


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

One End Stepped & Tapped

Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your applications. Furthermore, h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

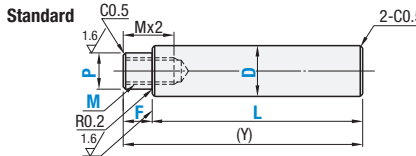


RoHS10

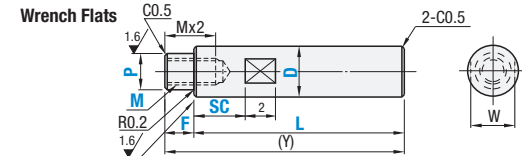
Type	Standard		Wrench Flats		Tolerance		Material	Surface Treatment
	Type	Wrench Flats	D	P	D	P		
(1)	NSFRMHG	NSFRMHGS	h9 (Cold-Drawn)	h7	1045 Carbon Steel or Equivalent	304 Stainless Steel	— Black Oxide Electroless Nickel Plating	
	SFRMHG	SFRMHGS						
	PSFRMHG	PSFRMHGS						
	SSFRMHG	SSFRMHGS						
(2)	NSFRMG	NSFRMGGS	h9 (Cold-Drawn)	g6	1045 Carbon Steel or Equivalent	304 Stainless Steel	— Black Oxide Electroless Nickel Plating	
	SFRMG	SFRMGGS						
	PSFRMG	PSFRMGGS						
	SSFRMG	SSFRMGGS						
(3)	NSFRHG	NSFRHGS	h7 (Ground)	h7	1045 Carbon Steel or Equivalent	304 Stainless Steel	— Black Oxide Electroless Nickel Plating	
	SFRHG	SFRHGS						
	PSFRHG	PSFRHGS						
	SSFRHG	SSFRHGS						
(4)	NSFRG	NSFRGS	g6 (Ground)	g6	1045 Carbon Steel or Equivalent	304 Stainless Steel	— Black Oxide Electroless Nickel Plating	
	SFRG	SFRGS						
	PSFRG	PSFRGS						
	SSFRG	SSFRGS						

D / P	Tolerance Table		
	h9 (Cold-Drawn)	h7 (Ground)	g6 (Ground)
3.1-6	0 -0.030	0 -0.012	-0.004 -0.012
6.1-10	0 -0.036	0 -0.015	-0.005 -0.014
10.1-18	0 -0.043	0 -0.018	-0.006 -0.017
18.1-30	0 -0.052	0 -0.021	-0.007 -0.020
30.1-50	0 -0.062	0 -0.025	-0.009 -0.025

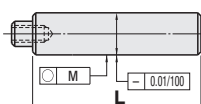
Surface roughness of D part for h9 (Cold-Drawn) is $Ra \leq 0.4$. Surface roughness for h7 (Ground) and g6 (Ground) is $Ra \leq 0.2$.



Standard

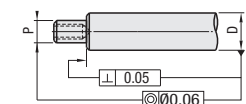


Wrench Flats



Circularity and Straightness

Circularity of Part D		Circularity M
Over	D or Less	
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007



Concentricity and Perpendicularity

Tolerances of L, Y and Other Dimensions		Tolerance
Over	or Less	
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) D Tolerance h9 (Cold-Drawn) / P Tolerance h7 (2) D Tolerance h9 (Cold-Drawn) / P Tolerance g6

Part Number Type	D	0.1 mm Increment		1 mm Increment		M (Coarse) Selection	1 mm Increment SC Wrench Flats Type Only	W	ℓ ₂	(Y) max.
		L	F	P	P					
(1) D part h9 / P part h7 NSFRMHG SFRMHG PSFRMHG SSFRMHG D6 is not available for SSFRMHG.	6	15.0-398.0	2 ≤ F ≤ Px5	5	5	2.6 3	SC+ℓ ₂ ≤ L SC=0 or SC≥1 ⊖ For SC≤Mx3-F W-M=2	5	8	300
	8	15.0-498.0								
	10	15.0-598.0								
	12	15.0-698.0								
	15	15.0-798.0								
	17	30.0-998.0								
	20	30.0-998.0								
	25	30.0-998.0								
	30	30.0-998.0								
	35	40.0-998.0								
	40	40.0-998.0								
	50	40.0-998.0								
(2) D part h9 / P part g6 NSFRMG SFRMG PSFRMG SSFRMG D6 is not available for SSFRMG.	6	15.0-398.0	2 ≤ F ≤ Px5	5	5	2.6 3	SC+ℓ ₂ ≤ L SC=0 or SC≥1 ⊖ For SC≤Mx3-F W-M=2	5	8	300
	8	15.0-498.0								
	10	15.0-598.0								
	12	15.0-698.0								
	15	15.0-798.0								
	17	30.0-998.0								
	20	30.0-998.0								
	25	30.0-998.0								
	30	30.0-998.0								
	35	40.0-998.0								
	40	40.0-998.0								
	50	40.0-998.0								

(3) h7 (Ground)

Part Number Type	D	0.1 mm Increment		1 mm Increment		M (Coarse) Selectable	1 mm Increment SC Wrench Flats Type Only	W	ℓ ₂	(Y) max.
		L	F	P	P					
NSFRHG SFRHG PSFRHG SSFRHG	6	15.0-398.0	2 ≤ F ≤ Px5	5	5	2.6 3	SC+ℓ ₂ ≤ L SC=0 or SC≥1 ⊖ SC≤Mx3-F W-M=2	5	8	300
	8	15.0-498.0								
	10	15.0-598.0								
	12	15.0-698.0								
	15	15.0-798.0								
	17	30.0-998.0								
	20	30.0-998.0								
	25	30.0-998.0								
	30	30.0-998.0								
	35	40.0-998.0								
	40	40.0-998.0								
	50	40.0-998.0								

