Cam Follower

THK General Catalog

Cam Follower

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Features of the Cam Follower

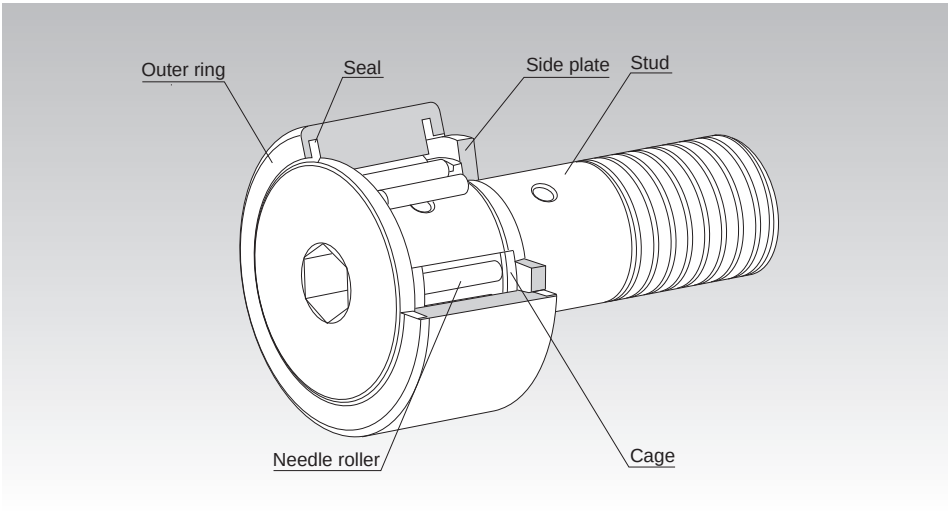


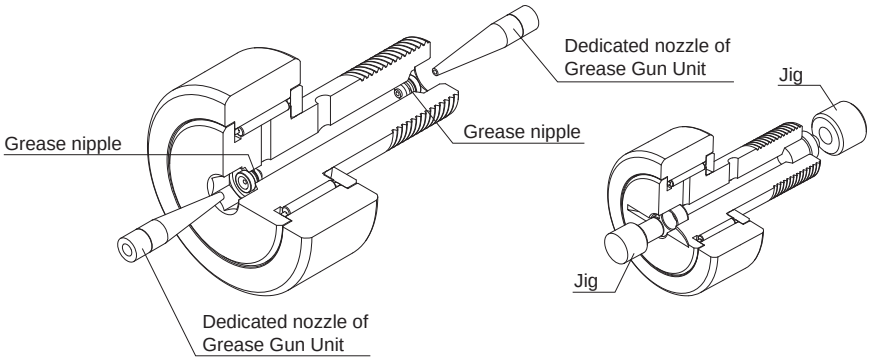
Fig.1 Structure of Cam Follower Model CF···UU-A

Structure and Features

The Cam Follower is a compact and highly rigid bearing with a shaft. It contains needle rollers and is used as a guide roller for cam mechanisms or straight motion.
Since its outer ring rotates while keeping direct contact with the mating surface, this product is thick-walled and designed to bear an impact load.
Inside the outer ring, needle rollers and a precision cage are incorporated. This prevents the product from skewing and achieves a superb rotation performance. And, as a result, the product is capable of easily withstanding high-speed rotation.
There are two types of the outer ring in shape: spherical and cylindrical. The spherical outer ring easily absorbs a distortion of the shaft center when the cam follower is installed and helps lighten a biased load.
The Cam Follower is used in a wide range of applications such as cam mechanisms of automatic machines, dedicated machines as well as carrier systems, conveyors, bookbinding machines, tool changers of machining centers, pallet changers, automatic coating machines, and sliding forks of automatic warehouses.

Cam Follower with Grease Nipple

With previous models it was necessary to fabricate a jig in order to install a plug or grease nipple. The Model CF-AB Cam Follower with grease nipples comes equipped with grease nipples on both sides, so it can be used immediately, without modification.
An Allen wrench can be used to anchor the stud from either the head or the threaded end, and it can be lubricated from either end as well. This ensures that there will be adequate space to install the unit and perform maintenance, improving work efficiency.



CF-AB　　Conventional type

Cam Follower Containing Thrust Balls

Even a slight mounting error in a high speed cam mechanism operating in a harsh environment could cause abnormal wear to the thrust unit of the cam follower. In such a case, using Cam Follower Containing Thrust Balls model CFN will bring about a significant effect in increasing the durability.
Models CFN5 to 12 are standard-stock items. If desiring a size other than the standard items, contact THK.
Model CFN is capable of receiving a thrust load caused by a slight mounting error. However, it is necessary to minimize a component of thrust force, or prevent it from occurring, when designing the cam mechanism and installing the Cam Follower.

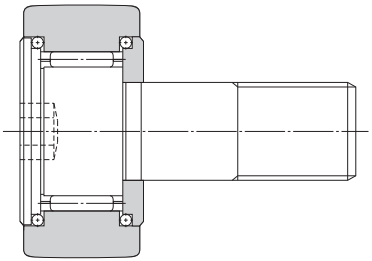


Fig.2

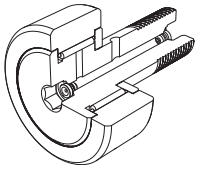
Types of the Cam Follower

Types and Features

Cam follower with grease nipple model CF-AB

Specification Table⇒A19-14

A hexagonal socket is provided on both stud ends, and a grease nipple for greasing is fitted to the inside. Therefore, lubrication and mounting from both directions is possible.
An eccentric type (CFH-AB) is also available.

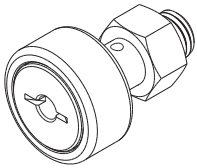


Model CF-AB

Popular Type Cam Follower Model CF

Specification Table⇒A19-16

It is a popular type of Cam Follower provided with a driver groove on the head of the stud. A highly corrosion resistant stainless steel type (symbol M) is also available.

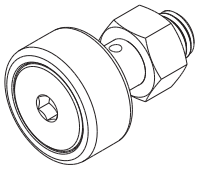


Model CF

Cam Follower with a Hexagon Socket Model CF-A

Specification Table⇒A19-18

Since the stud head has a hexagon socket, this model can easily be installed using a hexagon wrench.

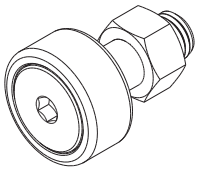


Model CF-A

Eccentric Cam Follower with a Hexagon Socket Model CFH-A

Specification Table⇒A19-22

This model can be installed in the same mounting hole as that of model CF. Since the mounting shaft of the stud and the stud head are eccentric by 0.25 mm to 1.0 mm, the position of this model can easily be adjusted simply by turning the stud. Thus, it is a compact, highly accurate eccentric cam follower with an integral structure. As a result, the man-hours for machining and assembly can significantly be reduced because it is unnecessary to align the cam follower with the cam groove and machine the mounting-hole area with precision.

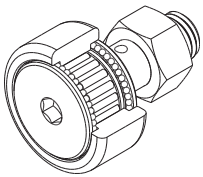


Model CFH-A

Cam Follower Containing Thrust Balls Model CFN-R-A

Specification Table⇒A19-24

Based on the popular type Cam Follower, this model is incorporated with thrust load balls.

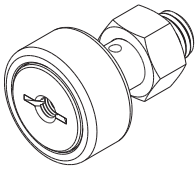


Model CFN-R-A

Cam Follower with a Tapped Hole for Greasing Model CFT

Specification Table⇒A19-26

Basically the same as the popular type Cam Follower, this model is provided with tapped holes for piping on the stud head and the thread.
It is optimal for locations where an integrated piping for greasing is required.

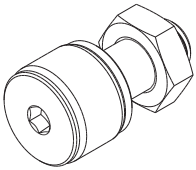


Model CFT

Outer ring compact cam follower model CFS

Specification Table⇒A19-28

This Cam Follower contains extremely fine needle rollers.
The outer ring external diameter is extremely small relative to the stud diameter, allowing a compact design.

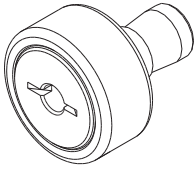


Model CFS

Easy-mount cam follower model CF-SFU

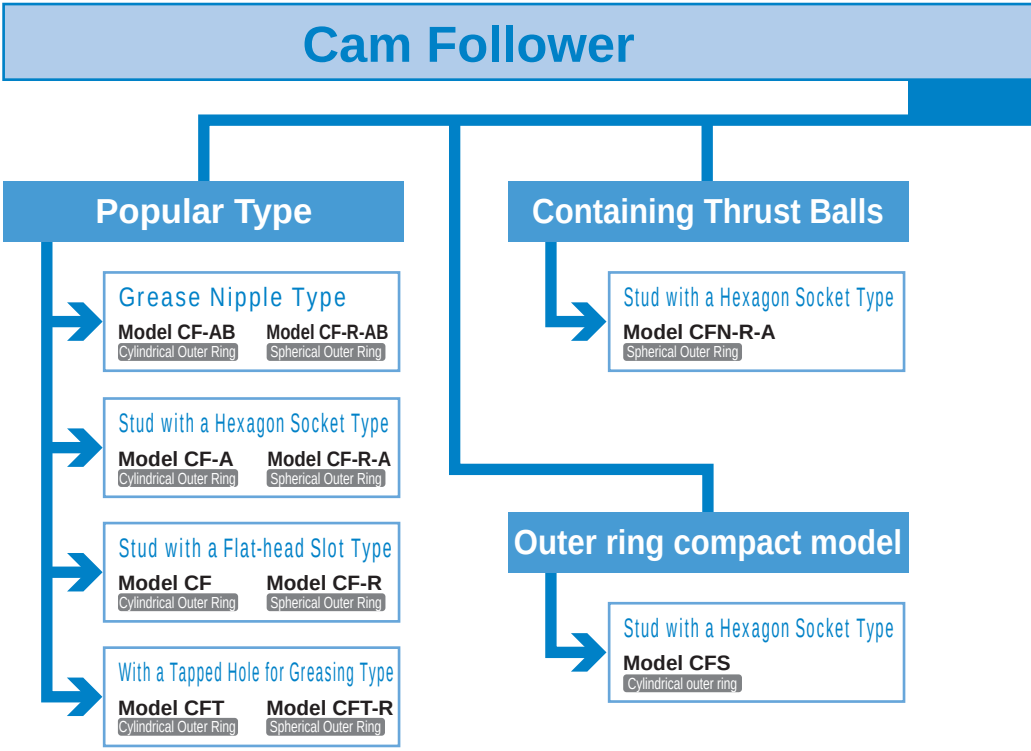
Specification Table⇒A19-30

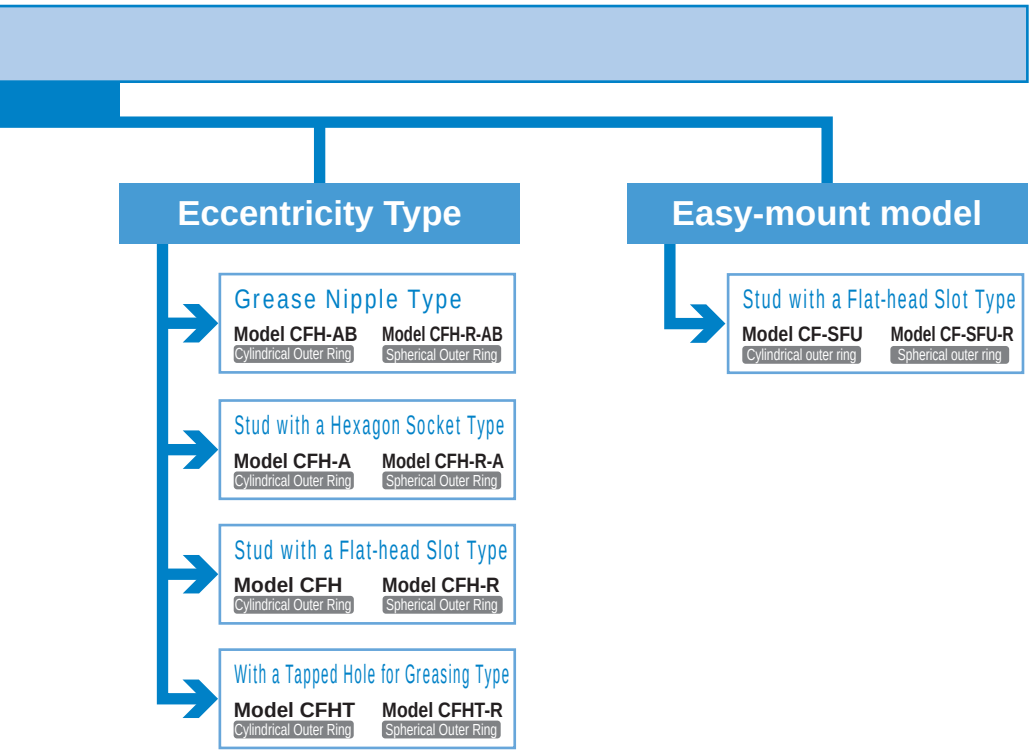
To simplify installation, a flat-head slot has been machined into the stud so that it can be secured with a screw. This is ideal for units where there is no space to fasten the stud. Model CF-SFU is only available with seals.



