


# Rotary Shafts

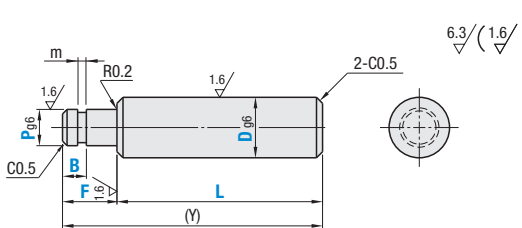
## One End Stepped & Both Ends Stepped with Retaining Ring Grooves

**Rotary Shafts – One End Stepped with Retaining Ring Groove**



RoHS10

Type	Material	Surface Treatment
NSFRX	1045 Carbon Steel or Equivalent	—
SFRX		Black Oxide
PSFRX		Electroless Nickel Plating
SSFRX	304 Stainless Steel	—




Retaining Ring Groove Dimensions / Applicable Retaining Rings P.853.  
Circularity / Straightness / Perpendicularity / Concentricity P.853.

Type	Part Number	D <sub>95</sub>	0.1 mm Increment		1 mm Increment		(Y) max.
			L	F	B	P	
NSFRX SFRX PSFRX SSFRX D13, 16, 18 and 22 are not available for SSFRX.	6	-0.004 -0.012	20.0–298.0	F <sub>≤Px5</sub>	When P <sub>≤6</sub> 2 <sub>≤B</sub>	3 4 5	300
	8	-0.005 -0.014	20.0–398.0			3 <sub>≤P&lt;D</sub>	400
	10	-0.006 -0.017	20.0–498.0			When 6<P <sub>≤10</sub> 3 <sub>≤B</sub>	5 <sub>≤P&lt;D</sub>
	12	-0.006 -0.017	25.0–598.0		When 10<P <sub>≤20</sub> 4 <sub>≤B</sub>		600
	13	-0.007 -0.020	25.0–698.0				When 20<P 5 <sub>≤B</sub>
	15	-0.007 -0.020	25.0–798.0			10 <sub>≤P&lt;D</sub>	
	16	-0.009 -0.025	30.0–798.0		16 <sub>≤P&lt;D</sub>		
	17	-0.009 -0.025	30.0–798.0				
	18	-0.009 -0.025	30.0–798.0				
	20	-0.009 -0.025	30.0–798.0				
	22	-0.009 -0.025	30.0–798.0				
	25	-0.009 -0.025	30.0–798.0				
	30	-0.009 -0.025	40.0–798.0				
	35	-0.009 -0.025	40.0–798.0				
	40	-0.009 -0.025	40.0–798.0				
50	-0.009 -0.025	40.0–798.0					

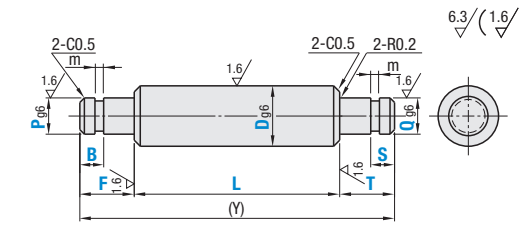
When D-P<sub>≤2</sub>, chamfer C at the step is 0.2 or less. For P dimension / 27 / 31 / 33 / 34 / 36 / 37 / 38 / 39 / 41 / 42 / 43 / 44 / 46 / 47 / 48 and 49 cannot be specified. For m Dimension, see P.853.

**Rotary Shafts – Both Ends Stepped with Retaining Ring Grooves**



RoHS10

Type	Material	Surface Treatment
NSFRZ	1045 Carbon Steel or Equivalent	—
SFRZ		Black Oxide
PSFRZ		Electroless Nickel Plating
SSFRZ	304 Stainless Steel	—



Retaining Ring Groove Dimensions / Applicable Retaining Rings P.853.  
Circularity, Straightness, Perpendicularity, Concentricity P.853.

Type	Part Number	D <sub>95</sub>	0.1 mm Increment		1 mm Increment		(Y) max.
			L	F / T	B / S	P / Q	
NSFRZ SFRZ PSFRZ SSFRZ D13, 16, 18 and 22 are not available for SSFRZ.	6	-0.004 -0.012	20.0–296.0	F <sub>≤Px5</sub> T <sub>≤Qx5</sub>	When P, Q <sub>≤6</sub> 2 <sub>≤B, S</sub>	3 4 5	300
	8	-0.005 -0.014	20.0–396.0			3 <sub>≤P, Q&lt;D</sub>	400
	10	-0.006 -0.017	20.0–496.0			When 6<P and Q <sub>≤10</sub> 3 <sub>≤B, S</sub>	5 <sub>≤P, Q&lt;D</sub>
	12	-0.006 -0.017	25.0–596.0		When 10<P and Q <sub>≤20</sub> 4 <sub>≤B, S</sub>		600
	13	-0.007 -0.020	25.0–696.0				When 20<P, Q, 5 <sub>≤B, S</sub>
	15	-0.007 -0.020	25.0–796.0			10 <sub>≤P, Q&lt;D</sub>	
	16	-0.009 -0.025	30.0–796.0		16 <sub>≤P, Q&lt;D</sub>		
	17	-0.009 -0.025	30.0–796.0				
	18	-0.009 -0.025	30.0–796.0				
	20	-0.009 -0.025	30.0–796.0				
	22	-0.009 -0.025	30.0–796.0				
	25	-0.009 -0.025	30.0–796.0				
	30	-0.009 -0.025	40.0–796.0				
	35	-0.009 -0.025	40.0–796.0				
	40	-0.009 -0.025	40.0–796.0				
50	-0.009 -0.025	40.0–796.0					

When D-(P/Q)<sub>≤2</sub>, chamfer C at the step is 0.2 or less. For P and Q dimensions, 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified. For m Dimension, see P.853.

**Part Number Example**

Part Number - L - F - B - P  
SFRX30 - 500 - F20 - B10 - P15

Part Number - L - F - B - P - T - S - Q  
PSFRZ30 - 340 - F13 - B9 - P10 - T12 - S10 - Q10

# Rotary Shafts

## One End Stepped & Both Ends Stepped with Retaining Ring Grooves, *continued*

### Available Types

#### One End Stepped with Retaining Ring Groove

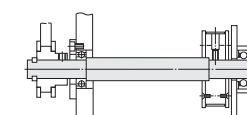
Type	NSFRX, SFRX, PSFRX								SSFRX							
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1
D	50.0	100.0	150.0	200.0	300.0	400.0	600.0	798.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	798.0
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

#### Both Ends Stepped with Retaining Ring Grooves

Type	NSFRZ, SFRZ, PSFRZ								SSFRZ							
	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	796.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	796.0
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*



Part Number Alterations  
Part Number - L - F - B - P - (LKC, FC...etc.)  
SFRX30 - 500 - F20 - B10 - P15 - LKC



Part Number - L - F - B - P - T - S - Q - (LKC, FC...etc.)  
PSFRZ30 - 340 - F13 - B9 - P10 - T12 - S10 - Q10 - LKC

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance
	One Keyway: KC Two Keyways: WKC	1 Set Screw Flat: FC 2 Set Screw Flats: WFC			
Code	KC, WKC	FC, WFC	SFC	UC	LKC
Spec.	KC: Adds a keyway. Ordering Code: KC50-A10 WKC: Adds two keyways. Ordering Code: WKC50-C8-K40-E10 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.	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 = 1 mm Increment G / J / V ≤ 50 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 = 1 mm Increment AG = 15° Increment SG ≤ 50 Ordering Code: SFC10-SG3-AG90 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 = 1 mm Increment Ordering Code: UC10 UC + L <sub>1</sub> ≤ L UC ≥ 1 Not applicable to D13 or more. D d L <sub>1</sub> 6 5 4 8 7 4 10 8 5 12 10 5	LKC: Changes L dimension tolerance. Ordering Code: LKC L < 500 L ± 0.05 L ≥ 500 L ± 0.1

For Keyway Details, P.853.