



C&N INDUSTRIAL GROUP LIMITED

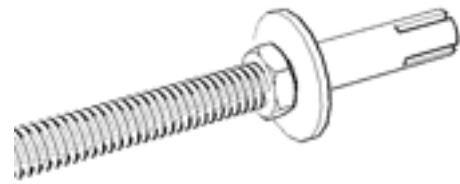


## BETTER PIPELINE BETTER CONNECTION

- Steel pipe
- Pipe fitting
- Flange
- Valve
- Fabricate parts
- Deep Processing

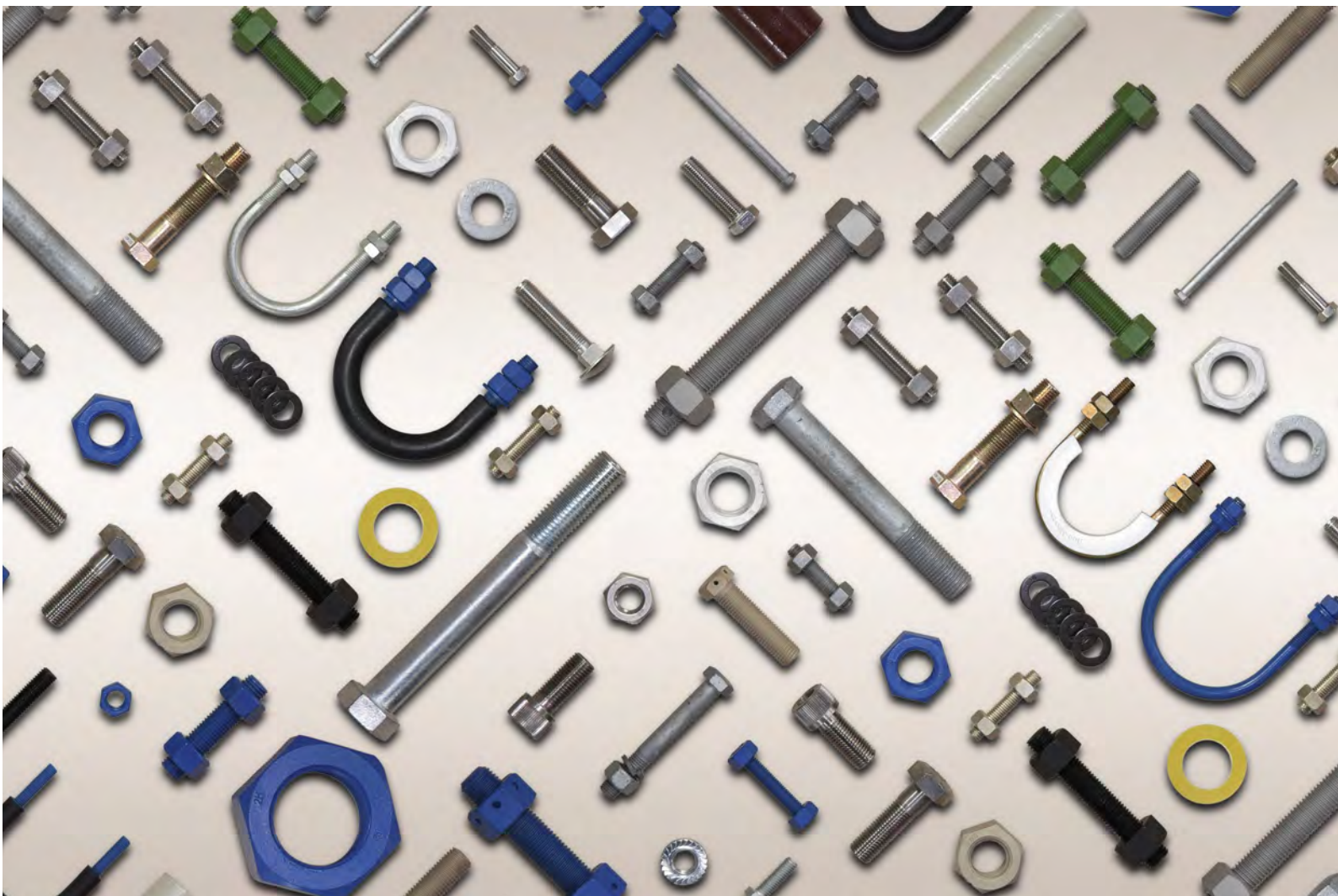
[www.cnpipefitting.com](http://www.cnpipefitting.com)  
[www.steelpipe.me](http://www.steelpipe.me)

**C&N** With over 10 years of supplying fasteners material to the industries, this range of service are to enlarge our pipeline, fitting and flange project needs, we are able to manufacture special sizes and even have specials manufactured.



**C&N** reputation dictates that we:

- Carry a wide selection of Fasteners and related products
- Supply only quality products
- Have competitive prices and stock availability
- Supply alternative solutions to fastening problems where needed
- Provide speedy and efficient deliveries
- Have secure parking available



### Specifications (标准及规格):

ANSI/ASME B1.1, ANSI/ASME B1.13M,  
ANSI/ASME B18.2.1, ANSI/ASME B18.2.2, IFI 136, ANSI/ASME B18.21.1,  
ANSI/ASME B18.22.1 & DIN, ISO, GB Standard etc.



### Size (尺寸)

M10 - M100, 3/8" - 4", UNF/UNC/UN Screw Thread

### Types (型式)

Hex Bolts, Stud Bolts, Anchor Bolts, Expansion Bolts, Eye Bolts, Threaded Rods  
六角螺栓, 双头螺栓, 地脚螺栓, 膨胀螺栓, 吊环螺栓, 牙杆  
Hex Nuts, Heavy Hex Nuts, LockNuts  
普通六角螺母, 重型六角螺母, 自锁螺母  
Plain Washers, Lock Washers  
平垫圈, 弹簧垫圈  
Special design per customer's drawings  
特制紧固件



### Material (材质):

ASTM A193 Gr. B7, B8, B8M, B16, B6, B5, B8T, B8MA  
(Bolts Materials for High Temperature Service 用于高温环境下的螺栓材质)  
ASTM 320-L7, L7M, L43, B8, B8M, B8T, B8MA  
(Bolts Materials for Low Temperature Service 用于低温环境的螺栓材质)  
ASTM A194 Gr. 2H, 2HM, 3, 4, 6, 7, 7M, 8, 8A, 8M, 8C, 8CA, 8T  
(Nuts Materials for high Temperature or Pressure 用于高温、高压环境的螺母材质)  
ASTM A540 Gr.B21, B22, B23, B24, B24V  
Aluminum Bronze ASTM B150 C63000;  
Inconel 625; Titanium; Duplex Stainless Steel

### Coating (表面处理)

Zinc Electroplating	电镀锌
Hot Dip Galvanization	热浸镀锌
Hot Dip Aluminum Plating	热浸镀铝
Dacromet coatings	达克罗涂覆
Cadmium Electroplating	镀镉
PTFE® Coatings	聚四氟乙烯涂层



### Packing

Packed in small carton(below 30kg)  
Final packed in Plywood boxes,below 1200kg)  
Threaded protect with nylon mesh  
Carbon steel stud blackening treatment





Petroleo De Venezuela S.A



ParkerStore Aeroport Pty Ltd



Saudi Basic INdustries Corporation



oil and Gasline company

长期主要客户:

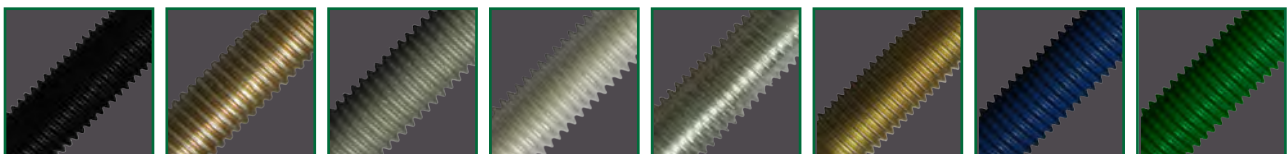
Main supply range:

- 海洋石油工程股份有限公司  
Offshore Oil Engineering Co., Ltd.
- 海洋石油（青岛）工程股份有限公司  
Offshore Oil (Qingdao) Engineering Co, Ltd.
- 中海石油（中国）有限公司湛江分公司  
CNOOC China Limited Zhanjiang Branch
- 中石化川东北物资供应储备中心  
Sinopec Sichuan North-East Material Supply Center
- 壳牌中国勘探与生产有限公司  
Shell China Exploration and Production Co., Ltd.
- 康菲中国有限公司  
ConocoPhillips China Inc.
- 中国核工业第五建设公司  
China Nuclear Industry Fifth Construction Corporation
- 山东核电设备制造有限公司  
Shandong Nuclear Power Equipment Manufacturing Co., Ltd.
- 北京迪威尔石油天然气技术开发有限公司  
Beijing Dwell Petroleum & Gas Technology Development Co. ,Ltd.
- 天津渤海石油船舶工程有限公司  
Bohai Oil Marine Engineering & Supply Co., Ltd.
- 蓬莱巨涛海洋工程重工有限公司  
Penglai Jutal Offshore Engineering Heavy Industries Co.,Ltd.



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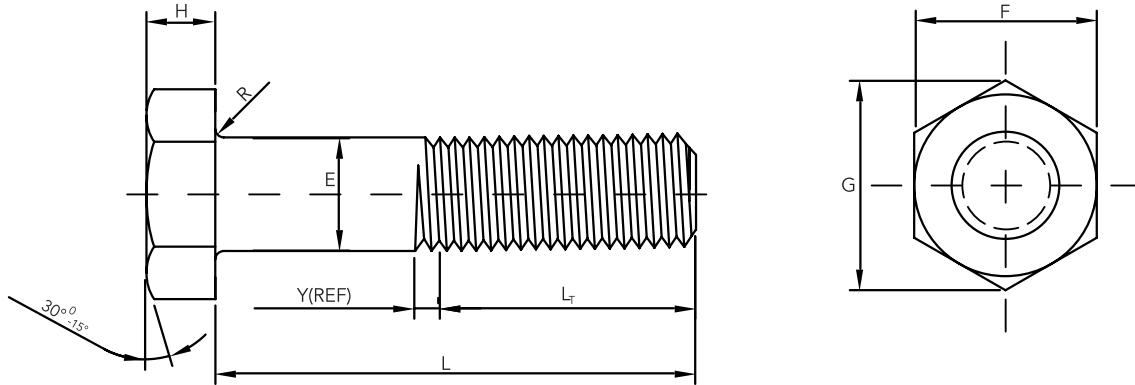
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# 美制六角螺栓

## HEX BOLTS

ANSI / ASME B18.2.1



Unit: Inch

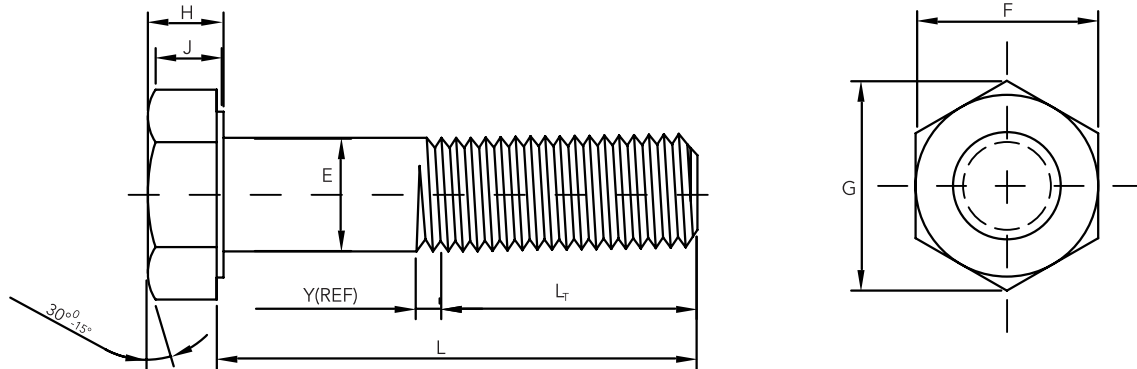
Nominal Size or Basic Bolt Dia.	E	F				G		H			R		L <sub>r</sub> (Ref)		
		Body Dia.	Width Across Flats			Width Across Corners		Head Height			Radius of Fillet		Thread Length		
			Max.	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Max.	Min.	For Bolt Lengths ≤ 6 in.	For Bolt Lengths > 6 in.
														Nom.	Nom.
3/8	0.3750	0.388	9/16	0.562	0.544	0.650	0.620	1/4	0.268	0.226	0.03	0.01	1.000	1.250	
1/2	0.5000	0.515	3/4	0.750	0.725	0.866	0.826	11/32	0.364	0.302	0.03	0.01	1.250	1.500	
5/8	0.6250	0.642	15/16	0.938	0.906	1.083	1.033	27/64	0.444	0.378	0.06	0.02	1.500	1.750	
3/4	0.7500	0.768	1 1/8	1.125	1.088	1.299	1.240	1/2	0.524	0.455	0.06	0.02	1.750	2.000	
7/8	0.8750	0.895	1 5/16	1.312	1.269	1.516	1.447	37/64	0.604	0.531	0.06	0.02	2.000	2.250	
1	1.0000	1.022	1 1/2	1.500	1.450	1.732	1.653	43/64	0.700	0.591	0.09	0.03	2.250	2.500	
1 1/8	1.1250	1.149	1 11/16	1.688	1.631	1.949	1.859	3/4	0.780	0.658	0.09	0.03	2.500	2.750	
1 1/4	1.2500	1.277	1 7/8	1.875	1.812	2.165	2.066	27/32	0.876	0.749	0.09	0.03	2.750	3.000	
1 3/8	1.3750	1.404	2 1/16	2.062	1.994	2.382	2.273	29/32	0.940	0.810	0.09	0.03	3.000	3.250	
1 1/2	1.5000	1.531	2 1/4	2.250	2.175	2.598	2.480	1	1.036	0.902	0.09	0.03	3.250	3.500	
1 3/4	1.7500	1.785	2 5/8	2.625	2.538	3.031	2.893	1 5/32	1.196	1.054	0.12	0.04	3.750	4.000	
2	2.0000	2.039	3	3.000	2.900	3.464	3.306	1 11/32	1.388	1.175	0.12	0.04	4.250	4.500	
2 1/4	2.2500	2.305	3 3/8	3.375	3.262	3.897	3.719	1 1/2	1.548	1.327	0.19	0.06	4.750	5.000	
2 1/2	2.5000	2.559	3 3/4	3.750	3.625	4.330	4.133	1 21/32	1.708	1.479	0.19	0.06	5.250	5.500	
2 3/4	2.7500	2.827	4 1/8	4.125	3.988	4.763	4.546	1 13/16	1.869	1.632	0.19	0.06	5.750	6.000	
3	3.0000	3.081	4 1/2	4.500	4.350	5.196	4.959	2	2.060	1.815	0.19	0.06	6.250	6.500	
3 1/4	3.2500	3.335	4 7/8	4.875	4.712	5.629	5.372	2 3/16	2.251	1.936	0.19	0.06	6.750	7.000	
3 1/2	3.5000	3.589	5 1/4	5.250	5.075	6.062	5.786	2 5/16	2.380	2.057	0.19	0.06	7.250	7.500	
3 3/4	3.7500	3.858	5 5/8	5.625	5.437	6.495	6.198	2 1/2	2.572	2.241	0.19	0.06	7.750	8.000	
4	4.0000	4.111	6	6.000	5.800	6.928	6.612	2 11/16	2.764	2.424	0.19	0.06	8.250	8.500	

Thread: UNC, 8UN, Class 2A.