Model CF-SFU

Classification Table




Eccentricity Type
Grease Nipple Type
Model CFH-AB
Cylindrical Outer Ring
Model CFH-R-AB
Spherical Outer Ring
Stud with a Hexagon Socket Type
Model CFH-A
Cylindrical Outer Ring
Model CFH-R-A
Spherical Outer Ring
Stud with a Flat-head Slot Type
Model CFH
Cylindrical Outer Ring
Model CFH-R
Spherical Outer Ring
With a Tapped Hole for Greasing Type
Model CFHT
Cylindrical Outer Ring
Model CFHT-R
Spherical Outer Ring
Easy-mount model
Stud with a Flat-head Slot Type
Model CF-SFU
Cylindrical outer ring
Model CF-SFU-R
Spherical outer ring

Nominal Life

[Static Safety Factor]

The basic static load rating C_0 refers to the static load with constant direction and magnitude, under which the calculated contact stress in the center of the contact area between the roller and the raceway under the maximum load is 4000 MPa. (If the contact stress exceeds this level, it will affect the rotation.) This value is indicated as "C_0" in the dimensional tables. When a load is statically or dynamically applied, it is necessary to consider the static safety factor as shown below.

$$\frac{C_0}{P_0} = f_S$$

f_S : Static safety factor in relation to C_0 (see Table1)
C_0 : Basic static load rating (kN)
P_0 : Radial load (kN)

The permissible load (F_0) indicates the permissible value of the applied load determined by the strength of the stud section of the Cam Follower. Therefore, it is necessary to consider the static safety factor f_M against F_0 as well as f_S.

$$\frac{F_0}{P_0} = f_M$$

f_M : Static safety factor in relation to F_0 (see Table1)
F_0 : Permissible load (kN)
P_0 : Radial load (kN)

Table1 Static Safety Factor (f_S, f_M)

Load conditions	Lower limit of f_S and f_M
Normal load	1 to 2
Impact load	2 to 3

[Nominal Life]

The service life of the Cam Follower is obtained from the following equation.

$$L = \left(\frac{f_T \cdot C}{f_W \cdot P_C}\right)^{\frac{10}{3}} \times 10^6$$

L : Nominal life
(The total number of revolutions that 90% of a group of identical Cam Follower units independently operating under the same conditions can achieve without showing flaking from rolling fatigue)
C : Basic dynamic load rating* (kN)
P_C : Radial load (kN)
f_T : Temperature factor (see Fig.1 on A19-11)
f_W : Load factor (see Table2 on A19-11)

* The basic dynamic load rating (C) of the Cam Follower shows the load with interlocked direction and magnitude, under which the nominal life (L) is 1 million revolutions when a group of identical Cam Follower units independently operate. The basic dynamic load rating (C) is indicated in the corresponding specification table.

[Calculating the Service Life Time]

When the nominal life (L) has been obtained, the service life time (L_h) is obtained from the following equation.

● **For Linear Motion**

$$L_h = \frac{D \cdot \pi \cdot L}{2 \times \ell_s \cdot n_1 \times 60}$$

L_h : Service life time (h)
L : Nominal life
D : Bearing outer diameter (mm)
ℓ_s : Stroke length (mm)
n_1 : Number of reciprocations per minute (min^{-1})

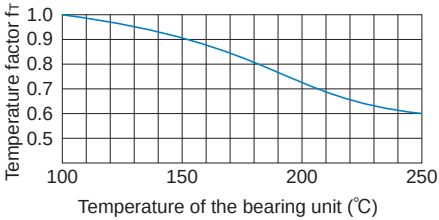


Fig.1 Temperature Factor (f_T)

Note) The normal service temperature is 80℃ or below. If the product is to be used at a higher temperature, contact THK.

● **For Rotary Motion**

$$L_h = \frac{D \cdot L}{D_1 \cdot n \times 60}$$

D_1 : Outer ring contact average diameter of the cam (mm)
n : Revolutions per minute of the cam (min^{-1})

Table2 Load Factor (f_w)

Condition	f_w
Smooth motion without impact	1 to 1.2
Normal motion	1.2 to 1.5
Motion with severe impact	1.5 to 3

Accuracy Standards

Cam Followers are manufactured with accuracies according to Table3. However, model CFS is manufactured in accordance with Table4.

(1) Dimensional tolerance of the cylindrical outer ring in outer diameter D : Table3
(2) Dimensional tolerance of the spherical outer ring in outer diameter D: $^{0}_{-0.05}$
(3) Dimensional tolerance of the Cam Follower in stud diameter d : h7
(4) Dimensional tolerance of the outer ring in width C: $^{0}_{-0.12}$

Table3 Accuracy of the Outer Ring (JIS Class 0)

Unit: μm

Nominal dimension of the bearing outer diameter (D) (mm)		Tolerance of the bearing in outer diameter (Dm) (note)		Tolerance of the outer ring in radial runout (max)
Above	Or less	Upper	Lower	
6	18	0	–8	15
18	30	0	–9	15
30	50	0	–11	20
50	80	0	–13	25
80	120	0	–15	35

Note) "Dm" represents the arithmetic average of the maximum and minimum diameters obtained in measuring the bearing outer diameter at two points.
Model CF-SFU is compatible with model CF.

Table4 Accuracy standards for CFS models.

Unit: mm

(1)Dimensional tolerance for outer ring diameter D	0 -0.008
(2)Dimensional tolerance for stud diameter d	h6
(3) Dimensional tolerance of the outer ring in width C:	0 -0.12
(4)Radial runout tolerance of the outer ring	15μm

Track Load Capacity

The track load capacity means the permissible load at which the outer ring of a bearing and the mating surface are capable of withstanding repeated use over a long period.
The track load capacity provided in the specification table indicates the value when using a steel material with tensile strength of 1.24 kN/mm^2 as the mating material. Therefore, it is possible to increase the track load capacity by increasing the hardness of the material. Fig.2 shows the hardness of the mating material and the track capacity factor in relation to tensile strength. To obtain the track load capacity of each mating material, multiply the track load capacity shown in the corresponding specification table by the respective track load factor.

Note) For the mating material, we recommend using those materials with the raceway hardness of 20 HC or higher and the tensile strength of 755 N/mm^2 or higher.

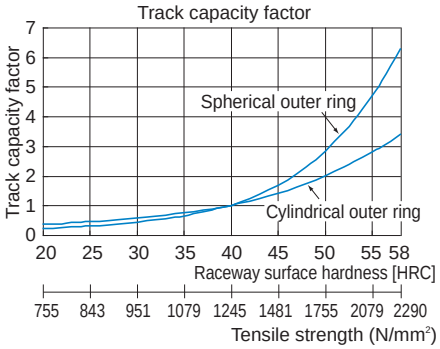


Fig.2 Track Capacity Factor

Radial Clearance

The radial clearance of Cam Followers is based on the value indicated in Table5 (both full-roller type and caged type share the same radial clearance). The radial clearance of CFS is indicated in Table6.

Table5 Radial Clearance Unit: μm

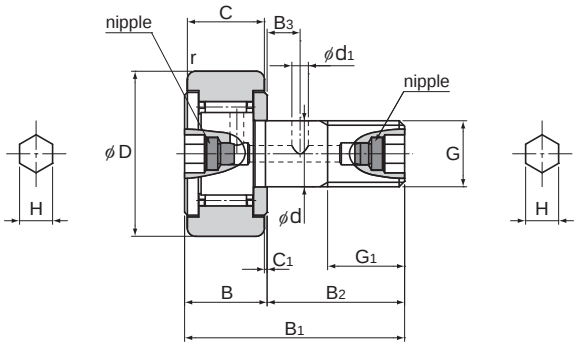
Model No.	Radial Clearance (Caged type and full-roller type)	
CF, CFN, CFH, CFT, CF-SFU	Min.	Max.
3 to 4	3	17
5 to 8	5	20
10 to 12−1	5	25
16 to 20−1	10	30
24 to 30−2	10	40

Model CF-SFU is compatible with model CF(with cages).

Table6 Radial clearance for model CFS Unit: μm

Stud diameter	Radial Clearance (Caged type and full-roller type)	
	Min.	Max.
2.5 to 5	3	17
6	5	20

Model CF-AB (Cam Follower with Grease Nipple (Cylindrical Outer Ring)), Model CF-M-AB (Stainless Steel), Model CF-R-AB (Cam Follower with Grease Nipple (Spherical Outer Ring)), Model CF-MR-AB (Stainless Steel)



Stud diameter		Main dimensions													
		Outer diameter	Outer ring width	Threaded			Overall length							Shoulder height	
d	Model No.	D	C	G	G_1	B	B_1	B_2	B_3	C_1	d_1	H	r_{smin}	f	(Min.)
12	CF 12-AB	30	14	M12×1.5	13	15	40	25	6	0.6	3	6	0.6	20	
12	CF 12-1-AB	32	14	M12×1.5	13	15	40	25	6	0.6	3	6	0.6	20	
16	CF 16-AB	35	18	M16×1.5	17	19.5	52	32.5	8	0.8	3	6	0.6	24	
18	CF 18-AB	40	20	M18×1.5	19	21.5	58	36.5	8	0.8	3	6	1	26	
20	CF 20-AB	52	24	M20×1.5	21	25.5	66	40.5	9	0.8	4	8	1	36	
20	CF 20-1-AB	47	24	M20×1.5	21	25.5	66	40.5	9	0.8	4	8	1	36	
24	CF 24-AB	62	29	M24×1.5	25	30.5	80	49.5	11	0.8	4	8	1	40	
24	CF 24-1-AB	72	29	M24×1.5	25	30.5	80	49.5	11	0.8	4	8	1	40	
30	CF 30-AB	80	35	M30×1.5	32	37	100	63	15	1	4	8	1	46	
30	CF 30-1-AB	85	35	M30×1.5	32	37	100	63	15	1	4	8	1	46	
30	CF 30-2-AB	90	35	M30×1.5	32	37	100	63	15	1	4	8	1	46	

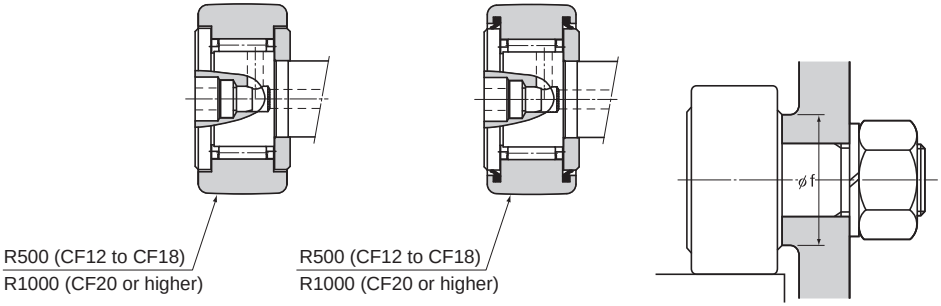
Note) The seal must be used at temperature of 80℃ or below.

Model number coding

CF12 V M UU R -AB

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No symbol: Without seal; UU: With seal
- R: No Symbol : Cylindrical outer ring; R : Spherical outer ring
- -AB: Stud With Hexagonal Socket At Both Ends

Note) For accessories, see A19-34.



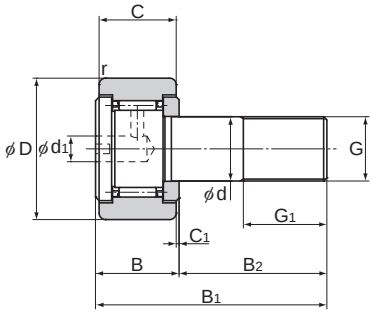
Model CF-R-AB　　Model CF-UUR-AB

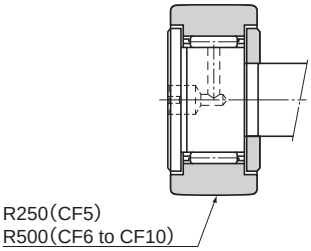
Unit: mm

	Basic Load Rating				Maximum permissible load	Track Load Capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C kN	C_0 kN	C kN	C_0 kN	F_0 kN	kN	kN	min^{-1}	min^{-1}	g	g
	7.87	9.79	13.4	19.8	9.37	7.06	2.45	14000	5800	105	107
	7.87	9.79	13.4	19.8	9.37	7.45	2.74	14000	5800	115	117
	12	18.3	20.6	37.6	17.3	11.2	3.14	10000	4500	205	207
	14.7	25.2	25.2	51.3	26.1	14.4	3.72	8500	3800	295	300
	20.7	34.8	33.2	64.8	32.1	23.2	8.23	7000	3400	525	530
	20.7	34.8	33.2	64.8	32.1	21	7.15	7000	3400	450	455
	30.6	53.2	46.7	92.9	49.5	34.2	10.5	6500	2900	915	925
	30.6	53.2	46.7	92.9	49.5	39.8	12.9	6500	2900	1150	1160
	45.4	87.6	67.6	145	73.7	52.6	14.9	5000	2300	1880	1890
	45.4	87.6	67.6	145	73.7	56	16.1	5000	2300	1950	1960
	45.4	87.6	67.6	145	73.7	59.3	17.3	5000	2300	2000	2010

Note) The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

Model CF (Popular Type (Cylindrical Outer Ring)), Model CF-M (Stainless Steel Type)
Model CF-R (Popular Type (Spherical Outer Ring)), Model CF-MR (Stainless Steel Type)





Model CF-R

Stud diameter		Main dimensions										
		Outer diameter	Outer ring width	Threaded			Overall length					Shoulder height
d	Model No.	D	C	G	G_1	B	B_1	B_2	C_1	d_1	r_{smin}	f (Min.)
5	CF 5	13	9	M5×0.8	7.5	10	23	13	0.5	3.1	0.3	9.7
6	CF 6	16	11	M6×1	8	12	28	16	0.6	4	0.3	11
8	CF 8	19	11	M8×1.25	10	12	32	20	0.6	4	0.3	13
10	CF 10	22	12	M10×1.25	12	13	36	23	0.6	4	0.3	15
10	CF 10-1	26	12	M10×1.25	12	13	36	23	0.6	4	0.3	15

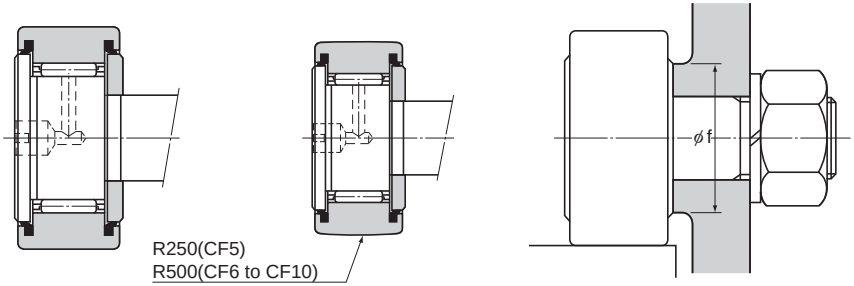
Note) The seal must be used at temperature of 80℃ or below.

