

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

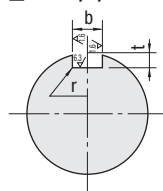
One End Tapped with Keyway

Number of keyways can be specified up to 3.



Type	D Tolerance	Material	Surface Treatment
① SFMKRT	h9 (Cold-drawn)	EN 1.1191 Equiv.	Black Oxide
PSFMKRT	h9 (Cold-drawn)	EN 1.4301 Equiv.	Electroless Nickel Plating
SSFMKRT	h9 (Cold-drawn)	EN 1.4301 Equiv.	-
② SFHKRT	h7 (Ground)	EN 1.1191 Equiv.	Black Oxide
PSFHKRT	h7 (Ground)	EN 1.1191 Equiv.	Electroless Nickel Plating
SSFHKRT	h7 (Ground)	EN 1.4301 Equiv.	-
③ SFGKRT	g6 (Ground)	EN 1.1191 Equiv.	Black Oxide
PSFGKRT	g6 (Ground)	EN 1.1191 Equiv.	Electroless Nickel Plating
SSFGKRT	g6 (Ground)	EN 1.4301 Equiv.	-

Detailed Keyway Dimensions

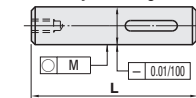


Shaft Dia.	Reference Dimension	b Tolerance (N9)	Reference Dimension	t Tolerance	r
6	2	-0.004	1.2	-	0.08-0.16
8, 10	3	-0.029	1.8	-	-
12	4	0	2.5	+0.1	-
13-17	5	-0.03	3.0	0	-
18-22	6	-	3.5	-	0.16-0.25
25, 30	8	0	4.0	-	-
35	10	-0.036	5.0	+0.2	-
40	12	0	5.0	0	0.25-0.4
50	14	-0.043	5.5	-	-

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

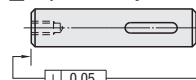


Circularity and Straightness



Not applicable to h9 (Cold-drawn).

Perpendicularity



Not applicable to h9 (Cold-drawn).

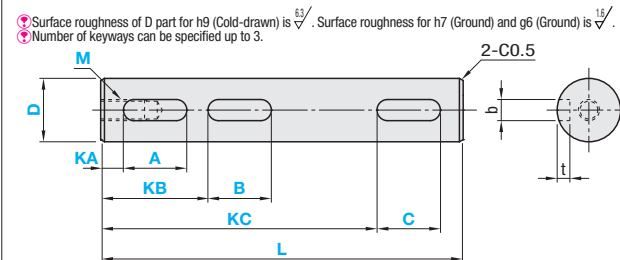
Circularity of Part D

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

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	800 ±0.8



Thread depth of M (Coarse) is Mx2.

① h9 (Cold-drawn)

Part Number	Type	Dh9 Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
SFMKRT	6	0 -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
PSFMKRT	8	0 -0.036	20.0~400.0	(3) (4) (5) (6)			
SSFMKRT	10	0 -0.043	20.0~500.0	4 (5) (6)			
(D6 is not available for SSFMKRT.)	12	0 -0.052	30.0~600.0	5 (6) (8)			
	15	0 -0.062	30.0~700.0	5 6 (8)			
	20	0 -0.062	40.0~800.0	5 6 8 10			
	25	0 -0.062	50.0~800.0	5 6 8 10 12			
	30	0 -0.062	60.0~800.0	8 10 12 16			
	35	0 -0.062	70.0~800.0	8 10 12 16 20			
	40	0 -0.062	80.0~800.0	12 16 20 24			

② h7 (Ground)

Part Number	Type	Dh7 Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
SFHKRT	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
PSFHKRT	8	0 -0.015	20.0~400.0	(3) (4) (5) (6)			
SSFHKRT	10	0 -0.018	20.0~500.0	4 (5) (6)			
	12	0 -0.021	30.0~600.0	5 (6) (8)			
	15	0 -0.021	30.0~700.0	5 6 (8)			
	20	0 -0.021	40.0~800.0	5 6 (8) (10) (12)			
	25	0 -0.021	50.0~800.0	5 6 8 (10) (12) (16)			
	30	0 -0.021	60.0~800.0	5 6 8 10 12 (16)			
	35	0 -0.021	70.0~800.0	8 10 12 16 20			
	40	0 -0.021	80.0~800.0	12 16 20 24			

③ g6 (Ground)

Part Number	Type	Dg6 Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ① KA, A	Keyway ② KB, B	Keyway ③ KC, C
SFGKRT	6	0 -0.004	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
PSFGKRT	8	0 -0.005	20.0~400.0	(3) (4) (5) (6)			
SSFGKRT	10	0 -0.007	20.0~500.0	4 (5) (6)			
(D13, 16, 18 and 22 are not available for SSFGKRT.)	12	0 -0.007	30.0~600.0	5 (6) (8)			
	13	0 -0.007	30.0~600.0	5 6 (8)			
	15	0 -0.007	30.0~700.0	5 6 (8)			
	16	0 -0.007	30.0~800.0	5 6 8 (10)			
	17	0 -0.007	40.0~800.0	5 6 8 (10) (12)			
	18	0 -0.007	40.0~800.0	5 6 8 (10) (12)			
	20	0 -0.007	40.0~800.0	5 6 8 10 (12) (16)			

M Sizes in () is selectable when KA≥Mx2.

Ordering Example	Part Number	L	M	Keyway ① KA	Keyway ② A	Keyway ③ KB	Keyway ④ B	Keyway ⑤ KC	Keyway ⑥ C
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1 Keyway SFMKRT10 - 325 - M4 - KA20 - A50
2 Keyways SFHKRT30 - 300 - M10 - KA20 - A50 - KB120 - B20
3 Keyways SFGKRT25 - 350 - M8 - KA10 - A60 - KB90 - B30 - KC210 - C30

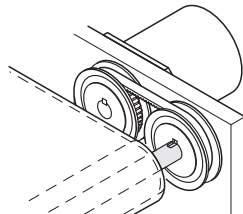
① h9 (Cold-drawn)

Type	SFMKRT (EN 1.1191 Equiv., Black Oxide)								PSFMKRT (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFMKRT (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	SFHKRT, SFGKRT (EN 1.1191 Equiv., Black Oxide)								PSFHKRT, PSFGKRT (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFHKRT, SSFGKRT (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						-	-	-						-	-	-						-	-	-
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35	-								-								-							
40	-								-								-							
50	-								-								-							

Example



Alterations	Part Number	L	M	KA	A	KB	B	KC	C	(LKC, FC-etc.)
SFMKRT30	-	300	-	M10	-	KA20	-	A50	-	KB120 - B20
PSFMKRT30	-	300	-	M10	-	KA20	-	A50	-	KB120 - B20
SSFMKRT30	-	300	-	M10	-	KA20	-	A50	-	KB120 - B20

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance	Retaining Ring Groove																																																																																			
Code	FC, WFC	SFC	UC	SC	LKC	TA, TB																																																																																			
Spec.	FC: Adds 1 set screw flat. <u>Ordering Code</u> FC10-G3 WFC: Adds 2 set screw flats. <u>Ordering Code</u> 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. <table border="1"><thead><tr><th>D</th><th>H</th></tr></thead><tbody><tr><td>6-17</td><td>1</td></tr><tr><td>18-40</td><td>2</td></tr><tr><td>50</td><td>3</td></tr></tbody></table> ⚠ 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. ⚠ When the keyway position is less than 1mm away from the end face, R is not applied. Ex.	D	H	6-17	1	18-40	2	50	3	Adds a set screw flat at any designated angle besides the datum plane (0°). SFC, SG = 1mm Increment AG = 15° Increment ⚠ SG:50 <u>Ordering Code</u> SFC10-SG3-AG120 <table border="1"><thead><tr><th>D</th><th>d</th><th>H</th></tr></thead><tbody><tr><td>6-17</td><td>1</td><td></td></tr><tr><td>18-40</td><td>2</td><td></td></tr><tr><td>50</td><td>3</td><td></td></tr></tbody></table> ⚠ When combined with other alterations, ±2 degree phase differential may occur.	D	d	H	6-17	1		18-40	2		50	3		Adds a slit cam groove. UC = 1mm Increment <u>Ordering Code</u> UC10 ⚠ UC+g1≤L ⚠ UC:1 ⚠ Not applicable to D13 or more. <table border="1"><thead><tr><th>D</th><th>d</th><th>l1</th></tr></thead><tbody><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>8</td><td>7</td><td></td></tr><tr><td>10</td><td>8</td><td>5</td></tr><tr><td>12</td><td>10</td><td></td></tr></tbody></table>	D	d	l1	6	5	4	8	7		10	8	5	12	10		Adds a wrench flat. SC = 1mm Increment ⚠ SC+g2≤L SC=0 or SC≥1 ⚠ A wrench flat is added to the opposite surface of keyway alteration. <table border="1"><thead><tr><th>D</th><th>W</th><th>l2</th><th>D</th><th>W</th><th>l2</th></tr></thead><tbody><tr><td>6</td><td>5</td><td>25</td><td>22</td><td>10</td><td></td></tr><tr><td>8</td><td>7</td><td>30</td><td>27</td><td>15</td><td></td></tr><tr><td>10</td><td>8</td><td>35</td><td>30</td><td></td><td></td></tr><tr><td>12</td><td>13</td><td>40</td><td>36</td><td></td><td></td></tr><tr><td>15</td><td>16</td><td>50</td><td>41</td><td></td><td></td></tr><tr><td>17</td><td>18</td><td></td><td></td><td></td><td>20</td></tr><tr><td>20, 22</td><td>17</td><td></td><td></td><td></td><td></td></tr></tbody></table> ⚠ When combined with other alterations, ±2 degree phase differential may occur.	D	W	l2	D	W	l2	6	5	25	22	10		8	7	30	27	15		10	8	35	30			12	13	40	36			15	16	50	41			17	18				20	20, 22	17					Changes L dimension tolerance. <u>Ordering Code</u> LKC ⚠ L<500→ L±0.05 L≥500→ L±0.1	Adds a retaining ring groove. (Applicable retaining rings are included.) TA, TB = 1mm Increment <u>Ordering Code</u> TA10-TB10 ⚠ 4<TA, TB<L/2 ⚠ For dimensions of the retaining ring groove, see P820
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