

光 蚰 栓



第一機械工業部
第一機器工業管理局

瀋陽螺釘廠

光 螺 栓 的 品 種



0110 六 角 頭 光 螺 栓



0111 小 六 角 頭 光 螺 栓



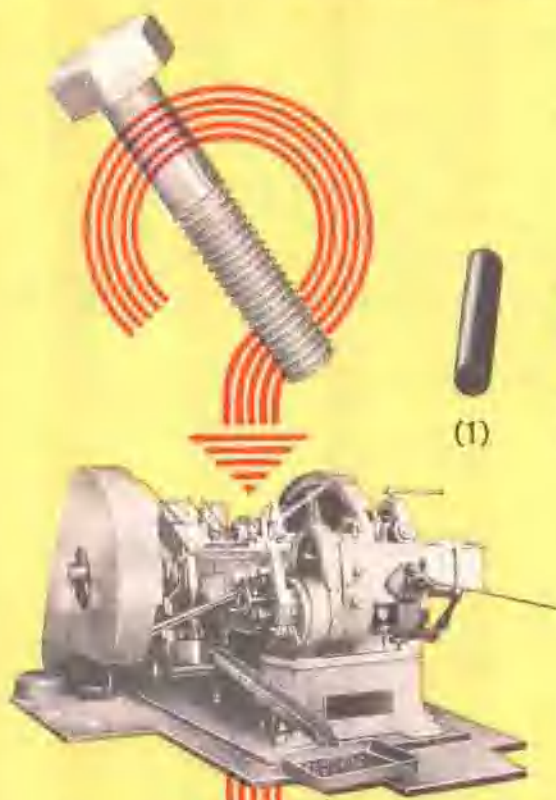
0112 薄 小 六 角 頭 光 螺 栓



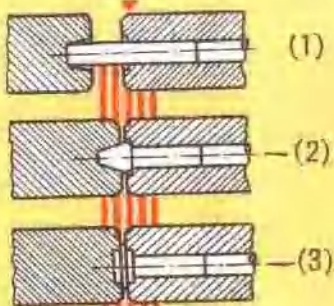
0113 雙 頭 光 螺 栓



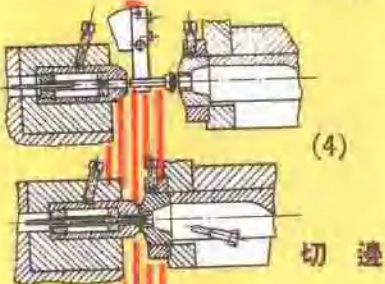
光螺栓的生產工藝過程



A124型自動冷鍛機



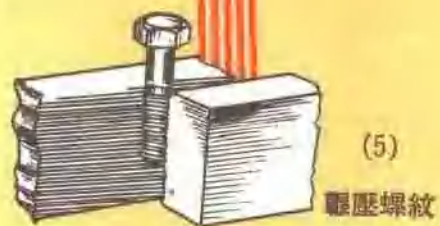
冷 鍛



切 邊



淬 火，發 藍

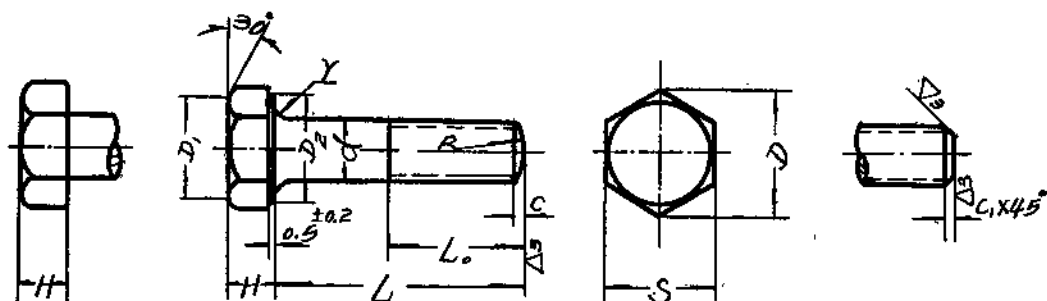


壓 壓 螺 紋

0110 六角頭光螺栓

材料: 鋼 35, 尤;
熱處理: $HRC 30 \sim 38^\circ$
表面處理: 發藍

$\nabla \nabla_4 (\nabla_3)$



$$D_1 \approx 0.95S$$

$$D_2 \approx S$$

$d=10, L=30$ 六角頭光螺栓用代號表示法 0110-10×30

螺栓直徑 d		對邊尺寸 S		螺頭高度 H		對角尺寸 D		根部 r		末端球面		C_1	螺栓頭與螺桿軸線允許偏心
公稱	允差	公稱	允差	公稱	允差	公稱	允差	公稱	允差	R	C_{∞}		
4		7		2.8	± 0.25	8.1	-0.3	—	—	3	0.7	0.7	0.25
5	-0.16	9	-0.2	3.5		10.4	-0.4	—	—	5	0.7	0.8	
6		10		4.5	± 0.3	11.5		0.5		6	0.8	1.0	
8	-0.2	14	-0.24	5.5		16.2	-0.5	0.5	-0.3	8	1.0	1.2	0.3
10		17		7		19.6		0.5		10	1.3	1.5	
12		19		8	± 0.36	21.9	-0.6	0.8	-0.4	12	1.6	1.8	
14	-0.24	22		9		25.4		0.8		16	1.6	2.0	0.4
16		24	-0.28	10		27.7		1.0		16	2.1	2.0	
18		27		12		31.2	-0.7	1.0	-0.5	20	2.2	2.5	
20	-0.28	30		13	± 0.43	34.6		1.0		20	2.6	2.5	0.6
22		32	-0.34	14		36.9	-0.8	1.0		22	2.9	2.5	
24		36		15		41.6	-0.9	1.2	-0.6	25	3.0	3.0	

