

Shafts

Both Ends Tapped Hollow Shafts / Both Ends Tapped Hollow Shafts with Wrench Flats / One End Threaded Hollow Shafts / One End Threaded Hollow Shafts with Wrench Flats

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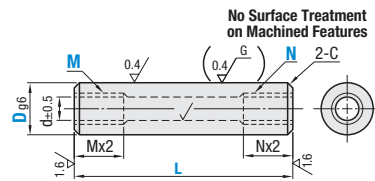


RoHS10

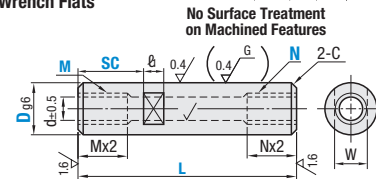
- Features of Low Temperature Black Chrome Plating P.213.
- Circularity and O.D. tolerance may not meet precision specification in areas approximately 15mm from wrench flats machined ends.
- Circularity, Straightness, Perpendicularity and Changes in Hardness P.198.
- Low temperature black chrome plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
- Annealing required for wrench flats machining and shaft end threading (effective thread length + approx. 10 mm) may lower hardness. P.199

Type				Material	Hardness	Surface Treatment	D Tolerance	
Both Ends Tapped	Both Ends Tapped with Wrench Flats	One End Threaded	One End Threaded with Wrench Flats				6	8-10
SPJW	SPWR	SPJN	SPNR	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	—	-0.004 -0.012	
SSPJW	SSPWR	—	—	SUS440C (13Cr) Stainless Steel Equivalent	52100 Bearing Steel Equivalent 58 HRC min.	—	-0.005 -0.014	
PSPJW	PSPWR	PSPJN	PSPNR	52100 Bearing Steel Equivalent	Hard Chrome Plating Hardness: 750 HV min. Plating Thickness: 5µ or More	—	-0.006 -0.017	
RSPJW	RSPWR	RSPJN	RSPNR	52100 Bearing Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	Low Temperature Black Chrome Plating	-0.007 -0.020	

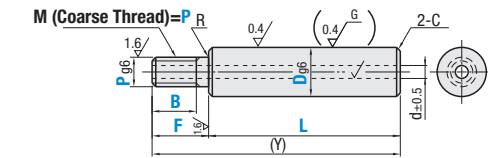
Both Ends Tapped Hollow Shaft Type



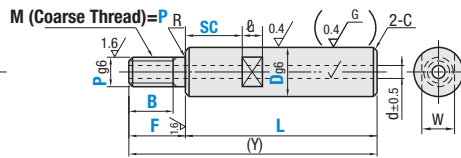
Both Ends Tapped Hollow Shafts with Wrench Flats



One End Threaded Hollow Shaft Type



One End Threaded with Wrench Flats Hollow Type



About Hollow Shaft Wall Thickness Deviations P.198.

Both Ends Tapped Hollow Shafts

Part Number	Type	D	L	M (Coarse Threads) / N (Coarse Threads)	Wrench Flats Dimensions			d	C		
					SC	W	ℓ ₁				
Both Ends Tapped Hollow Shafts					SC=1 mm Increment	5	7	8	2	0.5 or Less	
SPJW	*8	20-600	3	4 *5		7	8	3 (3)			
SSPJW (*marked sizes only)	*10	20-800 (300)		5 *6		8		4 (4)			
PSPJW	*12	32-1000 (500)		*8		10		6 (5)			
RSPJW (D≤30, L≤500)	*13	40-1000 (500)		*10		11		7 (5)			
	*16	48-1200 (600)		*12		14	10	10 (6)			
Both Ends Tapped Hollow Shafts with Wrench flats						SC+ℓ ₁ ≤L SC≥0	17		14 (8)		1.0 or Less
SPWR	*20	64-1200 (800)		*16			22		16 (10)		
SSPWR (*marked sizes only)	*25	80-1200 (1000)		*20			27		17 (12)		
PSPWR	*30	80-1500 (1000)		*20			30	15	19		
RSPWR (D≤30, L≤500)	35	96-1500		24	30		20	20			
	40	96-1500		24 30	36		20	20			
	50	120-1500		30	41	20	26				

- When T1, T2 or T3 is selected as M or N, tapered thread machining is applied. (Ordering Code: MT1, NT1) L requires Mx2+Nx2≤L.
- When Mx25+4+Nx2.5+4≤L, tap pilot holes may go through. When L≤Mx2+Nx2, effective depth of larger diameter tap has priority.
- Only * marked D, M and N dimensions are applicable to Stainless Steel Shafts. L and d dimensions in () are applicable.