Model number coding

CF6 V M UU R -N

- CF6: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: no symbol: without seal; UU: With seal
- R: No Symbol: Cylindrical outer ring; R: Spherical outer ring
- -N: No symbol: No grease nipple; N: Dedicated grease nipple included (See A19-34)

Note) Full-roller Type is applicable for Stud Diameter 6 to 10.



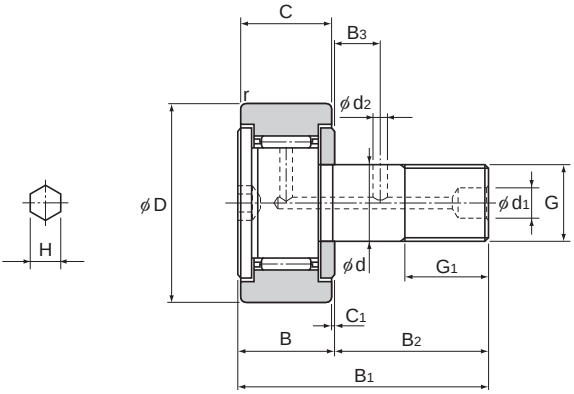
Model CF···UU Model CF···UUR

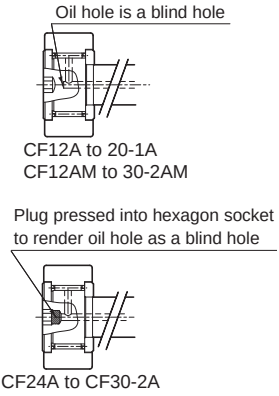
Unit: mm

	Basic load rating				Maximum permissible load	Track load capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C kN	C_0 kN	C kN	C_0 kN	F_0 kN	kN	kN	min^{-1}	min^{-1}	g	g
	3.14	2.77	—	—	1.42	2.25	0.53	29000	—	10.5	—
	3.59	3.58	6.94	8.5	2.11	3.43	1.08	25000	11000	18.5	19
	4.17	4.65	8.13	11.2	4.73	4.02	1.37	20000	8700	28.5	29
	5.33	6.78	9.42	14.3	5.81	4.7	1.67	17000	7200	45	46
	5.33	6.78	9.42	14.3	5.81	5.49	2.06	17000	7200	60	61

Note) The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

Model CF-A (Cam Follower with Hexagon Socket (Cylindrical Outer Ring)), Model CF-M-A (Stainless Steel Type)
Model CF-R-A (Cam Follower with Hexagon Socket (Spherical Outer Ring)), Model CF-MR-A (Stainless Steel Type)





Stud diameter		Main dimensions													
		Outer diameter	Outer ring width	Threaded			Overall length								Shoulder height
d	Model No.	D	C	G	G_1	B	B_1	B_2	B_3	C_1	d_1	d_2	H*	r_{smin}	f (Min.)
3	CF 3-A	10	7	M3×0.5	5	8	17	9	—	0.5	—*	—	2 (1.5)	0.2	6.8
4	CF 4-A	12	8	M4×0.7	6	9	20	11	—	0.5	—*	—	2.5 (2)	0.3	8.6
5	CF 5-A	13	9	M5×0.8	7.5	10	23	13	—	0.5	—*	—	3 (2.5)	0.3	9.7
6	CF 6-A	16	11	M6×1	8	12	28	16	—	0.6	—*	—	3	0.3	11
8	CF 8-A	19	11	M8×1.25	10	12	32	20	—	0.6	—*	—	4	0.3	13
10	CF 10-A	22	12	M10×1.25	12	13	36	23	—	0.6	—*	—	5	0.3	15
10	CF 10-1-A	26	12	M10×1.25	12	13	36	23	—	0.6	—*	—	5	0.3	15
12	CF 12-A	30	14	M12×1.5	13	15	40	25	6	0.6	6	3	6	0.6	20
12	CF 12-1-A	32	14	M12×1.5	13	15	40	25	6	0.6	6	3	6	0.6	20
16	CF 16-A	35	18	M16×1.5	17	19.5	52	32.5	8	0.8	6	3	6	0.6	24
18	CF 18-A	40	20	M18×1.5	19	21.5	58	36.5	8	0.8	6	3	6	1	26
20	CF 20-A	52	24	M20×1.5	21	25.5	66	40.5	9	0.8	8	4	8	1	36
20	CF 20-1-A	47	24	M20×1.5	21	25.5	66	40.5	9	0.8	8	4	8	1	36
24	CF 24-A	62	29	M24×1.5	25	30.5	80	49.5	11	0.8	8	4	8	1	40
24	CF 24-1-A	72	29	M24×1.5	25	30.5	80	49.5	11	0.8	8	4	8	1	40
30	CF 30-A	80	35	M30×1.5	32	37	100	63	15	1	8	4	8	1	46
30	CF 30-1-A	85	35	M30×1.5	32	37	100	63	15	1	8	4	8	1	46
30	CF 30-2-A	90	35	M30×1.5	32	37	100	63	15	1	8	4	8	1	46

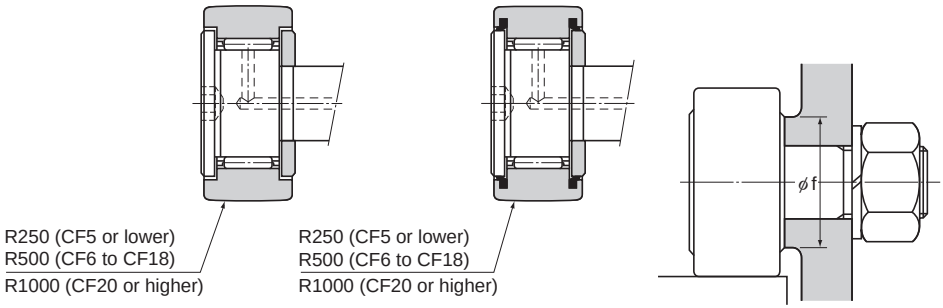
Note) The seal must be used at temperature of 80℃ or below.
Those models marked with "*" do not have a greasing hole and cannot be replenished with grease.

Model number coding

CF12 V M UU R -A N

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: no symbol: without seal; UU: With seal
- R: No Symbol: Cylindrical outer ring; R: Spherical outer ring
- -A: Stud head with a hexagon socket
- N: No symbol: No grease nipple; N: Dedicated grease nipple included (see A19-34)

Note) Full-roller Type is applicable for Stud Diameter 6 to 30.



Model CF-R-A　　Model CF···UUR-A

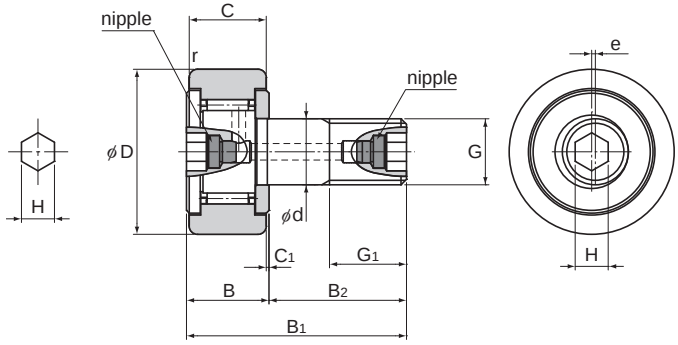
Unit: mm

	Basic load rating				Maximum permissible load	Track load capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C kN	C_0 kN	C kN	C_0 kN	F_0 kN	kN	kN	min^{-1}	min^{-1}	g	g
	1.47	1.18	—	—	0.36	1.37	0.37	47000	—	4.5	—
	2.06	2.05	—	—	0.78	1.76	0.47	37000	—	7.5	—
	3.14	2.77	—	—	1.42	2.25	0.53	29000	—	10.5	—
	3.59	3.58	6.94	8.5	2.11	3.43	1.08	25000	11000	18.5	19
	4.17	4.65	8.13	11.2	4.73	4.02	1.37	20000	8700	28.5	29
	5.33	6.78	9.42	14.3	5.81	4.7	1.67	17000	7200	45	46
	5.33	6.78	9.42	14.3	5.81	5.49	2.06	17000	7200	60	61
	7.87	9.79	13.4	19.8	9.37	7.06	2.45	14000	5800	105	107
	7.87	9.79	13.4	19.8	9.37	7.45	2.74	14000	5800	115	117
	12	18.3	20.6	37.6	17.3	11.2	3.14	10000	4500	205	207
	14.7	25.2	25.2	51.3	26.1	14.4	3.72	8500	3800	295	300
	20.7	34.8	33.2	64.8	32.1	23.2	8.23	7000	3400	525	530
	20.7	34.8	33.2	64.8	32.1	21	7.15	7000	3400	450	455
	30.6	53.2	46.7	92.9	49.5	34.2	10.5	6500	2900	915	925
	30.6	53.2	46.7	92.9	49.5	39.8	12.9	6500	2900	1150	1160
	45.4	87.6	67.6	145	73.7	52.6	14.9	5000	2300	1880	1890
	45.4	87.6	67.6	145	73.7	56	16.1	5000	2300	1950	1960
	45.4	87.6	67.6	145	73.7	59.3	17.3	5000	2300	2000	2010

Note1) "★" indicates that the dimensions in the parentheses in this row apply to stainless steel types.
The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

Note2) CF24 or larger cam followers with hexagon sockets (symbol - A, excluding SUS models) are constructed with a plug fitted into the through hole that links the hexagon socket to the greasing hole (see dimensional drawing ϕd_1,ϕd_2: **A19-18**) to prevent grease leakages from the hexagon socket.
During greasing, take care to ensure that the plug is not forced out of the hexagon socket by excessive pressure.

Model CFH-AB (Eccentric Cam Follower with Grease Nipple (Cylindrical Outer Ring)), Model CFH-M-AB (Stainless Steel), Model CFH-R-AB (Eccentric Cam Follower with Grease Nipple (Spherical Outer Ring)), Model CFH-MR-AB (Stainless Steel)



Stud diameter		Main dimensions												
		Outer diameter	Outer ring width	Threaded			Overall length			Runout				Shoulder height
d	Model No.	D	C	G	G_1	B	B_1	B_2	C_1	e	H_1	H_2	r_{smin}	f (Min.)
12	CFH 12-AB	30	14	M12×1.5	13	15	40	25	0.6	0.4	6	6	0.6	20
12	CFH 12-1-AB	32	14	M12×1.5	13	15	40	25	0.6	0.4	6	6	0.6	20
16	CFH 16-AB	35	18	M16×1.5	17	19.5	52	32.5	0.8	0.5	6	6	0.6	24
18	CFH 18-AB	40	20	M18×1.5	19	21.5	58	36.5	0.8	0.6	6	6	1	26
20	CFH 20-AB	52	24	M20×1.5	21	25.5	66	40.5	0.8	0.7	8	8	1	36
20	CFH 20-1-AB	47	24	M20×1.5	21	25.5	66	40.5	0.8	0.7	8	8	1	36
24	CFH 24-AB	62	29	M24×1.5	25	30.5	80	49.5	0.8	0.8	8	8	1	40
24	CFH 24-1-AB	72	29	M24×1.5	25	30.5	80	49.5	0.8	0.8	8	8	1	40
30	CFH 30-AB	80	35	M30×1.5	32	37	100	63	1	1	8	8	1	46
30	CFH 30-1-AB	85	35	M30×1.5	32	37	100	63	1	1	8	8	1	46
30	CFH 30-2-AB	90	35	M30×1.5	32	37	100	63	1	1	8	8	1	46

Note) The seal must be used at temperature of 80℃ or below.

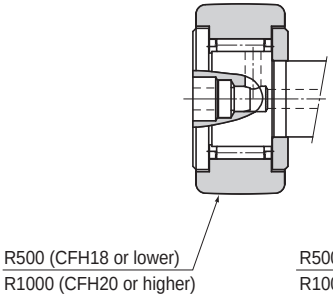
Model number coding

CFH12 V M UU R -AB

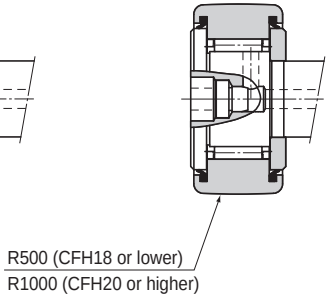
Model number

- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No symbol: Without seal; UU: With seal
- R: No Symbol: Cylindrical outer ring; R: Spherical outer ring
- -AB: Stud With Hexagonal Socket At Both Ends

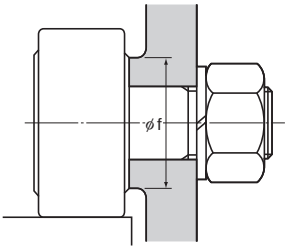
Note) For accessories, see A19-34.