- 說明: 1. 本規格相當於 GOST 7505—55。
2. 螺紋按 3 級精度製造, 經用戶提出可製成 2 級精度。
3. 技術條件按 GOST 0210—57 的規定。
4. 用普通鋼製造的螺栓, 不進行熱處理與表面處理。

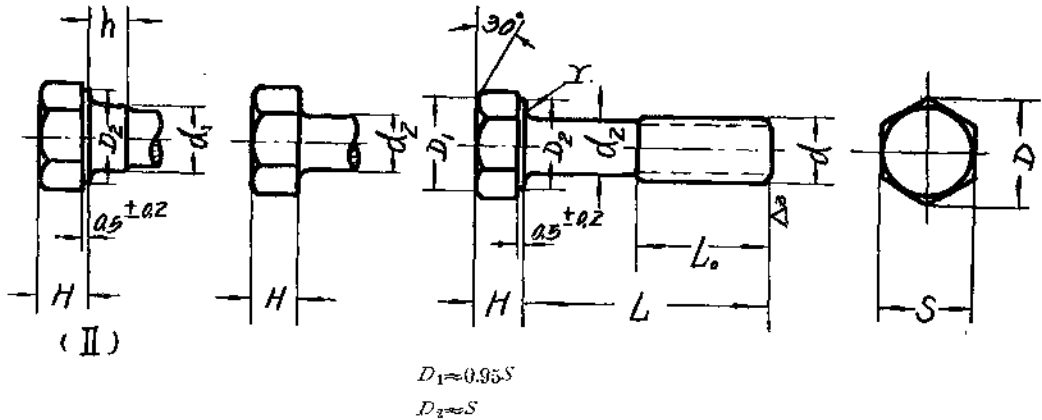
六角頭光螺殼生產規範及理論重量表

螺 栓		直 徑 d	每 10X0 個 螺 栓 的 理 論 重 量 (公 斤)													
螺 絲 部 份 長 度 L_0	公 稱 尺 寸	容 許 偏 差	容 許 偏 差													
			$d = 4 \sim 5$; $d = 6 \sim 14$; $d = 16 \sim 24$													
公 稱 尺 寸	容 許 偏 差	容 許 偏 差	4	5	6	8	10	12	14	16	18	20	22	24		
			30	30	30	30	30	30	35	35	45	45	52	52		
			+ 3	+ 3	+ 3	+ 4	+ 4	+ 4	+ 5	+ 5	+ 5	+ 5	+ 6	+ 6		
10			1.662	3.097	4.670	10.834	19.35									
12			1.800	3.344	5.022	10.894	20.39									
14			2.048	3.652	5.466	11.514	21.44									
16			2.236	3.930	5.916	12.224	22.42	30.462	46.67	61.824						
18			2.484	4.288	6.354	13.014	23.42	32.082	48.67	64.464						
20			2.652	4.546	6.788	13.904	24.96	33.522	51.08	67.644						
22			2.830	4.854	7.242	14.504	26.81	35.245	54.31	71.894						
25	± 0.6	± 0.8	3.147	5.316	7.908	15.784	28.67	39.832	57.26	75.874	98.466					
28			3.444	5.778	8.574	16.964	29.90	41.612	59.25	79.034	104.406	140.479				
30		± 1.0	3.642	6.096	9.015	17.754	31.13	43.392	61.67	81.444	110.766	145.379				
32			3.840	6.394	9.465	18.544	32.98	46.052	63.29	86.144	116.766	151.079				
35			4.137	6.856	10.125	19.734	35.84	50.492	71.33	94.044	126.766	164.379				
40				7.826	11.105	21.554	38.93	54.932	77.37	101.944	136.766	179.779				
45				8.396	12.215	23.524	42.01	59.372	83.41	109.844	146.766	189.979				
50					13.325	25.504	45.10	63.812	89.45	117.744	156.766	201.379				
55					14.435	27.404	48.18	68.252	95.49	125.644	166.666	213.679				
60					15.545	29.454	51.27	72.602	101.41	123.544	176.666	226.079				
65						31.424	54.35	77.132	107.61	141.444	186.666	238.579		206.189		
70						33.404	57.44	81.572	113.61	149.244	196.666	260.679		283.989		
75						35.364	60.52	86.012	119.61	157.744	206.666	283.079		301.689		
80						37.354	63.61	90.422	125.71	165.044	216.666	275.379		319.489		
85							66.69	96.722	131.71	172.944	226.666	287.679		337.189		
90	± 0.8	± 1.0					69.78	99.322	137.71	180.844	236.666	300.079		354.989		
95		± 1.3					72.86	103.722	148.81	188.744	246.666	312.379		372.689		
100							75.95	108.222	149.81	196.644	256.666	324.679		390.489		
105							78.35	112.022	154.81	203.044	264.966	335.079		408.189		
110							81.43	116.422	160.81	210.944	274.866	347.379		425.989		
115							84.52	120.822	166.91	218.844	284.866	359.779		443.689		
120																
125																
130																
140																
150																
160	± 1.0	± 1.3														
	± 1.5	± 1.5														