One End Threaded Hollow Shafts

Part Number	Type	D	1 mm Increments			P	Wrench Flats Dimensions			d	(Y) Max.	R	C			
			L	F	B		SC	W	ℓ ₁							
One End Threaded Hollow Shafts					SC=1 mm Increment	6			5	7	8	2	600	0.5 or Less		
SPJN	8	25-598		B≤F-2 (When P=6)		7			8	8		3	800			
PSPJN	10	25-798		B≤F-3 (When P=8, 10)		8			10	10		4	1000			
RSPJN (D≤30, L≤500)	12	25-998				11			11	11		7	1200			
One End Threaded Hollow Shafts with Wrench Flats						SC+ℓ ₁ ≤L SC≥0	16	25-1198	2≤F≤Px5	14	10		10			1.0 or Less
SPNR	20	25-1198		B≤F-5 (When P≤12)			17			14	14		14		1200	
PSPNR	25	25-1198		B=0 (Without threads)			22			17	16		16			
RSPNR (D≤30, L≤500)	30	25-1498		B=0			27			17	17		17		1500	
	35	25-1498		B≥Pitchx3			30			19	19		19			
	40	25-1498					36			20	20		20			

- When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).
- Thread machining will not be applied when B = 0 is specified.

Shafts

Both Ends Tapped Hollow Shafts / Both Ends Tapped Hollow Shafts with Wrench Flats / One End Threaded Hollow Shafts / One End Threaded Hollow Shafts with Wrench Flats, continued

Part Number Example

Both Ends Tapped Hollow Shafts
Part Number - L - M - N - SC
SPJW20 - 500 - M16 - N16
SPWR30 - 680 - M20 - N20 - SC10

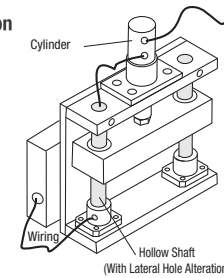
One End Threaded Hollow Shafts

Part Number - L - F - B - P - SC
SPJN20 - 1051 - F30 - B30 - P20
SPNR30 - 1270 - F60 - B28 - P24 - SC5

Part Number Alterations

Both Ends Tapped Hollow Shafts
Part Number - L - M - N - SC - (DKC...etc.)
SPJW30 - 500 - M20 - N20 - WSC12-X8

Application Example



One End Threaded Hollow Shafts

Part Number - L - F - B - P - SC - (DKC...etc.)
SPJN30 - 250 - F40 - B30 - P24 - DKC

Alterations	Code	Spec.																				
Revise O.D. Tolerance (Precision Grade)	DKC	Outer diameter tolerance is altered to h5. Ordering Code: DKC <table border="1"> <thead> <tr> <th>D</th> <th>h5 Tolerance</th> </tr> </thead> <tbody> <tr><td>6</td><td>0</td></tr> <tr><td>8-10</td><td>-0.005</td></tr> <tr><td>12-16</td><td>0</td></tr> <tr><td>20-30</td><td>-0.006</td></tr> <tr><td>35-50</td><td>-0.008</td></tr> <tr><td></td><td>0</td></tr> <tr><td></td><td>-0.009</td></tr> <tr><td></td><td>0</td></tr> <tr><td></td><td>-0.011</td></tr> </tbody> </table> <ul style="list-style-type: none"> Not applicable to Stainless Steel and Low Temperature Chrome Plated Shafts. 	D	h5 Tolerance	6	0	8-10	-0.005	12-16	0	20-30	-0.006	35-50	-0.008		0		-0.009		0		-0.011
D	h5 Tolerance																					
6	0																					
8-10	-0.005																					
12-16	0																					
20-30	-0.006																					
35-50	-0.008																					
	0																					
	-0.009																					
	0																					
	-0.011																					
Alteration to L Dimension Tolerance	LKC	Changes L Tolerance. Ordering Code: LKC <ul style="list-style-type: none"> L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1 <ul style="list-style-type: none"> L dimensions can be specified in 0.1 mm increment for LKC. Not applicable to One End Threaded Type when D-P≤2 																				
One End Bored	VC	Boring added to right end (Use as pilots) Hole diameter V _{HR} shown in the table below. K=1 mm increment 3<K≤Vx2 Ordering Code: VC-K5 <table border="1"> <thead> <tr> <th>D</th> <th>V_{HR}</th> </tr> </thead> <tbody> <tr><td>10</td><td>6</td></tr> <tr><td>12</td><td>8</td></tr> <tr><td>13</td><td>10</td></tr> <tr><td>16</td><td>12</td></tr> <tr><td>20</td><td>16</td></tr> <tr><td>25</td><td>20</td></tr> <tr><td>30</td><td>20</td></tr> <tr><td>35</td><td>24</td></tr> <tr><td>40</td><td>24</td></tr> </tbody> </table> <ul style="list-style-type: none"> Not applicable to Both End Tapped Hollow Shafts. 	D	V _{HR}	10	6	12	8	13	10	16	12	20	16	25	20	30	20	35	24	40	24
D	V _{HR}																					
10	6																					
12	8																					
13	10																					
16	12																					
20	16																					
25	20																					
30	20																					
35	24																					
40	24																					