Model CFH-R-AB



Model CFH-UUR-AB

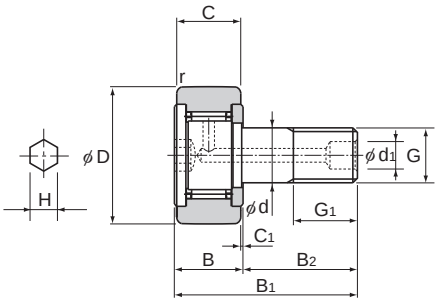


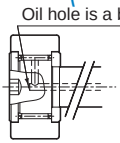
Unit: mm

	Basic Load Rating				Maximum permissible load	Track load capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C kN	C_0 kN	C kN	C_0 kN	F_0 kN	kN	kN	min^{-1}	min^{-1}	g	g
	7.87	9.79	13.4	19.8	9.37	7.06	2.45	14000	5800	105	107
	7.87	9.79	13.4	19.8	9.37	7.45	2.74	14000	5800	115	117
	12	18.3	20.6	37.6	17.3	11.2	3.14	10000	4500	205	207
	14.7	25.2	25.2	51.3	26.1	14.4	3.72	8500	3800	295	300
	20.7	34.8	33.2	64.8	32.1	23.2	8.23	7000	3400	525	530
	20.7	34.8	33.2	64.8	32.1	21	7.15	7000	3400	450	455
	30.6	53.2	46.7	92.9	49.5	34.2	10.5	6500	2900	915	925
	30.6	53.2	46.7	92.9	49.5	39.8	12.9	6500	2900	1150	1160
	45.4	87.6	67.6	145	73.7	52.6	14.9	5000	2300	1880	1890
	45.4	87.6	67.6	145	73.7	56	16.1	5000	2300	1950	1960
	45.4	87.6	67.6	145	73.7	59.3	17.3	5000	2300	2000	2010

Note) The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

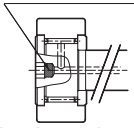
Model CFH-A (Eccentric Cam Follower with Hexagon Socket (Cylindrical Outer Ring)), Model CFH-M-A (Made of Stainless Steel)
Model CFH-R-A (Eccentric Cam Follower with Hexagon Socket (Spherical Outer Ring)), Model CFH-MR-A (Made of Stainless Steel)





CFH12A to 20-1A
CFH12AM to 30-2AM

Plug pressed into hexagon socket to render oil hole as a blind hole



CFH24A to CFH30-2A

Stud diameter		Main dimensions													
		Outer diameter	Outer ring width	Threaded			Overall length				Runout			Shoulder height f
d	Model No.	D	C	G	G_1	B	B_1	B_2	C_1	d_1	e	H*	r_{smin}	(Min.)
○ 5	CFH 5-A	13	9	M5×0.8	7.5	10	23	13	0.5	—*	0.2	3 (2.5)	0.3	9.7
6	CFH 6-A	16	11	M6×1	8	12	28	16	0.6	—*	0.25	3	0.3	11
8	CFH 8-A	19	11	M8×1.25	10	12	32	20	0.6	—*	0.25	4	0.3	13
10	CFH 10-A	22	12	M10×1.25	12	13	36	23	0.6	—*	0.3	5	0.3	15
10	CFH 10-1-A	26	12	M10×1.25	12	13	36	23	0.6	—*	0.3	5	0.3	15
12	CFH 12-A	30	14	M12×1.5	13	15	40	25	0.6	6	0.4	6	0.6	20
12	CFH 12-1-A	32	14	M12×1.5	13	15	40	25	0.6	6	0.4	6	0.6	20
16	CFH 16-A	35	18	M16×1.5	17	19.5	52	32.5	0.8	6	0.5	6	0.6	24
18	CFH 18-A	40	20	M18×1.5	19	21.5	58	36.5	0.8	6	0.6	6	1	26
20	CFH 20-A	52	24	M20×1.5	21	25.5	66	40.5	0.8	8	0.7	8	1	36
20	CFH 20-1-A	47	24	M20×1.5	21	25.5	66	40.5	0.8	8	0.7	8	1	36
24	CFH 24-A	62	29	M24×1.5	25	30.5	80	49.5	0.8	8	0.8	8	1	40
24	CFH 24-1-A	72	29	M24×1.5	25	30.5	80	49.5	0.8	8	0.8	8	1	40
30	CFH 30-A	80	35	M30×1.5	32	37	100	63	1	8	1	8	1	46
30	CFH 30-1-A	85	35	M30×1.5	32	37	100	63	1	8	1	8	1	46
30	CFH 30-2-A	90	35	M30×1.5	32	37	100	63	1	8	1	8	1	46

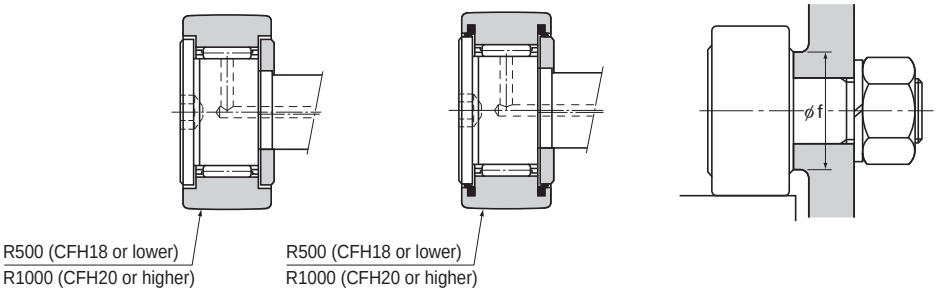
Note) THK also manufactures types that have a driver groove and a greasing hole on the head. (Model numbers of types with a driver groove do not include symbol "-A" in the end.)
The seal must be used at temperature of 80℃ or below.
Those models marked with "＊" do not have a greasing hole and cannot be replenished with grease.

Model number coding

CFH24-1 V M UU R -A N

- Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: no symbol: without seal; UU: With seal
- R: No Symbol: Cylindrical outer ring; R: Spherical outer ring
- -A: Stud head with a hexagon socket
- N: No Symbol: No grease nipple; N: Dedicated grease nipple included (See A19-34)

Note) Full-roller Type is applicable for Stud Diameter 6 to 30.



Model CFH-R　　Model CFH···UUR

Unit: mm

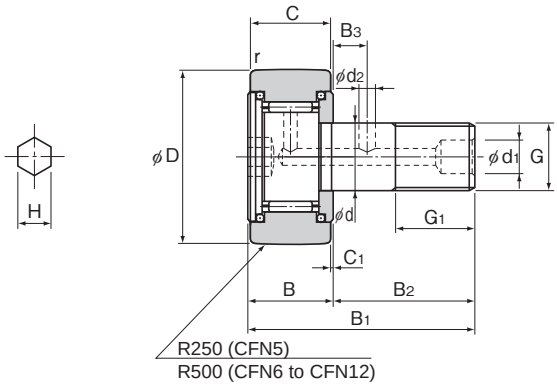
	Basic load rating				Maximum permissible load	Track load capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C	C_0	C	C_0	F_0						
	kN	kN	kN	kN	kN	kN	kN	min^{-1}	min^{-1}	g	g
	3.14	2.77	—	—	1.42	2.25	0.53	29000	—	10.5	—
	3.59	3.58	6.94	8.5	2.11	3.43	1.08	25000	11000	18.5	19
	4.17	4.65	8.13	11.2	4.73	4.02	1.37	20000	8700	28.5	29
	5.33	6.78	9.42	14.3	5.81	4.7	1.67	17000	7200	45	46
	5.33	6.78	9.42	14.3	5.81	5.49	2.06	17000	7200	60	61
	7.87	9.79	13.4	19.8	9.37	7.06	2.45	14000	5800	105	107
	7.87	9.79	13.4	19.8	9.37	7.45	2.74	14000	5800	115	117
	12	18.3	20.6	37.6	17.3	11.2	3.14	10000	4500	205	207
	14.7	25.2	25.2	51.3	26.1	14.4	3.72	8500	3800	295	300
	20.7	34.8	33.2	64.8	32.1	23.2	8.23	7000	3400	525	530
	20.7	34.8	33.2	64.8	32.1	21	7.15	7000	3400	450	455
	30.6	53.2	46.7	92.9	49.5	34.2	10.5	6500	2900	915	925
	30.6	53.2	46.7	92.9	49.5	39.8	12.9	6500	2900	1150	1160
	45.4	87.6	67.6	145	73.7	52.6	14.9	5000	2300	1880	1890
	45.4	87.6	67.6	145	73.7	56	16.1	5000	2300	1950	1960
	45.4	87.6	67.6	145	73.7	59.3	17.3	5000	2300	2000	2010

Note1) ○: Model CFH5M-A made of stainless steel is available on a made-to-order basis. If planning to use this model, contact THK.
Note2) ★ indicates that the dimensions in the parentheses in this row apply to stainless steel types.
Note3) The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

- Eccentric type (model CFH) variations
  Type in which the stud head side and screw side are tapped for pipe fitting (model CFHT)
  Type with a hexagon socket in the stud head side (model CFHT-A) (suitable for stud diameters of 12 mm or more)
  Type with a hexagon socket in the stud screw side (model CFHT-B) (suitable for stud diameters of 12 mm or more)
  Contact THK for information on other variations.

Note4) CF24 or larger cam followers with hexagon sockets (symbol - A, excluding SUS models) are constructed with a plug fitted into the through hole that links the hexagon socket to the greasing hole (see dimensional drawing ϕd_1,ϕd_2: A19-22) to prevent grease leakages from the hexagon socket.
During greasing, take care to ensure that the plug is not forced out of the hexagon socket by excessive pressure.

Model CFN-R-A (Cam Follower Containing Thrust Balls)



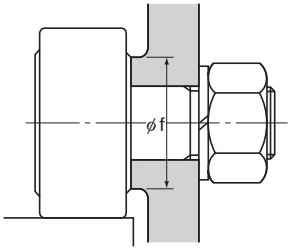
Stud diameter d	Model No. Spherical outer ring	Main										
		Outer diameter D	Outer ring width C	Threaded G	G_1	B	Overall length B_1	B_2	B_3	C_1	d_1	
5	CFN 5R-A	13	9	M5×0.8	7.5	10	23	13	—	0.5	—*	
6	CFN 6R-A	16	11	M6×1	8	12	28	16	—	0.6	—*	
8	CFN 8R-A	19	11	M8×1.25	10	12	32	20	—	0.6	—*	
10	CFN 10R-A	22	12	M10×1.25	12	13	36	23	—	0.6	—*	
12	CFN 12R-A	30	14	M12×1.5	13	15	40	25	6	0.6	6	

Note) Those models marked with "*" do not have a greasing hole and cannot be replenished with grease.

Model number coding

CFN12 R -A N

- CFN12: Model number
- R: Spherical outer ring
- -A: Stud head with a hexagon socket
- N: No Symbol : No grease nipple; N : Dedicated grease nipple included (See A19-34)

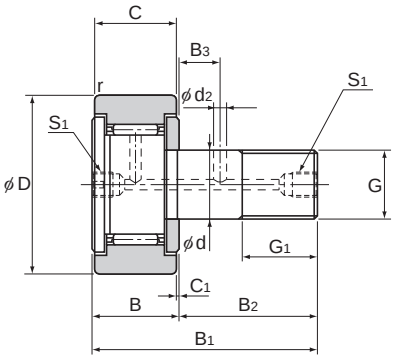


Unit: mm

dimensions					Basic load rating		Permissible thrust load	Maximum permissible load	Track load capacity	Rotational speed limit *	Mass
	d_2	H	r_{smin}	Shoulder height f (Min.)	C kN	C_0 kN	N	F_0 kN	kN	min^{-1}	g
	—*	3	0.3	10	3.14	2.77	160	1.42	0.53	29000	10.5
	—*	3	0.3	12	3.59	3.58	250	2.11	1.08	25000	18.5
	—*	4	0.3	14	4.17	4.65	290	4.73	1.37	20000	28.5
	—*	5	0.3	16.5	5.33	6.78	400	5.81	1.67	17000	45
	3	6	0.6	21.5	7.87	9.79	680	9.37	2.45	14000	105

Note) The rotation speed limit value in the table (*) applies to models using grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted.

Model CFT (Cam Follower with Tapped Greasing Hole (Cylindrical Outer Ring)), Model CFT-M (Made of Stainless Steel)
Model CFT-R (Cam Follower with Tapped Greasing Hole (Spherical Outer Ring)), Model CFT-MR (Made of Stainless Steel)



Stud diameter		Main dimensions													
		Outer diameter	Outer ring width	Threaded			Overall length							Shoulder height	
d	Model No.	D	C	G	G_1	B	B_1	B_2	B_3	C_1	S_1	d_2	r_{smin}	f (Min.)	
6	CFT 6	16	11	M6×1	8	12	28	16	—	0.6	M6×0.75*	—	0.3	11	
8	CFT 8	19	11	M8×1.25	10	12	32	20	—	0.6	M6×0.75*	—	0.3	13	
10	CFT 10	22	12	M10×1.25	12	13	36	23	—	0.6	M6×0.75*	—	0.3	15	
10	CFT 10-1	26	12	M10×1.25	12	13	36	23	—	0.6	M6×0.75*	—	0.3	15	
12	CFT 12	30	14	M12×1.5	13	15	40	25	6	0.6	M6×0.75	3	0.6	20	
12	CFT 12-1	32	14	M12×1.5	13	15	40	25	6	0.6	M6×0.75	3	0.6	20	
16	CFT 16	35	18	M16×1.5	17	19.5	52	32.5	8	0.8	PT 1/8	3	0.6	24	
18	CFT 18	40	20	M18×1.5	19	21.5	58	36.5	8	0.8	PT 1/8	3	1	26	
20	CFT 20	52	24	M20×1.5	21	25.5	66	40.5	9	0.8	PT 1/8	4	1	36	
20	CFT 20-1	47	24	M20×1.5	21	25.5	66	40.5	9	0.8	PT 1/8	4	1	36	
24	CFT 24	62	29	M24×1.5	25	30.5	80	49.5	11	0.8	PT 1/8	4	1	40	
24	CFT 24-1	72	29	M24×1.5	25	30.5	80	49.5	11	0.8	PT 1/8	4	1	40	
30	CFT 30	80	35	M30×1.5	32	37	100	63	15	1	PT 1/8	4	1	46	
30	CFT 30-1	85	35	M30×1.5	32	37	100	63	15	1	PT 1/8	4	1	46	
30	CFT 30-2	90	35	M30×1.5	32	37	100	63	15	1	PT 1/8	4	1	46	

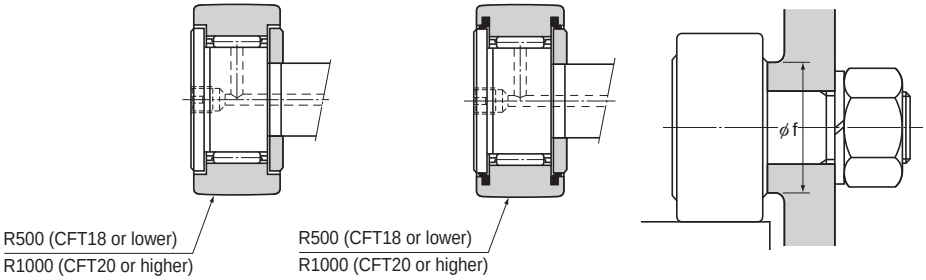
Note) The seal must be used at temperature of 80℃ or below.
Those models marked with "*" have a greasing hole only on the head.

