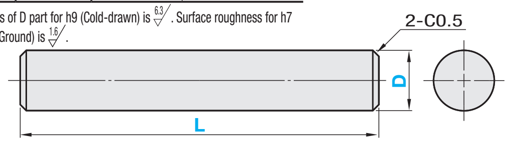
Rotary Shafts D Tolerance h9 (Cold-drawn) / h7 (Ground) / g6 (Ground)

Straight

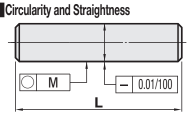
■Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your applications.

	Type	D Tolerance	M Material	S Surface Treatment
①	SFMR	h9 (Cold-drawn)	EN 1.1191 Equiv.	Black Oxide
	PSFMR			Electroless Nickel Plating
	SSFMR		EN 1.4301 Equiv.	-
②	SFHR	h7 (Ground)	EN 1.1191 Equiv.	Black Oxide
	PSFHR			Electroless Nickel Plating
	SSFHR		EN 1.4301 Equiv.	-
③	SFR	g6 (Ground)	EN 1.1191 Equiv.	Black Oxide
	PSFR			Electroless Nickel Plating
	SSFR		EN 1.4301 Equiv.	-
	HFR		EN 1.7220 Equiv. H Hardness: 30 ~ 35HRC	Black Oxide
	PHFR			Electroless Nickel Plating

Surface roughness of D part for h9 (Cold-drawn) is 6.3. Surface roughness for h7 (Ground) and g6 (Ground) is 1.6.



■Circularity and Straightness



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

■Circularity of Part D

D over	D or Less	Circularity M
1	2.5	0.006
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■L Dimension Tolerance

Dimension over	Dimension or Less	Tolerance
14	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

①h9 (Cold-drawn)

Part Number Type	D	h9	L=0.1mm Increment
SFMR PSFMR SSFMR (D6 is not available for SSFMR.)	3	0 / -0.025	15.0 ~ 150.0
	4	0 / -0.030	15.0 ~ 200.0
	5		15.0 ~ 250.0
	6		20.0 ~ 300.0
	8	0 / -0.036	20.0 ~ 400.0
	10		20.0 ~ 500.0
	12	0 / -0.043	30.0 ~ 600.0
	15		30.0 ~ 700.0
	20	0 / -0.052	40.0 ~ 800.0
	25		50.0 ~ 800.0
	30		60.0 ~ 800.0
	35	0 / -0.062	70.0 ~ 800.0
	40		80.0 ~ 800.0
	50		100.0 ~ 800.0

②h7 (Ground)

Part Number Type	D	h7	L=0.1mm Increment
SFHR PSFHR SSFHR	3	0 / -0.010	15.0 ~ 150.0
	4	0 / -0.012	15.0 ~ 200.0
	5		15.0 ~ 250.0
	6		20.0 ~ 300.0
	8	0 / -0.015	20.0 ~ 400.0
	10		20.0 ~ 500.0
	12	0 / -0.018	30.0 ~ 600.0
	15		30.0 ~ 700.0
	17		40.0 ~ 800.0
	20	0 / -0.021	40.0 ~ 800.0
	25		50.0 ~ 800.0
	30		60.0 ~ 800.0
	35	0 / -0.025	70.0 ~ 800.0
	40		80.0 ~ 800.0
	50		100.0 ~ 800.0

③g6 (Ground)

Part Number Type	D	g6	L=0.1mm Increment
SFR PSFR SSFR (D13, 16, 18 and 22 are not available for SSFR.) *HFR (Only * marked sizes are available.) *PHFR (Only * marked sizes are available.)	2	-0.002 / -0.008	15.0 ~ 50.0
	2.5		15.0 ~ 50.0
	3		15.0 ~ 150.0
	4	-0.004 / -0.012	15.0 ~ 200.0
	5		15.0 ~ 250.0
	6		20.0 ~ 300.0
	8	-0.005 / -0.014	20.0 ~ 400.0
	10		20.0 ~ 500.0
	12	-0.006 / -0.017	30.0 ~ 600.0
	13		30.0 ~ 600.0
	*15		30.0 ~ 700.0
	16		30.0 ~ 800.0
	17		40.0 ~ 800.0
	18		40.0 ~ 800.0
	*20	-0.007 / -0.020	40.0 ~ 800.0
	22		40.0 ~ 800.0
	*25		50.0 ~ 800.0
	*30		60.0 ~ 800.0
	*35	-0.009 / -0.025	70.0 ~ 800.0
	*40		80.0 ~ 800.0
	*50		100.0 ~ 800.0

