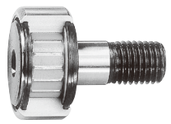
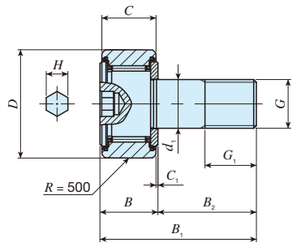
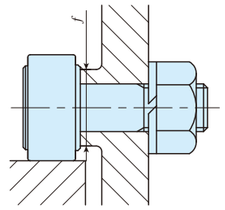
Selectable product specifications

Type of material	No symbol	High carbon steel
	F	Stainless steel
Roller guide method	No symbol	With cage
	V	Full complement
Seal structure	No symbol	Shield type
	UU	Sealed type
Shape of outer ring outside surface	No symbol	Cylindrical outer ring
	R	Crowned outer ring







Stud diameter mm	Identification number	Mass (Ref.) g	Boundary dimensions mm D	C	d_1	G	G_1	B	B_1	B_2	C_1	H	Mounting dimensions f Min. mm	Maximum tightening torque N·m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N	Track capacity N
5	CF 5 WBUUR/SG	10.3	13	9	5	M 5×0.8	7.5	10	23	13	0.5	3	9.3	1.6	2 520	2 140	1 260	794
6	CF 6 WBUUR/SG	18.5	16	11	6	M 6×1	8	12.2 max	28.2 max	16	0.6	3	11	2.7	3 660	3 650	1 950	1 040
8	CF 8 WBUUR/SG	28.5	19	11	8	M 8×1.25	10	12.2 max	32.2 max	20	0.6	4	13	6.5	4 250	4 740	4 620	1 330
10	CF 10 WBUUR/SG	45	22	12	10	M10×1.25	12	13.2 max	36.2 max	23	0.6	4	16	13.8	5 430	6 890	6 890	1 610
	CF 10-1 WBUUR/SG	60	26	12	10	M10×1.25	12	13.2 max	36.2 max	23	0.6	4	16	13.8	5 430	6 890	6 890	2 030
12	CF 12 WBUUR/SG	95	30	14	12	M12×1.5	13	15.2 max	40.2 max	25	0.6	6	21	21.9	7 910	9 790	9 790	2 470
	CF 12-1 WBUUR/SG	105	32	14	12	M12×1.5	13	15.2 max	40.2 max	25	0.6	6	21	21.9	7 910	9 790	9 790	2 710
16	CF 16 WBUUR/SG	170	35	18	16	M16×1.5	17	19.6 max	52.1 max	32.5	0.8	6	26	58.5	12 000	18 300	18 300	3 060
18	CF 18 WBUUR/SG	250	40	20	18	M18×1.5	19	21.6 max	58.1 max	36.5	0.8	8	29	86.2	14 800	25 200	25 200	3 660
20	CF 20 WBUUR/SG	460	52	24	20	M20×1.5	21	25.6 max	66.1 max	40.5	0.8	8	34	119	20 700	34 600	34 600	5 190
	CF 20-1 WBUUR/SG	385	47	24	20	M20×1.5	21	25.6 max	66.1 max	40.5	0.8	8	34	119	20 700	34 600	34 600	4 530

Remark This bearing cannot be re-lubricated as thermosetting solid-type lubricant C-Lube fills its inner space.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification Number

Examples of the identification number of Cam Followers are shown below. In addition, for application of material type, roller guide method, seal structure and shape of outer ring outside surface to each model, refer to the dimension table.

Example of Identification Number

Example 1	CFS	3	F		V				P6
Example 2	CF	10			V	B	UU	R	
Example 3	CF	5	F	W		B	UU	R	
Example 4	CF	8		W		B	UU	R	/SG

Model code	
CFS	Miniature Type Cam Followers
CFS···W	Thrust Disk Type Miniature Cam Followers
CF···B	Standard Type Cam Followers
CFKR	Double Hex Hole Cam Followers
CF···G	Cam Follower G
CF···WB	Thrust Disk Type Cam Followers
CF···WB···/SG	C-Lube Cam Followers
CFES···B	Solid Eccentric Stud Type Cam Followers
CFE···B	Eccentric Type Cam Followers
CF-RU1	Centralized Lubrication Type Cam Follower (Crowned Outer Ring)
CF-FU1	Centralized Lubrication Type Cam Follower (Cylindrical Outer Ring)
CF-SFU···B	Easy Mounting Type Cam Followers
NUCF···B	Cylindrical Roller Cam Followers
CR···B	Inch Series Cam Followers (With Hexagon Socket)
CR	Inch Series Cam Followers (With Screwdriver Slot)
CRH···B	Inch Series Cam Followers (With Hexagon Socket)
CRH	Inch Series Cam Followers (With Screwdriver Slot)

Dimensions
The value indicates the stud diameter. (unit: mm) (The outside diameter of the outer ring is indicated for Double Hex Hole Cam Followers only.) For Inch Series Cam Followers, outer ring outside diameter dimensions are indicated in 1/16 inch.

