

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

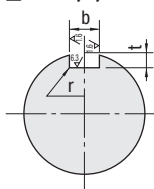
Both Ends Tapped with Keyways

Number of keyways can be specified up to 3.



Type	D Tolerance	Material	Surface Treatment
① SFMKRW	h9 (Cold-drawn)	EN 1.1191 Equiv.	Black Oxide
① PSFMKRW	h9 (Cold-drawn)	EN 1.4301 Equiv.	Electroless Nickel Plating
② SFHKRW	h7 (Ground)	EN 1.1191 Equiv.	Black Oxide
② PSFHKRW	h7 (Ground)	EN 1.1191 Equiv.	Electroless Nickel Plating
② SSFHKRW	h7 (Ground)	EN 1.4301 Equiv.	-
③ SFGKRW	g6 (Ground)	EN 1.1191 Equiv.	Black Oxide
③ PSFGKRW	g6 (Ground)	EN 1.1191 Equiv.	Electroless Nickel Plating
③ SSFGKRW	g6 (Ground)	EN 1.4301 Equiv.	-

Detailed Keyway Dimensions

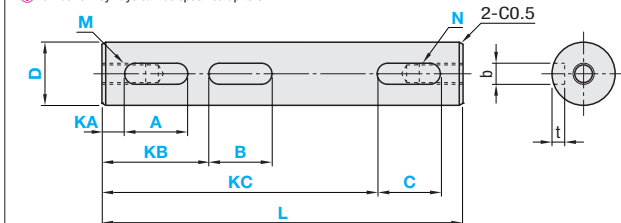


Shaft Dia.	Reference Dimension	b Tolerance (N9)	Reference Dimension	t Tolerance	r
6	2	-0.004	1.2		0.08-0.16
8, 10	3	-0.029	1.8	+0.1	0
12	4	0	2.5		0.16-0.25
13-17	5	-0.03	3.0		
18-22	6		3.5		
25, 30	8	0	4.0	+0.2	0
35	10	-0.036	5.0		0.25-0.4
40	12	0	5.0		
50	14	-0.043	5.5		

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

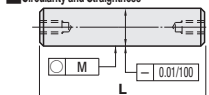


Surface roughness of D part for h9 (Cold-drawn) is $\sqrt{6.3}$. Surface roughness for h7 (Ground) and g6 (Ground) is $\sqrt{1.6}$. Number of keyways can be specified up to 3.



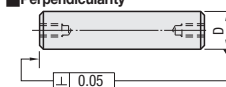
Thread depth of M (Coarse) and N (Coarse) is Mx2 and Nx2 respectively.

Circularity and Straightness



Not applicable to h9 (Cold-drawn).

Perpendicularity



Not applicable to h9 (Cold-drawn).

Circularity of Part D

D over or Less	Circularity M
5	13
13	20
20	40
40	50

Not applicable to h9 (Cold-drawn).

Tolerances of L and Other Dimensions

Dimension over or Less	Tolerance
2	6
6	30
30	120
120	400
400	800

① h9 (Cold-drawn)

Part Number			L 0.1mm Increment	M (Coarse) / N (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③
Type		Dh9 Tolerance			KA, A	KB, B	KC, C
					1mm Increment		
SFMKRW	6	0.030	20.0~300.0	(3) (4)	KA+A≤L KA=0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	0	20.0~400.0	(3) (4) (5) (6)			
	10	-0.036	20.0~500.0	4 (5) (6)			
PSFMKRW	12	0	30.0~600.0	5 (6) (8)			
	15	-0.043	30.0~700.0	5 6 (8)			
SSFMKRW (D6 is not available for SSFMKRW.)	20	0	40.0~800.0	5 6 8 10			
	25	-0.052	50.0~800.0	5 6 8 10 12			
	30		60.0~800.0	8 10 12 16			
	35	0.062	70.0~800.0	8 10 12 16 20			

② h7 (Ground)