# 美制精制六角螺栓

## HEX CAP SCREWS (FINISHED HEX BOLTS)

### ANSI / ASME B18.2.1



Unit: Inch

2

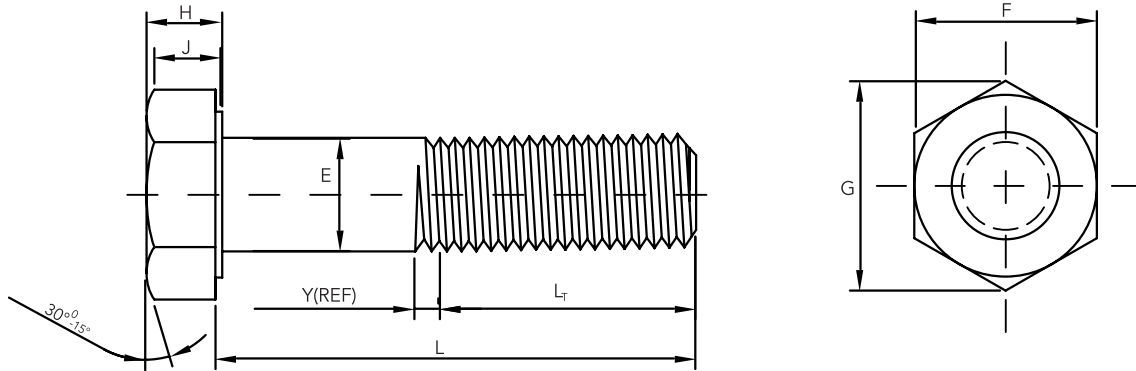
Nominal Size or Basic Bolt Dia.		E		F			G		H			J	Runout of Bearing Surface FIM	L <sub>T</sub> (Ref)		Y
		Body Dia.		Width Across Flats		Width Across Coners		Head Height			Wren-Ching Height	Thread Length		Transition Thread Length		
												For Screw Lengths ≤6 in.			For Screw Lengths >6 in.	
Max.	MIN.	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Min.	Max.	Nom.	Nom.	Max.		
3/8	0.3750	0.3750	0.369	9/16	0.562	0.551	0.650	0.628	15/64	0.243	0.226	0.160	0.012	1.000	1.250	0.312
1/2	0.5000	0.5000	0.493	3/4	0.750	0.736	0.866	0.840	5/16	0.323	0.302	0.215	0.014	1.250	1.500	0.385
5/8	0.6250	0.6250	0.617	15/16	0.938	0.922	1.083	1.051	25/64	0.403	0.378	0.269	0.017	1.500	1.750	0.455
3/4	0.7500	0.7500	0.741	1 1/8	1.125	1.100	1.299	1.254	15/32	0.483	0.455	0.324	0.020	1.750	2.000	0.500
7/8	0.8750	0.8750	0.866	1 5/16	1.312	1.285	1.516	1.465	35/64	0.563	0.531	0.378	0.023	2.000	2.250	0.556
1	1.0000	1.0000	0.9900	1 1/2	1.500	1.469	1.732	1.675	39/64	0.627	0.591	0.416	0.026	2.250	2.500	0.625
1 1/8	1.1250	1.1250	1.114	1 11/16	1.688	1.631	1.949	1.859	11/16	0.718	0.658	0.461	0.029	2.500	2.750	0.714
1 1/4	1.2500	1.2500	1.239	1 7/8	1.875	1.812	2.165	2.066	25/32	0.813	0.749	0.530	0.033	2.750	3.000	0.714
1 3/8	1.3750	1.3750	1.363	2 1/16	2.062	1.994	2.382	2.273	27/32	0.878	0.810	0.569	0.036	3.000	3.250	0.833
1 1/2	1.5000	1.5000	1.4880	2 1/4	2.250	2.175	2.598	2.480	15/16	0.974	0.902	0.640	0.039	3.250	3.500	0.833
1 3/4	1.7500	1.7500	1.738	2 5/8	2.625	2.538	3.031	2.893	1 3/32	1.134	1.054	0.748	0.046	3.750	4.000	1.000
2	2.0000	2.0000	1.988	3	3.000	2.900	3.464	3.306	1 7/32	1.263	1.175	0.825	0.052	4.250	4.500	1.111
2 1/4	2.2500	2.2500	2.238	3 3/8	3.375	3.262	3.897	3.719	1 3/8	1.423	1.327	0.933	0.059	....	5.000	1.111
2 1/2	2.5000	2.5000	2.4880	3 3/4	3.750	3.625	4.330	4.133	1 17/32	1.583	1.479	1.042	0.065	....	5.500	1.250
2 3/4	2.7500	2.7500	2.738	4 1/8	4.125	3.988	4.763	4.546	1 11/16	1.744	1.632	1.151	0.072	....	6.000	1.250
3	3.0000	3.0000	2.9880	4 1/2	4.500	4.350	5.196	4.959	1 7/8	1.935	1.815	1.290	0.079	....	6.500	1.250

Thread:UNC, 8UN, Class 2A.

# 美制重型六角螺栓

## HEAVY HEX SCREWS

ANSI / ASME B 18.2.1



Unit: Inch

Nominal Size or Basic Bolt Dia		E		F			G		H			J	L <sub>r</sub> (Ref)		Y	Runout of Bearing Surface FIR
		Body Dia		Width Across Flats			Width Across Comers		Head Height			Wren- Ching Height	Thread Length		Transition Thread Length	
													For Bolt Lengths ≤6 in.	For Bolt Lengths >6 in.		
Max	MIN	Basic	Max	Min	Max	Min	Basic	Max	Min	Min	Basic	Basic	Max	Max		
1/2	0.5000	0.5000	0.482	7/8	0.875	0.850	1.010	0.969	5/16	0.323	0.302	0.215	1.250	1.500	0.385	0.016
5/8	0.6250	0.6250	0.605	1-1/16	1.062	1.031	1.227	1.175	25/64	0.403	0.378	0.269	1.500	1.750	0.455	0.019
3/4	0.7500	0.7500	0.729	1-1/4	1.250	1.212	1.443	1.383	15/32	0.483	0.455	0.324	1.750	2.000	0.500	0.022
7/8	0.8750	0.8750	0.852	1-7/16	1.438	1.394	1.660	1.589	35/64	0.563	0.531	0.378	2.000	2.250	0.556	0.025
1	1.0000	1.0000	0.976	1-5/8	1.625	1.575	1.876	1.796	39/64	0.627	0.591	0.416	2.250	2.500	0.625	0.028
1 1/8	1.1250	1.1250	1.098	1-13/16	1.812	1.756	2.093	2.002	11/16	0.718	0.658	0.461	2.500	2.750	0.714	0.032
1 1/4	1.2500	1.2500	1.223	2	2.000	1.938	2.309	2.209	25/32	0.813	0.749	0.530	2.750	3.000	0.714	0.035
1 3/8	1.3750	1.3750	1.345	2-3/16	2.188	2.119	2.526	2.416	27/32	0.878	0.810	0.569	3.000	3.250	0.833	0.038
1 1/2	1.5000	1.5000	1.47	2-3/8	2.375	2.300	2.742	2.622	15/16	0.974	0.902	0.640	3.250	3.500	0.833	0.041
1 3/4	1.7500	1.7500	1.716	2-3/4	2.750	2.662	3.175	3.035	1-3/32	1.134	1.054	0.748	3.750	4.000	1.000	0.048
2	2.0000	2.0000	1.964	3-1/8	3.125	3.025	3.608	3.449	1 7/32	1.263	1.175	0.825	4.250	4.500	1.111	0.055
2 1/4	2.2500	2.2500	2.214	3-1/2	3.500	3.388	4.041	3.862	1 3/8	1.423	1.327	0.933		5.000	1.111	0.061
2 1/2	2.5000	2.5000	2.461	3-7/8	3.875	3.750	4.474	4.275	1 17/32	1.583	1.479	1.042		5.500	1.250	0.068
2 3/4	2.7500	2.7500	2.711	4-1/4	4.250	4.112	4.907	4.688	1-11/16	1.744	1.632	1.151		6.000	1.250	0.074
3	3.0000	3.0000	2.961	4-5/8	4.625	4.475	5.340	5.102	1-7/8	1.935	1.815	1.290		6.500	1.250	0.081

Thread:UNC, 8UN, Class 2A.

