

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

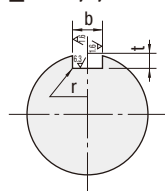
## One End Tapped with Keyway

Number of keyways can be specified up to 3.



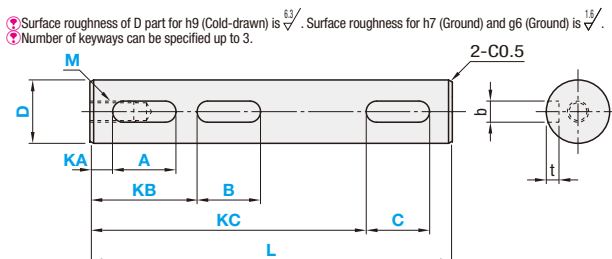
Type	D Tolerance	Material	Surface Treatment
SFMKRT	h9 (Cold-drawn)	1045 Carbon Steel	Black Oxide
PSFMKRT		304 Stainless Steel	Electroless Nickel Plating
SSFHKRT		304 Stainless Steel	-
SFHKRT	h7 (Ground)	1045 Carbon Steel	Black Oxide
PSFMKRT		304 Stainless Steel	Electroless Nickel Plating
SSFHKRT		304 Stainless Steel	-
SFGKRT	g6 (Ground)	1045 Carbon Steel	Black Oxide
PSFGKRT		304 Stainless Steel	Electroless Nickel Plating
SSFSGKRT		304 Stainless Steel	-

### Detailed Keyway Dimensions



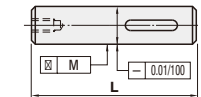
Shaft Dia.	Reference Dimension	b Tolerance (N9)	Reference Dimension	t Tolerance	r
6	2	-0.004	1.2		0.08-0.16
8, 10	3	-0.029	1.8	+0.1 0	
12	4	0	2.5		0.16-0.25
13-17	5	-0.03	3.0		
18-22	6	0	3.5		
25, 30	8	0	4.0		0.25-0.4
35	10	-0.036	5.0	+0.2 0	
40	12	0	5.0		
50	14	-0.043	5.5		

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



Thread depth of M (Coarse) is Mx2.

### Circularity and Straightness



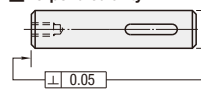
Not applicable to h9 (Cold-drawn).

### 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	±0.1
6	±0.2
30	±0.3
120	±0.5
400	±0.8

### ① h9 (Cold-drawn)

Part Number	Type	D <sub>h9</sub> Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③
					KA, A	KB, B	KC, C
SFMKRT	6	0.030	20.0-300.0	(3) (4)	KA+A≤L KA≥0	KB+B≤L KB≥KA+A	KC+C≤L KC≥KB+B
	8	0	20.0-400.0	(3) (4) (5) (6)			
	10	-0.036	20.0-500.0	4 (5) (6)			
	12	0	30.0-600.0	5 (6) (8)			
	15	-0.043	30.0-700.0	5 6 (8)			
PSFMKRT	20	0	40.0-800.0	5 6 8 10	b≤A≤100	b≤B≤100	b≤C≤100
	25	0	50.0-800.0	5 6 8 10 12			
	30	-0.052	60.0-800.0	8 10 12 16			
	35	0	70.0-800.0	8 10 12 16 20			
	40	-0.062	70.0-800.0	8 10 12 16 20			

### ② h7 (Ground)

Part Number	Type	D <sub>h7</sub> Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③
					KA, A	KB, B	KC, C
SFHKRT	6	0.012	20.0-300.0	(3) (4)	KA+A≤L KA≥0	KB+B≤L KB≥KA+A	KC+C≤L KC≥KB+B
	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)			
	15	-0.018	30.0-700.0	5 6 (8)			
PSFHKRT	20	0	40.0-800.0	5 6 (8) (10) (12)	b≤A≤100	b≤B≤100	b≤C≤100
	25	0	50.0-800.0	5 6 8 (10) (12) (16)			
	30	-0.021	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			

### ③ g6 (Ground)

Part Number	Type	D <sub>g6</sub> Tolerance	L=0.1mm Increment	M (Coarse) Selection	Keyway ①	Keyway ②	Keyway ③
					KA, A	KB, B	KC, C
SFGKRT	6	0.003	20.0-300.0	(3) (4)	KA+A≤L KA≥0	KB+B≤L KB≥KA+A	KC+C≤L KC≥KB+B
	8	-0.005	20.0-400.0	(3) (4) (5) (6)			
	10	-0.014	20.0-500.0	4 (5) (6)			
	12	0	30.0-600.0	5 (6) (8)			
	13	0	30.0-600.0	5 6 (8)			
PSFGKRT	15	-0.006	30.0-700.0	5 6 (8)	b≤A≤100	b≤B≤100	b≤C≤100
	16	-0.017	30.0-800.0	5 6 8 (10)			
	17	0	40.0-800.0	5 6 8 (10) (12)			
	18	0	40.0-800.0	5 6 8 (10) (12)			
	20	0	40.0-800.0	5 6 8 10 (12) (16)			
SSFSGKRT	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	0	60.0-800.0	8 10 12 16			
	35	-0.009	70.0-800.0	8 10 12 16 20			
	40	-0.025	80.0-800.0	12 16 20 24			