0111 小六角頭光螺栓

材 料: 鋼 35, 13
熱 處 理: $H_{RC} 30 \sim 38^\circ$
表面處理: 發藍

$\nabla \nabla_4 (\nabla_3)$



$d=10, L=30$ 小六角頭光螺栓用代號表示法 0111-10×30

螺 絲 直 徑 d		對 邊 尺 寸 S		螺 頭 高 度 H		對 角 尺 寸 D		根 部 r		根 頸 直 徑 d_1			根 頸 高 度	螺 絲 頭 與 螺 桿 軸 線 偏 心 允 許
公 制	英 制	公 稱	允 差	公 稱	允 差	公 稱	允 差	公 稱	允 差	公 稱		允 差	h	
										公 制	英 制			
6	$\frac{1}{4}"$	10	- 0.2	4.5	± 0.3	11.5	- 0.3	0.5		6	6.350	- 0.16	4	0.3
8	$\frac{5}{16}"$	12		5.5		13.8	- 0.4	0.5	- 0.3	8	7.938		5	
10	$\frac{3}{8}"$	14	- 0.24	7.0		16.2		0.5		10	9.525	- 0.2	6	
12	—	17		8.0	± 0.36	19.6	- 0.5	0.8	- 0.4	12	—		7	0.4
14	$\frac{1}{2}"$	19		9.0		21.9	- 0.6	0.8		14	12.700	- 0.24	8	
16	$\frac{5}{8}"$	22		10.0		25.4		1.0		16	15.875		9	0.5
18	—	24	- 0.28	12.0		27.7		1.0	- 0.5	18	—		10	
20	$\frac{3}{4}"$	27		13.0	± 0.43	31.2	- 0.7	1.0		20	19.050		11	0.6
22	$\frac{7}{8}"$	30		14.0		34.6		1.0		22	22.225	- 0.28	12	
24	—	32	- 0.34	15.0		36.9	- 0.8	1.2	- 0.6	24	—		13	

- 說明: 1. 本規格相當於 ГОСТ 7811-53。
2. 英制螺紋僅作修配用。
3. 經用戶提出可制成 II 型代圓根頭的螺栓。
4. 螺紋按 3 級精度制造, 經用戶提出可制成 2 級精度。
5. 按技術條件按螺 0210-57 的規定。
6. 用普通鋼制造的螺栓, 不進行熱處理及表面處理。
7. d_1 尺寸在外徑與中徑尺寸之間。