Ordering Example

Part Number	-	L
SFMR15	-	150
PSFHR20	-	300

①h9 (Cold-drawn)

Type	SFMR (EN 1.1191 Equiv., Black Oxide)								PSFMR (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFMR (EN 1.4301 Equiv.)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
3				-	-	-	-	-				-	-	-	-	-				-	-	-	-	-
4					-	-	-	-					-	-	-	-					-	-	-	-
5						-	-	-						-	-	-						-	-	-
6						-	-	-						-	-	-	-	-	-	-	-	-	-	-
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50	-								-								-							

②h7 (Ground) ③g6 (Ground)

Type	SFHR, SFR (EN 1.1191 Equiv., Black Oxide)								PSFHR, PSFR (EN 1.1191 Equiv., Electroless Nickel Plating)								SSFHR, SSFR (EN 1.4301 Equiv.)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
2		-	-	-	-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-
2.5		-	-	-	-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-
3				-	-	-	-	-				-	-	-	-	-				-	-	-	-	-
4					-	-	-	-					-	-	-	-					-	-	-	-
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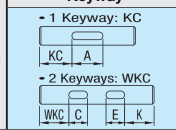
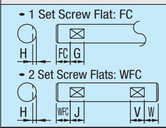
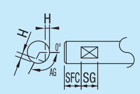
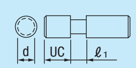
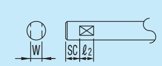
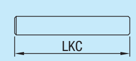
40	-								-								-							
50	-								-								-							

Type	HFR (EN 1.7220 Equiv. Hardness 30~35HRC, Black Oxide)								PHFR (EN 1.7220 Equiv. Hardness 30~35HRC, Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
15																
20																
25																
30	-								-							
35	-								-							
40	-								-							
50	-								-							

Alterations

Part Number	-	L	-	(KC, WKC, FC···etc.)
PSFMR30	-	250	-	KC20-A10

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
Alterations	• 1 Keyway: KC • 2 Keyways: WKC 	• 1 Set Screw Flat: FC • 2 Set Screw Flats: WFC 				
Code	KC, WKC	FC, WFC	SFC	UC	SC	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 = 1mm Increment A, E, C≤100 For Keyway Details, refer to **P.825**. If 3 keyways are required, use both KC and WKC. ⊗ Not applicable to D5 or less. When the keyway position is less than 1mm 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 = 1mm Increment G, J, V≤50 D 3~5: H 0.5; D 6~17: H 1; D 18~40: H 2; D 50: H 3 ⊗ Not applicable to D2 and D2.5.	Adds a set screw flat at any desired angle besides the datum plane (0°). SFC, SG= 1mm Increment AG = 15° Increment SG≤50 Ordering Code SFC10-SG3-AG120 D 3~5: H 0.5; D 6~17: H 1; D 18~40: H 2; D 50: H 3 ⊗ Not applicable to D2 and D2.5. When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC = 1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 ⊗ Not applicable to D2 and D2.5. ⊗ Not applicable to D13 or more. D 3: d 2; D 4: d 3; D 5: d 4; D 6: d 5; D 8: d 7 (ℓ1 4) D 10: d 8; D 12: d 10 (ℓ1 5)	Adds a wrench flat. SC = 1mm Increment SC+ℓ2≤L SC=0 or SC≥1 D 6: W 5; D 8: W 7; D 10: W 8 (ℓ2 8) D 12,13: W 10; D 15,16: W 13; D 17,18: W 14; D 20,22: W 17 (ℓ2 10) D 25: W 22 (ℓ2 10) D 30: W 27; D 35: W 30 (ℓ2 15) D 40: W 36; D 50: W 41 (ℓ2 20) ⊗ Not applicable to D5 or less. When combined with other alterations, ±2 degree phase differential may occur.	Changes L dimension tolerance. Ordering Code LKC L<500···› L±0.05 L≥500···› L±0.1
	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.					