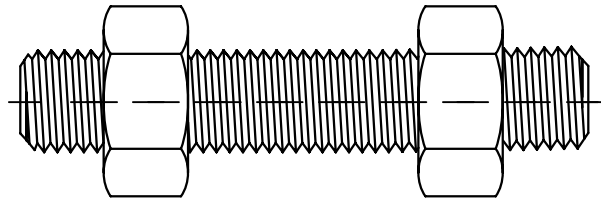


# 美制双头螺栓及螺母

## STUD BOLTS AND NUTS

ASTM A193 B7 & A194 2H

ASME B1.1 (UNC/8UN)



Kg/1000sets

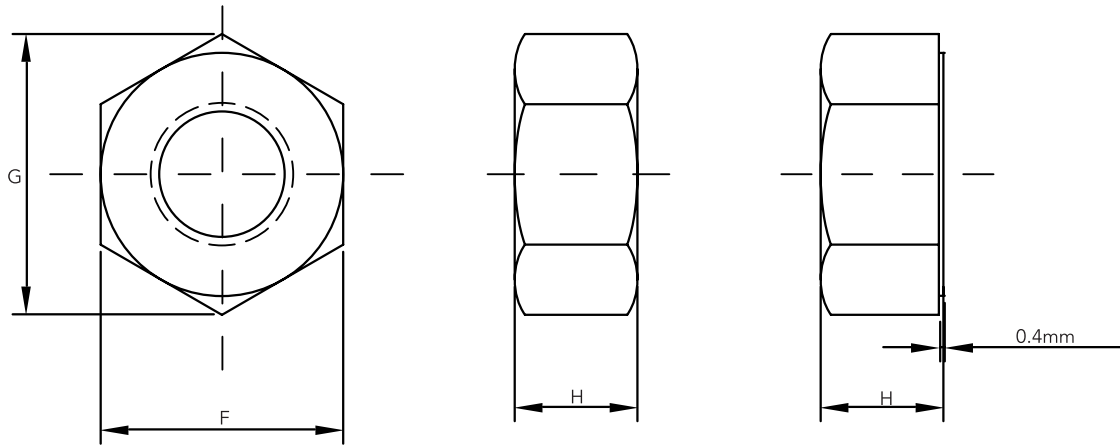
Diameter \ Studs Length	Diameter												
	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2"
2"	108	-	-	-	-	-	-	-	-	-	-	-	-
2 1/4"	112	191	-	-	-	-	-	-	-	-	-	-	-
2 1/2"	116	198	-	-	-	-	-	-	-	-	-	-	-
2 3/4"	120	204	319	-	-	-	-	-	-	-	-	-	-
3"	128	217	338	494	-	-	-	-	-	-	-	-	-
3 1/4"	132	224	347	507	-	-	-	-	-	-	-	-	-
3 1/2"	136	230	357	520	711	-	-	-	-	-	-	-	-
3 3/4"	140	237	366	533	728	-	-	-	-	-	-	-	-
4"	148	249	385	559	761	1027	-	-	-	-	-	-	-
4 1/4"	152	256	395	572	778	1049	-	-	-	-	-	-	-
4 1/2"	156	262	404	585	795	1071	-	-	-	-	-	-	-
4 3/4"	160	269	414	598	812	1093	-	-	-	-	-	-	-
5"	168	282	433	624	846	1137	1457	-	-	-	-	-	-
5 1/4"	173	288	442	637	862	1159	1484	-	-	-	-	-	-
5 1/2"	177	295	452	650	879	1181	1512	1913	-	-	-	-	-
5 3/4"	185	307	471	676	913	1224	1566	1980	-	-	-	-	-
6"	189	314	480	689	930	1246	1593	2014	2486	3013	3641	4268	-
6 1/4"	-	320	490	702	947	1268	1621	2048	2526	3060	3697	4332	-
6 1/2"	-	327	499	715	963	1290	1648	2081	2566	3108	3752	4397	-
6 3/4"	-	340	518	742	997	1334	1702	2149	2646	3204	3863	4526	-
7"	-	346	528	755	1014	1356	1730	2182	2686	3252	3919	4590	5448
7 1/4"	-	353	537	768	1031	1378	1757	2216	2727	3299	3974	4655	5521
7 1/2"	-	359	547	781	1048	1400	1784	2249	2767	3347	4030	4719	5595
7 3/4"	-	372	566	807	1081	1444	1839	2317	2847	3443	4141	4848	5741
8"	-	378	575	820	1098	1466	1866	2350	2887	3491	4196	4913	5815
8 1/4"	-	-	585	833	1115	1488	1893	2384	2927	3538	4252	4977	5888
8 1/2"	-	-	594	846	1132	1510	1920	2418	2968	3586	4307	5042	5962
8 3/4"	-	-	613	872	1166	1554	1975	2485	3048	3682	4418	5171	6108
9"	-	-	623	885	1183	1576	2002	2519	3088	3730	4474	5235	6182
9 1/2"	-	-	651	924	1233	1641	2084	2620	3208	3873	4640	5429	6402
10"	-	-	670	950	1267	1685	2138	2687	3289	3969	4751	5558	6549
10 1/2"	-	-	-	989	1317	1751	2220	2788	3409	4112	4918	5751	6769
11"	-	-	-	1016	1351	1795	2275	2855	3489	4208	5029	5880	6916
11 1/2"	-	-	-	1055	1402	1861	2356	2956	3610	4351	5195	6074	7136
12"	-	-	-	1081	1435	1905	2411	3023	3690	4447	5306	6203	7283
13"	-	-	-	-	-	2015	2547	3192	3891	4686	5584	6525	7650
14"	-	-	-	-	-	2146	2711	3394	4132	4972	5917	6912	8090
15"	-	-	-	-	-	2234	2820	3528	4292	5164	6139	7170	8384
16"	-	-	-	-	-	2366	2983	3730	4533	5450	6472	7557	8824
Thead Number	13unc	11unc	10unc	9unc	8unc	8un	8un	8un	8un	8un	8un	8un	8un

Nut Weight (g/2 Pieces)	60	108	176	270	386	538	714	928	1190	1470	1850	2186	2712
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# 美制六角螺母

## HEX NUTS

ANSI / ASME B18.2.2



Unit: Inch

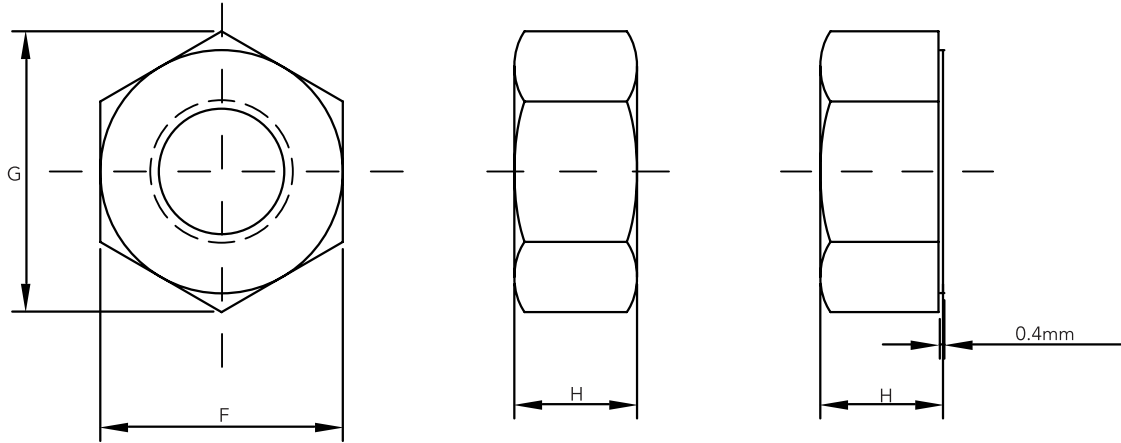
Nominal Size or Basic Major Diam. of Thread		F			H			G		Kgs.per 1000
		Width Across Flats			Thickness Hex Nuts			Width Across Corners		
		Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.	
3/8	0.3750	9/16	0.562	0.551	21/64	0.337	0.320	0.650	0.628	7.26
1/2	0.5000	3/4	0.750	0.736	7/16	0.448	0.427	0.866	0.840	17.01
9/16	0.5625	7/8	0.875	0.861	31/64	0.496	0.473	1.010	0.982	26.44
5/8	0.6250	15/16	0.938	0.922	35/64	0.559	0.535	1.083	1.051	33.25
3/4	0.7500	1 1/8	1.125	1.088	41/64	0.665	0.617	1.299	1.240	53.98
7/8	0.8750	1 5/16	1.312	1.269	3/4	0.776	0.724	1.516	1.447	86.18
1	1.0000	1 1/2	1.500	1.450	55/64	0.887	0.831	1.732	1.653	128.37
1 1/8	1.1250	1 11/16	1.688	1.631	31/32	0.999	0.939	1.949	1.859	182.80
1 1/4	1.2500	1 7/8	1.875	1.812	1 1/16	1.094	1.030	2.165	2.066	246.30
1 3/8	1.3750	2 1/16	2.062	1.994	1 11/64	1.206	1.138	2.382	2.273	331.13
1 1/2	1.5000	2 1/4	2.250	2.175	1 9/32	1.317	1.245	2.598	2.480	427.74

Thread:UNC, 8UN, Class 2B.

# 美制重型六角螺母

## HEAVY HEX NUTS

ANSI / ASME B 18.2.2



Unit: Inch

6

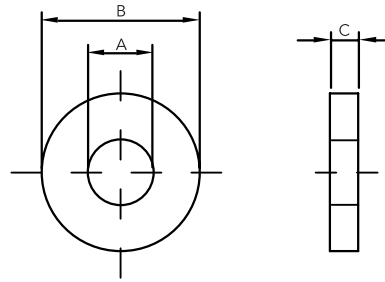
Nominal Size or Basic Major Diam. of Thread		F			H			G		Kgs.per 1000
		Width Across Flats			Thickness Heavy Hex Nuts			Width Across Corners		
		Basic	Max.	Min.	Basic	Max.	Min.	Max.	Min.	
1/2	0.5000	7/8	0.875	0.850	31/64	0.504	0.464	1.010	0.969	29.67
5/8	0.6250	1 1/16	1.062	1.031	39/64	0.631	0.587	1.227	1.175	53.98
3/4	0.7500	1 1/4	1.250	1.212	47/64	0.758	0.710	1.443	1.382	87.54
7/8	0.8750	1 7/16	1.438	1.394	55/64	0.885	0.833	1.660	1.589	134.72
1	1.0000	1 5/8	1.625	1.575	63/64	1.012	0.956	1.876	1.796	192.74
1 1/8	1.1250	1 13/16	1.812	1.756	1 7/64	1.139	1.079	2.093	2.002	268.53
1 1/4	1.2500	2	2.000	1.938	1 7/32	1.251	1.187	2.309	2.209	356.53
1 3/8	1.3750	2 3/16	2.188	2.119	1 11/32	1.378	1.310	2.526	2.416	462.67
1 1/2	1.5000	2 3/8	2.375	2.300	1 15/32	1.505	1.433	2.742	2.622	594.22
1 5/8	1.6250	2 9/16	2.562	2.481	1 19/32	1.632	1.556	2.959	2.828	734.83
1 3/4	1.7500	2 3/4	2.750	2.662	1 23/32	1.759	1.679	3.175	3.035	925.34
1 7/8	1.8750	2 15/16	2.938	2.844	1 27/32	1.886	1.802	3.392	3.242	1093.18
2	2.0000	3 1/8	3.125	3.025	1 31/32	2.013	1.925	3.608	3.449	1356.26
2 1/4	2.2500	3 1/2	3.5	3.388	2 13/64	2.251	2.155	4.041	3.862	1900.58
2 1/2	2.5000	3 7/8	3.875	3.75	2 29/64	2.505	2.401	4.474	4.275	2558.3
2 3/4	2.7500	4 1/4	4.25	4.112	2 45/64	2.759	2.647	4.907	4.688	3347.57
3	3.0000	4 5/8	4.625	4.475	2 61/64	3.013	2.893	5.34	5.102	4304.2

Thread:UNC, 8UN, Class 2B.

# 美制平垫圈

## PLAIN WASHERS TYPE A

ANSI / ASME B 18.22.1



Unit: Inch

Nominal Washer Size			A			B			C		
			Inside Diameter			Outside Diameter			Thickness		
			Basic	Tolerance		Basic	Tolerance		Basic	Max.	Min.
Plus	Minus	Plus		Minus							
3/8	0.375	N	0.406	0.015	0.005	0.812	0.015	0.007	0.065	0.080	0.051
3/8	0.375	W	0.438	0.015	0.005	1.000	0.030	0.007	0.083	0.104	0.064
1/2	0.500	N	0.531	0.015	0.005	1.062	0.030	0.007	0.095	0.121	0.074
1/2	0.500	W	0.562	0.015	0.005	1.375	0.030	0.007	0.109	0.132	0.086
5/8	0.625	N	0.656	0.030	0.007	1.312	0.030	0.007	0.095	0.121	0.074
5/8	0.625	W	0.688	0.030	0.007	1.750	0.030	0.007	0.134	0.160	0.108
3/4	0.750	N	0.812	0.030	0.007	1.469	0.030	0.007	0.134	0.160	0.108
3/4	0.750	W	0.812	0.030	0.007	2.000	0.030	0.007	0.148	0.177	0.122
7/8	0.875	N	0.938	0.030	0.007	1.750	0.030	0.007	0.134	0.160	0.108
7/8	0.875	W	0.938	0.030	0.007	2.250	0.030	0.007	0.165	0.192	0.136
1	1.000	N	1.062	0.030	0.007	2.000	0.030	0.007	0.134	0.160	0.108
1	1.000	W	1.062	0.030	0.007	2.500	0.030	0.007	0.165	0.192	0.136
1 1/8	1.125	N	1.250	0.030	0.007	2.250	0.030	0.007	0.134	0.160	0.108
1 1/8	1.125	W	1.250	0.030	0.007	2.750	0.030	0.007	0.165	0.192	0.136
1 1/4	1.250	N	1.375	0.030	0.007	2.500	0.030	0.007	0.165	0.192	0.136
1 1/4	1.250	W	1.375	0.030	0.007	3.000	0.030	0.007	0.165	0.192	0.136
1 3/8	1.375	N	1.500	0.030	0.007	2.750	0.030	0.007	0.165	0.192	0.136
1 3/8	1.375	W	1.500	0.045	0.010	3.250	0.045	0.010	0.180	0.213	0.153
1 1/2	1.500	N	1.625	0.030	0.007	3.000	0.030	0.007	0.165	0.192	0.136
1 1/2	1.500	W	1.625	0.045	0.010	3.500	0.045	0.010	0.180	0.213	0.153
1 5/8	1.625		1.750	0.045	0.010	3.750	0.045	0.010	0.180	0.213	0.153
1 3/4	1.750		1.875	0.045	0.010	4.000	0.045	0.010	0.180	0.213	0.153
1 7/8	1.875		2.000	0.045	0.010	4.250	0.045	0.010	0.180	0.213	0.153
2	2.000		2.125	0.045	0.010	4.500	0.045	0.010	0.180	0.213	0.153
2 1/4	2.250		2.375	0.045	0.010	4.750	0.045	0.010	0.220	0.248	0.193
2 1/2	2.500		2.625	0.045	0.010	5.000	0.045	0.010	0.238	0.280	0.210
2 3/4	2.750		2.875	0.065	0.010	5.250	0.065	0.010	0.259	0.310	0.228
3	3.000		3.125	0.065	0.010	5.500	0.065	0.010	0.284	0.327	0.249