Type of material	
No symbol	High carbon steel made
F	Stainless steel made

Roller guide method (1)	
No symbol	With cage
V	Full complement

Note (1) Cylindrical Roller Cam Followers are full complement type with no symbol.

Seal structure (1)	
No symbol	Shield type
UU	Sealed type

Note (1) Centralized Lubrication Type and Easy Mounting Type Cam Followers are sealed type with no symbol.

Shape of outer ring outside surface	
No symbol	Cylindrical outer ring
R	Crowned outer ring

Accuracy class		
No symbol	Accuracy class 0	
P6	Accuracy class 6	Applicable to Miniature Type Cam Followers CFS and CFS···W.
P5	Accuracy class 5	
P4	Accuracy class 4	

Load Rating and Life

Basic dynamic load rating C

Basic dynamic load rating refers to a static radial load with a certain direction and size with which 90% of a group of the same Cam Followers can run one million rotations without material damages due to rolling contact fatigue when they are operated in the same conditions.

Basic static load rating C_0

Basic static load rating refers to a static radial load with a certain direction and size with a certain contact stress at the center of contact parts of the rolling elements and a raceway under maximum load.

Life

The basic rating life calculation formulas are shown below.

$$L_{10} = \left(\frac{C}{P_r}\right)^{10/3} \quad \cdots\cdots(1)$$

Where, L_{10} : Basic rating life 10^6 rev.
C : Basic dynamic load rating N
P_r : Dynamic equivalent radial load N

Therefore, life time can be calculated by applying the rotational speed to the formula below.

$$L_h = \frac{10^6 L_{10}}{60n} \quad \cdots\cdots(2)$$

Where, L_h : Basic rating life represented by service hours h
n : Rotational speed min^{-1}

Static Safety Factor

Static safety factor can be obtained by the following equation and typical values are shown in Table 1.

$$f_s = \frac{C_0}{P_{0r}} \quad \cdots\cdots(3)$$

Where, f_s : Static safety factor
C_0 : Basic static load rating N
P_{0r} : Static equivalent radial load (maximum load) N

Table 1 Static safety factor

Operating conditions of the bearing	f_s
When high rotational accuracy is required	≥3
For ordinary operation conditions	≥1.5
For normal operating conditions not requiring very smooth rotation When it is rarely rotated	≥1

Load factor

Load actually applied on the Cam Followers becomes larger than load theoretically calculated from vibration and shock. Therefore, multiply the load by the load factor shown in Table 2.

Table 2 Load factor

Operating conditions	f_w
Smooth operation free from shock	1 to 1.2
Normal operation	1.2 to 1.5
Operation with shock load	1.5 to 3

Maximum Allowable Static Load

The applicable load on Cam Followers is, in some cases, limited by the bending strength and shear strength of the stud and the strength of the outer ring instead of the load rating of the needle roller bearing. Therefore, the maximum allowable static load that is limited by these strengths is specified.

Accuracy

The accuracy of Cam Followers is shown in Table 3, Table 4.1, Table 4.2, and Table 4.3.
We also provide special accuracy class products. For details, please contact IKO.

Table 3 Tolerances unit: μm

Item \ Series	Miniature Type Cam Followers CFS, CFS···W	Standard Type Cam Followers (1)		Inch Series Cam Followers	
		Crowned outer ring	Cylindrical outer ring	Crowned outer ring	Cylindrical outer ring
Outside dia. of outer ring D	See Table 4.1	0 −50	See Table 4.2	0 −50	See Table 4.3
Stud diameter d_1	h6	h7		+ 25 0	
Width of outer ring C	0 −120	0 −120		0 −130	

Note (1) Applicable for Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 4.1 Tolerance and allowance of outer ring (Miniature Type Cam Followers CFS and CFS···W) unit: μm

ΔD_{mp} Deviation of mean outside diameter in a single plane								K_{ea} Radial runout of outer ring of assembled bearing (Maximum)			
Class 0		Class 6		Class 5		Class 4		Class 0	Class 6	Class 5	Class 4
High	Low	High	Low	High	Low	High	Low				
0	−8	0	−7	0	−5	0	−4	15	8	5	4

Table 4.2 Tolerance and allowance of outer ring (Standard Type Cam Followers, Cylindrical outer ring) unit: μm

