


# Rotary Shafts

Both Ends Stepped, One End Threaded / Both Ends Stepped, One End Threaded, One End Tapped

**Rotary Shafts – Both Ends Stepped, One End Threaded**



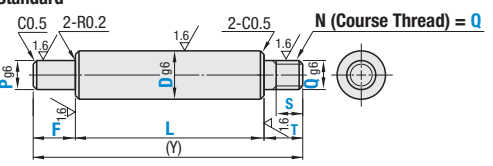
RoHS 10

Type		Material	Surface Treatment Nylon 6 (Glass Fiber 30%)
Standard	Wrench Flats		
NSFRE	NSFRES	1045 Carbon Steel or Equivalent	—
SFRE	SFRES		
—	SSFRES	304 Stainless Steel	—

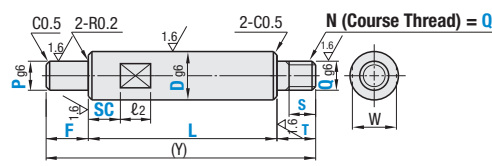
⊕ Circularity, Straightness, Perpendicularity, Concentricity P.853.

D Tolerance (g6)	
6	-0.004 -0.012
8, 10	-0.005 -0.014
12-18	-0.006 -0.017
20-30	-0.007 -0.020
35-50	-0.009 -0.025

**Standard**




**Wrench Flats**



Part Number	0.1 mm Increment				1 mm Increment		Q Selectable	1 mm Increment With Wrench Flats Only	W	l <sub>2</sub>	(Y) max.
	Type	D	L	F	T	P					
NSFRE SFRE	NSFRES SFRES SSFRES D13, 16, 18 and 22 are not available for SSFRES.	6	15.0-395.0	2≤F≤Px5	5≤T≤Qx7	3≤P<D	When Q≤6, S≤Qx3 & S≤T-2	3 4 5	SC+l <sub>2</sub> ≤L SC=0 or SC≥1	5	800
		8	15.0-495.0					3 4 5 6		7	
		10	15.0-595.0					4 5 6 8		8	
		12	15.0-695.0					5 6 8 10		10	
		13	15.0-695.0					5 6 8 10		11	
		15	15.0-795.0					5 6 8 10 12		13	
		16	15.0-895.0					5 6 8 10 12		14	
		17	30.0-895.0					5 6 8 10 12		17	
		18	30.0-895.0					5 6 8 10 12		19	
		20	30.0-995.0					6 8 10 12 16		22	
		22	40.0-995.0					6 8 10 12 16		27	
		25	30.0-995.0					8 10 12 16 20		30	
		30	30.0-995.0					8 10 12 16 20 24		36	
		35	40.0-995.0					10 12 16 20 24 30		41	
		40	40.0-995.0					12 16 20 24 30			
50	40.0-995.0	16 20 24 30									

⊕ When D-P(Q)≤2, chamfer C at the step is 0.2 or less.

**Rotary Shafts – Both Ends Stepped, One End Threaded**

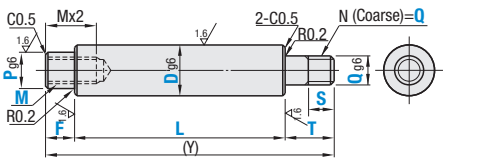


RoHS 10

Type		Material	Surface Finish
NSFRB			
SFRB			
PSFRB		304 Stainless Steel	Electroless Nickel Plating

⊕ Circularity, Straightness, Perpendicularity, Concentricity P.853.

D Tolerance (g6)	
6	-0.004 -0.012
8, 10	-0.005 -0.014
12-18	-0.006 -0.017
20-30	-0.007 -0.020
35-50	-0.009 -0.025



Part Number	0.1mm Increment				1mm Increment		M (Coarse)	Q	(Y) max.
	Type	D	L	F	T	P			
NSFRB SFRB PSFRB	NSFRB SFRB PSFRB	6	15.0-396.0	2≤F≤Px5	5≤T≤Qx7	5	When Q≤6, S≤Qx3 & S≤T-2	2.6 3	600
		8	15.0-496.0					2.6 3 4 5	
		10	15.0-596.0					3 4 5 6	
		12	15.0-696.0					4 5 6 8	
		13	15.0-696.0					4 5 6 8 10	
		15	15.0-796.0					4 5 6 8 10	
		16	15.0-896.0					4 5 6 8 10 12	
		17	30.0-896.0					4 5 6 8 10 12	
		18	30.0-896.0					4 5 6 8 10 12	
		20	30.0-996.0					4 5 6 8 10 12	
		22	50.0-996.0					4 5 6 8 10 12 16	
		25	30.0-996.0					4 5 6 8 10 12 16	
		30	30.0-996.0					6 8 10 12 16 20	
		35	40.0-996.0					6 8 10 12 16 20 24	
		40	40.0-996.0					10 12 16 20 24 30	
50	40.0-996.0	12 16 20 24 30							

⊕ When D-P(Q)≤2, chamfer C at the step is 0.2 or less.

