



Rotary Shafts – D Tolerance h9 (Cold-Drawn) / h7 & g6 (Ground)

Retaining Ring Grooves on Both Ends

Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your applications.

Rotary Shafts – Retaining Ring Grooves on Both Ends



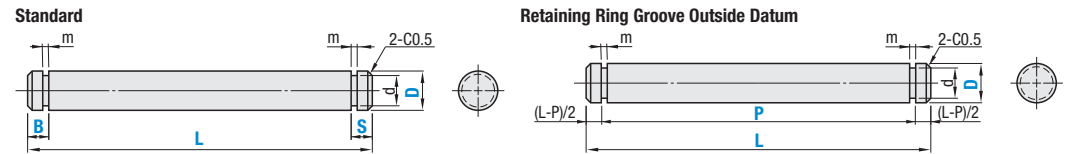
RoHS10

Type	Standard		Retaining Ring Groove Outside Datum	D Tolerance	Material	Surface Treatment
	No Retaining Ring	With Retaining Ring				
(1)	NSFMRR	NSFMRR	—	h9 (Cold-Drawn)	1045 Carbon Steel or Equivalent	Black Oxide Electroless Nickel Plating
	SFMRR	SFMRR				
	PSFMRR	PSFMRR				
	SSFMR	SSFMR				
(2)	NSFHRR	NSFHRR	—	h7 (Ground)	1045 Carbon Steel or Equivalent	Black Oxide Electroless Nickel Plating
	SFHRR	SFHRR				
	PSFHRR	PSFHRR				
	SSFHRR	SSFHRR				
(3)	NSFR	NSFR	NSFRGA	g6 (Ground)	1045 Carbon Steel or Equivalent	Black Oxide Electroless Nickel Plating
	SFR	SFR				
	PSFR	PSFR				
	SSFR	SSFR				
		PHFRR			4137 Alloy Steel or Equivalent Hardness 30–35 HRC min.	Black Oxide Electroless Nickel Plating

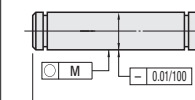
D	Tolerance Table		
	h9 (Cold-Drawn)	h7 (Ground)	g6 (Ground)
2 2.5 3	—	—	-0.002 -0.008
4-6	0 -0.030	0 -0.012	-0.004 -0.012
8-10	0 -0.036	0 -0.015	-0.005 -0.014
12-18	0 -0.043	0 -0.018	-0.006 -0.017
20-30	0 -0.052	0 -0.021	-0.007 -0.020
35-50	0 -0.062	0 -0.025	-0.009 -0.025

For Retaining Ring Groove Dimensions, P.853.

Surface roughness of D part for h9 (Cold-Drawn) is 0.3 for h7 (Ground) and g6 (Ground) is 0.1.



Circularity and Straightness

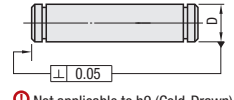


Straightness of size D2, D2.5 is 0.1/100. Not applicable to h9 (Cold-Drawn).

Circularity of Part D

Over	To	Circularity M
1	2.5	0.006
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Perpendicularity



Not applicable to h9 (Cold-Drawn).

Tolerances of L and Other Dimensions

Dimension	To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

Part Number		D	L 0.1 mm Increment	B, S 0.1 mm Increment	Retaining Ring No. Accessories: Retaining Rings 2 Pcs (Retaining Ring Type Only)
Type	Standard				
Without Retaining Ring NSFMRR SFMRR PSFMRR SSFMR	With Retaining Ring NSFMRR SFMRR PSFMRR SSFMR	3	15.0-150.0	2≤B or S<150	NETWS2
		4	15.0-200.0		NETWS3
		5	15.0-250.0		NETWS4
		6	15.0-500.0		NETWS5
		8	15.0-500.0		NETWS7
		10	15.0-800.0		STWS10
		12	15.0-900.0		STWS12
		15	15.0-1000.0		STWS15
		20	20.0-1000.0		STWS20
		25	20.0-1000.0		STWS25
D6 is not available for SSFMRR		30	20.0-1000.0		STWS30
		35	70.0-1000.0	5≤B or S<150	STWS35
		40	80.0-1000.0		STWS40
		50	100.0-1000.0		STWS50

Part Number		D	L 0.1 mm Increment	B, S 0.1 mm Increment	Retaining Ring No. Accessories: Retaining Rings 2 Pcs (Retaining Ring Type Only)
Type	Standard				
Without Retaining Ring NSFHRR SFHRR PSFHRR SSFHRR	With Retaining Ring NSFHRR SFHRR PSFHRR SSFHRR	6	15.0-500.0	2≤B or S<150	NETWS5
		8	15.0-500.0		NETWS7
		10	15.0-800.0		STWS10
		12	15.0-900.0		STWS12
		15	15.0-1000.0		STWS15
		17	20.0-1000.0	4≤B or S<150	STWS20
		20	20.0-1000.0		STWS25
		25	20.0-1000.0		STWS30
		35	80.0-1000.0	5≤B or S<150	STWS35
		40	80.0-1000.0		STWS40
50	100.0-1000.0		STWS50		