D Nominal outside diameter of outer ring mm		ΔD_{mp} Deviation of mean outside diameter in a single plane		V_{Dsp} Variation of outside diameter in a single plane (Maximum)	V_{Dmp} Variation of mean outside diameter (Maximum)	K_{ea} Radial runout of outer ring of assembled bearing (Maximum)
Over	Incl.	High	Low			
6	18	0	− 8	10	6	15
18	30	0	− 9	12	7	15
30	50	0	−11	14	8	20
50	80	0	−13	16	10	25
80	120	0	−15	19	11	35

Table 4.3 Tolerance and allowance of outer ring (Inch series Cam Followers, Cylindrical outer ring) unit: μm

D Nominal outside diameter of outer ring mm		ΔD_{mp} Deviation of mean outside diameter in a single plane		V_{Dsp} Variation of outside diameter in a single plane (Maximum)	V_{Dmp} Variation of mean outside diameter (Maximum)	K_{ea} Radial runout of outer ring of assembled bearing (Maximum)
Over	Incl.	High	Low			
6	18	0	−25	10	6	15
18	30			12	7	15
30	50			14	8	20
50	80			16	10	25
80	120			19	11	35

Radial Internal Clearance

Radial internal clearance of Cam Followers is shown in Table 5.

Table 5 Radial internal clearance unit: μm

Identification number				Radial internal clearance	
Miniature Type Cam Followers CFS, CFS···W	Standard Type Cam Followers (1)	Cylindrical Roller Cam Followers	Inch Series Cam Followers	Min.	Max.
CFS1.4 to CFS5	CF 3B to CF 5 B	–	CR 8, CR 8-1, CRH 8-1, CRH 9	3	17
CFS6	CF 6B	–	CR10, CR10-1, CRH10-1, CRH11	5	20
–	CF 8 to CF 12-1 CFKR30 to CFKR32	–	CR12 to CR22, CRH12 to CRH22	5	25
–	CF 16 to CF 20-1 CFKR22 to CFKR52	–	CR24 to CR36, CRH24 to CRH36	10	30
–	CF 24 to CF 30-2 CFKR62 to CFKR90	–	CR48, CRH40 to CRH56	10	40
–	–	–	CRH64	15	50
–	–	NUCF10 B to NUCF24 B	–	20	45
–	–	NUCF24-1B to NUCF30-2B	–	25	50

Note (1) Applicable for all Cam Followers other than Miniature Type Cam Followers, Cylindrical Roller Cam Followers and Inch Series Cam Followers.

Fit

Recommended fit of the Cam Followers stud and mounting hole is shown in Table 6 and dimensional tolerances of mounting hole are shown in Table 7, respectively. Since the Cam Follower is supported in a cantilever position, the mounting hole diameter should be prepared without play between the stud and the hole especially when heavy shock loads are applied.

Table 6 Recommended fit

Model of bearing	Tolerance class of mounting hole for stud
Miniature Type Cam Followers CFS, CFS···W	H6
Standard Type Cam Followers (1)	H7
Inch Series Cam Followers	F7

Note (1) Applicable for Cam Followers other than Miniature Type Cam Followers and Inch Series Cam Followers.

Table 7 Dimensional tolerances of mounting hole unit: μm

Classification of diameter mm		F7		H6		H7	
Over	Incl.	High	Low	High	Low	High	Low
–	3	+16	+ 6	+ 6	0	+10	0
3	6	+22	+10	+ 8	0	+12	0
6	10	+28	+13	+ 9	0	+15	0
10	18	+34	+16	+11	0	+18	0
18	30	+41	+20	+13	0	+21	0
30 40	40 50	+50	+25	+16	0	+25	0

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Track Capacity

Track capacity is defined as the load which can be continuously applied on a Cam Follower placed on a steel cam guide surface without causing deformation or indentation on the cam guide surface when the outer ring of the Roller Follower makes contact with the mating cam guide surface (plane). Track capacities shown in the dimension table are values on the assumption that hardness of the mating member material is 40HRC (tensile strength: 1250 N/mm^2) and if hardness is not 40HRC, these values must be multiplied by track capacity factors shown in Table 8.
If lubrication between the outer ring and the mating cam guide surface is insufficient, seizure and/or wear may occur depending on the operating conditions. Therefore, attention must be paid to lubrication and surface roughness of the mating cam guide especially for high-speed rotations such as cam mechanisms.