**Part Number Example**

Part Number - L - F - P - T - S - Q - SC

SFRE25 - 300 - F50 - P20 - T20 - S15 - Q10 - SC70

Part Number - L - F - P - M - T - S - Q

SFRB20 - 400 - F25 - P16 - M10 - T20 - S15 - Q10

# Rotary Shafts

Both Ends Stepped, One End Threaded / Both Ends Stepped, One End Threaded, One End Tapped, *continued*

## Available Types

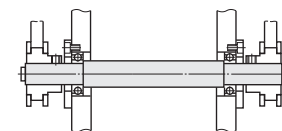
Both Ends Stepped, One End Threaded

Type	NSFRE, SFRE, NSFRES, SFRES										SSFRES																	
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1	995.0	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1	995.0								
6	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	995.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	995.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	995.0	
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Both Ends Stepped, One End Threaded, One End Tapped

Type	NSFRB, SFRB, PSFRB								
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1
6	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	996.0
8	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*
22	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*
35	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*

**Application Example**



**Part Number Alterations**

Part Number - L - F - P - T - S - Q (QMC) - SC - (LKC, FC...etc.)

SFRB25 - 300 - F50 - P20 - T20 - S15 - Q10 - SC70 - LKC

Part Number - L - F - P - M - T - S - Q (QMC) - (LKC, FC...etc.)

SFRB25 - 400 - F25 - P16 - M10 - T20 - S15 - Q10 - LKC

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Undercut, L Dimension Tolerance	Concentricity	Fine Thread																																																																	
	Code	KC / WKC / KZ	FC / WFC	SFC	UC	PC / QC / LKC	CKC	QMC																																																																
Spec.	<p>KC: Adds a keyway. Ordering Code: KC50-A10 WKC: Adds two keyways. Ordering Code: WKC50-C8-K40-E10</p> <p>⊕ KC / A / WKC / C / K / E = 1 mm increment ⊕ A / E / C ≤ 100 ⊕ For keyway details refer to P.853. ⊕ If 3 keyways are required, use both KC and WKC. ⊕ When keyway position is less than 1 mm away from the end face, R is not applied. Ex.</p>	<p>FC: Adds 1 set screw flat. Ordering Code: FC10-G3 WFC: Adds 2 set screw flats. Ordering Code: WFC10-J3-W10-V3</p> <p>⊕ FC / G / WFC / J / W / V = 1 mm increment ⊕ G / J / V ≤ 50</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>⊕ Keyways 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>	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°). SFC, SG = 1 mm increment AG = 15° increment SG ≤ 50 Ordering Code: SFC10-SG3-AG90</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. UC = 1 mm increment Ordering Code: UC10 ⊕ UC+l<sub>2</sub>≤L ⊕ UC≥1 ⊗ Not applicable to D13 or more.</p> <table border="1"> <tr><th>D</th><th>d</th><th>l<sub>1</sub></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>5</td></tr> </table>	D	d	l <sub>1</sub>	6	5	4	8	7	4	10	8	5	12	10	5	<p>PC, QC: Adds an undercut on P and Q. Ordering Code: PC ⊕ For undercut dimension details, refer to P.853. ⊗ F-B≤Mx2 ⊗ Not applicable to D=P or D=Q. LKC: Changes L dimension tolerance. Ordering Code: LKC ⊕ L&lt;500 L±0.05 ⊕ L≥500 L±0.1 ⊗ Not applicable to L=800 or more.</p>	<p>Changes the concentricity to 0.02. Ordering Code: CKC ⊕ Specify a value within dimension L range in the table below.</p> <table border="1"> <tr><th>D</th><th>Lmax</th></tr> <tr><td>6-22</td><td>450</td></tr> <tr><td>25-50</td><td>600</td></tr> </table>	D	Lmax	6-22	450	25-50	600	<p>Changes threads to Fine Thread in the table below. Ordering Code: QMC17</p> <table border="1"> <tr><th>D</th><th>QMC</th></tr> <tr><td>6</td><td>3 4.5 6</td></tr> <tr><td>8</td><td>3 4.5 6</td></tr> <tr><td>10</td><td>4.5 6 8</td></tr> <tr><td>12/13</td><td>5 6 8 10</td></tr> <tr><td>15/16</td><td>5 6 8 10 12</td></tr> <tr><td>17/18</td><td>6 8 10 12 15</td></tr> <tr><td>20/22</td><td>6 8 10 12 15 17</td></tr> <tr><td>25</td><td>8 10 12 15 17 20</td></tr> <tr><td>30</td><td>8 10 12 15 17 20 25</td></tr> <tr><td>35</td><td>10 12 15 17 20 25</td></tr> <tr><td>40</td><td>12 15 17 20 25 30 35</td></tr> <tr><td>50</td><td>15 17 20 25 30 35 40</td></tr> <tr><td>Pitch</td><td>0.35 0.5 0.75 1.0 1.5</td></tr> </table> <p>⊕ Q dimension is the same as QMC. ⊕ Specify QMC instead of Q.</p>	D	QMC	6	3 4.5 6	8	3 4.5 6	10	4.5 6 8	12/13	5 6 8 10	15/16	5 6 8 10 12	17/18	6 8 10 12 15	20/22	6 8 10 12 15 17	25	8 10 12 15 17 20	30	8 10 12 15 17 20 25	35	10 12 15 17 20 25	40	12 15 17 20 25 30 35	50	15 17 20 25 30 35 40	Pitch	0.35 0.5 0.75 1.0 1.5
D	H																																																																							
6-17	1																																																																							
18-40	2																																																																							
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17/18	6 8 10 12 15																																																																							
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35	10 12 15 17 20 25																																																																							
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Pitch	0.35 0.5 0.75 1.0 1.5																																																																							