(4) g6 (Ground)

Part Number Type	D	0.1 mm Increment		1 mm Increment		M (Coarse) Selectable	1 mm Increment SC Wrench Flats Type Only	W	ℓ ₂	(Y) max.
		L	F	P	P					
NSFRG SFRG PSFRG SSFRG	6	15.0-398.0	2 ≤ F ≤ Px5	5	5	2.6 3	SC+ℓ ₂ ≤ L SC=0 or SC≥1 ⊖ For SC≤Mx3-F W-M=2	5	8	300
	8	15.0-498.0								
	10	15.0-598.0								
	12	15.0-698.0								
	13	15.0-698.0								
	15	15.0-798.0								
	16	15.0-798.0								
	17	30.0-998.0								
	18	30.0-998.0								
	20	30.0-998.0								
	22	30.0-998.0								
	25	30.0-998.0								
30	30.0-998.0									
35	40.0-998.0									
40	40.0-998.0									
50	40.0-998.0									

⊖ When D=P=2, chamfer C at the step is 0.2 or less.

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

One End Stepped & Tapped, continued

Available Types

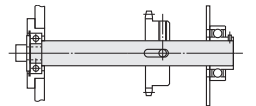
(1) D tolerance h9 (Cold-Drawn) / P tolerance h7 (2) D tolerance h9 (Cold-Drawn) / P tolerance g6

Type	NSFRMHG, NSFRMG, NSFRMGGS, NSFRHGS, SFRMHG, SFRMG, SFRHGS, SFRMGGS, PSFRMHG, PSFRMG, PSFRMGGS, PSFRHGS								SSFRMHG, SSFRMG, SSFRMGGS, SSFRHGS										
	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	998.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	998.0	
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

(3) h7 (Ground) (4) g6 (Ground)

Type	NSFRHG, NSFRG, NSFRHGS, NSFRGS, SFRHG, SFRG, SFRHGS, SFRGS, PSFRHG, PSFRG, PSFRHGS, PSFRGS								SSFRHG, SSFRG, SSFRHGS, SSFRGS										
	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	998.0	50.0	100.0	150.0	200.0	300.0	400.0	600.0	800.0	998.0	
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Application Example



Part Number Alterations

Part Number Alterations: PSFRHGS8 - L150 - F20 - P7 - M5 - SC20 - LKC (KC, WKC, FC, etc.)

Part Number Example

Part Number Example: SFRMHG30 - L250 - F30 - P16 - M10 - SFRHGS25 - L200 - F40 - P20 - M10 - SC30

Alterations	Keyway					
	1	2	1 (for 4th Keyway)	Keyway on Step P (Position Zero from End Face)	Keyway on Step P (Position Specified)	2nd Keyways on Step P
Code	KC	WKC	KZ	PKC	PP	PV
Dimension Increment	KC, A = 0.1 mm Increment	WKC, C, E, K = 0.1 mm Increment	KZ, Z = 0.1 mm Increment	PKC = 0.1 mm Increment	PP, PK = 0.1 mm Increment	PV, PW = 0.1 mm Increment
Ordering Example	KC50-A10	WKC5-C20-K5-E10	KC5-A10-WKC20-C10-K60-E10-KZ100-Z10	PKC10	PP5-PK10	PP5-PK10-PW5-PW10
Conditions	Key Length ≤ 100. *1, *2 When keyway position is less than 1 mm away from the end face, R is not applied.			Not applicable when P ≤ 5. Key Length ≤ 70. *1, *2		

Alterations	Set Screw Flat					
	1	2	2 Set Screw Flats (angle Specified)	Set Screw Flat on Step	F Dimension Part Set Screw Flats	Retaining Ring Groove
Code	FC	WFC	SFC	PFC	WC	TL, TR
Dimension Increment	FC, G = 1 mm Increment	WFC, J, V, W = 1 mm Increment	SFC, SG = 1 mm Increment AG = 15° Increment	PFC, LC = 1 mm Increment	WC = 0.1 mm Increment	TL, TR = 0.1 mm Increment
Ordering Example	FC10-G3	WFC10-J15-W10-V20	SFC10-SG3-AG120	PFC10-LC5	WC8	TL10
Conditions	For H dim., see P.877 (Alteration Table). G, J, V, SG, LC ≤ 70			2 ≤ TR ≤ 150 / TL + F ≤ 150 2 ≤ TF ≤ 150 For m dim., see P.853		

Alterations	Slit Cam Groove		L Dimension Tolerance		Slit Added		Concentricity		C Chamfered Width Part D Chamfering		Tapped Depth	
	UC	ℓ ₁	LKC	L	MM	MM	CCK	CD	MD	MD(M/3)		
Code	UC	ℓ ₁	LKC	L	MM	MM	CCK	CD	MD	MD(M/3)		
Dimension Increment	UC = 1 mm Increment	—	—	—	—	—	—	CD = Selectable	—	—		
Ordering Example	UC10	ℓ ₁	LKC	L	MM	MM	CCK	CD2	MD6	MD6		
Conditions	Not applicable when D ≥ 13		Not applicable when L ≥ 800		Not applicable when D ≥ 35		Not applicable when D Tol. = h9		Not applicable when M=2, 2.6, 24 or 30			