Table 8 Track capacity factor

Hardness HRC	Tensile strength N/mm^2	Track capacity factor	
		Crowned outer ring	Cylindrical outer ring
20	760	0.22	0.37
25	840	0.31	0.46
30	950	0.45	0.58
35	1 080	0.65	0.75
38	1 180	0.85	0.89
40	1 250	1.00	1.00
42	1 340	1.23	1.15
44	1 435	1.52	1.32
46	1 530	1.85	1.51
48	1 635	2.27	1.73
50	1 760	2.80	1.99
52	1 880	3.46	2.29
54	2 015	4.21	2.61
56	2 150	5.13	2.97
58	2 290	6.26	3.39

Allowable Rotational Speed

The allowable rotational speed of Cam Followers is affected by mounting and operating conditions. For d_1n value with only pure radial load applied, use values in Table 9 or lower as references. Under actual use conditions, it is recommended to use d_1n, one tenth of indicated values, taking into account the effect of axial load.
C-Lube Cam Followers and Cam Followers with C-Lube Unit mounted, use 10,000 or lower as reference for the d_1n value.

$$d_1n = d_1 \times n$$

where d_1 : Stud diameter of Cam Follower mm
n : Rotational speed min^{-1}

Table 9 d_1n values of Cam Followers

Model of bearing \ Lubrication	Grease lubrication	Oil lubrication
With cage	84 000	140 000
Full complement	42 000	70 000
Cylindrical Roller Cam Followers	66 000	110 000

Lubrication

Bearings with pre-packed grease are shown in Table 10. ALVANIA GREASE S2 (SHOWA SHELL SEKIYU K.K.) is pre-packed as lubrication grease.
For bearings without pre-packed grease, grease should be packed through the oil hole in the stud for use. Operating without lubrication will increase the wear on the rolling contact surfaces and lead to short bearing life.

Table 10 Bearings with pre-packed grease ○: With grease ×: Without grease

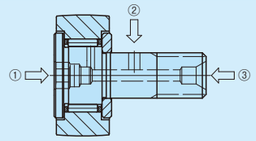
Model of bearing Stud dia. d_1(1) mm \ Type			With cage		Full complement
			Shield type	Sealed type	
Miniature Type Cam Followers	CFS		○	–	○
Thrust Disk Type Miniature Cam Followers	CFS···W				
Standard Type Cam Followers	CF···B	$d_1 \leq 5$	○	○	–
Double Hex Hole Cam Followers	CFKR				
Thrust Disk Type Cam Followers	CF···WB	$6 \leq d_1 \leq 10$			○
Solid Eccentric Stud Type Cam Followers	CFES···B				
Eccentric Type Cam Followers	CFE···B	$12 \leq d_1$	×		
Cam Follower G	CF···G		○	–	–
C-Lube Cam Followers	CF···WB···/SG (2)		–	×	–
Centralized Lubrication Type Cam Followers	CF-RU1 CF-FU1		–	○	–
Easy Mounting Type Cam Followers	CF-SFU···B		–	○	–
Cylindrical Roller Cam Followers	NUCF···B		–	–	○
Inch Series Cam Followers	CR···B (With hexagon socket) CR (With screwdriver slot)		○	○	○
Inch Series Cam Followers	CRH···B (With hexagon socket) CRH (With screwdriver slot)		–	–	○

Note (1) For Eccentric Type Cam Followers (CFE), thread diameter G as shown in the dimension table is applicable.
(2) C-Lube, a thermosetting solid-type lubricant, fills the inner space of the bearing.

Oil Hole

The position of oil hole is shown in Table 11.
Perform greasing quietly by fitting a lubrication nozzle shown in Table 12 to a straight type grease gun in JIS B 9808 and pressing the nozzle against the grease nipple or re-greasing fitting.
When the NPT type grease nipple of the special specifications shown in Table 19 and NPB type grease nipple shown in Table 15 are mounted, you may also fill grease by pressing the grease gun without using a supply nozzle specified in Table 12.
In addition, oil cannot be fed for those without oil hole described in Table 11.

Table 11 Location of oil hole

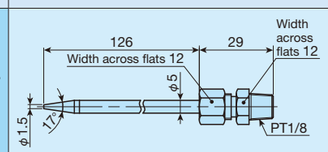
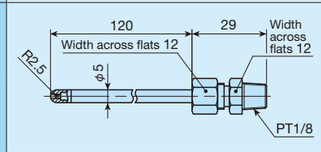
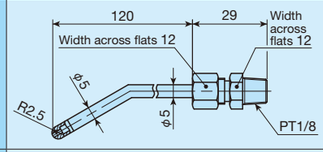
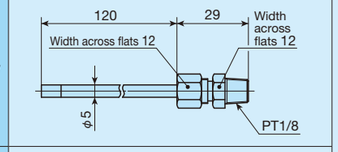
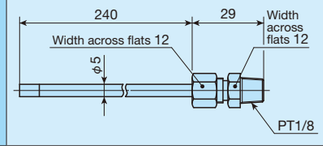
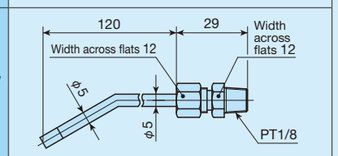
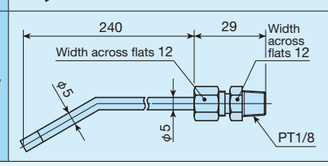