## 螺栓及螺母材质要求 MATERIAL SPECIFICATIONS FOR BOLTS AND NUTS

ASTM Specifications			Chemical Requirements %								
Spec.	Grade	Type	C	Mn	P max.	S max.	Si	Ni	Cr	Mo	Other Elements
A307-04	A/B	-	0.29max	1.20max	0.04	0.15/0.05	-	-	-	-	
A354-04	BC-BD	-	0.30-0.53 0.35-0.53	-	0.035	0.040	-	-	-	-	≤1 1/2" >1 1/2"
A193-06a ★	B5 B6 B6X B7 B7M B16	5%Cr 12%Cr Cr-Mo Cr-Mo-V	0.10min 0.08-0.15 0.37-0.49 0.36-0.47	1.00max 1.00max 0.65-1.10 0.45-0.70	0.040 0.040 0.035 0.035	0.030 0.030 0.040 0.040	1.00max 1.00max 0.15-0.35 0.15-0.35	- - - -	4.00-6.00 11.50-13.50 - 0.75-1.20 0.80-1.15	0.40-0.65 - 0.15-0.25 0.50-0.65	V 0.25-0.35 Al 0.015
A320-07 ●	L7,L7M,L70 L7A,L71 L7B,L72 L7C,L73 L43 L1	Cr-Mo AISI 4037 AISI 4137 AISI 8740 AISI 4340 -	0.38-0.48 0.35-0.40 0.35-0.40 0.38-0.43 0.38-0.43 0.17-0.24	0.75-1.00 0.70-0.90 0.70-0.90 0.75-1.00 0.60-0.85 0.70-1.40	0.035 0.035 0.035 0.035 0.035 0.035	0.040 0.040 0.040 0.040 0.040 0.050	0.15-0.35 0.15-0.35 0.15-0.35 0.15-0.35 0.15-0.35 0.15-0.30	- - - 0.40-0.70 1.65-2.00 -	0.80-1.10 - 0.80-1.10 0.40-0.60 0.70-0.90 -	0.15-0.25 0.20-0.30 0.15-0.25 0.20-0.30 0.20-0.30 -	B 0.001-0.003
A540-06	B21 B22 B23 B24 B24V	Cr-Mo-V 4142-H E4340-H 4340 Mod. 4340V Mod.	0.36-0.44 0.39-0.46 0.37-0.44 0.37-0.44 0.37-0.44	0.45-0.70 0.65-1.10 0.60-0.95 0.70-0.90 0.70-0.95	0.025 0.025 0.025 0.025 0.025	0.025 0.025 0.025 0.025 0.025	0.15-0.35 0.15-0.35 0.15-0.35 0.15-0.35 0.15-0.35	- - 1.55-2.00 1.65-2.00 1.55-2.00	0.80-1.15 0.75-1.20 0.65-0.95 0.70-0.95 0.60-0.95	0.50-0.65 0.15-0.25 0.20-0.30 0.30-0.40 0.40-0.60	V 0.25-0.35    V 0.04-0.10
A193-06a ★	B8,B8A B8C,B8CA B8M,B8MA, B8M2,B8M3 B8P,B8PA B8N,B8NA B8MN,B8MNA B8MLCuN B8MLCuNA B8T,B8TA B8R,B8RA B8S,B8SA B8LN,B8LNA B8MLN,B8MLNA	304 347 316  S 30500 304N 316N S 31254  321 S 20910 S 21800 S 30453 S 31653	0.08max 0.08max 0.08max  0.12max 0.08max 0.08max 0.02max  0.08max 0.06max 0.10max 0.03max 0.03max	2.00max 2.00max 2.00max  2.00max 2.00max 2.00max 1.00max  2.00max 4.00-6.00 7.00-9.00 2.00max 2.00max	0.045 0.045 0.045  0.045 0.030 0.045 0.030  0.045 0.030 0.060 0.045 0.045	0.030 0.030 0.030  0.030 0.030 0.030 0.010  0.030 0.030 0.030 0.030 0.030	1.00max 1.00max 1.00max  1.00max 1.00max 3.50-4.50 1.00max 1.00max	8.0-11.0 9.0-12.0 10.0-14.0  11.0-13.0 8.0-11.0 10.0-13.0 17.6-18.5  9.0-12.0 11.5-13.5 8.0-9.0 8.0-11.0 10.0-13.0	18.0-20.0 17.0-19.0 16.0-18.0  17.0-19.0 20.5-23.5 16.0-18.0 18.0-20.0 16.0-18.0	- - 2.00-3.00  - - - 6.00-6.50  - 1.50-3.00 - - 2.00-3.00	Nb+ta=10xc,min~1.10max    N 0.10-0.16 N 0.10-0.16 N 0.18-0.22 Cu 0.50-1.00  Ti=5X(C+N)min~0.70max N 0.2~0.4 Cu 0.1~0.3 V 0.1~0.3 N 0.08-0.18 N 0.10-0.16 N 0.10-0.16
A320-07 ●	B8,B8A B8C,B8CA B8T,B8TA B8P,B8PA B8F,B8FA  B8M,B8MA B8LN,B8LNA B8MLN,B8MLNA	304 347 321 S 30500 303 303Se 316 S 30453 S 31653	0.08max 0.08max 0.08max 0.08max 0.15max 0.15max 0.08max 0.03max 0.03max	2.00max 2.00max 2.00max 2.00max 2.00max 2.00max 2.00max 2.00max 2.00max	0.045 0.045 0.045 0.045 0.200 0.200 0.045 0.045 0.045	0.030 0.030 0.030 0.030 0.15min 0.060 0.030 0.030 0.030	1.00max 1.00max 1.00max 1.00max 1.00max 1.00max 1.00max 1.00max 1.00max	8.0-11.0 9.0-12.0 9.0-12.0 10.5-13.0 8.0-10.0 8.0-10.0 10.0-14.0 8.0-10.5 10.0-14.0	18.0-20.0 17.0-19.0 17.0-19.0 17.0-19.0 17.0-19.0 17.0-19.0 16.0-18.0 18.0-20.0 16.0-18.0	- - - - - - 2.00-3.00 - 2.00-3.00	Nb+ta=10xc,min ~1.10max Ti=5xX,min    Se=0.15-0.35   N 0.10-0.16 N 0.10-0.16
A453-03 ★	660 651 662 665	S 66286 S 63198 S 66220 S 66545	0.08max 0.28-0.35 0.08max 0.08max	2.00max 0.75-1.50 0.40-1.00 1.25-2.00	0.040 0.040 0.040 0.040	0.030 0.030 0.030 0.030	1.00max 0.30-0.80 0.40-1.00 0.10-0.80	24.0-27.0 8.0-11.0 24.0-28.0 24.0-28.0	13.5-16.0 18.0-21.0 12.0-15.0 12.0-15.0	1.00-1.50 1.00-1.75 2.0-3.5 1.25-2.25	Ti 1.90-2.35 Al 0.35max V0.10-0.50 B 0.001-0.01 Ti 1.00-1.75 Ti 0.10-0.35 Cu 0.25-0.60 Ti 1.80-2.10 Al 0.35max Cu 0.50max B 0.001-0.01 Ti 2.70-3.3 Al 0.25max Cu 0.25max B 0.01-0.07
A563-00	A	-	0.55max	-	0.12	0.15	-	-	-	-	
A194-06 ▲	2.2H, 2HM	-	0.40min	1.00max	0.040	0.050	0.40max	-	-	-	
A194-06 ▲	4	carbon, molyb	0.40-0.50	0.70-0.90	0.035	0.040	0.15-0.35	-	-	0.20-0.30	
A194-06 ▲	7.7M	AISI 4140/4142/ 4145/4140H/ 4142H/4145H	0.37-0.49	0.65-1.10	0.035	0.040	0.15-0.35	-	0.75-1.20	0.15-0.25	
A194-06 ▲	8.8A 8C,8CA 8M,8MA 8T,8TA 8F,8FA 8F,8FA	304 347 316 321 303 303se	0.08max 0.08max 0.08max 0.08max 0.15max 0.15max	2.00max 2.00max 2.00max 2.00max 2.00max 2.00max	0.045 0.045 0.045 0.045 0.20 0.20	0.030 0.030 0.030 0.030 0.15min 0.060	1.00max 1.00max 1.00max 1.00max 1.00max 1.00max	8.00-11.00 9.00-12.00 10.00-14.00 9.00-12.00 8.00-10.00 8.00-10.00	18.00-20.00 17.00-19.00 16.00-18.00 17.00-19.00 17.00-19.00 17.00-19.00	- - 2.00-3.00 - - -	Nb+Ta=10xC. Min   Ti=5X(C+N)min~ 0.70max  Se=0.15 min

● - FOR LOW TEMPERATURE SERVICE  
★ - FOR HIGH TEMPERATURE SERVICE  
▲ - NUTS FOR BOLTS FOR HIGH PRESSURE AND HIGH TEMPERATURE SERVICE

## 螺栓及螺母机械性能要求 MECHANICAL REQUIREMENTS FOR BOLTS AND NUTS

ATSM Specifications			Tensile strength min		Yield strength min, 0.2% offset		Elongation In 4D min %	Reduction OF Area min %	Hardness				Diameters		
SPEC.	CLASS	GRADE	Mpa	Ksi	Mpa	Ksi			Brinell		Rockwell B-C Scale				
									min	max	min	max			
A354-04	-	BC								255 235	331 311	26 22	36 33	1/4" - 2 1/2" >2 1/2"	
	-	BD								311 293	363 363	33 31	39 39	1/4" - 2 1/2" >2 1/2"	
A193-06a	4-6%Cr	B5	690	100	550	80	16	50						≤4"	
	13%Cr	B6	760	110	585	85	15	50						≤4"	
		B6X	620	90	485	70	16	50						≤4"	
	Cr-Mo	B7	860	125	720	105	16	50	321HB max			26HRC max		≤2 1/2"	
	Cr-Mo	B7M	690	100	550	80	18	50	235HB max			99HRB max		≤4"	
	Cr-Mo-V	B16	860	125	725	105	18	50	321HB max			35HRC max		≤2 1/2"	
A320-07	-	L7,L7A,L7B,L7C, L7O,L71,L72,L73	860	125	725	105	16	50						≤2 1/2"	
		L43	860	125	725	105	16	50	235HB max			99HRB max		≤4"	
		L7M	690	100	550	80	18	50						≤2 1/2"	
		L1	860	125	725	105	16	50						≤1"	
A540-06	CLASS 5	B21	825	120	725	105	15	50	241	285				≤2"	
		B22	825	120	725	105	15	50	248	293				≤2"	
		B23	825	120	725	105	15	50	248	311				≤2"	
		B24	825	120	725	105	15	50	248	311				≤2"	
A193-06a	CLASS 1&1D	B8,B8M,B8P B8LN,B8MLN									223HB max		96HRB max		
	CLASS 1	B8C,B8T	515	75	205	30	30	50			223HB max		96HRB max		
	CLASS 1A	B8A,B8CA,B8MA,B8PA,B8TA, B8LNA,B8MLNA,B8NA, B8MNA,B8MLCuNA									192HB max		90HRB max		
	CLASS 1B&1D	B8N,B8MN,B8MLCuN	550	80	240	35	30	40			223HB max		96HRB max		
	CLASS 1C&1D	B8R	690	100	380	55	35	55			271HB max		28HRC max		
	CLASS 1C	B8RA													
	CLASS 1C&1D	B8S	665	95	345	50	35	55			271HB max		28HRC max		
	CLASS 1C	B8SA													
CLASS 2	CLASS 2	B8,B8C,B8P,B8T,B8N, B8M,B8MN,B8MLCuN, B8,B8M2	860	125	690	100	12	35							≤3/4"
			760	110	655	95	15	45			321HB max		35HRC max		≤2"
			655	95	515	75	25	40							
A320-07	CLASS 1	B8,B8C,B8M,B8P,B8F,B8T,B8LN, B8MLN	515	75	205	30	30	50			223HB max		96HRB max		
	CLASS 1A	B8A,B8CA,B8MA,B8PA,B8FA,B8 TA,B8LNA, B8MLNA	515	75	205	30	30	50			192HB max		90HRB max		
	CLASS 2	B8,B8C,B8P,B8F,B8T	860	125	690	100	12	35							≤3/4"
			795	115	550	80	15	30			321HB max		35HRC max		3/4-1"
			725	105	450	65	20	35							1"-1 1/4"
			690	100	345	50	28	45							1 1/4" - 1 1/2"
			760	110	655	95	15	45							≤3/4"
			690	100	550	80	20	45			321HB max		35HRC max		3/4" - 1"
	B8M	655	95	450	65	25	45							1"-1 1/4"	
		620	90	345	50	30	45							1 1/4"-1 1/2"	
A453-03	CLASS A/B/C	660	895	130	585	85	15	18	248	341	24HRC	37HRC			
	CLASS D	660	895	130	725	105	15	18	248	321	24HRC	35HRC			
	CLASS A	651	690	100	485	70	18	35	217	277				≤3"	
		651	690	100	415	60	18	35	217	277	95HRB	29HRC		>3"	
	CLASS B	651	655	95	415	60	18	35	212	269	93HRB	28HRC		≤3"	
		651	655	95	345	50	18	35	212	269				>3"	
	CLASS A	662	895	130	585	85	15	18	248	321	24HRC	35HRC			
	CLASS B	662	860	125	550	80	15	18	248	321	24HRC	35HRC			
	CLASS A	665	1170	170	830	120	12	15	311	388	32HRC	41HRC			
	CLASS B	665	1070	155	830	120	12	15	311	388	32HRC	41HRC			

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SPEC.	CLASS	GRADE	Tensile strength min	Yield strength min, 0.2% offset	Elongation In 4D min %	Reduction OF Area min %	C Scale		B Scale		Diameters
							min	max	min	max	
A194-06		2 2H 2HM,7M 3,4,7,16 8,8C,8M,8T,8F,8P,8N 8A,8CA,8MA,8TA					159	352		84 min	
							248	327	24-35		
							159	235		84-99	
							248	327	24-35		
							126	300	32max.	60min.	
							126	192		60-90	

