/2 in.[1]	20–60 mm[1] 3/4–2 1/2 in.[1]	–	–
YAR 2-2RF/HV 	20–40 mm[1] 3/4–1 1/2 in.[1]	20–35 mm[1] 3/4–1 7/16 in.[1]	20–50 mm 3/4–1 15/16 in.	20–50 mm 3/4–1 15/16 in.	–	–
YAR 2-2RF/ VE495 	20–40 mm[1]	20–35 mm[1]	20–50 mm	20–50 mm	–	–
YAT 2 	20–40 mm[1]	20–35 mm[1]	17–50 mm[1]	20–50 mm[1]	–	**FYT .. RM** 1/2–2 3/16 in.
YEL 2-2F 	20–40 mm[1]	20–35 mm[1]	**FY .. WF** 20–60 mm 1 –2 7/16 in.	20–50 mm[1]	–	–
YEL 2-2RF/ VL065 	20–40 mm[1]	20–35 mm[1]	20–40 mm[1]	20–40 mm[1]	–	–
YET 2 	20–40 mm[1] 3/4–1 1/2 in.[1]	20–35 mm[1] 3/4–1 7/16 in.[1]	**FY .. FM** 15–60 mm 3/4–2 3/16 in.	20–60 mm[1] 3/4–1 1/2 in.[1]	–	**FYT .. FM** 1/2–2 3/16 in.
YSA 2-2FK on adapter sleeve 	20–35 mm[1] 3/4–1 1/4 in.[1]	20–30 mm[1] 3/4–1 3/16 in.[1]	20–60 mm[1] 3/4–2 3/8 in.[1]	**FYJ .. KF** 20–60 mm 3/4–2 3/8 in.	–	–
17262(00) 	20–40 mm[1]	20–35 mm[1]	17–60 mm[1]	20–60 mm[1]	–	–

[1] Parts must be ordered separately.

Flanged Y-bearing unit	Cast housings			Pressed steel housings		
						
Y-bearings	**FYTB 5(00)**	**FYTJ 5(00)**	**FYC 5(00)**	**PF**	**PFD**	**PFT**
YAR 2-2F 	**FYTB .. TF** 12–50 mm 3/4–1 3/4 in.	**FYTJ .. TF** 20–50 mm 3/4–1 3/4 in.	**FYC .. TF** 20–65 mm 3/4–2 1/2 in.[1]	12–50 mm[1] 3/4–1 3/4 in.[1]	12–40 mm[1] 3/4–1 1/2 in.[1]	12–40 mm[1] 3/4–1 1/2 in.[1]
YAR 2-2RF 	**FYTB .. TR** 20–50 mm 3/4–1 3/4 in.[1]	20–50 mm[1] 3/4–1 3/4 in.[1]	20–65 mm[1] 3/4–2 1/2 in.[1]	20–35 mm[1] 3/4–1 3/4 in.[1]	20–40 mm[1] 3/4–1 1/2 in.[1]	20–40 mm[1] 3/4–1 1/2 in.[1]
YAR 2-2RF/HV 	20–50 mm 3/4–1 15/16 in.	20–50 mm 3/4–1 15/16 in.	20–50 mm 3/4–1 15/16 in.	20–50 mm 3/4–1 15/16 in.	20–40 mm[1] 3/4–1 1/2 in.[1]	20–40 mm[1] 3/4–1 1/2 in.[1]
YAR 2-2RF/ VE495 	20–50 mm	20–50 mm	20–50 mm	20–50 mm	20–40 mm[1]	20–40 mm[1]
YAT 2 	17–50 mm[1]	20–50 mm[1]	20–50 mm[1]	17–50 mm[1] 5/8–1 15/16 in.[1]	17–40 mm[1] 5/8–1 1/2 in.[1]	17–40 mm[1] 5/8–1 1/2 in.[1]
YEL 2-2F 	**FYTB .. WF** 20–50 mm	20–50 mm[1]	20–60 mm[1]	20–50 mm[1] 1/2–1 15/16 in.[1]	20–40 mm[1] 1/2–1 1/2 in.[1]	20–40 mm[1] 1/2–1 1/2 in.[1]
YEL 2-2RF/ VL065 	20–40 mm[1]	20–40 mm[1]	20–40 mm[1]	20–40 mm[1]	20–40 mm[1]	20–40 mm[1]
YET 2 	**FYTB .. FM** 15–50 mm 3/4–1 1/2 in.[1]	20–50 mm[1] 3/4–1 1/2 in.[1]	20–40 mm[1] 3/4–1 1/2 in.[1]	15–50 mm[1] 3/4–1 3/4 in.[1]	15–40 mm[1] 3/4–1 1/2 in.[1]	15–40 mm[1] 3/4–1 1/2 in.[1]
YSA 2-2FK on adapter sleeve 	20–45 mm[1] 3/4–1 3/4 in.[1]	**FYTJ .. KF** 20–45 mm 3/4–1 3/4 in.	20–60 mm[1] 3/4–2 3/8 in.[1]	20–45 mm[1] 3/4–1 3/4 in.[1]	20–35 mm[1] 3/4–1 3/4 in.[1]	20–35 mm[1] 3/4–1 3/4 in.[1]
17262(00) 	17–50 mm[1]	20–50 mm[1]	20–60 mm[1]	17–50 mm[1]	17–40 mm[1]	17–40 mm[1]