Model number coding

CFT30-1 V M UU R -N

- Model number
- No symbol: With cage / V: Full-roller Type
- No symbol: Carbon steel / M: Stainless steel
- No symbol: Without seal / UU: With seal
- No symbol: Cylindrical outer ring / R: Spherical outer ring
- No Symbol: No grease nipple / N: Dedicated grease nipple included (See A19-34)

Note) Full-roller Type is applicable for Stud Diameter 6 to 30.



Model CFT-R　　Model CFT···UUR

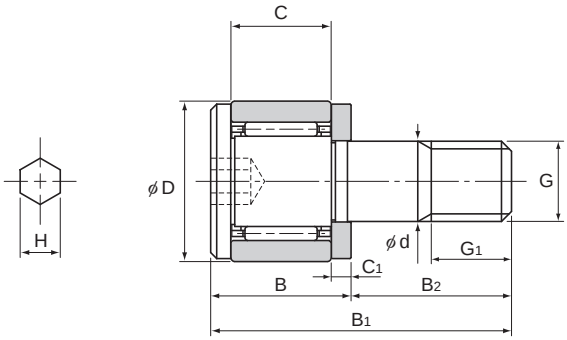
Unit: mm

	Basic load rating				Maximum permissible load	Track load capacity		Rotational speed limit *		Mass	
	With cage		Full rollers			Cylindrical outer ring	Spherical outer ring	With cage	Full rollers	With cage	Full rollers
	C kN	C_0 kN	C kN	C_0 kN	F_0 kN	kN	kN	min^{-1}	min^{-1}	g	g
	3.59	3.58	6.94	8.5	2.11	3.43	1.08	25000	11000	18.5	19
	4.17	4.65	8.13	11.2	4.73	4.02	1.37	20000	8700	28.5	29
	5.33	6.78	9.42	14.3	5.81	4.7	1.67	17000	7200	45	46
	5.33	6.78	9.42	14.3	5.81	5.49	2.06	17000	7200	60	61
	7.87	9.79	13.4	19.8	9.37	7.06	2.45	14000	5800	105	107
	7.87	9.79	13.4	19.8	9.37	7.45	2.74	14000	5800	115	117
	12	18.3	20.6	37.6	17.3	11.2	3.14	10000	4500	205	207
	14.7	25.2	25.2	51.3	26.1	14.4	3.72	8500	3800	295	300
	20.7	34.8	33.2	64.8	32.1	23.2	8.23	7000	3400	525	530
	20.7	34.8	33.2	64.8	32.1	21	7.15	7000	3400	450	455
	30.6	53.2	46.7	92.9	49.5	34.2	10.5	6500	2900	915	925
	30.6	53.2	46.7	92.9	49.5	39.8	12.9	6500	2900	1150	1160
	45.4	87.6	67.6	145	73.7	52.6	14.9	5000	2300	1880	1890
	45.4	87.6	67.6	145	73.7	56	16.1	5000	2300	1950	1960
	45.4	87.6	67.6	145	73.7	59.3	17.3	5000	2300	2000	2010

Note) The rotation speed limit value in the table (*) applies to models that have no seal and use grease lubrication. With those models using oil lubrication, up to 130% of this value is permitted. With those attached with seals, up to 70% of this value is permitted.

- Greasing tap type (model CFT) variations
  Type with a hexagon socket in the stud head side (model CFT-A) (suitable for stud diameters of 12 mm or more)
  Type with a hexagon socket in the stud screw side (model CFT-B) (suitable for stud diameters of 12 mm or more)
  Contact THK for information on other variations.

Outer ring compact model cam followers Models CFS-A, CFS-MA (stainless steel)



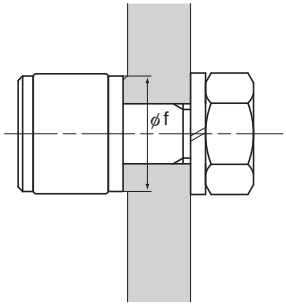
Stud diameter		Main dimensions									
		Outer diameter	Outer ring width	Threaded			Overall length				Shoulder height f
d	Model No.	D	C	G	G_1	B	B_1	B_2	C_1	H	(Min.)
2.5	CFS 2.5-A	5	3	M2.5×0.45	2.5	4.5	9.5	5	0.7	0.9	4.8
3	CFS 3-A	6	4	M3×0.5	3	5.5	11.5	6	0.7	1.5	5.8
4	CFS 4-A	8	5	M4×0.7	4	7	15	8	1	2	7.7
5	CFS 5-A	10	6	M5×0.8	5	8	18	10	1	2.5	9.6
6	CFS 6-A	12	7	M6×1.0	6	9.5	21.5	12	1.2	3	11.6

Model number coding

CFS3 V M -A

- CFS3: Model No.
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- -A: Stud head with a hexagon socket

Note1) Model CFS is only compatible with cylindrical outer ring types without seals and with stud head hexagon sockets.
Note2) Full-roller Type is applicable for Stud Diameter 2.5 to 6.

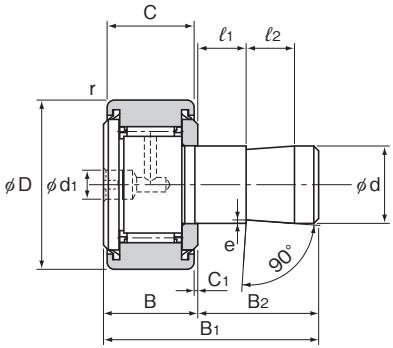


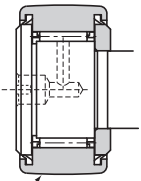
Unit: mm

	Basic load rating				Maximum permissible load	Track load capacity	Mass	
	With cage		Full rollers			Cylindrical outer ring		
	C	C_0	C	C_0	F_0		With cage	Full rollers
	kN	kN	kN	kN	kN	kN	g	g
	0.41	0.335	1	1.08	0.26	0.3	1	1
	0.63	0.61	1.37	1.77	0.36	0.48	2	2
	1.08	1.08	2.35	3.04	0.78	0.77	4	4
	1.57	1.86	3.14	4.71	1.42	1.18	7	7
	2.06	2.16	4.61	6.27	2.11	1.54	13	13

∗ Since model CFS does not have a greasing hole, it cannot be replenished with grease.

Easy-mount cam followers Models CF-SFU (cylindrical outer ring), CF-SFU-R (spherical outer ring)





Model CF-SFU···R

Stud diameter		Main dimensions											
		Outer diameter	Outer ring width		Overall length								
d	Model No.	D	C	B	B_1	B_2	C_1	ℓ_1	ℓ_2	d_1	r_{smin}	e	
6	CF-SFU-6	16	11	12	32	20	0.6	5	10	4	0.3	0.3	
8	CF-SFU-8	19	11	12	32	20	0.6	5	10	4	0.3	0.5	
10	CF-SFU-10	22	12	13	33	20	0.6	5	10	4	0.3	0.5	
10	CF-SFU-10-1	26	12	13	33	20	0.6	5	10	4	0.3	0.5	
12	CF-SFU-12	30	14	15	35	20	0.6	5	10	6	0.6	1	
12	CF-SFU-12-1	32	14	15	35	20	0.6	5	10	6	0.6	1	
16	CF-SFU-16	35	18	19.5	44.5	25	0.8	10	10	6	0.6	1	
18	CF-SFU-18	40	20	21.5	46.5	25	0.8	10	10	6	1	1	
20	CF-SFU-20	52	24	25.5	50.5	25	0.8	10	10	8	1	1	
20	CF-SFU-20-1	47	24	25.5	50.5	25	0.8	10	10	8	1	1	

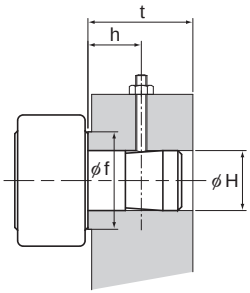
Model number coding

CF-SFU-6 R -N

Model No. Spherical outer ring

No Symbol : No grease nipple
N : Dedicated grease nipple included (See A**19-34**)

Note) Model CF-SFU is fitted with UU seals even where no UU symbol is used.



Unit: mm

Mounting dimensions				Basic load rating		Maximum permissible load	Track load capacity		Rotational speed limit *	Mass
Mounting dimension H		Shoulder height		With cage			Cylindrical outer ring	Spherical outer ring	With cage	
Tolerance	t	f	h	C	C_0	F_0				With cage
H7	(Min.)	(Min.)	(reference value)	kN	kN	kN	kN	kN	min^{-1}	g
6	20	11	10	3.59	3.58	2.11	3.43	1.08	17500	19
8	20	13	10	4.17	4.65	4.73	4.02	1.37	14000	28.5
10	20	15	10	5.33	6.78	5.81	4.7	1.67	11900	43
10	20	15	10	5.33	6.78	5.81	5.49	2.06	11900	58.5
12	20	20	10	7.87	9.79	9.37	7.06	2.45	9800	93
12	20	20	10	7.87	9.79	9.37	7.45	2.74	9800	103
16	25	24	15	12	18.3	17.3	11.2	3.14	7000	163.5
18	25	26	15	14.7	25.2	26.1	14.4	3.72	5950	235
20	25	36	15	20.7	34.8	32.1	23.2	8.23	4900	436
20	25	36	15	20.7	34.8	32.1	21	7.15	4900	361

Note) *The rotational speed limit applies to models with grease lubrication and seals.
Model CF-SFU is delivered with a stopper plug fitted.

Fit

For the dimensional tolerance of the Cam Follower in stud-mounting hole, we recommend the following fitting.

Table1 The dimensional tolerance of the stud-mounting hole

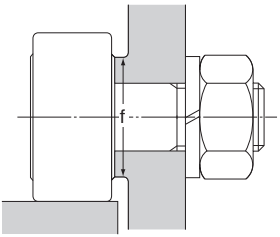
Model No.	The dimensional tolerance of the stud-mounting hole
Models CF, CFN, CFH, CFT, and CF-SFU	H7
Model CFS	H6

Installation

[Mounting Section]

Establish perpendicularity between the stud-mounting hole and the mounting surface, and chamfer the mouth of the hole to the smallest possible radius, preferably C0.5. Also, the diameter of the mounting surface should preferably be at least equal to the dimension “f” indicated in the specification table.

If the outer ring unilaterally or unevenly contacts the mating raceway, we recommend using model CF-R, whose outer ring circumference is spherically ground.



[Mating Raceway]

For the material of the mating raceway, see Track Load Capacity on A19-12.

[Mounting Precausions]

Do not tap the bracket and directly tighten the product without using a nut as shown in Fig.1. Doing so may result in an insufficient tightening torque, or cause the bending stress to concentrate in the male thread and damage the stud if the thread is loosened.

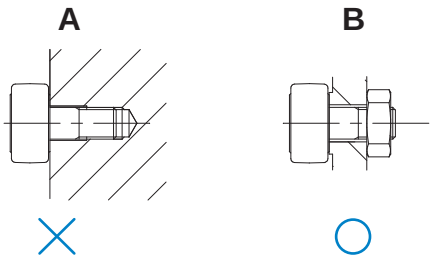


Fig.1

[Mounting model CF-SFU]

Refer to Fig.2 for information on how to mount CF-SFU models.

To the extent that CF-SFU models are designed for easy mounting and are therefore easy to remove, they are not suitable for uses where the loads applied are vibrating or involve impacts. For vibrating or impact loads, a normal cam follower secured by a nut is recommended.

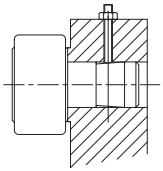


Fig.2

Accessories for the Cam Follower

Table1 shows accessories for standard types of Cam Followers. The dedicated grease nipple is attached at your request. If desiring the dedicated grease nipple, add symbol “N” to the end of the model number.

Example: CF 12 UUR -N
Dedicated grease nipple

Note) Because grease nipples are already embedded for model CF(H)-AB, those without an N symbol also include nipples.

Table1 Accessories

Model number	Plug Note 1	Plug Note 2	Nut JIS Class 2	Grease
CF(H)-AB	—	—	Included	Filled
CF (H)	Included	Included	Included	Filled
CFN	Included	Included	Included	Filled
CFT	—	—	Included	Filled
CFS	—	—	Included	Filled
CF-SFU	Mounting bolt	Included	—	Filled

Note1) The plug is used to prevent grease from leaking. However, it is not included in the packages of model CF5 and hexagon socket types of models CF(H)10-1-A and CFN10R-A or lower.
Note2) The plug is used for sealing the unused greasing holes.Since it cannot be removed once inserted, care should be taken.Not included for models CF(H)10-1 and lower.