⊕ For Keyway Details, P.853. ⊕ For undercut dimension details, refer to P.853.

Alterations	Keyway on Step P, Q	Keyway on Step P, Q	2nd Keyway on Step P, Q	Retaining Ring Groove on D	Retaining Ring Groove on P, Q	Set Screw Flat on P, Q	Left Hand Thread	Tapped Depth																														
	Code	PKC, QKC	PP, QQ	PV, QV	TL, TR	TF, TT	PFC, QFC	QLM	SC																													
Spec.	<p>PKC, QKC = 0.1 mm increment. Ordering Code: PKC10 ⊗ Not applicable when P≤5, Q≤5 ⊕ Key Length (PK) ≤ 70</p>	<p>PP, PK = 0.1 mm increment. QQ, QK = 0.1 mm increment. Ordering Code: PPS-PK10 ⊗ Not applicable when P≤5. ⊕ Key Length (PK) ≤ 70</p>	<p>PV, PV = 0.1 mm increment. QV, QV = 0.1 mm increment. Ordering Code: PPS-PK11-PVS-PW10 ⊕ Only available when PP(QQ) specified. ⊗ Not applicable when P≤5. ⊕ Key Length (PK) ≤ 71</p>	<p>TL, TR = 0.1 mm increment. Ordering Code: TL10, TR10 ⊕ 2sTR≤150 and TL+FS≤150 ⊕ For dimension m, see P.853.</p>	<p>TF, TT = 0.1 mm increment. Ordering Code: TF10 ⊕ 2sTF≤150, 2sTT≤150 ⊕ For dimension m, see P.853.</p>	<p>PFC, LC = 1 mm increment. QFC, RC = 1 mm increment. Ordering Code: PFC10-LC5</p>	<p>Change to Left-Hand Thread. Ordering Code: QLM</p>	<p>SC = 1 mm increment. Ordering Code: SC10 ⊕ SC+L<sub>2</sub>≤L, SC=0 or SC≥1 ⊗ Not applicable for D=2-5.</p> <table border="1"> <tr><th>D</th><th>W</th><th>l<sub>2</sub></th><th>D</th><th>W</th><th>l<sub>2</sub></th></tr> <tr><td>6</td><td>5</td><td>17 18 14</td><td>6</td><td>5</td><td>17 18 14</td></tr> <tr><td>8</td><td>7</td><td>8 20 22 17 10</td><td>8</td><td>7</td><td>8 20 22 17 10</td></tr> <tr><td>10</td><td>8</td><td>25 22</td><td>10</td><td>8</td><td>25 22</td></tr> <tr><td>12 13 10</td><td>10</td><td>30 27 15</td><td>12 13 10</td><td>10</td><td>30 27 15</td></tr> </table>	D	W	l <sub>2</sub>	D	W	l <sub>2</sub>	6	5	17 18 14	6	5	17 18 14	8	7	8 20 22 17 10	8	7	8 20 22 17 10	10	8	25 22	10	8	25 22	12 13 10	10	30 27 15	12 13 10	10	30 27 15
D	W	l <sub>2</sub>	D	W	l <sub>2</sub>																																	
6	5	17 18 14	6	5	17 18 14																																	
8	7	8 20 22 17 10	8	7	8 20 22 17 10																																	
10	8	25 22	10	8	25 22																																	
12 13 10	10	30 27 15	12 13 10	10	30 27 15																																	