[1] Parts must be ordered separately.

Data – general

Dimensions

The boundary dimensions for most flanged Y-bearing housings are in accordance with the following standards:

- Housings in the FY, FYT and FYTB series are in accordance with ISO 3228:1993.
- Housings in the FYJ, FYTJ and FYC series are in accordance with JIS B 1559-1995.
- Housings in the PF, PFD and PFT series are in accordance with ISO 3228:1993.

Tolerances

For flanged Y-bearing units with a cast housing, the tolerance for the total width T of the unit (→ **fig. 12**) is:

- ±0,5 mm for units up to and including 50 mm bore diameter
- ±0,6 mm for larger units

For flanged Y-bearing units with housings made of composite material or grey cast iron, the outside diameter of the bearing is matched to the diameter of the housing bore so that the outer ring is prevented from turning in its seat, but still able to compensate for misalignment.

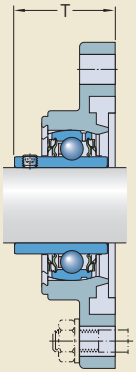
Additional information about tolerances for the inner ring bore are listed in the section *Y-bearings* on **page 89**.

Radial internal clearance

The Y-bearing used in a flanged Y-bearing unit has the same radial internal clearance as a similarly sized individual Y-bearing.

Additional information about the radial internal clearance can be found in the section *Y-bearings* on **page 90**.

Fig. 12



Materials

Composite housings
These housings are made of injection moulded glass fibre reinforced polyamide 6. A steel coil embedded in the housing adds greater stability to the form of the housing, even if temperatures are elevated.

The bolt holes for housings in the FYK and FYTBK series are reinforced with zinc-plated sheet steel inserts. The standard housing colour is black.

Cast housings
Cast housings are manufactured from grey cast iron EN-GJL HB195 in accordance with EN 1561:1997.

Pressed steel housings
Pressed steel housings are made from cold-rolled steel and are zinc-coated for corrosion protection.

Load carrying ability of the housings

Housings made of either composite material or grey cast iron are able to withstand the same dynamic and static loads as the Y-bearings they incorporate. These Y-bearing units can also be used for applications where shock loads or variable axial loads occur.

If SKF Y-bearing units are to be used in an application where health, safety, or the environment is at risk, contact the SKF application engineering service during the design phase.

Pressed steel housings have a lower load carrying capacity than their insert bearings. Permissible radial loads are specified in the product tables. The axial load should not exceed 20% of the permissible radial load.

If the Y-bearing units will be subjected to shock loads or variable axial loads, a grey cast iron or Y-TECH housing should always be used.