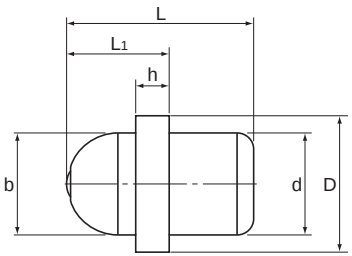


Table2 Specification Table for Grease Nipples

Supported models	Nipple dimensions						Nipple model No.
CF, CFN, CFH	d	b	D	h	L	L_1	
5	3.1	6	7.5	1.5	9	5.5	NP3.2×3.5
6 to 10	4	6	7.5	1.5	10	5.5	PB1021B
12 to 18	6	6	8	2	11	6	NP6×5
20 to 30	8	6	10	3	16	7	NP8×9

Note) It cannot be attached to models CF(H)10-1-A, CFN10R-A or lower.

Table3 lists grease nipples that can be attached to models CFT6 to 30. When ordering the product, specify the corresponding nipple model number.

Table3 Dedicated grease nipple for model CFT

Supported model number	Corresponding nipple model number
CFT 6 to 12	A-M6F,B-M6F,C-M6F
CFT 16 to 30	A-PT1/8,B-PT1/8,C-PT1/8

Note) For the dimensions and shapes of the grease nipples, see the General Catalog A24-26.

Model Number Coding

Model number configurations differ depending on the model features. Refer to the corresponding sample model number configuration.

[Cam Follower with Grease Nipple]

● **Models CF-AB and CFH-AB**

CF12 V M UU R -AB

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No symbol: Without seal; UU: With seal
- R: No Symbol : Cylindrical outer ring; R: Spherical outer ring
- -AB: Stud With Hexagonal Socket At Both Ends

[Cam Follower]

● **Models CF, CFH, CFN, CFT and CFS**

CF12 V M UU R -A N

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No Symbol : without seal; UU: With seal
- R: No Symbol : Cylindrical outer ring; R: Spherical outer ring
- -A: No Symbol : Flat-head Slot; -A: Stud head with a hexagon socket
- N: No Symbol : No grease nipple; N: Dedicated grease nipple included (See A19-34)

∗ Because support will vary depending on the model number, please refer to each dimensional table for details.

[Easy-mount cam follower]

● **Models CF-SFU and CF-SFU-R**

CF-SFU-6 R

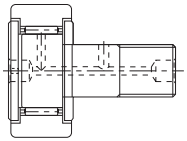
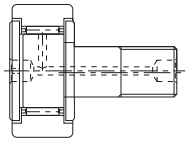
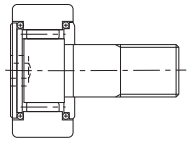
- R: Spherical outer ring

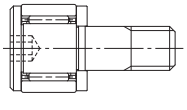
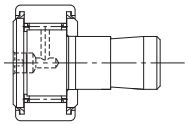
∗ CF-SFU models are fitted with UU seals even where no UU symbol is used.

Types and Model Numbers of Cam Followers

The Cam Follower is divided into several types as indicated in Table1.

Table1 Types and Model Numbers of Cam Followers

Type		Popular Type	Eccentric Cam Follower	Containing Thrust Balls
Shape				
Cylindrical outer ring	Stud with a hexagon socket	CF-A (CF⋯UU-A)	CFH-A (CFH⋯UU-A)	———
	Stud with a Flat-head Slot	CF (CF⋯UU)	CFH (CFH⋯UU)	———
	With a Tapped Hole for Greasing	CFT (CFT⋯UU)	CFHT (CFHT⋯UU)	———
	Made of stainless steel	CF-M (CF⋯MUU)	CFH-M (CFH⋯MUU)	———
Spherical outer ring	Stud with a hexagon socket	CF-R-A (CF⋯UUR-A)	CFH-R-A (CFH⋯UUR-A)	CFN-R-A
	Stud with a Flat-head Slot	CF-R (CF⋯UUR)	CFH-R (CFH⋯UUR)	———
	With a Tapped Hole for Greasing	CFT-R (CFT⋯UUR)	CFHT-R (CFHT⋯UUR)	———
	Made of stainless steel	CF-MR (CF⋯MUUR)	CFH-MR (CFH⋯MUUR)	———

Type		Outer ring compact model	Easy-mount model
Shape			
Cylindrical outer ring	Stud with a hexagon socket	CFS⋯-A	———
	Stud with a Flat-head Slot	———	CF-SFU-⋯
	With a Tapped Hole for Greasing	———	———
	Made of stainless steel	CFS⋯M-A	———
Spherical outer ring	Stud with a hexagon socket	———	———
	Stud with a Flat-head Slot	———	CF-SFU-⋯R
	With a Tapped Hole for Greasing	———	———
	Made of stainless steel	———	———

Note1) The symbols in the parentheses indicate model numbers of types with seals.
Note2) THK also manufactures low-speed full-roller types with long service lives. For these full-roller types, symbol “V” is indicated.
Note3) Symbol M indicates stainless steel type.

Example: CF 12 V UUR
Full-roller type

[Handling]

(1) Do not disassemble the parts. This will result in loss of functionality.
(2) Take care not to drop or strike the Cam Follower. Doing so may cause injury or damage. Giving an impact to it could also cause damage to its function even if the product looks intact.
(3) When handling the product, wear protective gloves, safety shoes, etc., as necessary to ensure safety.

[Precautions on Use]

(1) When securing the Cam Follower, use a torque wrench or the like to tighten the product at a torque equivalent to the corresponding value in B**19-14** on Table1.
(2) Do not use the product at temperature of 80℃ or higher. Exposure to higher temperatures may cause the resin/rubber parts to deform/be damaged.
(3) Prevent foreign material, such as cutting chips or coolant, from entering the system. Failure to do so may cause damage.
(4) If foreign material such as cutting chips adheres to the product, replenish the lubricant after cleaning the product.
(5) Cam Followers are designed for use under a radial load. Do not use the product under a thrust load.
(6) Micro-oscillation can prevent the lubricant from coating the surface where balls meet the raceway, which can lead to fretting. To prevent this, use a grease with superior fretting resistance. THK also recommends periodically rotating the Cam Follower at least once to ensure that the raceway and balls are coated with lubricant.
(7) Insufficient rigidity or accuracy of mounting members causes the bearing load to concentrate on one point and the bearing performance will drop significantly. Accordingly, give sufficient consideration to the rigidity/accuracy of the housing and base and strength of the fixing bolts.

[Lubrication]

(1) The Cam Follower uses lithium soap-based grease No. 2 as standard grease. (Model CFN uses THK AFC Grease.)
Replenish the lubricant whenever necessary. Do not combine different lubricants. Mixing lubricants can cause adverse interaction between disparate additives or other ingredients. (See B**19-15,** Dust-proofing and Lubrication.)
(2) We recommend applying a lubricant to the mating surface where the Cam Follower travels.
(3) CF24, CFH24 or larger Cam Followers with hexagon sockets (symbol - A, excluding SUS models) are constructed with a plug fitted into the through hole that links the hexagon socket to the greasing hole (see dimensional drawing φd_1, φd_2 A**19-18**) to prevent grease leakages from the hexagon socket.
During lubrication, take care to ensure that the plug is not forced out of the hexagon socket by excessive pressure.
(4) When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, use the grease appropriate for the specification/environment.
(5) The consistency of grease changes according to the temperature. Take note that the slide resistance of the Cam Follower also changes as the consistency of grease changes.
(6) After lubrication, the slide resistance of the Cam Follower may increase due to the agitation resistance of grease. Be sure to perform a break-in to let the grease spread fully, before operating the machine.
(7) Excess grease may scatter immediately after lubrication, so wipe off scattered grease as necessary.

(8) The properties of grease deteriorate and its lubrication performance drops over time, so grease must be checked and added properly according to the use frequency of the machine.
(9) The greasing interval varies depending on the use condition and service environment. Set the final lubrication interval/amount based on the actual machine.

[Storage]
When storing the Cam Follower, enclose it in a package designated by THK and store it in a room while avoiding high temperature, low temperature and high humidity.
After the product has been in storage for an extended period of time, lubricant inside may have deteriorated, so add new lubricant before use.

[Disposal]
Dispose of the product properly as industrial waste.

Cam Follower

THK General Catalog

Cam Follower

THK General Catalog

B Support Book

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Features of the Cam Follower

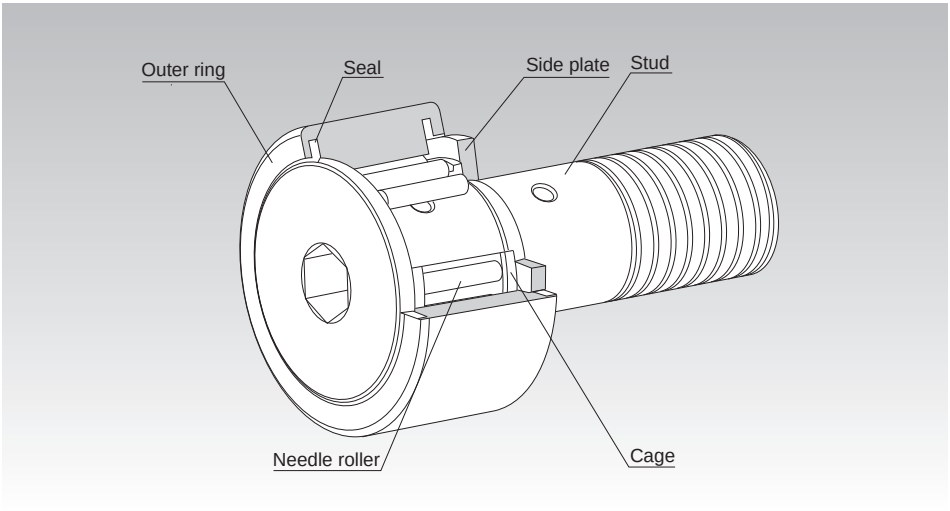


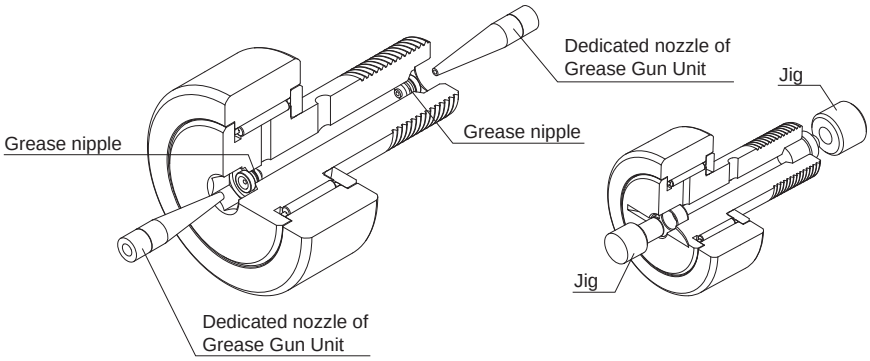
Fig.1 Structure of Cam Follower Model CF···UU-A

Structure and Features

The Cam Follower is a compact and highly rigid bearing with a shaft. It contains needle rollers and is used as a guide roller for cam mechanisms or straight motion.
Since its outer ring rotates while keeping direct contact with the mating surface, this product is thick-walled and designed to bear an impact load.
Inside the outer ring, needle rollers and a precision cage are incorporated. This prevents the product from skewing and achieves a superb rotation performance. And, as a result, the product is capable of easily withstanding high-speed rotation.
There are two types of the outer ring in shape: spherical and cylindrical. The spherical outer ring easily absorbs a distortion of the shaft center when the cam follower is installed and helps lighten a biased load.
The Cam Follower is used in a wide range of applications such as cam mechanisms of automatic machines, dedicated machines as well as carrier systems, conveyors, bookbinding machines, tool changers of machining centers, pallet changers, automatic coating machines, and sliding forks of automatic warehouses.

Cam Follower with Grease Nipple

With previous models it was necessary to fabricate a jig in order to install a plug or grease nipple. The Model CF-AB Cam Follower with grease nipples comes equipped with grease nipples on both sides, so it can be used immediately, without modification.
An Allen wrench can be used to anchor the stud from either the head or the threaded end, and it can be lubricated from either end as well. This ensures that there will be adequate space to install the unit and perform maintenance, improving work efficiency.



CF-AB　　Conventional type

Cam Follower Containing Thrust Balls

Even a slight mounting error in a high speed cam mechanism operating in a harsh environment could cause abnormal wear to the thrust unit of the cam follower. In such a case, using Cam Follower Containing Thrust Balls model CFN will bring about a significant effect in increasing the durability.
Models CFN5 to 12 are standard-stock items. If desiring a size other than the standard items, contact THK.
Model CFN is capable of receiving a thrust load caused by a slight mounting error. However, it is necessary to minimize a component of thrust force, or prevent it from occurring, when designing the cam mechanism and installing the Cam Follower.

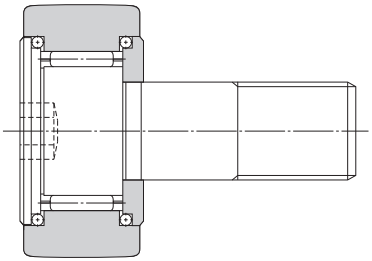


Fig.2

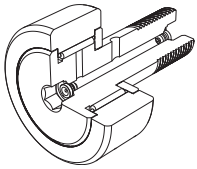
Types of the Cam Follower

Types and Features

Cam follower with grease nipple model CF-AB

Specification Table⇒A19-14

A hexagonal socket is provided on both stud ends, and a grease nipple for greasing is fitted to the inside. Therefore, lubrication and mounting from both directions is possible.
An eccentric type (CFH-AB) is also available.