○: With oil hole

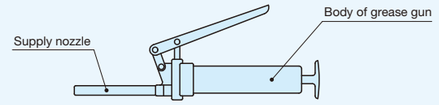
Model of bearing Stud dia. d_1(1) mm \ Oil hole position			① Head	② Stud outer diameter section	③ Stud end
Miniature Type Cam Followers	CFS		–	–	–
Thrust Disk Type Miniature Cam Followers	CFS···W				
Standard Type Cam Followers	CF···B	$d_1 \leq 4$	–	–	–
Double Hex Hole Cam Followers	CFKR				
Thrust Disk Type Cam Followers	CF···WB	$5 \leq d_1 \leq 10$	○ (2)	–	– (6)
Solid Eccentric Stud Type Cam Followers	CFES···B				
Eccentric Type Cam Followers	CFE···B	$10 < d_1$	○ (3)	○	○
Cylindrical Roller Cam Followers	NUCF···B				
Cam Follower G	CF···G		–	–	–
C-Lube Cam Followers	CF···WB···/SG		–	–	–
Centralized Lubrication Type Cam Followers (4) CF-RU1, CF-FU1		$d_1 \leq 12$	○	–	–
		$12 < d_1$	○	○	○
Easy Mounting Type Cam Followers CF-SFU···B		$d_1 \leq 10$	○ (2)	–	–
		$10 < d_1$	○ (5)	–	–
Inch Series Cam Followers CR···B (With hexagon socket)		$d_1 \leq 6.35$	–	–	–
		$6.35 < d_1$	–	○	○
Inch Series Cam Followers CR (With screwdriver slot)		$d_1 \leq 6.35$	○	–	–
		$6.35 < d_1$	○	○	○
Inch Series Cam Followers CRH···B (With hexagon socket)		$d_1 \leq 7.938$	–	–	–
		$7.938 < d_1$	–	○	○
Inch Series Cam Followers CRH (With screwdriver slot)		$d_1 \leq 7.938$	○	–	–
		$7.938 < d_1$	○	○	○

Note (1) For Eccentric Type Cam Followers (CFE), thread diameter G as shown in the dimension table is applicable. However, oil hole on the stud outside surface cannot be used.
(2) Grease can be fed from the re-greasing fitting located inside the hexagon socket on the head.
(3) A grease nipple is incorporated in the hexagon socket at the head. Re-greasing can be done from the stud head and the stud end by press fitting a supplied grease nipple into the oil hole on the stud end.
(4) Head and stud end have a tapped hole for piping.
(5) Grease can be fed from the grease nipple located inside the hexagon socket on the head.
(6) Lubrication from the head part and the stud end is possible for Double Hex Hole Cam Followers (CFKR) only.

Table 12 Models and dimensions of supply nozzle

Model	Dimension	Applicable grease nipple and re-greasing fitting
A-5126T		NPF3 (1) NPF4-1 (1) NPF6-1 (1) Re-greasing fitting (1)
A-5120R		NPF4-1 (1) NPF6-1 (1)
B-5120R		
A-5120V		
A-5240V		NPT4-1 NPT6-1 NPB2 NPB3 NPB3-1 NPB4
B-5120V		
B-5240V		

Note (1) HSP-3 of YAMADA CORPORATION can also be used.
Remark The supply nozzles shown in the table can be mounted on the main body of a common grease gun available on the market shown below.
If needed, specify the supply nozzle model and contact **IKO**.



Cam Followers

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Accessories

Accessories for Cam Followers are shown in Table 13. Grease nipple dimensions are shown in Table 14 and Table 15. Dimensions of plug for unused oil hole and dimensions of plug inserter are shown in Table 16.

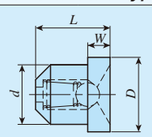
Table 13 Accessories

○: Supplied

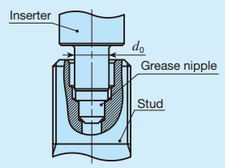
Model of bearing / Stud dia. d_1(1) mm	Accessories		Grease nipple	Plug	Nut	Spring washer
Miniature Type Cam Followers	CFS		–	–	○	–
Thrust Disk Type Miniature Cam Followers	CFS···W					
Standard Type Cam Followers	CF···B	$d_1 \leq 10$	– (2)	–	○	–
Double Hex Hole Cam Followers	CFKR					
Thrust Disk Type Cam Followers	CF···WB					
Solid Eccentric Stud Type Cam Followers	CFES···B	$12 \leq d_1$	○	–	○	–
Cylindrical Roller Cam Followers	NUCF···B					
Cam Follower G	CF···G		–	–	○	–
C-Lube Cam Followers	CF···WB···/SG		–	–	○	–
Eccentric Type Cam Followers	CFE···B	$d_1 \leq 10$	–	–	○	○
		$12 \leq d_1$	○	–	○	○
Centralized Lubrication Type Cam Followers	CF-RU1, CF-FU1		–	–	○	–
Easy Mounting Type Cam Followers	CF-SFU···B		–	–	–	–
Inch Series Cam Followers (With Hexagon Socket)	CR···B	$d_1 \leq 6.35$	–	–	○	–
		$9.525 \leq d_1$	○	○	○	–
Inch Series Cam Followers (With Screwdriver Slot)	CR		○	○	○	–
Inch Series Cam Followers (With Hexagon Socket)	CRH···B	$d_1 \leq 7.938$	–	–	○	–
		$11.112 \leq d_1$	○	○	○	–
Inch Series Cam Followers (With Screwdriver Slot)	CRH		○	○	○	–