Part Number			L 0.1mm Increment	M (Coarse) / N (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③			
Type		Dh7 Tolerance			KA, A	KB, B	KC, C			
1mm Increment										
SFHKRW	6	0 -0.012	20.0~300.0	(3) (4)	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100			
	8	0	20.0~400.0	(3) (4) (5) (6)						
	10	-0.015	20.0~500.0	4 (5) (6)						
	12	0	30.0~600.0	5 (6) (8)						
PSFHKRW	15	-0.018	30.0~700.0	5 6 (8)						
	17	0	40.0~800.0	5 6 8 (10) (12)						
SSFHKRW	20	0	40.0~800.0	5 6 8 (10) (12) (16)						
	25	-0.021	50.0~800.0	5 6 8 10 12 (16)						
	30	0	60.0~800.0	8 10 12 16						
	35	0	70.0~800.0	8 10 12 16 20						
	40	-0.025	80.0~800.0	12 16 20 24						
	50	0	100.0~800.0	16 20 24 30						

③ g6 (Ground)

Part Number			L	M (Coarse) / N (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③			
Type	Dg6	Tolerance			KA, A	KB, B	KC, C			
			0.1mm Increment		1mm Increment					
SFGKRW	6	-0.004 -0.012	20.0~300.0	(3) (4)	KA+A≤L KA=0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100			
	8	-0.005	20.0~400.0	(3) (4) (5) (6)						
	10	-0.014	20.0~500.0	4 (5) (6)						
	12		30.0~600.0	5 (6) (8)						
	13		30.0~600.0	5 6 (8)						
PSFGKRW	15	-0.006 -0.017	30.0~700.0	5 6 (8)						
	16		30.0~800.0	5 6 8 (10)						
	17		40.0~800.0	5 6 8 (10) (12)						
	18		40.0~800.0	5 6 8 (10) (12)						
	SSFGKRW (D13, 16, 18 and 22 are not available for SSFGKRW.)	20		40.0~800.0				5 6 8 10 (12) (16)		
22		-0.007	40.0~800.0	5 6 8 10 12 (16)						
25		-0.020	50.0~800.0	5 6 8 10 12 (16)						
30			60.0~800.0	8 10 12 16						
35			70.0~800.0	8 10 12 16 20						
40		-0.009	80.0~800.0	12 16 20 24						
50		-0.025	100.0~800.0	16 20 24 30						

M, N Sizes in () are selectable when KA≥Mx2 and L-KC-C≥Nx2.

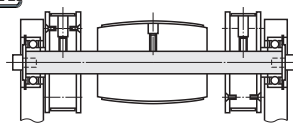
Ordering Example	Part Number	L	M	N	Keyway ① KA	Keyway ② KB	Keyway ③ KC
1 Keyway	SFMKRW10	- 325	- M4	- N4	- KA20	- A50	
2 Keyways	SFHKRW30	- 300	- M10	- N10	- KA20	- A50	- KB120 - B20
3 Keyways	SFGKRW25	- 350	- M8	- N8	- KA10	- A60	- KB90 - B30 - KC210 - C30

① h9 (Cold-drawn)

Type	SFMKRW (EN 1.1191 Equiv., Black Oxide)								PSFMKRW (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFMKRW (EN 1.4301 Equiv.)							
D	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	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	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						-	-	-							-	-							-	-
10								-								-								-
12								-								-								-
15																								
20																								
25																								
30	-								-								-							
35	-								-								-							

② h7 (Ground) ③ g6 (Ground)

Type	SFHKRW, SFGKRW (EN 1.1191 Equiv., Black Oxide)								PSFHKRW, PSFGKRW (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFHKRW, SSFGKRW (EN 1.4301 Equiv.)							
D	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
6	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0
8						-	-	-						-	-	-						-	-	-
10							-	-							-	-							-	-
12								-								-								-
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Alterations SFHKRW30 - 300 - M10 - N10 - KA20 - A50 - KB120 - B20 - LKC

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
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. 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+δ1≤L UC≤1 Not applicable to D13 or more. D d δ1 6 5 4 8 7 30 27 15 10 8 35 30 12 13 10 40 36 15 16 13 50 41 20 17 18 14 20 23 17	Adds a wrench flat. SC = 1mm Increment SC+δ2≤L SC=0 or SC≤1 A wrench flat is added to the opposite surface of keyway alteration. D W δ2 D W δ2 6 5 25 22 10 8 7 30 27 15 10 8 35 30 12 13 10 40 36 15 16 13 50 41 20 17 18 14 20 23 17 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