



Shafts

Standard & Precision Type / Both Ends Tapped with Wrench Flats / Both Ends Tapped with Cross-Drilled Holes

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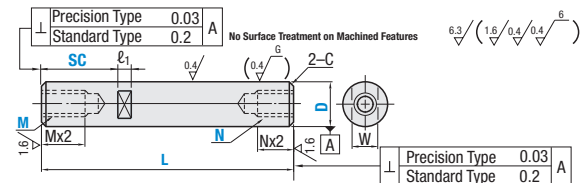
RoHS 10

- Ⓢ Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10 mm). **P.199**
- Ⓢ Full Length Hardness Guaranteed Shafts **P.212**
- Ⓢ Circularity, Straightness, Perpendicularity, Concentricity and Changes in Hardness **P.198**
- Ⓢ Features of Low Temp. Black Chrome Plating **P.213**
- Ⓢ For Shafts without wrench flats or cross-drilled holes please see **P.208**.

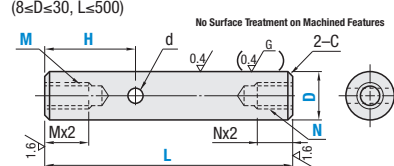
Type						Material	Hardness	Surface Treatment
With Wrench Flats			With Cross-Drilled Holes					
Precision Type	Standard		Standard		Precision Type	Material	Hardness	Surface Treatment
D Tol. g6	D Tol. g6	D Tol. h5	D Tol. f8	D Tol. g6	D Tol. f8			
VFJZ	SFJZ	SFUZ	—	SFHZ	—	52100 Bearing Steel Equivalent	Effective Hardened Depth of Induction Hardened P.199	—
VSFJZ	SSFJZ	SSFUZ	—	SSFHZ	—	SUS440C (13Cr) Stainless Steel Equivalent		
VPFJZ	PSFJZ	PSFUZ	—	PSFHZ	—	52100 Bearing Steel Equivalent	52100 Bearing Steel Equivalent 58 HRC min.	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 5 μ or More
VPSFJZ	PSSFJZ	PSSFUZ	—	PSSFHZ	—	SUS440C (13Cr) Stainless Steel Equivalent		
VRJZ	RSFJZ	—	—	RSFHZ	—	52100 Bearing Steel Equivalent	SUS440C (13Cr) Stainless Steel Equivalent 56 HRC min.	Low Temperature Black Chrome Plating
—	—	—	PSFGZ	—	PSGHZ	1045 Carbon Steel Equivalent		
—	—	—	PSSFGZ	—	—	304 Stainless Steel	—	Hard Chrome Plating Plating Hardness: HV 750~ Plating Thickness: 10 μ or More

Ⓢ L needs to be $M \times 2 + N \times 2 \leq L$ Ⓢ When $M \times 2.5 + 4 + N \times 2.5 + 4 \geq L$, tap pilot hole may go through.

With Wrench Flats



With Cross-Drilled Holes



D Tolerance			
D	g6	h5	f8
6	-0.004	0	-0.010
8	-0.005	0	-0.013
10	-0.012	-0.005	-0.028
12	—	—	—
13	-0.006	0	-0.016
15	-0.007	0	-0.020
16	-0.017	-0.008	-0.043
18	—	—	—
20	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30	—	—	—
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50	—	—	—

Part Number	L			M (Coarse Threads)							Wrench Flats Dimensions			C		
	Type	D	1 mm Increments	3	4	5	6	8	10	12	16	20	SC		W	ℓ₁
Precision Type With Wrench Flats D Tolerance g6	6	25-350	3										SC=1 mm Inc Ⓢ $SC+\ell_1 \leq L$ Ⓢ $SC \geq 0$ Ⓢ Details of Wrench Flats P.199	5	8	0.5 or Less
	8	25-500	3	4	5											
	10	25-500	3	4	5	6										
	12	25-500	3	4	5	6	8									
	13	25-500	3	4	5	6	8									
	15	25-500	3	4	5	6	8	10								
	16	25-500	3	4	5	6	8	10								
	18	25-500	3	4	5	6	8	10	12							
	20	30-500	3	4	5	6	8	10	12							
	25	30-500	3	4	5	6	8	10	12	16						
30	30-500	3	4	5	6	8	10	12	16	20						