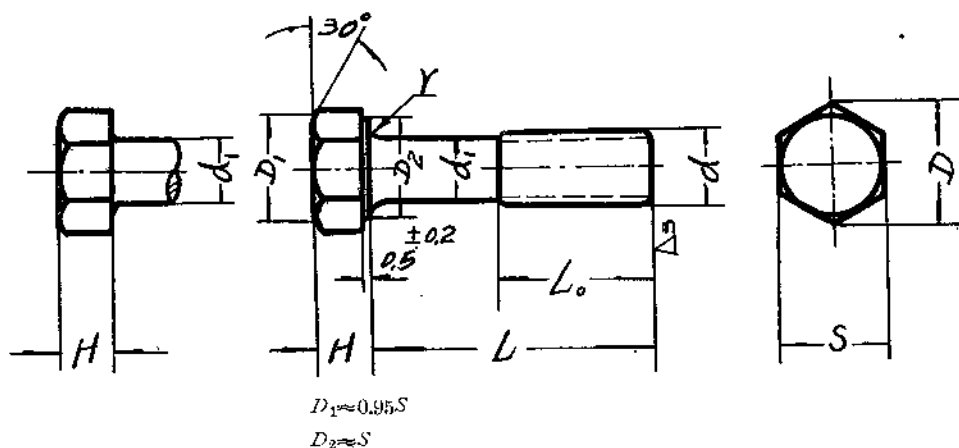
公制小六角頭光螺栓生產規範及理論重量表

螺 絲 公 稱 直 徑 d	螺 絲 公 稱 長 度 L	每 1000 個 螺 絲 的 理 論 重 量 (公 斤)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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		$d = 6 \sim 14$	$d = 16 \sim 24$	$d = 6 \sim 14$	$d = 16 \sim 24$	$d = 6 \sim 14$	$d = 16 \sim 24$	$d = 6 \sim 14$	$d = 16 \sim 24$	$d = 6 \sim 14$	$d = 16 \sim 24$	$d = 6 \sim 14$	$d = 16 \sim 24$																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
10	± 0.8	4.767	8.311	14.95	30.216	55.65	88.264	125.644	161.944	202.414	238.838	274.338	309.838	345.338	380.838	416.338	451.838	487.338	522.838	558.338	593.838	629.338	664.838	700.338	735.838	771.338	806.838	842.338	877.838	913.338	948.838	984.338	1019.838	1055.338	1090.838	1126.338	1161.838	1197.338	1232.838	1268.338	1303.838	1339.338	1374.838	1410.338	1445.838	1481.338	1516.838	1552.338	1587.838	1623.338	1658.838	1694.338	1729.838	1765.338	1800.838	1836.338	1871.838	1907.338	1942.838	1978.338	2013.838	2049.338	2084.838	2120.338	2155.838	2191.338	2226.838	2262.338	2297.838	2333.338	2368.838	2404.338	2439.838	2475.338	2510.838	2546.338	2581.838	2617.338	2652.838	2688.338	2723.838	2759.338	2794.838	2830.338	2865.838	2901.338	2936.838	2972.338	3007.838	3043.338	3078.838	3114.338	3149.838	3185.338	3220.838	3256.338	3291.838	3327.338	3362.838	3398.338	3433.838	3469.338	3504.838	3540.338	3575.838	3611.338	3646.838	3682.338	3717.838	3753.338	3788.838	3824.338	3859.838	3895.338	3930.838	3966.338	4001.838	4037.338	4072.838	4108.338	4143.838	4179.338	4214.838	4250.338	4285.838	4321.338	4356.838	4392.338	4427.838	4463.338	4498.838	4534.338	4569.838	4605.338	4640.838	4676.338	4711.838	4747.338	4782.838	4818.338	4853.838	4889.338	4924.838	4960.338	4995.838	5031.338	5066.838	5102.338	5137.838	5173.338	5208.838	5244.338	5279.838	5315.338	5350.838	5386.338	5421.838	5457.338	5492.838	5528.338	5563.838	5599.338	5634.838	5670.338	5705.838	5741.338	5776.838	5812.338	5847.838	5883.338	5918.838	5954.338	5989.838	6025.338	6060.838	6096.338	6131.838	6167.338	6202.838	6238.338	6273.838	6309.338	6344.838	6380.338	6415.838	6451.338	6486.838	6522.338	6557.838	6593.338	6628.838	6664.338	6699.838	6735.338	6770.838	6806.338	6841.838	6877.338	6912.838	6948.338	6983.838	7019.338	7054.838	7090.338	7125.838	7161.338	7196.838	7232.338	7267.838	7303.338	7338.838	7374.338	7409.838	7445.338	7480.838	7516.338	7551.838	7587.338	7622.838	7658.338	7693.838	7729.338	7764.838	7800.338	7835.838	7871.338	7906.838	7942.338	7977.838	8013.338	8048.838	8084.338	8119.838	8155.338	8190.838	8226.338	8261.838	8297.338	8332.838	8368.338	8403.838	8439.338	8474.838	8510.338	8545.838	8581.338	8616.838	8652.338	8687.838	8723.338	8758.838	8794.338	8829.838	8865.338	8900.838	8936.338	8971.838	9007.338	9042.838	9078.338	9113.838	9149.338	9184.838	9220.338	9255.838	9291.338	9326.838	9362.338	9397.838	9433.338	9468.838	9504.338	9539.838	9575.338	9610.838	9646.338	9681.838	9717.338	9752.838	9788.338	9823.838	9859.338	9894.838	9930.338	9965.838	10001.338	10036.838	10072.338	10107.838	10143.338	10178.838	10214.338	10249.838	10285.338	10320.838	10356.338	10391.838	10427.338	10462.838	10498.338	10533.838	10569.338	10604.838	10640.338	10675.838	10711.338	10746.838	10782.338	10817.838	10853.338	10888.838	10924.338	10959.838	11000.338	11040.838	11081.338	11121.838	11162.338	11202.838	11243.338	11283.838	11324.338	11364.838	11405.338	11445.838	11486.338	11526.838	11567.338	11607.838	11648.338	11688.838	11729.338	11769.838	11810.338	11850.838	11891.338	11931.838	11972.338	12012.838	12053.338	12093.838	12134.338	12174.838	12215.338	12255.838	12296.338	12336.838	12377.338	12417.838	12458.338	12498.838	12539.338	12579.838	12620.338	12660.838	12701.338	12741.838	12782.338	12822.838	12863.338	12903.838	12944.338	12984.838	13025.338	13065.838	13106.338	13146.838	13187.338	13227.838	13268.338	13308.838	13349.338	13389.838	13430.338	13470.838	13511.338	13551.838	13592.338	13632.838	13673.338	13713.838	13754.338	13794.838	13835.338	13875.838	13916.338	13956.838	14000.338	14040.838	14081.338	14121.838	14162.338	14202.838	14243.338	14283.838	14324.338	14364.838	14405.338	14445.838	14486.338	14526.838	14567.338	14607.838	14648.338	14688.838	14729.338	14769.838	14810.338	14850.838	14891.338	14931.838	14972.338	15012.838	15053.338	15093.838	15134.338	15174.838	15215.338	15255.838	15296.338	15336.838	15377.338	15417.838	15458.338	15498.838	15539.338	15579.838	15620.338	15660.838	15701.338	15741.838	