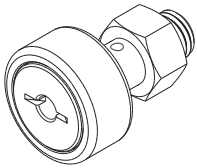


Model CF-AB

Popular Type Cam Follower Model CF

Specification Table⇒A19-16

It is a popular type of Cam Follower provided with a driver groove on the head of the stud. A highly corrosion resistant stainless steel type (symbol M) is also available.

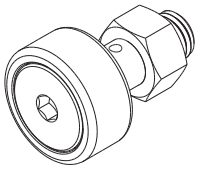


Model CF

Cam Follower with a Hexagon Socket Model CF-A

Specification Table⇒A19-18

Since the stud head has a hexagon socket, this model can easily be installed using a hexagon wrench.

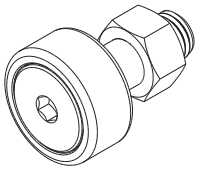


Model CF-A

Eccentric Cam Follower with a Hexagon Socket Model CFH-A

Specification Table⇒A19-22

This model can be installed in the same mounting hole as that of model CF. Since the mounting shaft of the stud and the stud head are eccentric by 0.25 mm to 1.0 mm, the position of this model can easily be adjusted simply by turning the stud. Thus, it is a compact, highly accurate eccentric cam follower with an integral structure. As a result, the man-hours for machining and assembly can significantly be reduced because it is unnecessary to align the cam follower with the cam groove and machine the mounting-hole area with precision.

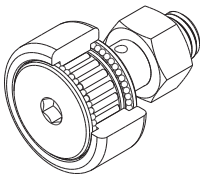


Model CFH-A

Cam Follower Containing Thrust Balls Model CFN-R-A

Specification Table⇒A19-24

Based on the popular type Cam Follower, this model is incorporated with thrust load balls.

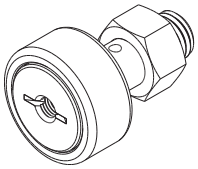


Model CFN-R-A

Cam Follower with a Tapped Hole for Greasing Model CFT

Specification Table⇒A19-26

Basically the same as the popular type Cam Follower, this model is provided with tapped holes for piping on the stud head and the thread.
It is optimal for locations where an integrated piping for greasing is required.

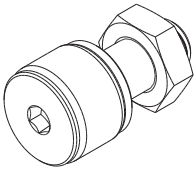


Model CFT

Outer ring compact cam follower model CFS

Specification Table⇒A19-28

This Cam Follower contains extremely fine needle rollers.
The outer ring external diameter is extremely small relative to the stud diameter, allowing a compact design.

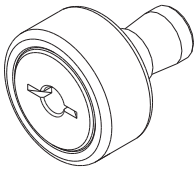


Model CFS

Easy-mount cam follower model CF-SFU

Specification Table⇒A19-30

To simplify installation, a flat-head slot has been machined into the stud so that it can be secured with a screw. This is ideal for units where there is no space to fasten the stud. Model CF-SFU is only available with seals.



Model CF-SFU

Classification Table

Cam Follower

Popular Type

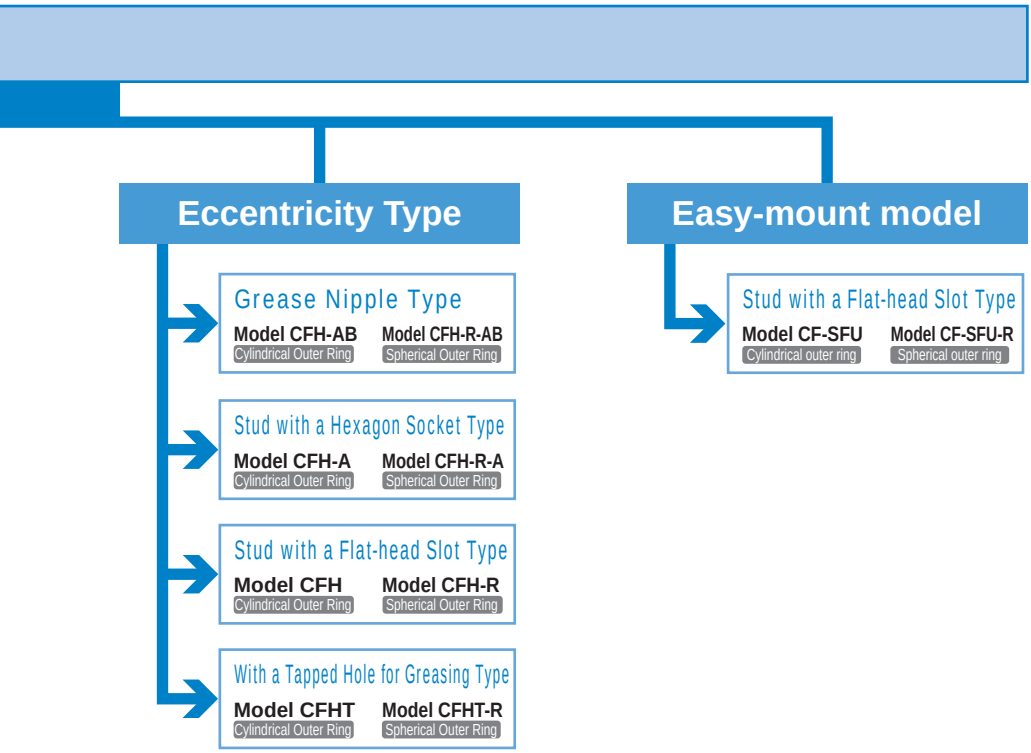
- **Grease Nipple Type**
  - Model CF-AB (Cylindrical Outer Ring)
  - Model CF-R-AB (Spherical Outer Ring)
- **Stud with a Hexagon Socket Type**
  - Model CF-A (Cylindrical Outer Ring)
  - Model CF-R-A (Spherical Outer Ring)
- **Stud with a Flat-head Slot Type**
  - Model CF (Cylindrical Outer Ring)
  - Model CF-R (Spherical Outer Ring)
- **With a Tapped Hole for Greasing Type**
  - Model CFT (Cylindrical Outer Ring)
  - Model CFT-R (Spherical Outer Ring)

Containing Thrust Balls

- **Stud with a Hexagon Socket Type**
  - Model CFN-R-A (Spherical Outer Ring)

Outer ring compact model

- **Stud with a Hexagon Socket Type**
  - Model CFS (Cylindrical outer ring)


Eccentricity Type
Grease Nipple Type
Model CFH-AB
Cylindrical Outer Ring
Model CFH-R-AB
Spherical Outer Ring
Stud with a Hexagon Socket Type
Model CFH-A
Cylindrical Outer Ring
Model CFH-R-A
Spherical Outer Ring
Stud with a Flat-head Slot Type
Model CFH
Cylindrical Outer Ring
Model CFH-R
Spherical Outer Ring
With a Tapped Hole for Greasing Type
Model CFHT
Cylindrical Outer Ring
Model CFHT-R
Spherical Outer Ring
Easy-mount model
Stud with a Flat-head Slot Type
Model CF-SFU
Cylindrical outer ring
Model CF-SFU-R
Spherical outer ring

Nominal Life

[Static Safety Factor]

The basic static load rating C_0 refers to the static load with constant direction and magnitude, under which the calculated contact stress in the center of the contact area between the roller and the raceway under the maximum load is 4000 MPa. (If the contact stress exceeds this level, it will affect the rotation.) This value is indicated as "C_0" in the dimensional tables. When a load is statically or dynamically applied, it is necessary to consider the static safety factor as shown below.

$$\frac{C_0}{P_0} = f_S$$

f_S : Static safety factor in relation to C_0 (see Table1)
C_0 : Basic static load rating (kN)
P_0 : Radial load (kN)

The permissible load (F_0) indicates the permissible value of the applied load determined by the strength of the stud section of the Cam Follower. Therefore, it is necessary to consider the static safety factor f_M against F_0 as well as f_S.

$$\frac{F_0}{P_0} = f_M$$

f_M : Static safety factor in relation to F_0 (see Table1)
F_0 : Permissible load (kN)
P_0 : Radial load (kN)

Table1 Static Safety Factor (f_S, f_M)

Load conditions	Lower limit of f_S and f_M
Normal load	1 to 2
Impact load	2 to 3

[Nominal Life]

The service life of the Cam Follower is obtained from the following equation.

$$L = \left(\frac{f_T \cdot C}{f_W \cdot P_C}\right)^{\frac{10}{3}} \times 10^6$$

L : Nominal life
(The total number of revolutions that 90% of a group of identical Cam Follower units independently operating under the same conditions can achieve without showing flaking from rolling fatigue)
C : Basic dynamic load rating* (kN)
P_C : Radial load (kN)
f_T : Temperature factor
(see Fig.1 on B**19-11**)
f_W : Load factor
(see Table2 on B**19-11**)

* The basic dynamic load rating (C) of the Cam Follower shows the load with interlocked direction and magnitude, under which the nominal life (L) is 1 million revolutions when a group of identical Cam Follower units independently operate. The basic dynamic load rating (C) is indicated in the corresponding specification table.

[Calculating the Service Life Time]

When the nominal life (L) has been obtained, the service life time (L_h) is obtained from the following equation.

● For Linear Motion

$$L_h = \frac{D \cdot \pi \cdot L}{2 \times \ell_S \cdot n_1 \times 60}$$

L_h : Service life time (h)
L : Nominal life
D : Bearing outer diameter (mm)
ℓ_S : Stroke length (mm)
n_1 : Number of reciprocations per minute (min^{-1})

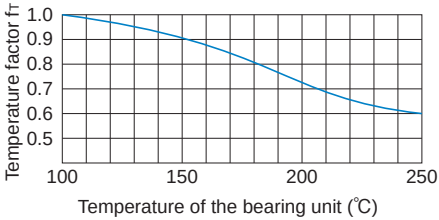


Fig.1 Temperature Factor (f_T)

Note) The normal service temperature is 80°C or below. If the product is to be used at a higher temperature, contact THK.

● For Rotary Motion

$$L_h = \frac{D \cdot L}{D_1 \cdot n \times 60}$$

D_1 : Outer ring contact average diameter of the cam (mm)
n : Revolutions per minute of the cam (min^{-1})

Table2 Load Factor (f_w)

Condition	f_w
Smooth motion without impact	1 to 1.2
Normal motion	1.2 to 1.5
Motion with severe impact	1.5 to 3

Track Load Capacity

The track load capacity means the permissible load at which the outer ring of a bearing and the mating surface are capable of withstanding repeated use over a long period.
The track load capacity provided in the specification table indicates the value when using a steel material with tensile strength of 1.24 kN/mm^2 as the mating material. Therefore, it is possible to increase the track load capacity by increasing the hardness of the material. Fig.2 shows the hardness of the mating material and the track capacity factor in relation to tensile strength. To obtain the track load capacity of each mating material, multiply the track load capacity shown in the corresponding specification table by the respective track load factor.

Note) For the mating material, we recommend using those materials with the raceway hardness of 20 HRC or higher and the tensile strength of 755 N/mm^2 or higher.

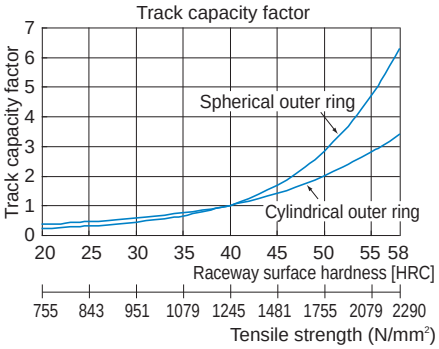


Fig.2 Track Capacity Factor

Example of Calculating a Track Load Capacity

Obtain the track load capacity when heat-treating the mating material, which a bearing whose outer ring has a track load capacity of 5.29 kN contacts, to hardness of 50 HRC.
The track capacity factor when the hardness is 50 HRC is 2.84, as indicated in Fig.2. Therefore, the desired track load capacity is calculated as follows.

The track load capacity=5.29kN×2.84=15.0kN

Installation

[Installing the Cam Follower]

If the Cam Follower is to be used under a heavy load, it is necessary to install the product so that the greasing hole on the stud is out of the loaded area. To help identify the position of the greasing hole, the THK logo is marked on the side face of the stud collar. (See Fig.1.)
The vertical hole in the middle of the stud is used as a whirl stop or a greasing hole.

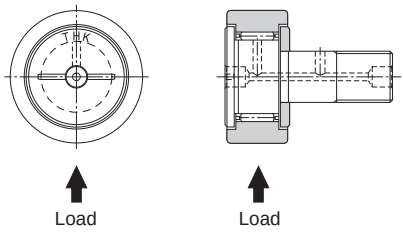


Fig.1 Positions of the THK Logo and the Greasing Holes

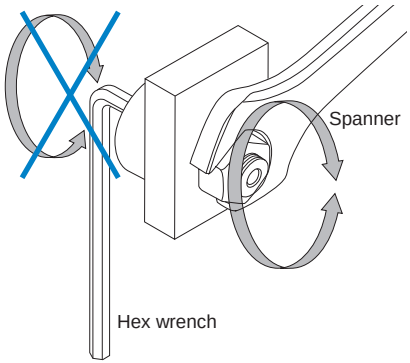
Make sure that the outer ring is evenly in contact with the mating surface. When installing the Cam Follower, also make sure its axis is perpendicular to the traveling direction.

- **Using spring washers**

If a spring washer is used to secure a cam follower, take care to check that the spring washer has no burrs or sharp edges. If there are burrs or sharp edges, contact between burrs or edges and the nut or flash washer used for mounting will cause abrasion and the abraded fragments will adhere to the stud screw. This will result in damage or incomplete tightening when the nut is tightened and may damage the screw section.