Note (1) For Eccentric Type Cam Followers (CFE), thread diameter G as shown in the dimension table is applicable.
(2) For Double Hex Hole Cam Followers (CFKR) only, a grease nipple is included for the thread side.
Remark The standard grease nipple (brass) is included in the Stainless Steel Made Cam Follower.
We also have the stainless steel grease nipple. Please contact IKO and request the product.

Table 14 Dimensions of grease nipple for Standard Type Cam Followers (1)



Identification number	Dimensions of grease nipple mm				Stud dia. d_1 (2)	Dimension of inserter mm
	d	D	L	W	mm	$d_0\ ^{+0.05}_{-0.05}$
NPF3(3)	3	4	4.5	1.3	10	4.1
NPF4-1	4	5	5	1.5	12～16	5.3
NPF6-1	6	7	8	2	18～30	7.3



Note (1) Applicable to Cam Followers other than Inch Series Cam Followers.
(2) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.
(3) Only Double Hex Hole Cam Followers (CFKR) sizes 22 and 26 are applicable.
Remark The same grease nipple as the accessory is integrated in the hexagon socket on the head.

Table 15 Dimensions of grease nipple for Inch Series Cam Followers

Identification number	Dimensions of grease nipple mm						Applicable bearing
	d	D	D_1	L	L_1	W	
NPB2	3.18	7.5	6	9	5.5	1.5	CR8 to CR10-1, CRH8-1 to CRH11
NPB3	4.76	7.5	6	10	5.5	1.5	CR12 to CR22, CRH12 to CRH22
NPB3-1	4.76	7.5	6	12.5	5.5	1.55	CR24 to CR36, CRH24 to CRH44
NPB4	6.35	8	6	13	6	2	CR48, CRH48 to CRH64

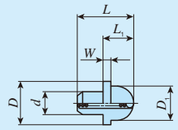


Table 16 Dimensions of plug for Inch Series Cam Followers

Identification number	Dimensions of plug mm			Dimension of inserter mm	Applicable bearing
	D	t	B	$d\ ^{0}_{-0.1}$	
USB2F	3.18	0.3	3.3	2.3	CR 8 to CR10-1
USB3F	4.76	0.4	4.3	3.7	CR12 to CR36, CRH12 to CRH44
USB4F	6.35	0.5	4.8	5.2	CR48, CRH48 to CRH64

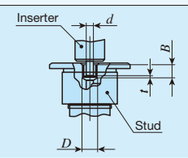
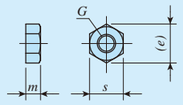


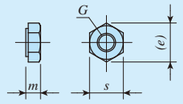
Table 17 Metric series nut dimensions



Model of bearing	Stud dia. d_1 (1)	Nut dimensions mm			
		G	m	s	e
CF, CFKR, CFES, CFE, CF···W, CF-RU1, CF-FU1, CF···G, CF···WB···/SG, CFS, CFS···W, NUCF	1.4	M 1.4×0.3	1.1	3	3.25
	2	M 2 ×0.4	1.6	4	4.6
	2.5	M 2.5×0.45	2	5	5.8
	3	M 3 ×0.5	2.4	5.5	6.4
	4	M 4 ×0.7	3.2	7	8.1
	5	M 5 ×0.8	4	8	9.2
	6	M 6 ×1	5	10	11.5
	8	M 8 ×1.25	6.5	13	15
	10	M10 ×1.0(2) M10 ×1.25	8	17	19.6
	12	M12 ×1.5	10	19	21.9
	16	M16 ×1.5	13	24	27.7
	18	M18 ×1.5	15	27	31.2
	20	M20 ×1.5	16	30	34.6
	24	M24 ×1.5	19	36	41.6
	30	M30 ×1.5	24	46	53.1

Note (1) For Eccentric Type Cam Followers (CFE), thread diameter G as shown in the dimension table is applicable.
(2) Applicable to Double Hex Hole Cam Followers (CFKR).