15782.338	15822.838	15863.338	15903.838	15944.338	15984.838	16025.338	16065.838	16106.338	16146.838	16187.338	16227.838	16268.338	16308.838	16349.338	16389.838	16430.338	16470.838	16511.338	16551.838	16592.338	16632.838	16673.338	16713.838	16754.338	16794.838	16835.338	16875.838	16916.338	16956.838	17000.338	17040.838	17081.338	17121.838	17162.338	17202.838	17243.338	17283.838	17324.338	17364.838	17405.338	17445.838	17486.338	17526.838	17567.338	17607.838	17648.338	17688.838	17729.338	17769.838	17810.338	17850.838	17891.338	17931.838	17972.338	18012.838	18053.338	18093.838	18134.338	18174.838	18215.338	18255.838	18296.338	18336.838	18377.338	18417.838	18458.338	18498.838	18539.338	18579.838	18620.338	18660.838	18701.338	18741.838	18782.338	18822.838	18863.338	18903.838	18944.338	18984.838	19025.338	19065.838	19106.338	19146.838	19187.338	19227.838	19268.338	19308.838	19349.338	19389.838	19430.338	19470.838	19511.338	19551.838	19592.338	19632.838	19673.338	19713.838	19754.338	19794.838	19835.338	19875.838	19916.338	19956.838	20000.338	20040.838	20081.338	20121.838	20162.338	20202.838	20243.338	20283.838	20324.338	20364.838	20405.338	20445.838	20486.338	20526.838	20567.338	20607.838	20648.338	20688.838	20729.338	20769.838	20810.338	20850.838	20891.338	20931.838	20972.338	21012.838	21053.338	21093.838	21134.338	21174.838	21215.338	21255.838	21296.338	21336.838	21377.338	21417.838	21458.338	21498.838	21539.338	21579.838	21620.338	21660.838	21701.338	21741.838	21782.338	21822.838	21863.338	21903.838	21944.338	21984.838	22025.338	22065.838	22106.338	22146.838	22187.338	22227.838	22268.338	22308.838	22349.338	22389.838	22430.338	22470.838	22511.338	22551.838	22592.338	22632.838	22673.338	22713.838	22754.338	22794.838	22835.338	22875.838	22916.338	22956.838	23000.338	23040.838	23081.338	23121.838	23162.338	23202.838	23243.338	23283.838	23324.338	23364.838	23405.338	23445.838	23486.338	23526.838	23567.338	23607.838	23648.338	23688.838	23729.338	23769.838	23810.338	23850.838	23891.338	23931.838	23972.338	24012.838	24053.338	24093.838	24134.338	24174.838	24215.338	24255.838	24296.338	24336.838	24377.338	24417.838	24458.338	24498.838	24539.338	24579.838	24620.338	24660.838	24701.338	24741.838	24782.338	24822.838	24863.338	24903.838	24944.338	24984.838	25025.338	25065.838	25106.338	25146.838	25187.338	25227.838	25268.338	25308.838	25349.338	25389.838	25430.338	25470.838	25511.338	25551.838	25592.338	25632.838	25673.338	25713.838	25754.338	25794.838	25835.338	25875.838	25916.338	25956.838	26000.338	26040.838	26081.338	26121.838	26162.338	26202.838	26243.338	26283.838	26324.338	26364.838	26405.338	26445.838	26486.338	26526.838	26567.338	26607.838	26648.338	26688.838	26729.338	26769.838	26810.338	26850.838	26891.338	26931.838	26972.338	27012.838	27053.338	27093.838	27134.338	27174.838	27215.338	27255.838	27296.338	27336.838	27377.338	27417.838	27458.338	27498.838	27539.338	27579.838	27620.338	27660.838	27701.338	27741.838	27782.338	27822.838	27863.338	27903.838	27944.338	27984.838	28025.338	28065.838	28106.338	28146.838	28187.338	28227.838	28268.338	28308.838	28349.338	28389.838	28430.338	28470.838	28511.338	28551.838	28592.338	28632.838	28673.338	28713.838	28754.338	28794.838	28835.338	28875.838	28916.338	28956.838	29000.338	29040.838	29081.338	29121.838	29162.338	29202.838	29243.338	29283.838	29324.338	29364.838	29405.338	29445.838	29486.338	29526.838	29567.338	29607.838	29648.338	29688.838	29729.338	29769.838	29810.338	29850.838	29891.338	29931.838	29972.338	30012.838	30053.338	30093.838	30134.338	30174.838	30215.338	30255.838	30296.338	30336.838	30377.338	30417.838	30458.338	30498.838	30539.338	30579.838	30620.338	30660.838	30701.338	30741.838	30782.338	30822.838	30863.338	30903.838	30944.338	30984.838	31025.338	31065.838	31106.338	31146.838	31187.338	31227.838	31268.338	31308.838	31349.338	31389.838	31430.338	31470.838	31511.338	31551.838	31592.338	31632.838	31673.338	31713.838	31754.338	31794.838	31835.338	31875.838	31916.338	31956.838	32000.338	32040.838	32081.338	32121.838	32162.338	32202.838	32243.338	32283.838	32324.338	32364.838	32405.338	32445.838	32486.338	32526.838	32567.338	32607.838	32648.338	32688.838	32729.338	32769.838	32810.338	32850.838	32891.338	32931.838	32972.338	33012.838	33053.338	33093.838	33134.338	33174.838	33215.338	33255.838	33296.338	33336.838	33377.338	33417.838	33458.338	33498.838	33539.338	33579.838	33620.338	33660.838	33701.338	33741.838	33782.338	33822.838	33863.338	33903.838

