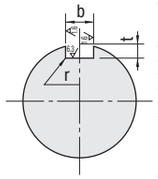
Rotary Shafts D Tolerance h9 (Cold-drawn) / h7 (Ground) / g6 (Ground)

Straight with Keyway

■Number of keyways can be specified up to 3.

	Type	D Tolerance	M Material	S Surface Treatment
①	SFMKR	h9 (Cold-drawn)	EN 1.1191 Equiv.	Black Oxide
	PSFMKR			Electroless Nickel Plating
	SSFMKR		EN 1.4301 Equiv.	-
②	SFHKR	h7 (Ground)	EN 1.1191 Equiv.	Black Oxide
	PSFHKR			Electroless Nickel Plating
	SSFHKR		EN 1.4301 Equiv.	-
③	SFGKR	g6 (Ground)	EN 1.1191 Equiv.	Black Oxide
	PSFGKR			Electroless Nickel Plating
	SSFGKR		EN 1.4301 Equiv.	-

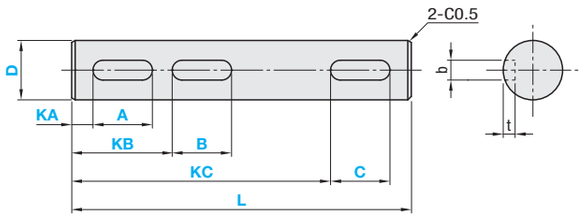
■Detailed Keyway Dimensions



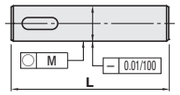
Shaft Dia.	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6	2	-0.004 -0.029	1.2	+0.1 0	0.08~0.16
8, 10	3		1.8		
12	4	0 -0.03	2.5		
13~17	5		3.0		0.16~0.25
18~22	6		3.5		
25, 30	8	0 -0.036	4.0	+0.2 0	
35	10		5.0		0.25~0.4
40	12	0 -0.043	5.0		
50	14		5.5		

When KA=0, KA+A=L, KB+B=L, KC+C=L, keyway shape is as shown below.

Surface roughness of D part for h9 (Cold-drawn) is 6.3. Surface roughness for h7 (Ground) and g6 (Ground) is 1.6.
Number of keyways can be specified up to 3.



■Circularity and Straightness



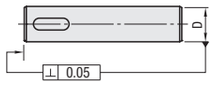
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D over	D or Less	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension over	Dimension or Less	Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

①h9 (Cold-drawn)

Type	D	Tolerance	L=0.1mm Increment	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
				1mm Increment		
SFMKR PSFMKR SSFMKR (D6 is not available for SSFMKR.)	6	0 -0.030	20.0~300.0	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥0 b≤B≤100	KC+C≤L KC≥0 b≤C≤100
	8	0 -0.036	20.0~400.0			
	10		20.0~500.0			
	12	0 -0.043	30.0~600.0			
	15		30.0~700.0			
	20	0 -0.052	40.0~800.0			
	25		50.0~800.0			
	30		60.0~800.0			
	35	0 -0.062	70.0~800.0			

②h7 (Ground)

Type	D	Tolerance	L=0.1mm Increment	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
				1mm Increment		
SFHKR PSFHKR SSFHKR	6	0 -0.012	20.0~300.0	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥0 b≤B≤100	KC+C≤L KC≥0 b≤C≤100
	8	0 0.015	20.0~400.0			
	10		20.0~500.0			
	12	0 -0.018	30.0~600.0			
	15		30.0~700.0			
	17		40.0~800.0			
	20	0 -0.021	40.0~800.0			
	25		50.0~800.0			
	30		60.0~800.0			
	35	0 -0.025	70.0~800.0			
	40		80.0~800.0			
	50		100.0~800.0			

③g6 (Ground)

Type	D	Tolerance	L=0.1mm Increment	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
				1mm Increment		
SFGKR PSFGKR SSFGKR (D13, 16, 18 and 22 are not available for SSFGKR.)	6	-0.004 -0.012	20.0~300.0	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥0 b≤B≤100	KC+C≤L KC≥0 b≤C≤100
	8	-0.005 -0.014	20.0~400.0			
	10		20.0~500.0			
	12	-0.006 -0.017	30.0~600.0			
	13		30.0~600.0			
	15		30.0~700.0			
	16		30.0~800.0			
	17		40.0~800.0			
	18		40.0~800.0			
	20	-0.007 -0.020	40.0~800.0			
	22		40.0~800.0			
	25		50.0~800.0			
	30		60.0~800.0			
	35	-0.009 -0.025	70.0~800.0			
	40		80.0~800.0			
	50		100.0~800.0			

Ordering Example

Part Number	-	L	-	Keyway ① KA	-	Keyway ① A	-	Keyway ② KB	-	Keyway ② B	-	Keyway ③ KC	-	Keyway ③ C

1 Keyway SFMKR10 - 325 - KA20 - A50
2 Keyways SFHKR30 - 330 - KA20 - A50 - KB120 - B20
3 Keyways SFGKR25 - 350 - KA10 - A10 - KB90 - B30 - KC210 - C30

①h9 (Cold-drawn)

Type / D	SFMKR (EN 1.1191 Equiv., Black Oxide) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0	PSFMKR (EN 1.1191 Equiv., Electroless Nickel Plating) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0	SSFMKR (EN 1.4301 Equiv.) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0
6						-	-	-						-	-	-	-	-	-	-	-	-	-	-
8							-	-							-	-							-	-
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35	-								-								-							

②h7 (Ground) ③g6 (Ground)

Type / D	SFHKR, SFGKR (EN 1.1191 Equiv., Black Oxide) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0	PSFHKR, PSFGKR (EN 1.1191 Equiv., Electroless Nickel Plating) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0	SSFHKR, SSFGKR (EN 1.4301 Equiv.) Min. L~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	L200.1~300.0	L300.1~400.0	L400.1~600.0	L600.1~800.0
6						-	-	-						-	-	-						-	-	-
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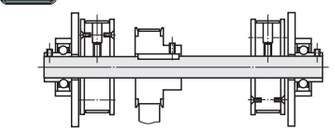
ex. Example



Alterations

Part Number	-	L	-	KA	-	A	-	KB	-	B	-	KC	-	C	-	(FC, SFC···etc.)
SFHKR30	-	300	-	KA20	-	A50	-	KB120	-	B20					-	LKC

	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
Alterations	- 1 Set Screw Flat: FC - 2 Set Screw Flats: WFC				
Code	FC, WFC	SFC	UC	SC	LKC
Spec.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 Set screw flat and keyway(s) are added to the same surface. D / H: 6~17 / 1; 18~40 / 2; 50 / 3 Keyway(s) and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	Adds a set screw flat at any designated angle besides the datum plane (0°). SFC, SG= 1mm Increment AG = 15° Increment SG≤50 Ordering Code SFC10-SG3-AG120 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC = 1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7; 10 / 8 / 5; 12 / 10	Adds a wrench flat. SC = 1mm Increment SC+ℓ2≤L SC=0 or SC≥1 A wrench flat is added to the opposite surface of keyway alteration. D / W / ℓ2: 6 / 5; 8 / 7; 10 / 8; 12,13 / 10; 15,16 / 13; 17,18 / 14; 20,22 / 17 — 8; 10; 15; 20 D / W / ℓ2: 25 / 22 / 10; 30 / 27; 35 / 30; 40 / 36; 50 / 41 — 15; 20 When combined with other alterations, ±2 degree phase differential may occur.	Changes L dimension tolerance. Ordering Code LKC L<500··· L±0.05 L≥500··· L±0.1