


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

## Straight with Keyway

For products uncovered by the e-Catalog Standard, see P.131.

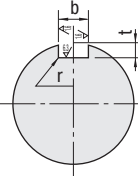
Number of keyways can be specified up to 3.



RoHS 10

Type	D Tolerance	Material	Surface Treatment
(1) SFMKR	h9 (Cold-drawn)	S45C	Black Oxide
PSFMKR		Equivalent	Electroless Nickel Plating
SSFMKR		SUS304	-
(2) SFHKR	h7 (Ground)	S45C	Black Oxide
PSFHKR		Equivalent	Electroless Nickel Plating
SSFHKR		SUS304	-
(3) SFGKR	g6 (Ground)	S45C	Black Oxide
PSFGKR		Equivalent	Electroless Nickel Plating
SSFGR		SUS304	-

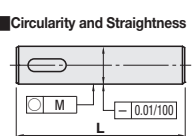
### Detailed Keyway Dimensions



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

When KA<1, KA+A=L, KB+B=L and L-KC<C, keyway is shaped as shown below.

### Circularity and Straightness



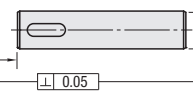
Not applicable to h9 (Cold-drawn).

### Circularity of Part D

D	over 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 or Less	Tolerance	
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	1000	±0.8

### (1)h9 (Cold-drawn)

Type	Part Number	D <sub>h9</sub> Tolerance	L 1mm Increment	Keyway (1)	Keyway (2)	Keyway (3)
				KA, A	KB, B	KC, C
SFMKR	6	0 -0.030	15.0-400.0	KA+A≤L	KB+B≤L	KC+C≤L
	8	0	15.0-500.0			
	10	-0.036	15.0-600.0			
	12	0	15.0-700.0			
	15	-0.043	15.0-800.0			
PSFMKR	20	0	30.0-1000.0	KA≥0	KB≥0	KC≥0
	25	-0.052	50.0-1000.0			
	30	0	60.0-1000.0			
SSFMKR	35	0 -0.062	70.0-1000.0	b≤A≤100	b≤B≤100	b≤C≤100
	40	0	70.0-1000.0			

### (2)h7 (Ground)

Type	Part Number	D <sub>h7</sub> Tolerance	L 1mm Increment	Keyway (1)	Keyway (2)	Keyway (3)
				KA, A	KB, B	KC, C
SFHKR	6	0 -0.012	15.0-400.0	KA+A≤L	KB+B≤L	KC+C≤L
	8	0	15.0-500.0			
	10	-0.015	15.0-600.0			
	12	0	15.0-700.0			
	15	0	15.0-800.0			
PSFHKR	17	0	30.0-900.0	KA≥0	KB≥0	KC≥0
	20	0	30.0-1000.0			
	25	-0.021	50.0-1000.0			
SSFHKR	30	0	60.0-1000.0	b≤A≤100	b≤B≤100	b≤C≤100
	35	0	70.0-1000.0			
40	-0.025	80.0-1000.0				
50	0	100.0-1000.0				

### (3)g6 (Ground)

Type	Part Number	D <sub>g6</sub> Tolerance	L 1mm Increment	Keyway (1)	Keyway (2)	Keyway (3)
				KA, A	KB, B	KC, C
SFGKR	6	-0.004 -0.012	15.0-400.0	KA+A≤L	KB+B≤L	KC+C≤L
	8	-0.005	15.0-500.0			
	10	-0.014	15.0-600.0			
	12	0	15.0-700.0			
	13	0	15.0-700.0			
PSFGKR	15	-0.006	15.0-800.0	KA≥0	KB≥0	KC≥0
	16	-0.017	15.0-900.0			
	17	0	30.0-900.0			
SSFGR	18	0	30.0-900.0	b≤A≤100	b≤B≤100	b≤C≤100
	20	-0.007	30.0-1000.0			
22	-0.020	40.0-1000.0				
25	-0.020	50.0-1000.0				
30	-0.009	60.0-1000.0				
35	-0.009	70.0-1000.0				
40	-0.025	80.0-1000.0				
50	0	100.0-1000.0				

Ordering Example

Part Number - L - Keyway (1) - Keyway (2) - Keyway (3)

1 Keyway SFMKR10 - 325 - KA20 - A50

2 Keyways SFHKR30 - 330 - KA20 - A50 - KB120 - B20

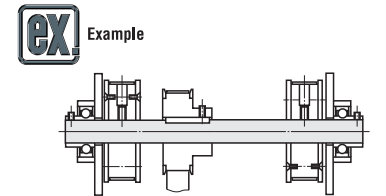
3 Keyways SFGKR25 - 350 - KA10 - A10 - KB90 - B30 - KC210 - C30

### (1)h9 (Cold-drawn)

Type	SFMKR (S45C Equivalent, Black Oxide)								PSFMKR (S45C Equivalent, Electroless Nickel Plating)								SSFMKR (SUS304)										
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1			
D	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

### (2)h7 (Ground) (3)g6 (Ground)

Type	SFHKR, SFGKR (S45C Equivalent, Black Oxide)								PSFHKR, PSFGKR (S45C Equivalent, Electroless Nickel Plating)								SSFHKR, SSFGR (SUS304)										
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1			
D	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Alterations Part Number - L - KA - A - KB - B - KC - C - (FC, KFC etc.)

SFHKR30 - 300 - KA20 - A50 - KB120 - B20 - KC - LKC

### Set Screw Flat

Alterations	1	2	2 Set Screw Flats (Angle Specified)	2 Set Screw Flats at both ends	Chamfering Depth Configurable
	Code	FC	WFC	SFC	KWC
Dimension Increment	FC, G = 1mm Increment	WFC, J, V, W = 1mm Increment	SFC, SG = 1mm Increment AG = 15° Increment	KWC = 1mm Increment	WC = 0.1mm
Ordering Example	FC10-G3	WFC10-J15-W10-V20	SFC10-SG3-AG120	KWC10	WC6.8
Conditions	For H dim., see P843. G, J, V ≤ 70			For W dim., see P843.	

### Retaining Ring Groove, Slit Cam Groove, L Dimension Tolerance, Wrench Flats, Changes Part D Chamfering

Alterations	Retaining Ring Groove	Slit Cam Groove	L Dimension Tolerance	Wrench Flats	Changes Part D Chamfering
	Code	TA, TB = 0.1mm Increment	UC	LKC	SC
Dimension Increment	TA10	UC10	LKC	SC10	CD2
Ordering Example	TA10	UC10	LKC	SC10	CD2
Conditions	2≤TA, TB≤150	Not applicable when Shaft Dia. = Ø2 or Ø2.5 or when D≥13.	Not applicable when L≥800.	Not applicable when D≤5.	Only values provided on the Applicable Dia. Table are applicable.

For details about Alterations, see Alteration Overview (P843).

When combined with other alterations, ±2 degree phase difference may occur. Provide 2mm or more clearance between this alteration and others.

When multiple keyways or set screw flats are specified, they are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase difference may occur.