0112 薄小六角頭光螺栓

材 料: 鋼35, 允;
熱 處 理: $H_{RC} 33 \sim 38^\circ$
表面處理: 發藍

$\nabla \nabla_1 (\nabla_2)$



$d=10, L=30$ 薄小六角頭光螺栓用代號表示法 0112-10×30

螺 栓 直 徑 d		對 邊 尺 寸 S		螺 頭 高 度 H		$D \approx$	$\approx$	螺栓頭與 螺桿軸線 容許偏心
公 制	英 制	公 稱	允 差	公 稱	允 差			
4	—	6	-0.16	2.8	± 0.3	6.9	—	0.25
5	—	8	-0.2	3.5	± 0.4	9.2	-0.25	0.3
6	$\frac{1}{4}"$	10		3.5		11.5		
8	$\frac{5}{16}"$	12	-0.24	5	± 0.5	13.8		0.4
10	$\frac{3}{8}"$	14		6		16.2		
12	—	17	-0.28	7	± 0.6	19.6		
—	$\frac{1}{2}"$	19		7		21.9		

- 說明: 1. 本規格相當於 K21-1。
2. 英制螺紋僅作修配用。
3. 螺紋按 3 級精度製造, 經用戶提出可制成 2 級精度。
4. 技術條件按標 0210-57 的規定。
5. 用普通鋼製造的螺栓, 不進行熱處理及表面處理。
6. 螺栓直徑 $d=14$ 以上時, 請用 0111 小六角頭光螺栓。
7. d_2 尺寸在外徑與中徑尺寸之間。

公制薄小六角頭光螺柱生產規範及理論重量表

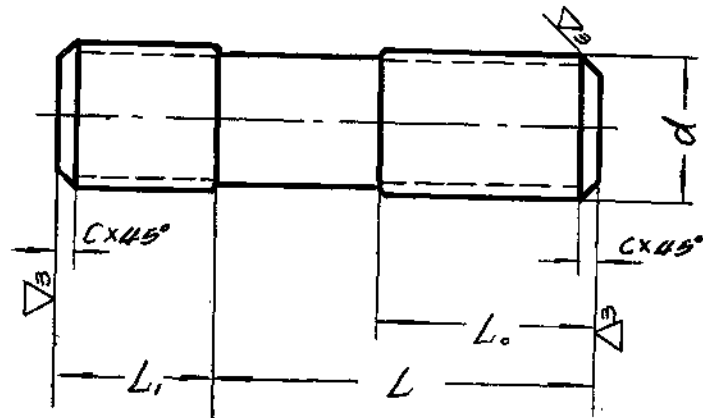
螺 柱		直 徑		尺 寸		4		5		6		8		10		12	
螺紋部份長度 L_0		公 容		稱 許		30		30		30		30		30		30	
						+ 3		+ 3		+ 3		+ 4		+ 4		+ 4	
螺 桿		長 度		L													
公 稱		允 許		偏 差													
		$d=4\sim5$		$d=6\sim14$		$d=16\sim24$											
10						1.420	2.035	4.21	8.03	13.81							
12						1.618	2.342	4.472	8.67	14.85							
14						1.816	2.650	4.916	9.31	15.90							
16						2.014	3.028	5.360	10.02	16.98							
18						2.212	3.436	5.804	10.82	18.19							
20						2.416	4.144	6.248	11.61	19.43							
22						2.608	4.452	6.692	12.40	21.28							
25						2.905	4.914	7.358	13.58	23.13							
28						3.202	5.376	8.024	14.77	24.37							
30						3.400	5.684	8.463	15.56	25.60							
32						3.598	5.992	8.912	16.35	27.45							
35						3.895	6.454	9.578	17.53	30.31							
40							7.224	10.55	19.28	33.39							
45							7.994	11.66	21.25	36.48							
50								12.77	23.23	39.56							
55								13.88	25.20	42.63							
60								14.99	27.18	45.73							
65								16.10	29.15	48.82							
70									31.13	51.90							
75									33.10	54.99							
80									35.08	58.07							
85										61.16							
90										64.24							
95										67.33							
100										70.41							
105										72.92							
110										76.01							
115										79.09							
120																	
125																	
130																	
140																	
150																	
160																	

0113 雙頭光螺栓

材 料：鋼35

表面處理：發藍

▽▽₁(▽₂)



$d=10, L=50$ 雙頭光螺栓用代號表示法 0113-10×50

螺 栓 直 徑 d	L_1		倒 角 C	L_0	
	公 稱	允 差		公 稱	允 差
5	8	+ 2	0.8	10	+ 3
6	10		1.0	12	
8	12		1.2	16	
10	15	+ 2.5	1.5	20	
12	18		1.8	24	
14	20		2.0	28	
16	22	+ 3	2.0	28	
18	25		2.5	30	
20	28		2.5	35	
22	30		2.5	40	
24	35		3.0	42	
27	38		3.5	48	

說明：1. 本規格相當於 OCT 20001—38。

2. 螺紋用切削法製造時，螺桿上無螺紋部份直徑，應在外徑尺寸範圍內。

3. 經用戶提出，螺栓旋入另件的深度 L_1 ，也可按 $L_1=d$ 製造，兩端可制出不同的螺紋，此時用戶應分別指明旋入另件端 L_1 ，及旋入螺母端 L_0 的螺紋種類及要求。