# 法兰用螺栓尺寸对照表

## DIMENSIONS OF FLANGE BOLTS (ANSI B16.5)

Unit: Inch

Nom. Pipe Size 法兰尺寸	150 LB						300 LB						600 LB						900 LB						1500 LB						2500 LB					
	No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Machine Bolts Length 双头螺栓长度			No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Machine Bolts Length 双头螺栓长度			No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Stud Bolts Length 双头螺栓长度			No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Stud Bolts Length 双头螺栓长度			No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Stud Bolts Length 双头螺栓长度			No. of Holes 法兰孔数	Diam. of Bolts 螺栓直径	Stud Bolts Length 双头螺栓长度								
			0.06" Raised Face RF 面	0.06" Raised Face RF 面	Ring Joint RTJ 面			0.06" Raised Face RF 面	0.06" Raised Face RF 面	Ring Joint RTJ 面			0.25" Raised Face RF 面	Male-Female Tongue-Groove 凹凸面舌槽面	Ring Joint RTJ 面			0.25" Raised Face RF 面	Male-Female Tongue-Groove 凹凸面舌槽面	Ring Joint RTJ 面			0.25" Raised Face RF 面	Male-Female Tongue-Groove 凹凸面舌槽面	Ring Joint RTJ 面			0.25" Raised Face RF 面	Male-Female Tongue-Groove 凹凸面舌槽面	Ring Joint RTJ 面						
1/2	4	1/2	2.00	2.25	-	4	1/2	2.25	2.50	3.00	4	1/2	3.00	2.75	3.00	4	3/4	4.25	4.00	4.25	4	3/4	4.25	4.00	4.25	4	3/4	4.75	4.50	4.75						
3/4	4	1/2	2.00	2.50	-	4	5/8	2.50	3.00	3.50	4	5/8	3.50	3.25	3.50	4	3/4	4.50	4.25	4.50	4	3/4	4.50	4.25	4.50	4	3/4	5.00	4.75	5.00						
1	4	1/2	2.25	2.50	3.00	4	5/8	2.50	3.00	3.50	4	5/8	3.50	3.25	3.50	4	7/8	5.00	4.75	5.00	4	7/8	5.00	4.75	5.00	4	7/8	5.50	5.25	5.50						
1 1/4	4	1/2	2.25	2.75	3.25	4	5/8	2.75	3.25	3.75	4	5/8	3.75	3.50	3.75	4	7/8	5.00	4.75	5.00	4	7/8	5.00	4.75	5.00	4	1	6.00	5.75	6.00						
1 1/2	4	1/2	2.50	2.75	3.25	4	3/4	3.00	3.50	4.00	4	3/4	4.25	4.00	4.25	4	1	5.50	5.25	5.50	4	1	5.50	5.25	5.50	4	1 1/8	6.75	6.50	6.75						
2	4	5/8	2.75	3.25	3.75	8	5/8	3.00	3.50	4.00	8	5/8	4.25	4.00	4.25	8	7/8	5.75	5.50	5.75	8	7/8	5.75	5.50	5.75	8	1	7.00	6.75	7.00						
2 1/2	4	5/8	3.00	3.50	4.00	8	3/4	3.25	4.00	4.50	8	3/4	4.75	4.50	4.75	8	1	6.25	6.00	6.25	8	1	6.25	6.00	6.25	8	1 1/8	7.75	7.50	8.00						
3	4	5/8	3.00	3.50	4.00	8	3/4	3.50	4.25	4.75	8	3/4	5.00	4.75	5.00	8	7/8	5.75	5.50	5.75	8	1 1/8	7.00	6.75	7.00	8	1 1/4	8.75	8.50	9.00						
3 1/2	8	5/8	3.00	3.50	4.00	8	3/4	3.75	4.25	5.00	8	7/8	5.50	5.25	5.50																					
4	8	5/8	3.00	3.50	4.00	8	3/4	3.75	4.50	5.00	8	7/8	5.75	5.50	5.75	8	1 1/8	6.75	6.50	6.75	8	1 1/4	7.75	7.50	7.75	8	1 1/2	10.00	9.75	10.25						
5	8	3/4	3.25	3.75	4.25	8	3/4	4.25	4.75	5.25	8	1	6.50	6.25	6.50	8	1 1/4	7.50	7.25	7.50	8	1 1/2	9.75	9.50	9.75	8	1 3/4	11.75	11.50	12.25						
6	8	3/4	3.25	4.00	4.50	12	3/4	4.25	4.75	5.50	12	1	6.75	6.50	6.75	12	1 1/8	7.50	7.25	7.75	12	1 3/8	10.25	10.00	10.50	8	2	13.50	13.25	14.00						
8	8	3/4	3.50	4.25	4.75	12	7/8	4.75	5.50	6.00	12	1 1/8	7.50	7.25	7.75	12	1 3/8	8.75	8.50	8.75	12	1 5/8	11.50	11.25	12.75	12	2	15.00	14.75	15.50						
10	12	7/8	4.00	4.50	5.00	16	1	5.50	6.25	6.75	16	1 1/4	8.50	8.25	8.50	16	1 3/8	9.25	9.00	9.25	12	1 7/8	13.25	13.00	13.50	12	2 1/2	19.25	19.00	20.00						
12	12	7/8	4.00	4.75	5.25	16	1 1/8	5.75	6.75	7.25	20	1 1/4	8.75	8.50	8.75	20	1 3/8	10.00	9.75	10.00	16	2	14.75	14.50	15.25	12	2 3/4	21.25	21.00	22.00						
14	12	1	4.50	5.25	5.75	20	1 1/8	6.25	7.00	7.50	20	1 3/8	9.25	9.00	9.25	20	1 1/2	10.75	10.50	11.00	16	2 1/4	16.00	15.75	16.75											
16	16	1	4.50	5.25	5.75	20	1 1/4	6.50	7.50	8.00	20	1 1/2	10.00	9.75	10.00	20	1 5/8	11.25	11.00	11.50	16	2 1/2	17.50	17.25	18.50											
18	16	1 1/8	5.00	5.75	6.25	24	1 1/4	6.75	7.75	8.25	20	1 5/8	10.75	10.50	10.75	20	1 7/8	12.75	12.50	13.25	16	2 3/4	19.50	19.25	20.75											
20	20	1 1/8	5.50	6.25	6.75	24	1 1/4	7.25	8.00	8.75	24	1 5/8	11.25	11.00	11.50	20	2	13.75	13.50	14.25	16	3	21.25	21.00	22.25											
24	20	1 1/4	6.00	6.75	7.25	24	1 1/2	8.00	9.00	10.00	24	1 7/8	13.00	12.75	13.25	20	2 1/2	17.25	17.00	18.00	16	3 1/2	24.25	24.00	25.50											

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Length of stud bolt does not include the height of the chamfered part.  
双头螺栓长度不包括倒角高度

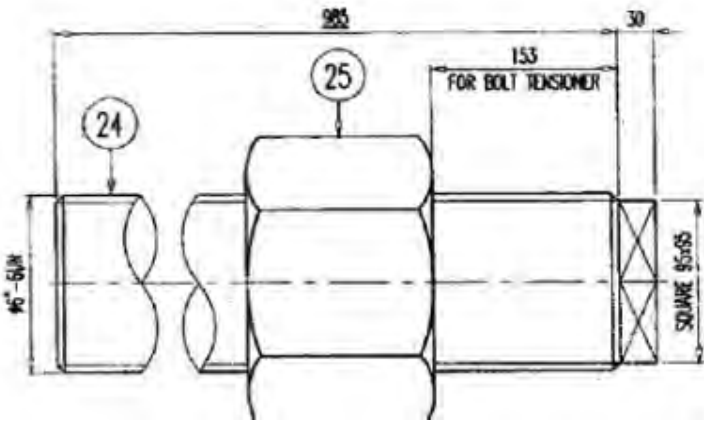
法兰尺寸 >24" 时

螺栓直径 = 螺栓孔直径 -3mm

RF 面法兰 螺栓长度 = 2x 法兰厚度 + 3mm + 2x 螺栓直径 + 1/2"

RTJ 面法兰 螺栓长度 = 2x 法兰厚度 + RTJ 高度 + 3x 螺栓直径

双头螺栓重量计算公式: 直径 x 直径 x 0.17 x 长度 / 1000 x 1.1 = 干件重量 (KG)



STUD BOLT WITH 1 NUT SIZE: 6"-6UN X 985MM+30MM LG MATERIAL: A193 GR.B16 / A194 GR.4



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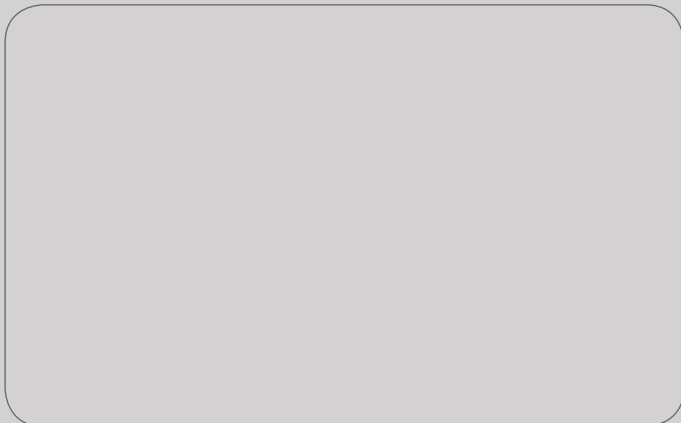
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