

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

For products uncovered by the e-Catalog Standard, see P.131.

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

Type	D Tolerance	Material	Surface Treatment
(1) SFMR	h9 (Cold-drawn)	S45C	Black Oxide
PSFMR		Equivalent	Electroless Nickel Plating
SSFMR		SUS304	-
(2) SFHR	h7 (Ground)	S45C	Black Oxide
PSFHR		Equivalent	Electroless Nickel Plating
SSFHR		SUS304	-
(3) SFR	g6 (Ground)	S45C	Black Oxide
PSFR		Equivalent	Electroless Nickel Plating
SSFR		SUS304	-
HFR		SCM435	Black Oxide
PHFR		SCM435 Hardness 30~35HRC	Electroless Nickel Plating

Surface roughness of Part D for h9 (Cold-drawn) is $\sqrt{1.6}$, Surface roughness for h7 (Ground) and g6 (Ground) is $\sqrt{0.8}$.

Dimensional diagrams show diameter D, length L, and chamfered ends with 2-C0.5.

(1)h9 (Cold-drawn)

Type	Part Number	D _{h9}	L=0.1mm Increment
SFMR PSFMR SSFMR (D6 is not available for SSFMR.)	3	0.025	15.0-150.0
	4	0	15.0-200.0
	5	-0.030	15.0-250.0
	6	0	15.0-400.0
	8	0	15.0-500.0
	10	-0.036	15.0-600.0
	12	0	15.0-700.0
	15	-0.043	15.0-800.0
	20	0	30.0-1000.0
	25	-0.052	50.0-1000.0
	30	0	60.0-1000.0
	35	-0.062	70.0-1000.0
	40	0	80.0-1000.0
	50	-0.062	100.0-1000.0

(2)h7 (Ground)

Type	Part Number	D _{h7}	L=0.1mm Increment
SFHR PSFHR SSFHR	3	0.010	15.0-150.0
	4	0	15.0-200.0
	5	-0.012	15.0-250.0
	6	0	15.0-400.0
	8	0	15.0-500.0
	10	-0.015	15.0-600.0
	12	0	15.0-700.0
	15	-0.018	15.0-800.0
	17	0	30.0-900.0
	20	0	30.0-1000.0
	25	-0.021	50.0-1000.0
	30	0	60.0-1000.0
	35	0	70.0-1000.0
	40	0	80.0-1000.0
	50	-0.025	100.0-1000.0

(3)g6 (Ground)

Type	Part Number	D _{g6}	L=0.1mm Increment
SFR PSFR SSFR (D13, D16, D18 or D22 is not available for SSFR.) *HFR (Only * marked sizes are available.) *PHFR (Only * marked sizes are available.)	2	-0.002	15.0-50.0
	2.5	-0.008	15.0-50.0
	3	-0.004	15.0-150.0
	4	-0.012	15.0-200.0
	5	-0.012	15.0-250.0
	6	-0.005	15.0-400.0
	8	-0.014	15.0-500.0
	10	-0.014	15.0-600.0
	12	-0.006	15.0-700.0
	13	-0.017	15.0-700.0
	*15	-0.006	15.0-800.0
	*16	-0.017	15.0-900.0
	*17	-0.007	30.0-900.0
	*18	-0.020	30.0-900.0
	*20	-0.007	30.0-1000.0
	*22	-0.020	40.0-1000.0
	*25	-0.009	50.0-1000.0
	*30	-0.025	60.0-1000.0
	*35	-0.009	70.0-1000.0
	*40	-0.025	80.0-1000.0
*50	-0.025	100.0-1000.0	

For HFR, PHFR, the upper limit for L dim. is 800.

Ordering Example

Part Number	-	L
SFMR15	-	150
PSFHR20	-	300

(1)h9 (Cold-drawn)

Type	SFMR (S45C Equivalent, Black Oxide)								PSFMR (S45C Equivalent, Electroless Nickel Plating)								SSFMR (SUS304)										
	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			
D	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	1000.0
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(2)h7 (Ground) (3)g6 (Ground)

Type	SFHR, SFR (S45C Equivalent, Black Oxide)								PSFHR, PSFR (S45C Equivalent, Electroless Nickel Plating)								SSFHR, SSFR (SUS304)									
	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		
D	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	1000.0	
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Type	HFR (SCM435 Hardness 30~35HRC, Black Oxide)								PHFR (SCM435 Hardness 30~35HRC, Electroless Nickel Plating)							
	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	800.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Alterations

Part Number - L - (KC, WKC, FC... etc.)

PSFMR30 - 250 - KC20-A10

Alterations	Keyway			Set Screw Flat			
	1	2	1 (for 4th keyway)	1	2	2 Set Screw Flats (Angle Specified)	2 Set Screw Flats at both ends
For details, see Alteration Overview P.843							
Code	KC	WKC	KZ	FC	WFC	SFC	KWC
Dimension Increment	KC, A = 0.1mm Increment	WKC, C, E, K = 0.1mm Increment	KZ, Z = 0.1mm Increment	FC, G = 1mm Increment	WFC, J, V, W = 1mm Increment	SFC, SG = 1mm Increment	KWC = 1mm Increment
Ordering Example	KC50-A10	WKC5-C20-K5-E10	KZ5-A10-WKC20-C10-K60-E10-KZ100-Z10	FC10-G3	WFC10-J15-W10-V20	SFC10-SG3-AG120	KWC10
Conditions	Not applicable when Shaft Dia. ≤ Ø5. Key Length ≤ 100. *1, *2			Not applicable when Shaft Dia. = Ø2 or Ø2.5. G, J, V, SG ≤ 70		Not applicable when Shaft Dia. ≤ Ø6, when D = 13, 16, 17, 18 or 22, or when L > 600. Only when KWC is specified, WC is available.	

Alterations	Retaining Ring Groove	Slit Cam Groove	L Dimension Tolerance	Wrench Flats	Changes Part D Chamfering
	For details, see Alteration Overview P.843				
Code	TA, TB	UC	LKC	SC	CD
Dimension Increment	TA, TB = 0.1mm Increment	UC = 1mm Increment	LKC = 1mm Increment	SC = 1mm Increment	CD = Selectable
Ordering Example	TA10	UC10	LKC	SC10	CD2
Conditions	2 ≤ TA, TB ≤ 150	Not applicable when Shaft Dia. = Ø2 or Ø2.5 or when D ≥ 13	Not applicable when L ≥ 800.	Not applicable when D ≤ 5.	Only values provided on the Applicable Dia. Table are applicable.

For details about Alterations, see Alteration Overview (P.843).

When combined with other alterations, ±2 degree phase difference may occur. Provide 2mm or more clearance between this alteration and others.

When multiple keyways or set screw flats are specified, they are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase difference may occur.

*1. When multiple keyways are added with 2mm or less clearance between them, keyways will interfere.

*2. When the keyway position is less than 1mm away from the end face, R is not applied.