4. 技術條件按螺 0210—57 規定。

5. 螺紋末端可不車出45°倒角。

雙頭光螺栓生產規範及理論重量表

螺 絲		螺 絲 直 徑 d		每 1000 個 螺 絲 的 理 論 重 量 (公 斤)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
公 稱 尺 寸	容 許 差	$d = 5 \sim 14$	$d = 16 \sim 27$																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				5	6	8	10	12	14	16	18	20	22	24	27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
15	± 1.5		4.61	5.11	5.61	6.11	6.61	7.11	7.61	8.11	8.61	9.11	9.61	10.11	10.61	11.11	11.61	12.11	12.61	13.11	13.61	14.11	14.61	15.11	15.61	16.11	16.61	17.11	17.61	18.11	18.61	19.11	19.61	20.11	20.61	21.11	21.61	22.11	22.61	23.11	23.61	24.11	24.61	25.11	25.61	26.11	26.61	27.11	27.61	28.11	28.61	29.11	29.61	30.11	30.61	31.11	31.61	32.11	32.61	33.11	33.61	34.11	34.61	35.11	35.61	36.11	36.61	37.11	37.61	38.11	38.61	39.11	39.61	40.11	40.61	41.11	41.61	42.11	42.61	43.11	43.61	44.11	44.61	45.11	45.61	46.11	46.61	47.11	47.61	48.11	48.61	49.11	49.61	50.11	50.61	51.11	51.61	52.11	52.61	53.11	53.61	54.11	54.61	55.11	55.61	56.11	56.61	57.11	57.61	58.11	58.61	59.11	59.61	60.11	60.61	61.11	61.61	62.11	62.61	63.11	63.61	64.11	64.61	65.11	65.61	66.11	66.61	67.11	67.61	68.11	68.61	69.11	69.61	70.11	70.61	71.11	71.61	72.11	72.61	73.11	73.61	74.11	74.61	75.11	75.61	76.11	76.61	77.11	77.61	78.11	78.61	79.11	79.61	80.11	80.61	81.11	81.61	82.11	82.61	83.11	83.61	84.11	84.61	85.11	85.61	86.11	86.61	87.11	87.61	88.11	88.61	89.11	89.61	90.11	90.61	91.11	91.61	92.11	92.61	93.11	93.61	94.11	94.61	95.11	95.61	96.11	96.61	97.11	97.61	98.11	98.61	99.11	99.61	100.11	100.61	101.11	101.61	102.11	102.61	103.11	103.61	104.11	104.61	105.11	105.61	106.11	106.61	107.11	107.61	108.11	108.61	109.11	109.61	110.11	110.61	111.11	111.61	112.11	112.61	113.11	113.61	114.11	114.61	115.11	115.61	116.11	116.61	117.11	117.61	118.11	118.61	119.11	119.61	120.11	120.61	121.11	121.61	122.11	122.61	123.11	123.61	124.11	124.61	125.11	125.61	126.11	126.61	127.11	127.61	128.11	128.61	129.11	129.61	130.11	130.61	131.11	131.61	132.11	132.61	133.11	133.61	134.11	134.61	135.11	135.61	136.11	136.61	137.11	137.61	138.11	138.61	139.11	139.61	140.11	140.61	141.11	141.61	142.11	142.61	143.11	143.61	144.11	144.61	145.11	145.61	146.11	146.61	147.11	147.61	148.11	148.61	149.11	149.61	150.11	150.61	151.11	151.61	152.11	152.61	153.11	153.61	154.11	154.61	155.11	155.61	156.11	156.61	157.11	157.61	158.11	158.61	159.11	159.61	160.11	160.61	161.11	161.61	162.11	162.61	163.11	163.61	164.11	164.61	165.11	165.61	166.11	166.61	167.11	167.61	168.11	168.61	169.11	169.61	170.11	170.61	171.11	171.61	172.11	172.61	173.11	173.61	174.11	174.61	175.11	175.61	176.11	176.61	177.11	177.61	178.11	178.61	179.11	179.61	180.11	180.61	181.11	181.61	182.11	182.61	183.11	183.61	184.11	184.61	185.11	185.61	186.11	186.61	187.11	187.61	188.11	188.61	189.11	189.61	190.11	190.61	191.11	191.61	192.11	192.61	193.11	193.61	194.11	194.61	195.11	195.61	196.11	196.61	197.11	197.61	198.11	198.61	199.11	199.61	200.11	200.61	201.11	201.61	202.11	202.61	203.11	203.61	204.11	204.61	205.11	205.61	206.11	206.61	207.11	207.61	208.11	208.61	209.11	209.61	210.11	210.61	211.11	211.61	212.11	212.61	213.11	213.61	214.11	214.61	215.11	215.61	216.11	216.61	217.11	217.61	218.11	218.61	219.11	219.61	220.11	220.61	221.11	221.61	222.11	222.61	223.11	223.61	224.11	224.61	225.11	225.61	226.11	226.61	227.11	227.61	228.11	228.61	229.11	229.61	230.11	230.61	231.11	231.61	232.11	232.61	233.11	233.61	234.11	234.61	235.11	235.61	236.11	236.61	237.11	237.61	238.11	238.61	239.11	239.61	240.11	240.61	241.11	241.61	242.11	242.61	243.11	243.61	244.11	244.61	245.11	245.61	246.11	246.61	247.11	247.61	248.11	248.61	249.11	249.61	250.11	250.61	251.11	251.61	252.11	252.61	253.11	253.61	254.11	254.61	255.11	255.61	256.11	256.61	257.11	257.61	258.11	258.61	259.11	259.61	260.11	260.61	261.11	261.61	262.11	262.61	263.11	263.61	264.11	264.61	265.11	265.61	266.11	266.61	267.11	267.61	268.11	268.61	269.11	269.61	270.11	270.61	271.11	271.61	272.11	272.61	273.11	273.61	274.11	274.61	275.11	275.61	276.11	276.61	277.11	277.61	278.11	