Part Number		D	L 0.1 mm Increment	B, S 0.1 mm Increment	P 0.1 mm Increment	m Tolerance	d Tolerance	Retaining Ring No. Accessories: Retaining Ring 2 pcs. (Retaining Ring Type Only)
Type	Standard							
Without Retaining Ring NSFR SFR PSFR SSFR	With Retaining Ring NSFRGA SFRGA PSFRGA SSFRGA	2	15.0-50.0	2≤B or S<150	3≤P≤L-4	0.4	+0.05	NETWS1.2
		2.5	15.0-50.0					NETWS1.5
		3	15.0-150.0					NETWS2
		4	15.0-200.0					NETWS3
		5	15.0-250.0					NETWS4
		6	15.0-500.0					NETWS5
		8	15.0-500.0					NETWS7
		10	15.0-800.0					STWS10
		12	15.0-900.0					STWS12
		13	15.0-900.0					STWS13
		*15	15.0-1000.0	STWS15				
		16	15.0-1000.0	STWS16				
		17	20.0-1000.0	STWS17				
		18	20.0-1000.0	STWS18				
		*20	20.0-1000.0	STWS20				
		*25	20.0-1000.0	STWS25				
		*30	20.0-1000.0	STWS30				
		35	80.0-1000.0	STWS35				
		40	80.0-1000.0	STWS40				
		50	100.0-1000.0	STWS50				

For NETWS and STWS retaining rings details, refer to P.853. The material of retaining ring is 304 Stainless Steel.

Rotary Shafts – D Tolerance h9 (Cold-Drawn) / h7 & g6 (Ground)

Retaining Ring Grooves on Both Ends, continued

Available Types

Type	NSFMRR, NSFMRRA, SFMRR, SFMRRA, PSFMRR, PSFMRR																SSFMR, SSFMRR								HFRR, PHFRR							
	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1	Min. L	L50.1	L100.1	L150.1	L200.1	L300.1	L400.1	L600.1	L800.1					
D	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	Max.	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	Max.	50.0	100.0	150.0	200.0	300.0	400.0	600.0	1000.0						
2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
6	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
8	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
12	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
15	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
20	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
25	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
30	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
35	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					

Part Number Example: SFMRR30 - 150 - B6 - S6

Application Example: Select from h9 (Cold-Drawn), h7 (Ground) and g6 (Ground) for your applications.

Part Number Alterations: SFRRGA20 - 180 - P150

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats
	Code	KC / WKC / KZ	FC / WFC	SFC	UC
Spec.	KC: Adds a keyway. Ordering Code: KC50-A10 WKC: Adds 2 Keyways. Ordering Code: WKC50-CB-K40-E10 Ordering Code: KZ100-Z10 ① KC, A, WKC, C, E, K, KZ, Z= 0.1 mm increment ② A, C, E, Z=100 ③ For keyway details refer to P.853. ④ If 3 keyways are required use both KC and WKC. If 4th keyway is required use KZ only as addition to KC and WKC. ⑤ Not applicable to D5 or less. ⑥ When keyway position is less than 1 mm away from the end face, R is not applied. ⑦ Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500 mm, ±2 degree phase differential may occur.	FC: Adds 1 set screw flat. Ordering Code: FC10-G3 WFC: Adds 2 set screw flats. Ordering Code: WFC10-J3-W10-V3 ① FC, G, WFC, J, W, V = 1 mm increment ② G, J, V=50 ③ Not applicable to D2 and D2.5.	Adds a set screw flat at any desired angle besides the datum plane (0°). SFC = 1 mm Increment AG = 15° Increment ① SG=50 Ordering Code: SFC10-SG3-AG120	Adds a slit cam groove. UC = 1 mm Increment Ordering Code: UC10 ① UC+L≤L ② UC=1 ③ Not applicable to D2 and D2.5. ④ Not applicable to D13 or more.	Adds a wrench flat. SC = 1 mm Increment Ordering Code: SC10 ① SC+L≤L ② SC=0 or SC=1

Alterations	2 Set Screw Flat at Both Ends	Set Screw Flat Depth	L Dimension Tolerance	C Chamfer Change on D
	Code	KWC	WC	LKC
Spec.	Adds 2 Set Screw Flats at both ends. KWC = 1 mm Increment Ordering Code: KWC20 ① KWC=B-m, S-m ② L≤680 is applicable ③ Not applicable to D dimensions other than indicated above.	Set Screw Flat Depth can be specified in 0.1 increments. Ordering Code: WC6.8 ① Applicable only when KWC alteration is performed. ② Not applicable to D dimensions other than indicated above.	Changes L Dimension Tolerance. Ordering Code: LKC ① L<500 L±0.05 ② L=500 L±0.1 ③ Not applicable to L=800 or more.	CD= Selection from Table below. Ordering Code: CD2 Chamfer (CD) Applicable Dia. C2 ø6-ø51 C3 ø8-ø51 C4 ø10-ø51 C5 ø12-ø51