Part Number	Type	L		Selection							Wrench Flats Dimensions			Cross-Drilled Hole Dim.			C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		D	1 mm Inc.	M (Coarse Threads)							SC	W	ℓ₁	H	d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Standard Type With Wrench Flats D Tolerance g6	Precision Type With Wrench Flats D Tolerance h5	6	20(15)-900	3	3	4	5	6	8	10	12	16	20	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336	342	348	354	360	366	372	378	384	390	396	402	408	414	420	426	432	438	444	450	456	462	468	474	480	486	492	498	504	510	516	522	528	534	540	546	552	558	564	570	576	582	588	594	600	606	612	618	624	630	636	642	648	654	660	666	672	678	684	690	696	702	708	714	720	726	732	738	744	750	756	762	768	774	780	786	792	798	804	810	816	822	828	834	840	846	852	858	864	870	876	882	888	894	900	906	912	918	924	930	936	942	948	954	960	966	972	978	984	990	996	1002	1008	1014	1020	1026	1032	1038	1044	1050	1056	1062	1068	1074	1080	1086	1092	1098	1104	1110	1116	1122	1128	1134	1140	1146	1152	1158	1164	1170	1176	1182	1188	1194	1200	1206	1212	1218	1224	1230	1236	1242	1248	1254	1260	1266	1272	1278	1284	1290	1296	1302	1308	1314	1320	1326	1332	1338	1344	1350	1356	1362	1368	1374	1380	1386	1392	1398	1404	1410	1416	1422	1428	1434	1440	1446	1452	1458	1464	1470	1476	1482	1488	1494	1500	1506	1512	1518	1524	1530	1536	1542	1548	1554	1560	1566	1572	1578	1584	1590	1596	1602	1608	1614	1620	1626	1632	1638	1644	1650	1656	1662	1668	1674	1680	1686	1692	1698	1704	1710	1716	1722	1728	1734	1740	1746	1752	1758	1764	1770	1776	1782	1788	1794	1800	1806	1812	1818	1824	1830	1836	1842	1848	1854	1860	1866	1872	1878	1884	1890	1896	1902	1908	1914	1920	1926	1932	1938	1944	1950	1956	1962	1968	1974	1980	1986	1992	1998	2004	2010	2016	2022	2028	2034	2040	2046	2052	2058	2064	2070	2076	2082	2088	2094	2100	2106	2112	2118	2124	2130	2136	2142	2148	2154	2160	2166	2172	2178	2184	2190	2196	2202	2208	2214	2220	2226	2232	2238	2244	2250	2256	2262	2268	2274	2280	2286	2292	2298	2304	2310	2316	2322	2328	2334	2340	2346	2352	2358	2364	2370	2376	2382	2388	2394	2400	2406	2412	2418	2424	2430	2436	2442	2448	2454	2460	2466	2472	2478	2484	2490	2496	2502	2508	2514	2520	2526	2532	2538	2544	2550	2556	2562	2568	2574	2580	2586	2592	2598	2604	2610	2616	2622	2628	2634	2640	2646	2652	2658	2664	2670	2676	2682	2688	2694	2700	2706	2712	2718	2724	2730	2736	2742	2748	2754	2760	2766	2772	2778	2784	2790	2796	2802	2808	2814	2820	2826	2832	2838	2844	2850	2856	2862	2868	2874	2880	2886	2892	2898	2904	2910	2916	2922	2928	2934	2940	2946	2952	2958	2964	2970	2976	2982	2988	2994	3000	3006	3012	3018	3024	3030	3036	3042	3048	3054	3060	3066	3072	3078	3084	3090	3096	3102	3108	3114	3120	3126	3132	3138	3144	3150	3156	3162	3168	3174	3180	3186	3192	3198	3204	3210	3216	3222	3228	3234	3240	3246	3252	3258	3264	3270	3276	3282	3288	3294	3300	3306	3312	3318	3324	3330	3336	3342	3348	3354	3360	3366	3372	3378	3384	3390	3396	3402	3408	3414	3420	3426	3432	3438	3444	3450	3456	3462	3468	3474	3480	3486	3492	3498	3504	3510	3516	3522	3528	3534	3540	3546	3552	3558	3564	3570	3576	3582	3588	3594	3600	3606	3612	3618	3624	3630	3636	3642	3648	3654	3660	3666	3672	3678	