278.61	279.11	279.61	280.11	280.61	281.11	281.61	282.11	282.61	283.11	283.61	284.11	284.61	285.11	285.61	286.11	286.61	287.11	287.61	288.11	288.61	289.11	289.61	290.11	290.61	291.11	291.61	292.11	292.61	293.11	293.61	294.11	294.61	295.11	295.61	296.11	296.61	297.11	297.61	298.11	298.61	299.11	299.61	300.11	300.61	301.11	301.61	302.11	302.61	303.11	303.61	304.11	304.61	305.11	305.61	306.11	306.61	307.11	307.61	308.11	308.61	309.11	309.61	310.11	310.61	311.11	311.61	312.11	312.61	313.11	313.61	314.11	314.61	315.11	315.61	316.11	316.61	317.11	317.61	318.11	318.61	319.11	319.61	320.11	320.61	321.11	321.61	322.11	322.61	323.11	323.61	324.11	324.61	325.11	325.61	326.11	326.61	327.11	327.61	328.11	328.61	329.11	329.61	330.11	330.61	331.11	331.61	332.11	332.61	333.11	333.61	334.11	334.61	335.11	335.61	336.11	336.61	337.11	337.61	338.11	338.61	339.11	339.61	340.11	340.61	341.11	341.61	342.11	342.61	343.11	343.61	344.11	344.61	345.11	345.61	346.11	346.61	347.11	347.61	348.11	348.61	349.11	349.61	350.11	350.61	351.11	351.61	352.11	352.61	353.11	353.61	354.11	354.61	355.11	355.61	356.11	356.61	357.11	357.61	358.11	358.61	359.11	359.61	360.11	360.61	361.11	361.61	362.11	362.61	363.11	363.61	364.11	364.61	365.11	365.61	366.11	366.61	367.11	367.61	368.11	368.61	369.11	369.61	370.11	370.61	371.11	371.61	372.11	372.61	373.11	373.61	374.11	374.61	375.11	375.61	376.11	376.61	377.11	377.61	378.11	378.61	379.11	379.61	380.11	380.61	381.11	381.61	382.11	382.61	383.11	383.61	384.11	384.61	385.11	385.61	386.11	386.61	387.11	387.61	388.11	388.61	389.11	389.61	390.11	390.61	391.11	391.61	392.11	392.61	393.11	393.61	394.11	394.61	395.11	395.61	396.11	396.61	397.11	397.61	398.11	398.61	399.11	399.61	400.11	400.61	401.11	401.61	402.11	402.61	403.11	403.61	404.11	404.61	405.11	405.61	406.11	406.61	407.11	407.61	408.11	408.61	409.11	409.61	410.11	410.61	411.11	411.61	412.11	412.61	413.11	413.61	414.11	414.61	415.11	415.61	416.11	416.61	417.11	417.61	418.11	418.61	419.11	419.61	420.11	420.61	421.11	421.61	422.11	422.61	423.11	423.61	424.11	424.61	425.11	425.61	426.11	426.61	427.11	427.61	428.11	428.61	429.11	429.61	430.11	430.61	431.11	431.61	432.11	432.61	433.11	433.61	434.11	434.61	435.11	435.61	436.11	436.61	437.11	437.61	438.11	438.61	439.11	439.61	440.11	440.61	441.11	441.61	442.11	442.61	443.11	443.61	444.11	444.61	445.11	445.61	446.11	446.61	447.11	447.61	448.11	448.61	449.11	449.61	450.11	450.61	451.11	451.61	452.11	452.61	453.11	453.61	454.11	454.61	455.11	455.61	456.11	456.61	457.11	457.61	458.11	458.61	459.11	459.61	460.11	460.61	461.11	461.61	462.11	462.61	463.11	463.61	464.11	464.61	465.11	465.61	466.11	466.61	467.11	467.61	468.11	468.61	469.11	469.61	470.11	470.61	471.11	471.61	472.11	472.61	473.11	473.61	474.11	474.61	475.11	475.61	476.11	476.61	477.11	477.61	478.11	478.61	479.11	479.61	480.11	480.61	481.11	481.61	482.11	482.61	483.11	483.61	484.11	484.61	485.11	485.61	486.11	486.61	487.11	487.61	488.11	488.61	489.11	489.61	490.11	490.61	491.11	491.61	492.11	492.61	493.11	493.61	494.11	494.61	495.11	495.61	496.11	496.61	497.11	497.61	498.11	498.61	499.11	499.61	500.11	500.61	501.11	501.61	502.11	502.61	503.11	503.61	504.11	504.61	505.11	505.61	506.11	506.61	507.11	507.61	508.11	508.61	509.11	509.61	510.11	510.61	511.11	511.61	512.11	512.61	513.11	513.61	514.11	514.61	515.11	515.61	516.11	516.61	517.11	517.61	518.11	518.61	519.11	519.61	520.11	520.61	521.11	521.61	522.11	522.61	523.11	523.61	524.11	524.61	525.11	525.61	526.11	526.61	527.11	527.61	528.11	528.61	529.11	529.61	530.11	530.61	531.11	531.61	532.11	532.61	533.11	533.61	534.11	534.61	535.11	535.61	536.11	536.61	537.11	537.61	538.11	538.61	539.11	539.61	540.11	540.61	541.11	541.61	542.11	542.61	543.11	543.61	544.11	544.61	545.11	545.61	546.11	546.61	547.11	547.61	548.11	548.61	549.11	549.61	550.11	550.61	551.11	551.61	552.11	552.61	553.11	553.61	554.11	554.61	555.11	555.61	556.11	556.61	557.11	557.61	558.11	558.61	559.11	559.61	560.11	560.61	561.11	561.61	562.11	562.61	563.11	563.61	564.11