- **About the installation procedure**

When mounting the Cam Follower, secure the flat-blade screwdriver groove and the hex wrench and turn the nut using a spanner.
If turning the flat-blade screwdriver groove and the hex wrench side, the flat-blade screwdriver groove or the hexagon hole of the Cam Follower may be fractured.



● Tightening Torque for the Stud

Since the stud of the Cam Follower receives bending stress and tensile stress caused by a bearing load, it is necessary to keep the tightening torque of the screw from exceeding the values indicated in Table1.

If the mounting screw may be loosened due to vibrations or impact, use a spring washer, thin nuts of JIS B 1181 Class 3 as double-nuts or a special nut capable of preventing itself from loosening.

Table1 Maximum Tightening Torque of the Screw

Model No CF, CFN, CFH, CFT and CFS	Maximum tightening torque N-m
2.5	0.18
3	0.392
4	0.98
5	1.96
6	2.94
8	7.84
10 10-1	16.7
12 12-1	29.4
16	70.6
18	98
20 20-1	137
24 24-1	245*
30 30-1 30-2	480*

Note) * is the value in case of the standard material (carbon steel). If a stainless steel type is to be used, the maximum value is 70% of this value. 1 N-m equals to 0.102 kgf-m.

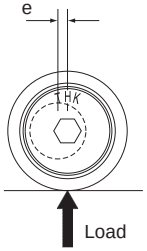
[Installing the Eccentric Cam Follower]

The eccentricity is adjusted in the following steps.

(1) Insert the stud into the mounting hole, and lightly tighten the nut until the nut starts turning. In doing so, position the THK logo in relation to the load direction as shown in Fig.2.
(2) Use the hexagon socket on the stud head to turn the stud and adjust the clearance between the stud and the mating contact surface.
(3) After adjusting the clearance, tighten the nut while keeping the stud from turning. Be sure the maximum tightening torque in (see Table1) is not exceeded.

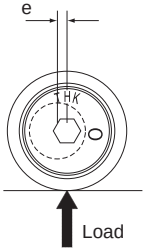
The surface of the Cam Follower stud is hardened. Take this into account when machining the stud.

For model CFH12-A or higher with a greasing hole



The figure shows the position of the THK logo in relation to the eccentricity direction for model CFH12-A or higher with a greasing hole.

For model CFH10-1-A or lower without a greasing hole



For model CFH10-1-A or lower without a greasing hole, the "O" mark indicates the eccentricity direction. There is no relationship between the THK logo and the eccentricity direction.

Fig.2

Contamination Protection and Lubrication

The Cam Follower models include seal types (model numbers: "···UU"), which are incorporated with special synthetic rubber seals that are highly resistant to wear in order to prevent foreign material from entering the interior of the cam follower and the lubricant from leaking.
Since the Cam Follower contains high-quality lithium soap based grease No. 2, you can start using the product without replenishing grease. Model CFN contains THK AFC Grease.
To replenish the Cam Follower with grease, fill grease into the greasing hole on the stud. However, note that some of the models with stud diameters of 10 mm or less do not have a greasing hole and are provided with initial lubrication only, and therefore do not allow replenishment of grease.
Please note that when replenishing lubricant from the grease nipple, the dedicated attachments (included with grease gun unit MG70) vary depending on the cam follower model number. (See Table2)

Table2 Table for Supported Model Numbers

Model number	Corresponding nipple model number	Attachment Type
CF(H)-AB	—*	Type P
CF	NP3.2×3.5, PB1021B, NP6×5, NP8×9	Type N
CFH		
CFN		
CF-SFU		
CFT	M6F, PT1/8	Type H

* Model CF(H)-AB features a pre-embedded grease nipple.
Note) For the dimensions and shapes of the attachments, see A24-24.

The appropriate fill quantity is a half to one third of the space inside the bearing. The lubrication interval varies depending on the operating conditions. As a guide, however, replenish grease of the same group every six months to two years for types with a cage, or every one to 6 months for full-roller types.
Even with types equipped with seals ("···UU"), surplus grease may seep during the initial operation period or immediately after resumption of grease replenishment. If desiring to avoid contamination of the surrounding area of the machine by grease, first perform seasoning or the like in advance, and then wipe the seeping surplus grease.
When driving the dedicated grease nipple onto the Cam Follower, use a jig like the one shown in Fig.3 to provide pressure to the flange of the nipple.

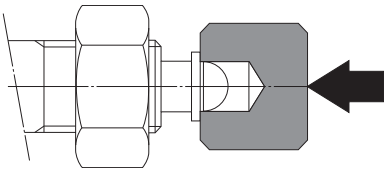


Fig.3

Accessories for the Cam Follower

Table1 shows accessories for standard types of Cam Followers. The dedicated grease nipple is attached at your request. If desiring the dedicated grease nipple, add symbol “N” to the end of the model number.

Example: CF 12 UUR -N
└ Dedicated grease nipple

Note) Because grease nipples are already embedded for model CF(H)-AB, those without an N symbol also include nipples.

Table1 Accessories

Model number	Plug Note 1	Plug Note 2	Nut JIS Class 2	Grease
CF(H)-AB	—	—	Included	Filled
CF (H)	Included	Included	Included	Filled
CFN	Included	Included	Included	Filled
CFT	—	—	Included	Filled
CFS	—	—	Included	Filled
CF-SFU	Mounting bolt	Included	—	Filled

Note1) The plug is used to prevent grease from leaking. However, it is not included in the packages of model CF5 and hexagon socket types of models CF(H)10-1-A and CFN10R-A or lower.
Note2) The plug is used for sealing the unused greasing holes.Since it cannot be removed once inserted, care should be taken.Not included for models CF(H)10-1 and lower.

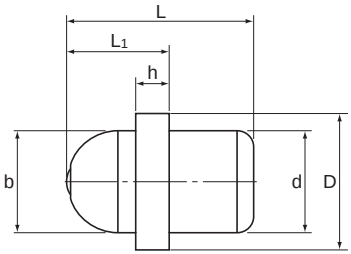


Table2 Specification Table for Grease Nipples

Supported models	Nipple dimensions						Nipple model No.
CF, CFN, CFH	d	b	D	h	L	L_1	
5	3.1	6	7.5	1.5	9	5.5	NP3.2×3.5
6 to 10	4	6	7.5	1.5	10	5.5	PB1021B
12 to 18	6	6	8	2	11	6	NP6×5
20 to 30	8	6	10	3	16	7	NP8×9

Note) It cannot be attached to models CF(H)10-1-A, CFN10R-A or lower.

Table3 lists grease nipples that can be attached to models CFT6 to 30. When ordering the product, specify the corresponding nipple model number.

Table3 Dedicated grease nipple for model CFT

Supported model number	Corresponding nipple model number
CFT 6 to 12	A-M6F,B-M6F,C-M6F
CFT 16 to 30	A-PT1/8,B-PT1/8,C-PT1/8

Note) For the dimensions and shapes of the grease nipples, see the General Catalog A24-26.

Model Number Coding

Model number configurations differ depending on the model features. Refer to the corresponding sample model number configuration.

[Cam Follower with Grease Nipple]

● **Models CF-AB and CFH-AB**

CF12 V M UU R -AB

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No symbol: Without seal; UU: With seal
- R: No Symbol : Cylindrical outer ring; R: Spherical outer ring
- -AB: Stud With Hexagonal Socket At Both Ends

[Cam Follower]

● **Models CF, CFH, CFN, CFT and CFS**

CF12 V M UU R -A N

- CF12: Model number
- V: No symbol: With cage; V: Full-roller Type
- M: No symbol: Carbon steel; M: Stainless steel
- UU: No Symbol : without seal; UU: With seal
- R: No Symbol : Cylindrical outer ring; R: Spherical outer ring
- -A: No Symbol : Flat-head Slot; -A: Stud head with a hexagon socket
- N: No Symbol : No grease nipple; N: Dedicated grease nipple included (See B19-16)

∗ Because support will vary depending on the model number, please refer to each dimensional table for details.

[Easy-mount cam follower]

● **Models CF-SFU and CF-SFU-R**

CF-SFU-6 R

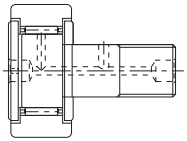
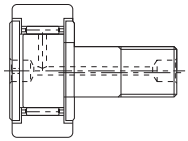
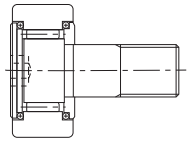
- R: Spherical outer ring

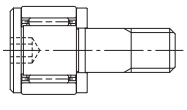
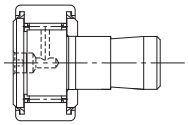
∗ CF-SFU models are fitted with UU seals even where no UU symbol is used.

Types and Model Numbers of Cam Followers

The Cam Follower is divided into several types as indicated in Table1.

Table1 Types and Model Numbers of Cam Followers

Type		Popular Type	Eccentric Cam Follower	Containing Thrust Balls
Shape				
Cylindrical outer ring	Stud with a hexagon socket	CF-A (CF···UU-A)	CFH-A (CFH···UU-A)	———
	Stud with a Flat-head Slot	CF (CF···UU)	CFH (CFH···UU)	———
	With a Tapped Hole for Greasing	CFT (CFT···UU)	CFHT (CFHT···UU)	———
	Made of stainless steel	CF-M (CF···MUU)	CFH-M (CFH···MUU)	———
Spherical outer ring	Stud with a hexagon socket	CF-R-A (CF···UUR-A)	CFH-R-A (CFH···UUR-A)	CFN-R-A
	Stud with a Flat-head Slot	CF-R (CF···UUR)	CFH-R (CFH···UUR)	———
	With a Tapped Hole for Greasing	CFT-R (CFT···UUR)	CFHT-R (CFHT···UUR)	———
	Made of stainless steel	CF-MR (CF···MUUR)	CFH-MR (CFH···MUUR)	———

Type		Outer ring compact model	Easy-mount model
Shape			
Cylindrical outer ring	Stud with a hexagon socket	CFS···-A	———
	Stud with a Flat-head Slot	———	CF-SFU-····
	With a Tapped Hole for Greasing	———	———
	Made of stainless steel	CFS···M-A	———
Spherical outer ring	Stud with a hexagon socket	———	———
	Stud with a Flat-head Slot	———	CF-SFU-···R
	With a Tapped Hole for Greasing	———	———
	Made of stainless steel	———	———

Note1) The symbols in the parentheses indicate model numbers of types with seals.
Note2) THK also manufactures low-speed full-roller types with long service lives. For these full-roller types, symbol “V” is indicated.
Note3) Symbol M indicates stainless steel type.

Example: CF 12 V UUR
Full-roller type

[Handling]

(1) Do not disassemble the parts. This will result in loss of functionality.
(2) Take care not to drop or strike the Cam Follower. Doing so may cause injury or damage. Giving an impact to it could also cause damage to its function even if the product looks intact.
(3) When handling the product, wear protective gloves, safety shoes, etc., as necessary to ensure safety.

[Precautions on Use]

(1) When securing the Cam Follower, use a torque wrench or the like to tighten the product at a torque equivalent to the corresponding value in B19-14 on Table1.
(2) Do not use the product at temperature of 80℃ or higher. Exposure to higher temperatures may cause the resin/rubber parts to deform/be damaged.
(3) Prevent foreign material, such as cutting chips or coolant, from entering the system. Failure to do so may cause damage.
(4) If foreign material such as cutting chips adheres to the product, replenish the lubricant after cleaning the product.
(5) Cam Followers are designed for use under a radial load. Do not use the product under a thrust load.
(6) Micro-oscillation can prevent the lubricant from coating the surface where balls meet the raceway, which can lead to fretting. To prevent this, use a grease with superior fretting resistance. THK also recommends periodically rotating the Cam Follower at least once to ensure that the raceway and balls are coated with lubricant.
(7) Insufficient rigidity or accuracy of mounting members causes the bearing load to concentrate on one point and the bearing performance will drop significantly. Accordingly, give sufficient consideration to the rigidity/accuracy of the housing and base and strength of the fixing bolts.

[Lubrication]

(1) The Cam Follower uses lithium soap-based grease No. 2 as standard grease. (Model CFN uses THK AFC Grease.)
Replenish the lubricant whenever necessary. Do not combine different lubricants. Mixing lubricants can cause adverse interaction between disparate additives or other ingredients. (See B19-15, Dust-proofing and Lubrication.)
(2) We recommend applying a lubricant to the mating surface where the Cam Follower travels.
(3) CF24, CFH24 or larger Cam Followers with hexagon sockets (symbol - A, excluding SUS models) are constructed with a plug fitted into the through hole that links the hexagon socket to the greasing hole (see dimensional drawing φd_1, φd_2 A19-18) to prevent grease leakages from the hexagon socket.
During lubrication, take care to ensure that the plug is not forced out of the hexagon socket by excessive pressure.
(4) When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, use the grease appropriate for the specification/environment.
(5) The consistency of grease changes according to the temperature. Take note that the slide resistance of the Cam Follower also changes as the consistency of grease changes.
(6) After lubrication, the slide resistance of the Cam Follower may increase due to the agitation resistance of grease. Be sure to perform a break-in to let the grease spread fully, before operating the machine.
(7) Excess grease may scatter immediately after lubrication, so wipe off scattered grease as necessary.

(8) The properties of grease deteriorate and its lubrication performance drops over time, so grease must be checked and added properly according to the use frequency of the machine.
(9) The greasing interval varies depending on the use condition and service environment. Set the final lubrication interval/amount based on the actual machine.

[Storage]
When storing the Cam Follower, enclose it in a package designated by THK and store it in a room while avoiding high temperature, low temperature and high humidity.
After the product has been in storage for an extended period of time, lubricant inside may have deteriorated, so add new lubricant before use.

[Disposal]
Dispose of the product properly as industrial waste.