Flanged composite housings and most grey cast iron housings have a recess (→ **fig. 13a**), or shoulder (→ **fig. 13b**) at the back for accurate positioning, either on an appropriate shoulder or in a bore in the machine wall.

An appropriate shoulder can be provided by one of the following methods:

- machining the wall accordingly (→ **fig. 13c**)
- attaching an appropriate washer to the wall by several screws (→ **fig. 13d**)

Furthermore, these features relieve the attachment bolts of radial forces.

Attaching to a support surface

Flanged Y-bearing units have two, three or four bolt holes through which they can be attached to their support surface with threaded fasteners. These bolt holes are:

- round and reinforced with pressed steel inserts in composite housings
- drilled and round in cast housings
- square in pressed steel housings

In the absence of a centring shoulder and when heavy loads apply, SKF recommends doweling the housing to its support surface. Dimples for the dowel pin holes are cast into housings in the FY, FYJ, FYTB and FYTJ series. Information on the position and size of the holes for these dowel pins is provided in **table 1**, **page 172**.

Fig. 13

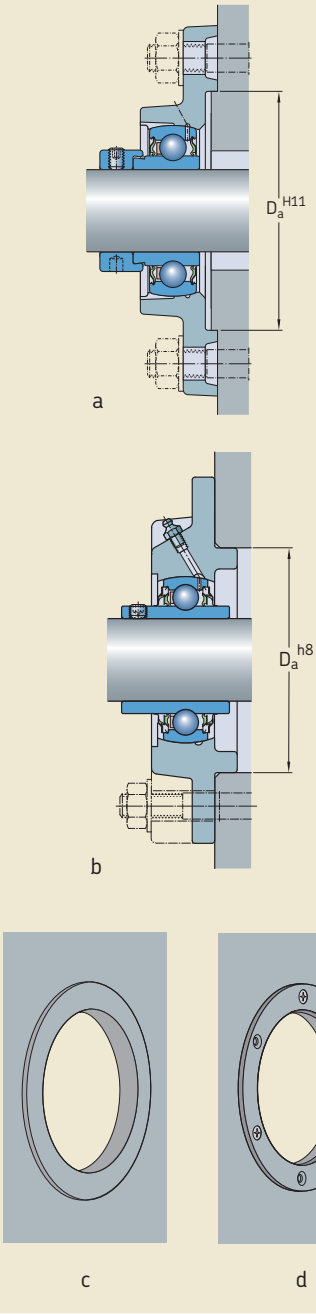
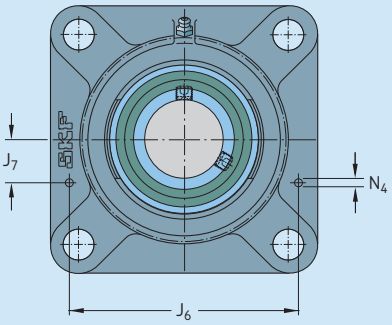
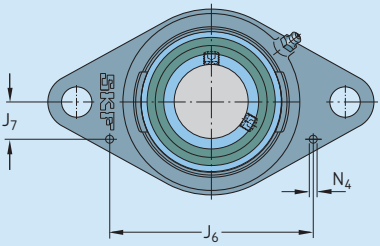


Table 1

Position and size of dowel pin holes for flanged Y-bearing housings made of grey cast iron





Housing size	Dimensions for housings in the FY, FYJ series			FYT, FYTB, FYTJ series		
	J_6	J_7	N_4	J_6	J_7	N_4
–	mm					
503	66	12	4	61,5	11	2
504	74	16	4	74	11,5	2
505	83	19	4	81	12	4
506	96	24,5	4	99	12,5	4
507	106	29	4	106	15	5
508	118	34	4	116	16	6
509	123	33,5	5	120	18	6
510	129	35,5	5	127	20	6
511	148	45	5	154	18	6
512	161	49,5	5	–	–	–
513	169	51	6	–	–	–
514	169	49	8	–	–	–
515	176	51,5	8	–	–	–
516	184	51,5	8	–	–	–
518	207	52,5	8	–	–	–
520	233	55	8	–	–	–

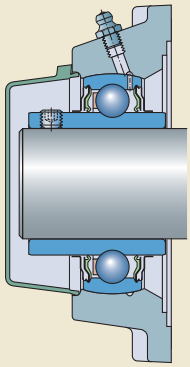
End covers

To protect the shaft ends and avoid any accidents, end covers are available for flanged Y-TECH units and most flanged Y-bearing units with a cast housing (→ **fig. 14**).

In the product tables, end covers in the ECY 2 series are shown together with the appropriate bearing unit. The designation of the end cover is listed together with the distance that the end cover protrudes from the housing.

For additional information about end covers, refer to the section *Design of Y-bearing arrangements*, on **page 47**.

Fig. 14



Grease fills

All standard SKF flanged Y-bearing units are filled with a high-quality long-lasting grease containing a lithium-calcium thickener that has a consistency of 2 on the NLGI scale.

For additional information about lubricants and lubrication, refer to the section *Lubrication and maintenance*, starting on **page 48**.

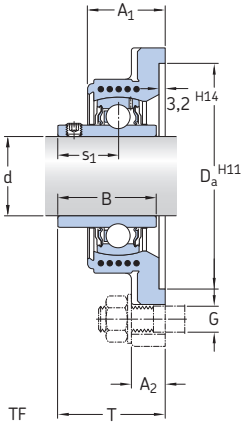
Mounting

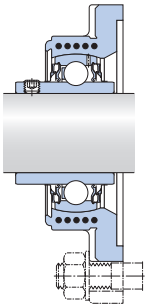
The procedure for mounting a flanged Y-bearing unit depends on:

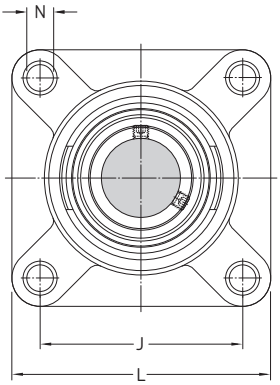
- the design of the housing
- the method used to attach the unit to the shaft

These methods are described in detail in the section *Mounting instructions*, starting on **page 52**.

Flanged Y-TECH units with a housing with a square flange and grub screws, metric shafts
d **20 – 40** mm







Dimensions											Basic load ratings dynamic	static	Fatigue load limit	Limiting speed with shaft tolerance h6	Designation Bearing unit
d	A_1	A_2	B	D_a	J	L	N	G	s_1	T	C	C_0	P_u		
mm											kN		kN	r/min	–
20	30	15	31	68,3	63,5	86	12	10	18,3	37,3	12,7	6,55	0,28	8 500	**FYK 20 TF**
	30	15	31	68,3	63,5	86	12	10	18,3	37,3	12,7	6,55	0,28	5 000	**FYK 20 TR**
25	31	15	34,1	74,6	70	95	12	10	19,8	38,8	14	7,8	0,335	7 000	**FYK 25 TF**
	31	15	34,1	74,6	70	95	12	10	19,8	38,8	14	7,8	0,335	4 300	**FYK 25 TR**
30	33	15,3	38,1	93,7	82,5	108	12	10	22,2	42,2	19,5	11,2	0,475	6 300	**FYK 30 TF**
	33	15,3	38,1	93,7	82,5	108	12	10	22,2	42,2	19,5	11,2	0,475	3 800	**FYK 30 TR**
35	35	17	42,9	106,4	92	118	14,5	12	25,4	46,4	25,5	15,3	0,655	5 300	**FYK 35 TF**
	35	17	42,9	106,4	92	118	14,5	12	25,4	46,4	25,5	15,3	0,655	3 200	**FYK 35 TR**
40	39	17	49,2	115,9	101,5	130	14,5	12	30,2	54,2	30,7	19	0,8	4 800	**FYK 40 TF**
	39	17	49,2	115,9	101,5	130	14,5	12	30,2	54,2	30,7	19	0,8	2 800	**FYK 40 TR**