Table 18 Inch series nut dimensions



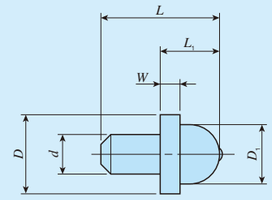
Model of bearing	Stud dia. d_1 (inch)	Nut dimensions mm			
		G UNF	m	s	e
CR, CRH	4.826	No.10-32	4	8	9.2
	6.35 (1/4)	1/4-28	5.5	10	11.5
	7.938 (5/16)	5/16-24	6.5	12	13.8
	9.525 (3/8)	3/8-24	8	14	16.2
	11.112 (7/16)	7/16-20	10	17	19.5
	12.7 (1/2)	1/2-20	11	19	21.9
	15.875 (5/8)	5/8-18	14	23	26.5
	19.05 (3/4)	3/4-16	16	26	30
	22.225 (7/8)	7/8-14	19	32	37
	25.4 (1)	1 -14UNS	22	36	41.4
	28.575 (1 1/8)	1 1/8-12	24	41	47.1
	31.75 (1 1/4)	1 1/4-12	27	46	53.5
	38.1 (1 1/2)	1 1/2-12	33	55	63.5
	44.45 (1 3/4)	1 3/4-12UN	38	65	75.1
	50.8 (2)	2 -12UN	44	75	86.6

Special Specification

Grease nipple supplied as an accessory can be replaced with the grease nipple shown in Table 19 upon request. With this grease nipple, you may fill grease by pressing the JIS B 9808 straight type grease gun directly onto it without using the supply nozzle in Table 12. When you request it, indicate the identification number with /NP at the end. Note that it is not applicable to Double Hex Hole Cam Followers CFKR.

Example of Identification Number
CF 12 BUUR / NP

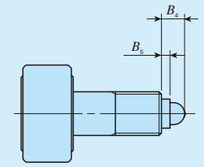
Table 19 Dimensions of NPT type grease nipple



Identification number	Dimensions of grease nipple mm						Stud dia. d_1 (1)
	d	D	D_1	L	L_1	W	mm
NPT4-1	4	8	6	12	6	2	12 to 16
NPT6-1	6	8	6	14	8	4	18 to 30

Note (1) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.

Table 20 Dimensions with NPT type grease nipple mounted



Identification number	Dimensions mm		Stud dia. d_1 (1)
	B_4	B_5	mm
NPT4-1	6	2	12 to 16
NPT6-1	8	4	18 to 30

Note (1) For Eccentric Type Cam Followers, thread diameter G as shown in the dimension table is applicable.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Operating Temperature Range

Operating temperature range of Cam Followers is -20˚C to +120˚C. However, note that the maximum allowable temperature varies in models shown in Table 21.

Table 21 Limitation of operating temperature range

Model / Stud dia. d_1 mm		Type: With cage, Shield type	With cage, Sealed type
Miniature Type Cam Followers CFS Thrust Disk Type Miniature Cam Followers CFS···W	d_1=2	-20˚C to 110˚C (1)	–
Standard Type Cam Followers CF···B Thrust Disk Type Cam Followers CF···WB	d_1=3, 4	-20˚C to 110˚C (1)	-20˚C to 80˚C
	d_1=5	-20˚C to 120˚C	-20˚C to 80˚C
Standard Type Cam Followers / Stainless Steel Made CF···FB Thrust Disk Type Cam Followers / Stainless Steel Made CF···FWB	3≤d_1≤5	-20˚C to 110˚C (1)	-20˚C to 80˚C
C-Lube Cam Followers CF···WB···/SG	5≤d_1≤20	–	-15˚C to 80˚C (2)

Note (1) 100˚C when used continuously.
(2) Below 60˚C is recommended for long use.

Mounting

○ Notes about mounts

Make the center axis of the mounting hole perpendicular to the moving direction of the Cam Follower and match the side shoulder accurately with the seating surface indicated by dimension f in the table of dimensions. (See Fig. 3)
The chamfered mounting hole should be as small as possible (C0.5 or so).
When mounting Cam Followers, do not hit the flange head of the Cam Follower directly with a hammer, etc. This may lead to a bearing failure such as irregular rotation or cracking.
If the Cam Follower outer ring is not in good contact with the mating running surface then we recommend use of a crowned outer ring type.

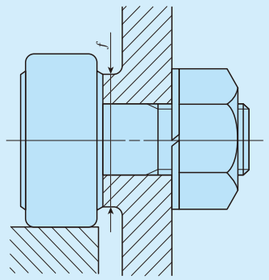


Fig. 3 Height of side face of mounting hole

○ Notes about oil hole position and loading direction

The IKO mark on the flange head of the stud indicates the position of the oil hole on the raceway. Avoid locating the oil hole within the loading zone. Otherwise, product life may become shorter. (See Fig. 4.) The hole located in the middle part of the stud perpendicular to the stud center axis is used for greasing or locking.