- When selecting multiple alteration additions, the distance between machined areas should be greater than 2 mm. P.201
- Alterations may lower hardness. P.199

Alterations	Code	Spec.																																							
Wrench Flats at Two Locations	WSC	Adds Wrench Flats at two locations. Ordering Code: WSC12-X8 <ul style="list-style-type: none"> WSC, X = 1 mm increment When D≤25 WSC+X+ℓ, x2<L WSC≥Mx2, X≥Mx2 When D≥30 WSC+X+ℓ, x2<L WSC≥0 X≥0 Orientation between two wrench flat features is random <table border="1"> <thead> <tr> <th>D</th> <th>W</th> <th>ℓ₁</th> </tr> </thead> <tbody> <tr><td>6</td><td>5</td><td></td></tr> <tr><td>8</td><td>7</td><td>8</td></tr> <tr><td>10</td><td>8</td><td></td></tr> <tr><td>12</td><td>10</td><td></td></tr> <tr><td>13</td><td>11</td><td></td></tr> <tr><td>16</td><td>14</td><td>10</td></tr> <tr><td>20</td><td>17</td><td></td></tr> <tr><td>25</td><td>22</td><td></td></tr> <tr><td>30</td><td>27</td><td>15</td></tr> <tr><td>35</td><td>30</td><td></td></tr> <tr><td>40</td><td>36</td><td>20</td></tr> <tr><td>50</td><td>41</td><td></td></tr> </tbody> </table> <ul style="list-style-type: none"> Applicable to Both Ends Tapped Hollow Shafts only. 	D	W	ℓ ₁	6	5		8	7	8	10	8		12	10		13	11		16	14	10	20	17		25	22		30	27	15	35	30		40	36	20	50	41	
D	W	ℓ ₁																																							
6	5																																								
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35	30																																								
40	36	20																																							
50	41																																								
Lateral Hole on One Side	RH	Adds a lateral hole to one side. Lateral hole diameters are shown in the table below. RH=1 mm increment <ul style="list-style-type: none"> d₁+1<RH≤Dx3 Ordering Code: RH5 <table border="1"> <thead> <tr> <th>D</th> <th>d₁</th> <th>D</th> <th>d₁</th> </tr> </thead> <tbody> <tr><td>10</td><td>2 (2)</td><td>20</td><td>6 (4)</td></tr> <tr><td>12</td><td>3 (2)</td><td>25, 30</td><td>6 (5)</td></tr> <tr><td>13</td><td>3 (2)</td><td>35, 40</td><td>8</td></tr> <tr><td>16</td><td>5 (3)</td><td>50</td><td>10</td></tr> </tbody> </table> <ul style="list-style-type: none"> Values in () are for Stainless Steel Shafts. The hollow I.D. "d" may vary due to the wall thickness deviations. Not applicable to threaded side of One End Threaded Shafts. Burrs might remain inside after alteration. Orientation in relation to other features will be random. Not applicable to Both Ends Tapped Shafts Not applicable if interfering with other alterations. 	D	d ₁	D	d ₁	10	2 (2)	20	6 (4)	12	3 (2)	25, 30	6 (5)	13	3 (2)	35, 40	8	16	5 (3)	50	10																			
D	d ₁	D	d ₁																																						
10	2 (2)	20	6 (4)																																						
12	3 (2)	25, 30	6 (5)																																						
13	3 (2)	35, 40	8																																						
16	5 (3)	50	10																																						

Alteration Details P.200