Ordering Example: Part Number - L - M - Keyway ① - Keyway ② - Keyway ③  
 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

Price [Configure Online](#)

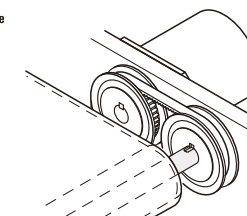
### ① h9 (Cold-drawn)

Type	SFMKRT (1045 Carbon Steel, Black Oxide)							PSFMKRT (1045 Carbon Steel, Electroless Nickel Plating)							SSFMKRT (304 Stainless Steel)									
	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
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### ② h7 (Ground) ③ g6 (Ground)

Type	SFHKRT, SFGKRT (1045 Carbon Steel, Black Oxide)							PSFHKRT, PSFGKRT (1045 Carbon Steel, Electroless Nickel Plating)							SSFHKRT, SSFGKRT (304 Stainless Steel)									
	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
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**EX** Example



Alterations: Part Number - L - M - KA - A - KB - B - KC - C - (LKC, FC, etc.)  
 SFHKRT30 - 300 - M10 - KA20 - A50 - KB120 - B20 - LKC

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance	Retaining Ring Groove																																																																															
	Code	FC, WFC	KFC	UC	SC	LKC	TA, TB																																																																														
Spec.	<p>FC: Adds 1 set screw flat.            WFC: Adds 2 set screw flats.</p> <p>Ordering Code FC10-G3            WFC10-J3-W10-V3</p> <p>FC, G, WFC, J, W, V = 1mm Increment</p> <p>G, J, V ≤ 50</p> <p>Set screw flat and keyway(s) are added to the same surface.</p> <table border="1"> <tr><th>D</th><th>H</th></tr> <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> </table> <p>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.</p> <p>When the keyway position is less than 1mm away from the end face, R is not applied.</p>	D	H	6-17	1	18-40	2	50	3	<p>Adds a set screw flat at any designated angle besides the datum plane (0°).</p> <p>KFC, G = 1mm Increment            AG = 15° Increment</p> <p>AG ≤ 50            Ordering Code KFCT10-G3-AG120</p> <table border="1"> <tr><th>D</th><th>H</th></tr> <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> </table> <p>When combined with other alterations, ±2 degree phase differential may occur.</p>	D	H	6-17	1	18-40	2	50	3	<p>Adds a slit cam groove.</p> <p>UC = 1mm Increment            AG = 15° Increment</p> <p>UC + θ ≤ 1            UC ≥ 1</p> <p>Not applicable to D13 or more.</p> <table border="1"> <tr><th>D</th><th>d</th><th>θ</th></tr> <tr><td>6</td><td>5</td><td>4</td></tr> <tr><td>8</td><td>7</td><td>4</td></tr> <tr><td>10</td><td>8</td><td>5</td></tr> <tr><td>12</td><td>10</td><td></td></tr> </table>	D	d	θ	6	5	4	8	7	4	10	8	5	12	10		<p>Adds a wrench flat.</p> <p>SC = 1mm Increment            SC + 2z ≤ L            SC = 0 or SC = 1</p> <p>A wrench flat is added to the opposite surface of keyway alteration.</p> <table border="1"> <tr><th>D</th><th>W</th><th>z</th><th>D</th><th>W</th><th>z</th></tr> <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>10</td><td>40</td><td>36</td><td></td><td></td></tr> <tr><td>15</td><td>13</td><td>50</td><td>41</td><td></td><td></td></tr> <tr><td>17</td><td>14</td><td></td><td></td><td></td><td></td></tr> <tr><td>20</td><td>22</td><td>17</td><td></td><td></td><td></td></tr> </table> <p>When combined with other alterations, ±2 degree phase differential may occur.</p>	D	W	z	D	W	z	6	5	25	22	10		8	7	30	27	15		10	8	35	30			12	10	40	36			15	13	50	41			17	14					20	22	17				<p>Changes L dimension tolerance.</p> <p>Ordering Code LKC</p> <p>L &lt; 500 → L ± 0.05            L ≥ 500 → L ± 0.1</p>	<p>Adds a retaining ring groove. (Applicable retaining rings are included.)</p> <p>TA, TB = 1mm Increment            Ordering Code TA10-TB10</p> <p>4 ≤ TA, TB ≤ L/2</p> <p>For dimensions of the retaining ring groove, see P820</p>
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