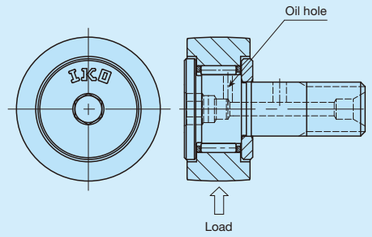


Fig. 4 Oil hole location and loading direction

○ Notes about mounting methods

❶ When mounting Cam Followers, fix in place by holding the hexagon socket or screwdriver slot with a hex wrench or slotted screwdriver and use a wrench to tighten on a nut. (See Fig. 5)
If mounting by turning the hexagon socket or screwdriver slot itself, the hexagon socket or screwdriver slot of the Cam Follower may become damaged.

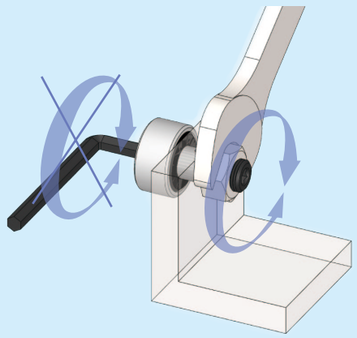


Fig. 5 Methods of mounting

❷ When tightening the nut, the tightening torque should not exceed the values shown in the table of dimensions. If the tightening torque is too large, it is possible that the threaded portion of the stud will be broken. When there is a possibility of loosening, a special nut such as a lock nut, spring washer, or self-locking nut should be used.

❸ When direct-fixing the Cam Follower without nuts for mounting as shown in Fig. 6, it may be difficult to achieve sufficient tightening torque. If the screw then loosens, stress may concentrate on the thread, causing the stud to break. Such a method is not recommended.

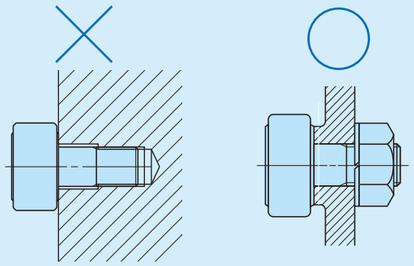


Fig. 6 Methods of mounting

○ Mounting methods for Solid Eccentric Stud Type Cam Followers

❶ For Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Followers, a reference position for adjustment is defined as the IKO mark at the side face of stud collar located in the position specified in Fig. 7. Use this as a reference. Adjust the outer ring position by rotating it using the hexagon socket on the stud head. The stud is fixed with a nut and a spring washer, etc. The tightening torque should not exceed the values of maximum tightening torque shown in the table of dimensions.
When shock loads are applied and the adjusted eccentricity has to be ensured, it is recommended to make holes in the housing, stud and eccentric collar, and fix the stud with a dowel pin as shown in Fig. 8. However, studs with diameter 8 mm (eccentric collar diameter: 11 mm) or less are quench-hardened.

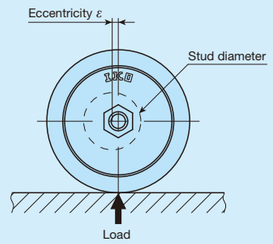


Fig. 7 Reference position for adjusting of Solid Eccentric Stud Type Cam Followers and Eccentric Type Cam Followers

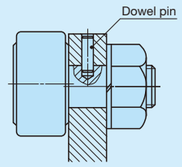


Fig. 8 Mounting examples of Solid Eccentric Stud Type Cam Followers

❷ The length of a mounting hole for Eccentric Type Cam Followers must be 0.5 mm or more longer than the B_3 dimensions (eccentric collar width) specified in the dimension table. (See Fig.9)

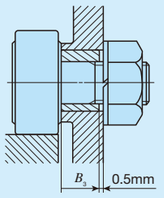


Fig. 9 Length of mounting hole for Eccentric Type Cam Followers

○ Mounting methods for Easy Mounting Type Cam Followers

For mounting Easy Mounting Type Cam Followers, it is recommended to fix the fixing screw from the upper side to the stepped portion of the stud. (See Fig. 10)
While M5 to M6 screws are generally used as fixing screws, adjust the size used depending on the usage criteria.

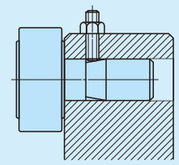


Fig. 10 Mounting examples of Easy Mounting Type Cam Followers

Precautions for Use

❶ Never clean C-Lube Cam Followers with organic solvent or white kerosene with property of removing fat.

❷ To rotate the C-Lube Cam Followers normally, apply load of 1% or more of the basic dynamic load rating.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch