

**MAY 2025**

**CONVERSION CHART  
WEIGHT COUNT  
SPECIFICATION LIST  
DIMENSION DETAILS  
TECHNICAL DATA**



• E S T A B L I S H E D - 1 9 6 4 •

**M. OCHHAVLAL & CO.**

📍 124, Narayan Dhuru Street, Ground Floor, Nagdevi Area, Mumbai - 400 003, Maharashtra, India

📞 022-4616 6211 / 4616 6212 / 4616 6213 / 4616 6214 📩 mochhavlal@hotmail.com

Prakash Shah : +91 98210 96314 | Vishal Shah : +91 98701 03656

GSTIN : 27AAAFM3904F1ZN



ESTABLISHED - 1964

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## CONVERSION OF INCHES TO MILLIMETRES

INCH		0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
Inches	Decimal	Millimeters (mm)									
0	0	--	25.400	50.800	76.200	101.600	127.000	152.400	177.800	203.200	228.600
1/64	0.015	0.397	25.797	51.197	76.597	101.997	127.397	152.797	178.197	203.597	228.997
1/32	0.031	0.794	26.194	51.594	76.994	102.394	127.794	153.194	178.594	203.994	229.394
3/64	0.046	1.191	26.591	51.991	77.391	102.791	128.191	153.591	178.991	204.391	229.791
1/16	0.062	1.588	26.988	52.388	77.788	103.188	128.588	153.988	179.388	204.788	230.188
5/64	0.078	1.984	27.384	52.784	78.184	103.584	128.984	154.384	179.784	205.184	230.584
3/32	0.093	2.381	27.781	53.181	78.581	103.981	129.381	154.781	180.181	205.581	230.981
7/64	0.109	2.778	28.178	53.578	78.978	104.378	129.778	155.178	180.578	205.978	231.378
1/8	0.125	3.175	28.575	53.975	79.375	104.775	130.175	155.575	180.975	206.375	231.775
9/64	0.140	3.572	28.972	54.372	79.772	105.172	130.572	155.972	181.372	206.772	232.172
5/32	0.156	3.969	29.369	54.769	80.169	105.569	130.969	156.369	181.769	207.169	232.569
11/64	0.171	4.366	29.766	55.166	80.566	105.966	131.366	156.766	182.166	207.566	232.966
3/16	0.187	4.762	30.162	55.562	80.962	106.362	131.762	157.162	182.562	207.962	233.362
13/64	0.203	5.159	30.559	55.959	81.359	106.759	132.159	157.559	182.959	208.359	233.759
7/32	0.218	5.556	30.956	56.356	81.756	107.156	132.556	157.956	183.356	208.756	234.156
15/64	0.234	5.953	31.353	56.753	82.153	107.553	132.953	158.353	183.753	209.153	234.553
1/4	0.250	6.350	31.750	57.150	82.550	107.950	133.350	158.750	184.150	209.550	234.950
17/64	0.265	6.747	32.147	57.547	82.947	108.347	133.747	159.147	184.547	209.947	235.347
9/32	0.281	7.144	32.544	57.944	83.344	108.744	134.144	159.544	184.944	210.344	235.744
19/64	0.296	7.541	32.941	58.341	83.741	109.141	134.541	159.941	185.341	210.741	236.141
5/16	0.312	7.938	33.338	58.738	84.138	109.538	134.938	160.338	185.738	211.138	236.538
21/64	0.328	8.334	33.734	59.134	84.534	109.934	135.334	160.734	186.134	211.534	236.934
11/32	0.343	8.731	34.131	59.531	84.931	100.331	135.731	161.131	186.531	211.931	237.331
23/64	0.359	9.128	34.528	59.928	85.328	110.728	136.128	161.528	186.928	212.328	237.728
3/8	0.375	9.525	34.925	60.325	85.725	111.125	136.525	161.925	187.325	212.725	238.125
25/64	0.390	9.922	35.322	60.722	86.122	111.522	136.922	162.322	187.722	213.122	238.522
13/32	0.406	10.319	35.719	61.119	86.519	111.919	137.319	162.719	188.119	213.519	238.919
27/64	0.421	10.716	36.116	61.516	86.916	112.316	137.716	163.116	188.516	213.916	239.316
7/16	0.437	11.112	36.512	61.912	87.312	112.712	138.112	163.512	188.912	214.312	239.712
29/64	0.453	11.509	36.909	62.309	87.709	113.109	138.509	163.909	189.309	214.709	240.109
15/32	0.468	11.906	37.306	62.706	88.106	113.506	138.906	164.306	189.706	215.106	240.506
31/64	0.484	12.303	37.703	63.103	88.503	113.903	139.303	164.703	190.103	215.503	240.903
1/2	0.500	12.700	38.100	63.500	88.900	114.300	139.700	165.100	190.500	215.900	241.300
33/64	0.515	13.097	38.497	63.897	89.297	114.697	140.097	165.497	190.897	216.297	241.697
17/32	0.531	13.494	38.894	64.294	89.694	115.094	140.494	165.894	191.294	216.694	242.094
35/64	0.546	13.891	39.291	64.691	90.091	115.491	140.891	166.291	191.691	217.091	242.491
9/16	0.562	14.288	39.688	65.088	90.488	115.888	141.288	166.688	192.088	217.488	242.888
37/64	0.578	14.684	40.084	65.484	90.884	116.284	141.684	167.084	192.484	217.884	243.284
19/32	0.593	15.081	40.481	65.881	91.281	116.681	142.081	167.481	192.881	218.281	243.681
39/64	0.609	15.478	40.878	66.278	91.678	117.078	142.478	167.878	193.278	218.678	244.078
5/8	0.625	15.875	41.275	66.675	92.075	117.475	142.875	168.275	193.675	219.075	244.475
41/64	0.640	16.272	41.672	67.072	92.472	117.872	143.272	168.672	194.072	219.472	244.872
21/32	0.656	16.669	42.069	67.469	92.869	118.269	143.669	169.069	194.469	219.869	245.269
43/64	0.671	17.066	42.466	67.866	93.266	118.666	144.066	169.466	194.866	220.266	245.666
11/16	0.687	17.462	42.862	68.262	93.662	119.062	144.462	169.862	195.262	220.662	246.062
45/64	0.703	17.859	43.259	68.659	94.059	119.459	144.859	170.259	195.659	221.059	246.459
23/32	0.718	18.256	43.656	69.056	94.456	119.856	145.256	170.656	196.056	221.456	246.856
47/64	0.734	18.653	44.053	69.453	94.853	120.253	145.653	171.053	196.453	221.853	247.253
3/4	0.750	19.050	44.450	69.850	95.250	120.650	146.050	171.450	196.850	222.250	247.650
49/64	0.765	19.447	44.847	70.247	95.647	121.047	146.447	171.847	197.247	222.647	248.047
25/32	0.781	19.844	45.244	70.644	96.044	121.444	146.844	172.244	197.644	223.044	248.444
51/64	0.796	20.241	45.641	71.041	96.441	121.841	147.241	172.641	198.041	223.441	248.841
13/16	0.812	20.638	46.038	71.438	96.838	122.238	147.638	173.038	198.438	223.838	249.238
53/64	0.828	21.034	46.434	71.834	97.234	122.634	148.034	173.434	198.834	224.234	249.634
27/32	0.843	21.431	46.831	72.231	97.631	123.031	148.431	173.831	199.231	224.631	250.031
55/64	0.859	21.828	47.228	72.628	98.028	123.428	148.828	174.228	199.628	225.028	250.428
7/8	0.875	22.225	47.625	73.025	98.425	123.825	149.225	174.625	200.025	225.425	250.825
57/64	0.890	22.622	48.022	73.422	98.822	124.222	149.622	175.022	200.422	225.822	251.222
29/32	0.906	23.019	48.419	73.819	99.219	124.619	150.019	175.419	200.819	226.219	251.619
59/64	0.921	23.416	48.816	74.216	99.616	125.016	150.416	175.816	201.216	226.616	252.016
15/16	0.937	23.812	49.212	74.612	100.012	125.412	150.812	176.212	201.612	227.012	252.412
61/64	0.953	24.209	49.609	75.009	100.409	125.809	151.209	176.609	202.009	227.409	252.809
31/32	0.968	24.606	50.006	75.406	100.806	126.206	151.606	177.006	202.406	227.806	253.206
63/64	0.984	25.003	50.403	75.803	101.203	126.603	152.003	177.403	202.803	228.203	253.603

10 in. = 254 mm

## MILLIMETERS TO INCHES (IN DECIMAL) (Range : 1 to 500 mm)

MM	0 in	1 in	2 in	3 in	4 in	5 in	6 in	7 in	8 in	9 in
0	0	0.039	0.078	0.118	0.157	0.196	0.236	0.275	0.314	0.354
10	0.393	0.433	0.472	0.511	0.551	0.590	0.629	0.669	0.708	0.748
20	0.787	0.826	0.866	0.905	0.944	0.984	1.023	1.062	1.102	1.141
30	1.181	1.220	1.259	1.299	1.338	1.377	1.417	1.456	1.496	1.535
40	1.574	1.614	1.653	1.692	1.732	1.771	1.811	1.850	1.889	1.929
50	1.968	2.007	2.047	2.086	2.125	2.165	2.204	2.244	2.283	2.322
60	2.362	2.401	2.440	2.480	2.519	2.559	2.598	2.637	2.677	2.716
70	2.755	2.795	2.834	2.874	2.913	2.952	2.992	3.031	3.070	3.110
80	3.149	3.188	3.228	3.267	3.307	3.346	3.385	3.425	3.464	3.503
90	3.543	3.582	3.622	3.661	3.700	3.740	3.779	3.818	3.858	3.897
100	3.937	3.976	4.015	4.055	4.094	4.133	4.173	4.212	4.251	4.291
110	4.330	4.370	4.409	4.448	4.488	4.527	4.566	4.606	4.645	4.685
120	4.724	4.763	4.803	4.842	4.881	4.921	4.960	5.000	5.039	5.078
130	5.118	5.157	5.196	5.236	5.275	5.314	5.354	5.393	5.433	5.472
140	5.511	5.551	5.590	5.629	5.669	5.708	5.748	5.787	5.826	5.866
150	5.905	5.944	5.984	6.023	6.062	6.102	6.141	6.181	6.220	6.259
160	6.299	6.338	6.377	6.417	6.456	6.496	6.535	6.574	6.614	6.653
170	6.692	6.732	6.771	6.811	6.850	6.889	6.929	6.968	7.007	7.047
180	7.086	7.125	7.165	7.204	7.244	7.283	7.322	7.362	7.401	7.440
190	7.480	7.519	7.559	7.598	7.637	7.677	7.716	7.755	7.795	7.834
200	7.874	7.913	7.952	7.992	8.031	8.070	8.110	8.149	8.188	8.228
210	8.267	8.307	8.346	8.385	8.425	8.464	8.503	8.543	8.582	8.622
220	8.661	8.700	8.740	8.779	8.818	8.858	8.897	8.937	8.976	9.015
230	9.055	9.094	9.133	9.173	9.212	9.251	9.291	9.330	9.370	9.409
240	9.448	9.488	9.527	9.566	9.606	9.645	9.685	9.724	9.763	9.803
250	9.842	9.881	9.921	9.960	10.000	10.039	10.078	10.118	10.157	10.196
260	10.236	10.275	10.314	10.354	10.393	10.433	10.472	10.511	10.551	10.590
270	10.629	10.669	10.708	10.748	10.787	10.826	10.866	10.905	10.944	10.984
280	11.023	11.062	11.102	11.141	11.181	11.220	11.259	11.299	11.338	11.377
290	11.417	11.456	11.496	11.535	11.574	11.614	11.653	11.692	11.732	11.771
300	11.811	11.850	11.889	11.929	11.968	12.007	12.047	12.086	12.125	12.165
310	12.204	12.244	12.283	12.322	12.362	12.401	12.440	12.480	12.519	12.559
320	12.598	12.637	12.677	12.716	12.755	12.795	12.834	12.874	12.913	12.952
330	12.992	13.031	13.070	13.110	13.149	13.188	13.228	13.267	13.307	13.346
340	13.385	13.425	13.464	13.503	13.543	13.582	13.622	13.661	13.700	13.740
350	13.779	13.818	13.858	13.897	13.937	13.976	14.015	14.055	14.094	14.133
360	14.173	14.212	14.251	14.291	14.330	14.370	14.409	14.448	14.488	14.527
370	14.566	14.606	14.645	14.685	14.724	14.763	14.803	14.842	14.881	14.921
380	14.960	15.000	15.039	15.078	15.118	15.157	15.196	15.236	15.275	15.314
390	15.354	15.393	15.433	15.472	15.511	15.551	15.590	15.629	15.669	15.708
400	15.748	15.787	15.826	15.866	15.905	15.944	15.984	16.023	16.062	16.102
410	16.141	16.181	16.220	16.259	16.299	16.338	16.377	16.417	16.456	16.496
420	16.535	16.574	16.614	16.653	16.692	16.732	16.771	16.811	16.850	16.889
430	16.929	16.968	17.007	17.047	17.086	17.125	17.165	17.204	17.244	17.283
440	17.322	17.362	17.401	17.440	17.480	17.519	17.559	17.598	17.637	17.677
450	17.716	17.755	17.795	17.834	17.874	17.913	17.952	17.992	18.031	18.070
460	18.110	18.149	18.188	18.228	18.267	18.307	18.346	18.385	18.425	18.464
470	18.503	18.543	18.582	18.622	18.661	18.700	18.740	18.779	18.818	18.858
480	18.897	18.937	18.976	19.015	19.055	19.094	19.133	19.173	19.212	19.251
490	19.291	19.330	19.370	19.409	19.448	19.488	19.527	19.566	19.606	19.645
500	19.685	19.724	19.763	19.803	19.842	19.881	19.921	19.960	20.000	20.039

## M.S. HEX HALF THREAD BOLTS WITH NUTS - BS : 916/53

DIMENSIONS IN INCHES

APPOROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R													
	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"	1.1/8"	1.1/4"	1.1/2"	1.3/4"	2"
3/4"	4500													
1"	3994	2450	1601	1010										
1.1/4"	3568	2192	1446	928	650	358								
1.1/2"	3213	1982	1317	851	602	335	210	171						
1.3/4"	2932	1810	1210	790	562	314	198	161	111					
2"	2682	1665	1119	736	526	295	186	153	105					
2.1/4"	2494	1541	1036	690	494	279	177	145	99	71				
2.1/2"	2316	1435	972	649	467	265	168	136	95	68	51	32	22	16
3"	2033	1261	860	580	419	239	154	124	88	63	47	30	20	15
3.1/2"	1810	1125	771	524	381	219	140	114	82	59	44	28	20	15
4"	1626	1015	699	478	349	201	130	103	75	55	42	27	18	14
4.1/2"	1485	925	640	440	322	186	122	97	72	51	39	26	18	13
5"	1368	847	590	407	298	173	114	91	65	49	37	24	17	13
5.1/2"	1267	783	547	380	279	162	106	85	61	46	34	22	15	12
6"	1180	728	510	355	261	153	99	79	58	43	32	21	14	12
7"					240	144	93	68	52	39	29	20	13	10
8"					212	130	86	63	47	35	27	18	12	9
9"					193	117	77	57	43	32	25	16	11	9
10"					174	105	70	52	40	30	23	15	11	8
11"					160	99	66	48	37	28	21	14	10	7
12"					149	93	62	44	34	26	20	13	9	7
14"					130	82	54	40	30	23	18	12	8	6
16"					115	73	48	35	27	21	16	10	7	5
18"					103	65	44	32	24	19	15	9	7	5
20"					93	59	40	29	22	17	13	8	6	4

## M.S. HEX FULL THREAD BOLTS WITH NUTS - BS : 916/53

DIMENSIONS IN INCHES

APPOROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R												
	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"	1.1/8"	1.1/4"	1.1/2"
1/4"	15440												
3/8"	14115	6077											
1/2"	12753	5693	3522										
5/8"	11987	5276	3310	2122									
3/4"	11074	4962	3069	1990	1192	798							
1"	10040	4389	2772	1735	1076	747	410						
1.1/4"	8569	3977	2513	1583	1001	696	385	238	182				
1.1/2"	7773	3636	2298	1455	932	650	363	226	171	119			
1.3/4"	7326	3348	2117	1346	867	611	344	214	162	113			
2"	6731	3103	1962	1253	814	576	327	204	154	108			
2.1/4"	6112	2891	1830	1172	766	544	310	195	147	104			
2.1/2"	5613	2706	1712	1100	725	516	296	187	140	99	53		
3"	4949	2400	1518	981	654	468	271	171	129	92	67	50	30
3.1/2"	4490	2155	1365	884	596	428	249	159	117	85	62	47	
4"	4098	1956	1238	806	547	394	231	148	112	79	57	44	27
4.1/2"		1791	1134	739	505	366	216	138	103	75	54	42	
5"		1653	1047	684	469	341	202	129	96	70	51	39	24
6"		1433	907	593	412	300	179	116	85	62	46	35	22
7"				516		264	161	105	76	57		31	
8"				466		238	147	95	69	52		29	18
9"				418		220	135	87	64	48		27	
10"				388		202	122	81	59	44		26	
11"						188	113	75	56	41		23	
12"						173	105	68	53	38		22	

## M.S. HEX HALF THREAD BOLTS ONLY (WITHOUT NUTS) - BS : 916/53

DIMENSIONS IN INCHES

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R													
	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"	1.1/8"	1.1/4"	1.1/2"	1.3/4"	2"
3/4"	6835													
7/8"	6290	3570												
1"	5760	3380	2520											
1.1/4"	4670	2920	2155	1200	965	568								
1.1/2"	4310	2570	1880	1090	862	510	324							
1.3/4"	3825	2290	1665	1000	780	463	303	228						
2"	3430	2075	1495	928	713	423	279	210	149					
2.1/4"	3120	1890	1360	863	655	390	258	194	138					
2.1/2"	2855	1740	1245	807	607	362	240	181	129	98	74	48	33	23
3"	2450	1495	1065	713	530	316	211	159	116	87	66	44	30	21
3.1/2"	2140	1310	930	640	470	281	188	142	102	78	59	40	27	20
4"	1900	1170	825	580	420	251	170	127	93	71	55	37	25	18
4.1/2"	1710	1052	743	530	380	236	160	117	88	65	51	35	23	17
5"	1560	960	675	488	340	216	147	107	78	61	47	31	21	16
6"	1310	813	572	422	305	185	126	91	69	53	40	27	18	14
7"			495		275	163	107	77	61	45	36	24	16	13
8"			438		230	146	99	74	55	41	33	21	15	11
9"			390		215	130	85	65	49	39	30	19	13	10
10"			350		200	115	79	59	44	36	27	18	12	9
11"					179	108	74	54	41	33	25	17	12	9
12"			290		159	101	69	50	38	31	24	16	11	8
14"					139	88	60	44	33	26	21	14	10	7
16"					120	77	53	38	29	23	18	12	9	6
18"					110	69	47	34	26	21	16	11	8	
20"					100	62	42	31	23	19	14	10	7	

## M.S. HEX FULL THREAD BOLTS ONLY (WITHOUT NUTS) - BS : 916/53

DIMENSIONS IN INCHES

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R													
	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"	1.1/8"	1.1/4"	1.1/2"	2"
1/4"	26200													
3/8"	22600	10000												
1/2"	19300	9000	5500	3360										
5/8"	17600	8000	5000	3250										
3/4"	15700	7300	4470	2950	1785	1240								
1"	13700	6124	3868	2423	1537	1120	640							
1.1/4"	11100	5351	3382	2137	1389	1009	582	365	267					
1.1/2"	9800	4752	3004	1910	1260	917	533	337	245	174				
1.3/4"	9100	4272	2702	1727	1143	841	492	312	226	162				
2"	8200	3882	2455	1577	1053	776	458	291	211	153				
2.1/4"	7300	3556	2251	1451	975	720	427	273	199	144				
2.1/2"	6600	3280	2076	1342	909	672	401	257	187	135		75		
3"	5700	2841	1798	1169	800	592	356	229	167	122	91	70	44	
3.1/2"	5100	2505	1587	1035	715	530	320	207	148	111	82	64		
4"	4600	2240	1418	929	646	479	291	189	140	101	74	59	37	20
4.1/2"		2026	1284	842	589	438	267	173	127	94	69	55		
5"		1852	1174	771	541	403	246	160	116	87	64	51	32	17
6"		1580	1001	658	466	347	214	140	101	76	56	44	29	15
7"				565		300	188	125	89	68		39		
8"				505		268	170	111	80	61		35	23	12
9"				450		245	154	101	73	56		33		
10"				415		223	138	93	67	51		31	20	10
11"						206	127	85	63	47		28		
12"						189	117	77	59	44		26	18	

## M.S. HEX HALF THREAD BOLTS WITH NUTS IS:1363/67 - DIN:601/70 & 555/72 - BS:4190/67

DIMENSIONS IN METRIC

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R									
	M 5	M 6	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22
16 mm	11160	6729	3144	1557						
20 mm	8361	6157	2923	1466	1022					
25 mm	7575	5574	2673	1366	952	612				
30 mm	6784	4950	2415	1278	897	516	467		268	
35 mm	6218	4464	2202	1184	837	500	438	312	255	
40 mm	5675	4065	2024	1103	780	486	413	300	241	
45 mm	5219	3731	1872	1033	729	476	390	290	230	
50 mm	4854	3448	1742	970	685	444	367	280	220	176
55 mm		3205	1628	915	646	430	347	265	210	166
60 mm		2994	1529	866	611	408	328	250	199	156
65 mm		2808	1440	822	580	396	312	238	189	147
70 mm		2645	1362	782	552	385	297	226	180	141
75 mm		2500	1291	746	526	378	284	215	172	128
80 mm		2369	1228	713	500	360	274	204	165	125
90 mm			1118	655	458	335	252	192	151	120
100 mm			1026	606	423	306	233	180	140	108
110 mm				563	393	282	217	160	131	106
120 mm					526	367	266	203	152	122
130 mm					495	344	250	190	144	115
140 mm					467	324	240	179	141	108
150 mm					442	306	225	170	133	103
160 mm					420	290	206	161	122	99
170 mm					400	276		153		94
180 mm					381	263	186	146		90
190 mm					364	251		139		86
200 mm					349	240	169	133	102	82
220 mm					322	221		123		76
240 mm					299	204		114		70
250 mm					289	197		110	86	67
260 mm					279	190		106		65
280 mm					261	178		99		61
300 mm					246	167		93		57
320 mm						158		88		54
340 mm						149		83		51
360 mm						142		79		48
380 mm						135		75		46
400 mm						128		72		44

## M.S. HEX HALF THREAD BOLTS WITH NUTS IS:1363/67 - DIN:601/70 & 555/72 - BS:4190/67

DIMENSIONS IN METRIC

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R													
	M 24	M 27	M 30	M 33	M 36	M 39	M 42	M 45	M 48	M 52	M 56	M 60	M 64	M 72
60 mm	118	87	71											
65 mm	114	84	66											
70 mm	110	82	61											
75 mm	106	79	59											
80 mm	102	76	57	46	37									
90 mm	95	71	53	43	35									
100 mm	89	67	50	40	32	26	23							
110 mm	83	63	48	38	30	25	21							
120 mm	79	60	46	37	29	24	20	16						
130 mm	75	57	44	35	28	23	19		14					
140 mm	72	54	42	33	27	22	18			13				
150 mm	68	51	40	32	26	21	17	15						
160 mm	65	49	38	30	25	20	17		12			7		
170 mm	62	47	36	29	24	19	16			10	8		6	
180 mm	60	45	35	28	23	19	16	14	11					
190 mm	57	43	34	27	22	18	15							
200 mm	55	42	33	26	21	17	15	13		9				
220 mm	51	39	30	24	20	16	14		10		7	6		4
240 mm	47	36	28	23	18	15	13	12		8			5	
250 mm	45	35	27	22	17	15	13		9					
260 mm	44	34	27	22	16	14	12							
280 mm	42	32	25	20	16	14	12	11		6	5			
300 mm	39	30	24	19	15	13	11		8	7			4	3
320 mm	37	28	23	18										
340 mm	35	27	21	17										
360 mm	34	26	20	17										
380 mm	32	25	20	16										
400 mm	31	23	19	15										

## M.S. HEX FULL THREAD BOLTS WITH NUTS

DIMENSIONS IN METRIC

APPROX COUNT PER 50 KGS.

LENGTH	D	I	A	M	E	T	E	R						
	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 10	M 12	M 14	M 16	M 18		
3 mm	160771													
4 mm	155762	62108												
5 mm	146627	58476	25839											
6 mm	138503	55863	24936	15196	8740	5972								
8 mm	124687	50758	23094	14325	8249	5635	3738							
10 mm	113378	46509	21597	13368	7811	5334	3591							
12 mm	106156	42916	20201	12561	7417	5069	3419	1699	1153					
16 mm	94161	37592	18017	11159	6728	4628	3139	1591	1083					
20 mm		33110	16206	10039	6156	4218	2920	1496	1021					
25 mm		28900	14387	8927	5573	3833	2670	1391	951	648	494	354		
30 mm			12935	8037	5085	3485	2459	1301	890	609	463	333		
35 mm				11777	7309	4676	3216	2279	1221	836	574	436		
40 mm					10786	6701	4328	2968	2124	1151	788	543		
45 mm						9969	6172	4024	2770	1989	1088	746		
50 mm							9249	5746	3752	2584	1877	1031		
55 mm								8627	5364	3515	2432	1770		
60 mm									8095	5029	3328	2298		
65 mm										7614	4734	3139		
70 mm											7187	4459		
75 mm												4232		
80 mm													4027	
85 mm													2587	
90 mm													2472	
100 mm													2279	
110 mm													2118	
120 mm													1829	
130 mm													1745	
140 mm													1660	
150 mm													1575	
160 mm														498
170 mm														481
180 mm														444
190 mm														294
200 mm														411
225 mm														259
250 mm														339
260 mm														
280 mm														
300 mm														203
														106

## M.S. HEX FULL THREAD BOLTS WITH NUTS

DIMENSIONS IN METRIC

APPOROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R											
	M 20	M 22	M 24	M 27	M 30	M 33	M 36	M 39	M 42	M 45	M 48	M 52
12 mm												
16 mm												
20 mm												
25 mm	267											
30 mm	253											
35 mm	240	197										
40 mm	229	188	143									
45 mm	219	179	137									
50 mm	208	171	131	93	69	54						
55 mm	200	163	127	89	67	52						
60 mm	192	157	122	87	65	51	40	31	27		18	
65 mm	185	151	117	83	63	49	38	31	26	21		14
70 mm	178	145	113	81	61	48	37	30			17	
75 mm	172	140	109	78	59	46	36	28	25	20		
80 mm	165	135	106	76	57	45	35	28				
85 mm	160	131	103	74	56	44	34	27	24	19	16	13
90 mm	155	126	100	72	54	43	33	26	23			
100 mm	145	118	94	68	52	41	32	25	22	18	15	12
110 mm	137	111	89	64	49	39	30	24	21	17		
120 mm	130	105	84	61	47	37	29	24	20		14	
130 mm	122	100	80	58	45	35	28	22		16	13	11
140 mm	117	95	76	56	43	34	27	21	19	15		
150 mm	111	90	73	53	41	33	26	20	18			
160 mm	106	87	70	51	39	31	25	20			12	10
170 mm	102	83	67	49	38	30	24	19	17	14		
180 mm	98	80	63	47	37	28	23	19				9
190 mm	94	76	62	45	35	28	22	18	16			
200 mm	91	73	59	44	34	27	22	17	15	13	11	8
225 mm	83		54		32							
250 mm	76		50		29							
300 mm	64		44		26							

## M.S. HEX FULL THREAD BOLTS ONLY (WITHOUT NUTS)

DIMENSIONS IN METRIC

APPOROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R												
	M 1.6	M 2	M 2.5	M 2.6	M 3	M 3.5	M 4	M 5	M 6	M 7	M 8	M 10	
3 mm	476190	248756	135135	130548									
4 mm	434782	236966	125000	121065	105263								
5 mm	400000	216450	116279	112866	95238	59523	39682						
6 mm	370370	199203	108695	105708	88495	55555	37593	22935	14705	9208			
8 mm	322580	171821	96153	92081	76335	49019	33557	21008	13368	8431	5847		
10 mm	285714	151057	86206	82918	67114	43859	30487	19011	12254	7776	5494		
12 mm	256410	138504	78125	74294	59880	39682	27777	17421	11312	7225	5102	2604	
16 mm		118764	65789	62034	50000	33333	23809	14836	9784	6361	4504	2358	
20 mm			56818	53590	42372	28901	20746	12919	8620	5611	4065	2155	
25 mm				49019	45871	35714	24630	17857	11135	7518	4950	3597	1945
30 mm							15673	9784	6657	4385	3225	1773	
35 mm						27000		14005	8726	5973	3968	2923	1628
40 mm							12626	7874	5417	3597	2673	1506	
45 mm							11520	7153	4950	3311	2463	1400	
50 mm						20800	10570	6587	4545	3048	2293	1308	
55 mm							9765	6090	4201	2840	2136	1228	
60 mm							9090	5662	3937	2659	2000	1154	
65 mm							8488	5291	3676	2487	1879	1091	
70 mm							7961	4950	3472	2347	1773	1035	
75 mm							7650	4672	3267	2212	1677	984	
80 mm							7100	4424	3086	2100	1592	938	
85 mm									2941	1992	1515	896	
90 mm								4100	2793	1901	1445	857	
100 mm							6600	3800	2550	1736	1326	789	
110 mm								3300	2350		1222	730	
120 mm								3100	2000		1120	681	
130 mm								3000	1900		1040	637	
140 mm									1800		980	599	
150 mm								2600			930	565	
160 mm											900	555	
170 mm												535	
180 mm											820	490	
190 mm													
200 mm									1380		725	450	
220 mm													
250 mm												365	
260 mm													
280 mm													
300 mm													

## M.S. HEX FULL THREAD BOLTS ONLY (WITHOUT NUTS)

DIMENSIONS IN METRIC

APPOROX COUNT PER 50 KGS.

LENGTH	D	I	A	M	E	T	E	R								
	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 27	M 30	M 33	M 36	M 39	M 42	M 45	M 48	M 52
12 mm	1824															
16 mm	1655															
20 mm	1515		800													
25 mm	1366	943	712	518	396											
30 mm	1243	863	650	476	367											
35 mm	1141	794	598	442	340	276										
40 mm	1054	736	554	413	318	259	204									
45 mm	980	685	514	387	299	242	193									
50 mm	917	641	485	364	280	228	182	132	100	79						
55 mm	860	603	454	342	265	215	173	125	96	75						
60 mm	810	569	427	324	251	204	164	120	92	72	58	46	39	32	27	22
65 mm	765	538	406	308	239	194	156	114	88	69	55	45	38	31	26	21
70 mm	725	511	384	294	228	185	149	110	84	67	53	43	36	30	25	20
75 mm	689	490	364	280	218	177	143	105	81	64	51	41	35	29	24	20
80 mm	657	467	347	267	208	169	137	101	78	62	50	40	34	28	24	19
85 mm	627	446	333	256	200	162	132	97	75	59	48	39	33	27	23	19
90 mm	600	427	318	246	192	155	127	94	72	57	46	37	32	26	22	18
100 mm	552	393	294	228	177	144	118	87	68	54	43	35	30	25	21	17
110 mm	511	364	271	211	165	134	110	82	64	51	41	33	28	23	20	16
120 mm	476	340	253	198	155	125	103	77	60	48	39	32	27	22	19	16
130 mm	446	318	238	185	145	118	97	72	57	45	37	30	25	21	18	15
140 mm	420	299	223	175	137	111	92	69	54	43	35	28	24	20	17	14
150 mm	396	282	210	166	130	105	87	65	51	41	33	27	23	19	17	14
160 mm	385		198	157	123	100	83	62	49	39	32	26	22	19	16	13
170 mm	360		187	150	117	95	79	59	47	37	30	25	21	18	15	12
180 mm	340	250	181	143	112	91	74	57	45	35	29	24	20	17	15	12
190 mm	325		172	136	107	87	72	54	43	34	28	23	20	16	14	12
200 mm	310	220	168	131	103	83	69	52	41	33	27	22	19	16	14	11
225 mm	283		150		93		62		38							
250 mm	250		137		85		57		35							
300 mm	218		114		71		49		30							

## M.S. HEX HALF THREAD BOLTS ONLY (WITHOUT NUTS) - IS : 1363/67

DIMENSIONS IN METRIC

APPOROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R																
	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36	M39	M42	M45
25 mm	7000																
30 mm	6080	3150															
35 mm	5350	2810	1590														
40 mm	4830	2530	1455	1013													
45 mm	4350	2310	1335	940		506											
50 mm	4000	2120	1235	875	622	470			220	180	127	97	76	62			
55 mm	3700	1960	1145	820	588	437		260	210	170	122	92	73	59			
60 mm	3420	1825	1075	770	550	408	312	244	200	160	116	88	71	57	45		
65 mm	3170	1700	1010	725	500	384	296	230	188	150	111	84	68	54	44		
70 mm	2990	1650	955	687	471	361	276	218	179	142	107	81	65	52	42	35	
75 mm	2820	1535	904	653	448	343	265	207	170	135	103	79	63	49	40	34	
80 mm	2650	1425	853	620	425	325	254	197	162	128	100	75	60	47	38	33	26
90 mm	2400	1300	780	568	408	296	227	180	148	117	90	70	56	45	36	31	25
100 mm	2200	1190	715	522	367	271	208	166	136	108	83	65	52	42	34	29	24
110 mm	2000	1080	665	461	336	251	196	154	125	100	76	60	48	40	33	27	23
120 mm	1800	972	617	400	305	232	185	143	115	94	72	57	45	38	32	26	22
130 mm	1690	925	578	372	284	217	167	134	109	89	68	54	42	35	29	24	21
140 mm	1585	880	540	345	264	203	150	125	103	85	64	50	40	33	27	23	20
150 mm	1490	860	497	327	252	191	144	118	97	80	61	49	39	32	26	22	19
160 mm	1400		455	310	230	180	138	111	92	76	58	46	37	30	25	21	18
180 mm			430	295	205	162	125	100	83	68	52	41	33	28	23	19	16
200 mm			390	265	185	148	113	91	75	62	48	38	30	25	21	17	15
225 mm			350	245		132		83	68	57	43	35	28	23	19	16	14
250 mm			320	210		120	93	75	62	51	39	32	25	22	17	15	13
275 mm			290	190		109		69	57	47	37	30	24	20	16	14	12
300 mm				183		101		63	52	43	34	27	23	18	15	13	11

## ROUND HEAD RIVETS

DIMENSIONS IN INCHES

APPROX COUNT PER 50 KGS.

LENGTH	DIAMETER								
	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"
1/2"	8779	5204	3216						
5/8"	7570	4634	2862						
3/4"	6882	4071	2586	1760	1380				
7/8"	6252	3779	2386	1632	1323	793			
1"	5775	3480	2240	1504	1226	715	445		
1.1/4"	4834	2976	1933	1303	1069	629	390	276	
1.3/8"	4535	2777	1793	1230	992	571	374	264	
1.1/2"	4236	2579	1653	1157	948	555	359	252	194
1.5/8"			1581	1112	882	529	341	240	184
1.3/4"			1508	1067	841	491	323	229	178
1.7/8"			1431	1012	793	480	308	220	171
2"			1354	957	745	465	298	213	163
2.1/8"					721	447	291	205	157
2.1/4"					661	418	279	195	152
2.3/8"					645	406	269	187	146
2.1/2"					636	391	259	182	143
2.5/8"					610	373	251	177	139
2.3/4"					598	366	243	172	134
2.7/8"					570	348	236	165	130
3"					554	341	228	158	126
3.1/8"							219	154	122
3.1/4"							212	150	118
3.3/8"							206	145	115
3.1/2"							201	142	112
3.3/4"								135	106
4"								129	100

## M.S. FULLY THREADED BARS (ROD / STUD)

APPROX WEIGHT PER PC.

DIA	WT. PER ONE METER
6 mm	0.160
8 mm	0.290
10 mm	0.475
12 mm	0.700
14 mm	0.980
16 mm	1.250
18 mm	1.657
20 mm	2.050
22 mm	2.520
24 mm	3.000
30 mm	4.660
33 mm	5.780
36 mm	6.800
39 mm	8.205

APPROX WEIGHT PER PC.

DIA	WT. PER ONE METER
1/4"	0.175
5/16"	0.290
3/8"	0.445
1/2"	0.770
5/8"	1.290
3/4"	1.830
7/8"	2.550
1"	3.400
1 1/8"	4.250
1 1/4"	5.400
1 1/2"	7.650

## M.S. ROUND HEAD SQUARE NECK CARRIAGE BOLTS ONLY

DIMENSIONS IN INCHES

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R				
	1/4"	5/16"	3/8"	7/16"	1/2"
1"	7100	4148	2660	2000	1390
1.1/4"	5810	3423	2000	1667	1256
1.1/2"	4900	2940	1724	1465	1020
1.3/4"	4245	2580	1562	1250	910
2"	3730	2300	1390	1110	820
2.1/4"	3335	2080	1334	1040	781
2.1/2"	2990	1870	1282	989	746
2.3/4"	2730	1723	1162	901	675
3"	2500	1597	1078	825	625
3.1/2"	2020	1300	944	661	505
4"	1793	1192	833	562	444
4.1/2"	1612	1040	746	520	403
5"	1458	944	640	471	358
5.1/2"	1360	865	591	430	335
6"	1228	800	546	398	308
7"				356	274
8"				312	240

## M.S. ROUND HEAD SQUARE NECK CARRIAGE BOLTS WITH SQUARE NUTS

DIMENSIONS IN INCHES

APPROX COUNT PER 50 KGS.

LENGTH	D I A M E T E R				
	1/4"	5/16"	3/8"	7/16"	1/2"
1"	4672	2689	1758	1157	811
1.1/4"	4023	2439	1600	1062	750
1.1/2"	3579	2141	1432	980	698
1.3/4"	3223	1937	1300	888	643
2"	2930	1770	1191	818	593
2.1/4"	2682	1628	1098	759	552
2.1/2"	2471	1508	1019	707	517
2.3/4"	2291	1404	951	661	485
3"	2137	1314	891	622	457
3.1/2"	1885	1164	797	556	409
4"	1683	1045	712	502	371
4.1/2"	1521	948	647	458	340
5"	1387	867	592	420	313
5.1/2"	1275	799	546	389	290
6"	1179	741	507	362	270
7"				319	239
8"				284	214

## FULLY THREADED UNC (ASTM) STUDS

APPROX COUNT PER PC

LENGTH	D	I	A	M	E	T	E	R					
	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"
50 mm	0.044	0.069	0.100	0.136	0.178	0.225	0.296	0.356	0.422	0.493	0.570	0.681	0.771
55 mm	0.049	0.076	0.110	0.150	0.195	0.247	0.326	0.392	0.464	0.543	0.627	0.749	0.848
60 mm	0.053	0.083	0.120	0.163	0.213	0.270	0.355	0.428	0.506	0.592	0.684	0.817	0.925
65 mm	0.058	0.090	0.130	0.177	0.231	0.292	0.385	0.463	0.549	0.641	0.741	0.885	1.002
70 mm	0.062	0.097	0.140	0.190	0.249	0.315	0.415	0.499	0.591	0.690	0.798	0.953	1.079
75 mm	0.067	0.104	0.150	0.204	0.266	0.337	0.444	0.535	0.633	0.740	0.855	1.021	1.156
80 mm	0.071	0.111	0.160	0.218	0.284	0.360	0.474	0.570	0.675	0.789	0.912	1.089	1.233
85 mm	0.075	0.118	0.170	0.231	0.302	0.382	0.504	0.606	0.717	0.838	0.969	1.158	1.310
90 mm	0.080	0.125	0.180	0.245	0.320	0.404	0.533	0.641	0.760	0.888	1.026	1.226	1.387
95 mm	0.084	0.132	0.190	0.258	0.337	0.427	0.563	0.677	0.802	0.937	1.083	1.294	1.464
100 mm	0.089	0.139	0.200	0.272	0.355	0.449	0.592	0.713	0.844	0.986	1.140	1.362	1.541
110 mm	0.098	0.153	0.220	0.299	0.391	0.494	0.652	0.784	0.928	1.085	1.254	1.498	1.695
120 mm	0.107	0.166	0.240	0.326	0.426	0.539	0.711	0.855	1.013	1.184	1.388	1.634	1.850
125 mm	0.111	0.173	0.250	0.340	0.444	0.562	0.741	0.891	1.055	1.233	1.425	1.702	1.927
130 mm	0.115	0.180	0.260	0.353	0.462	0.584	0.770	0.926	1.097	1.282	1.482	1.770	2.004
140 mm	0.124	0.194	0.280	0.381	0.497	0.628	0.829	0.998	1.182	1.381	1.596	1.907	2.158
150 mm	0.133	0.208	0.300	0.408	0.533	0.674	0.889	1.069	1.266	1.480	1.710	2.043	2.312
160 mm	0.142	0.222	0.320	0.435	0.568	0.719	0.948	1.140	1.350	1.578	1.824	2.179	2.466
170 mm	0.151	0.236	0.340	0.462	0.604	0.764	1.007	1.212	1.435	1.677	1.938	2.315	2.620
175 mm	0.155	0.243	0.350	0.476	0.621	0.786	1.037	1.247	1.477	1.726	1.995	2.383	2.697
180 mm	0.160	0.250	0.360	0.489	0.639	0.809	1.066	1.283	1.519	1.776	2.052	2.451	2.774
190 mm	0.169	0.264	0.380	0.517	0.675	0.854	1.126	1.354	1.604	1.874	2.166	2.588	2.928
200 mm	0.178	0.277	0.399	0.544	0.710	0.899	1.185	1.425	1.688	1.973	2.280	2.724	3.083
210 mm	0.186	0.291	0.419	0.571	0.746	0.944	1.244	1.497	1.772	2.071	2.394	2.860	3.237
220 mm	0.195	0.305	0.439	0.596	0.781	0.989	1.303	1.568	1.857	2.170	2.508	2.996	3.391
225 mm	0.200	0.312	0.449	0.612	0.799	1.011	1.333	1.604	1.899	2.219	2.565	3.064	3.468
230 mm	0.204	0.319	0.459	0.625	0.817	1.034	1.363	1.639	1.941	2.269	2.622	3.132	3.545
240 mm	0.213	0.333	0.479	0.653	0.852	1.079	1.422	1.710	2.026	2.367	2.736	3.268	3.699
250 mm	0.222	0.347	0.499	0.680	0.888	1.124	1.481	1.782	2.110	2.466	2.850	3.405	3.853
260 mm	0.231	0.361	0.519	0.707	0.923	1.169	1.540	1.853	2.194	2.565	2.964	3.541	4.007
270 mm	0.240	0.375	0.539	0.734	0.959	1.213	1.600	1.924	2.279	2.663	3.078	3.677	4.161
275 mm	0.244	0.382	0.549	0.748	0.977	1.236	1.629	1.960	2.321	2.713	3.135	3.745	4.238
280 mm	0.249	0.388	0.559	0.761	0.994	1.258	1.659	1.995	2.363	2.762	3.192	3.813	4.316
290 mm	0.257	0.402	0.579	0.788	1.030	1.303	1.718	2.067	2.448	2.861	3.306	3.949	4.470
300 mm	0.266	0.416	0.599	0.816	1.065	1.348	1.777	2.138	2.532	2.959	3.420	4.086	4.624

## NUTS

APPROX. COUNT PER 50 KGS.

SIZE	OLD SPECIFICATION HEX NUTS IS 1363 / 67	H=D HEIGHT = DIAMETER HEX NUTS
<b>M-2</b>	454550	
<b>M-3</b>	151500	
<b>M-4</b>	74075	
<b>M-5</b>	45045	
<b>M-6</b>	21551	
<b>M-7</b>	17000	
<b>M-8</b>	10373	
<b>M-10</b>	4900	3900
<b>M-12</b>	3144	2575
<b>M-14</b>	2083	1640
<b>M-16</b>	1623	1280
<b>M-18</b>	1124	860
<b>M-20</b>	829	665
<b>M-22</b>	700	550
<b>M-24</b>	485	390
<b>M-27</b>	324	268
<b>M-30</b>	231	188
<b>M-33</b>	184	145
<b>M-36</b>	135	114
<b>M-39</b>	105	87
<b>M-42</b>	87	68
<b>M-45</b>	68	54
<b>M-48</b>	54	44
<b>M-52</b>	46	36
<b>M-56</b>	38	30
<b>M-60</b>	31	26
<b>M-64</b>	27	22
<b>M-72</b>	20	16
<b>M-80</b>	15	
<b>M-90</b>	11	
<b>M-100</b>	8	
	<b>NEW SPECIFICATION</b>	
<b>SIZE</b>	<b>HEX NUTS IS 1363 / 92</b>	
<b>M-10x16 A/F</b>	5500	
<b>M-12x18 A/F</b>	3600	
<b>M-16</b>	1500	
<b>M-20</b>	750	
<b>M-22</b>	560	
<b>M-24</b>	400	

SIZE	HEX NUTS BSW / BSF	SQUARE NUTS BSW	ASTM A-194 UNC HEAVY HEX NUTS
<b>1/8"</b>	122000		
<b>5/32"</b>	94300		
<b>3/16"</b>	37600		
<b>1/4"</b>	15500	14700	
<b>5/16"</b>	9800	7650	6600
<b>3/8"</b>	6121	5175	3650
<b>7/16"</b>	3600	2971	2500
<b>1/2"</b>	2250	1868	1690
<b>5/8"</b>	1150	992	950
<b>3/4"</b>	696	567	580
<b>7/8"</b>	580	458	395
<b>1"</b>	385	324	278
<b>1.1/8"</b>	275	214	190
<b>1.1/4"</b>	188	150	146
<b>1.3/8"</b>	132		113
<b>1.1/2"</b>	110		83
<b>1.5/8"</b>			68
<b>1.3/4"</b>	70		55
<b>2"</b>	61		37
<b>2.1/4"</b>	45		27
<b>2.1/2"</b>	29		21
<b>2.3/4"</b>	19		15
<b>3"</b>	15		11
<b>0 BA</b>	18500		
<b>2 BA</b>	39700		

### HEX LOCK NUTS ( BSW / BSF )

APPROX. WEIGHT PER 100 PCS.

Size	Weight	Size	Weight
<b>1/4"</b>	0.19	<b>1"</b>	8.50
<b>5/16"</b>	0.34	<b>1.1/8"</b>	11.80
<b>3/8"</b>	0.51	<b>1.1/4"</b>	17.20
<b>7/16"</b>	0.93	<b>1.3/8"</b>	23.00
<b>1/2"</b>	1.43	<b>1.1/2"</b>	28.00
<b>5/8"</b>	2.70	<b>1.3/4"</b>	46.00
<b>3/4"</b>	4.80	<b>2"</b>	54.00
<b>7/8"</b>	5.60		

## OTHER FASTENER ITEMS

APPROX WEIGHT IN KGS. PER 100 NOS.

SIZE	PLAIN PUNCHED WASHER IS:2016	HEAVY WASHER IS:6610	MACHINED WASHER IS:2016	SQUARE		TAPER	WASHERS	SPRING WASHER FLAT SECTION IS:3063-72	SPRING WASHER SQUARE SECTION IS:6735-72 DIN : 7980	HEX LOCK NUTS IS:1364-84			
				MACHINED		HIGH STRENGTH FRICTION GRIP							
				FOR CHANNELS IS:5372-75	FOR I-BEAM IS:5374-75	TYPE-B (CHANNELS) IS : 6649-85	TYPE-C (I-BEAMS ) IS : 6649-85						
<b>M-3</b>								0.01	0.01				
<b>M-4</b>								0.02	0.02				
<b>M-5</b>	0.04		0.04					0.03	0.03	0.08			
<b>M-6</b>	0.11		0.11					0.08	0.04	0.12			
<b>M-8</b>	0.20		0.21	1.10	1.20			0.16	0.11	0.30			
<b>M-10</b>	0.39	1.60	0.40	1.00	1.10			0.25	0.20	0.67			
<b>M-12</b>	0.58	1.90	0.62	2.00	2.20	2.00	1.80	0.38	0.23	1.09			
<b>M-14</b>	0.82							0.60	0.38	1.68			
<b>M-16</b>	1.06	2.90	1.13	3.40	3.75	9.00	8.50	0.89	0.59	1.80			
<b>M-18</b>	1.27							0.97	0.66	2.69			
<b>M-20</b>	1.64	4.40	1.72	5.80	6.70	8.50	8.00	1.52	1.23	3.30			
<b>M-22</b>	1.75					7.50	7.00	1.65	1.36	3.89			
<b>M-24</b>	3.11	6.30	3.30	13.50	16.00	6.50	6.00	2.62	1.81	5.10			
<b>M-27</b>	3.94	8.00	4.23	12.50	15.00	12.00	11.50	2.87	2.06	8.15			
<b>M-30</b>	5.05	10.10	5.36	16.50	18.70	17.50	16.00	4.43	3.20	10.40			
<b>M-33</b>	7.10	12.00	7.54	21.00	23.50	23.00	22.50	6.30	3.50	14.30			
<b>M-36</b>	8.73	14.60	9.20	25.50	29.20	26.50	26.00	6.73	5.25	17.60			
<b>M-39</b>	12.60	16.70	13.30	28.30	34.50			7.17	5.61	24.00			
<b>M-42</b>	17.50	20.10	18.30					11.10	8.00	27.50			
<b>M-45</b>	21.20	22.20	22.00					11.70	8.53	37.00			
<b>M-48</b>	28.40	26.00	29.40					12.30	9.00	42.80			
<b>M-52</b>	31.90		33.00					18.20		52.00			
<b>M-56</b>	47.90							19.30					
<b>M-60</b>	51.60							20.30					
<b>M-64</b>	55.40							21.80					
<b>M-68</b>	57.40												
<b>M-72</b>	63.40							24.00					

## THREADING THEORY .... IN TPI & PITCH

Size	Equival. to mm	B S W		B S F		U N C		U N F	
		TPI	PITCH Inch Metric						
No. 1	1.854	--	-- --	--	-- --	64	.016 0.397	72	.014 0.353
No. 2	2.184	--	-- --	--	-- --	56	.018 0.454	64	.016 0.397
No. 3	2.515	--	-- --	--	-- --	48	.021 0.529	56	.018 0.454
No. 4	2.845	--	-- --	--	-- --	40	.025 0.635	48	.021 0.529
No. 5	3.175	--	-- --	--	-- --	40	.025 0.635	44	.023 0.577
No. 6	3.505	--	-- --	--	-- --	32	.031 0.794	40	.025 0.635
No. 8	4.166	--	-- --	--	-- --	32	.031 0.794	36	.028 0.706
No. 10	4.826	--	-- --	--	-- --	24	.041 1.058	32	.031 0.794
No. 12	5.486	--	-- --	--	-- --	24	.041 1.058	28	.036 0.907
1/8"	3.175	40	.025 0.635	--	-- --	--	-- --	--	-- --
3/16"	4.762	24	.041 1.058	32	.031 0.794	--	-- --	--	-- --
1/4"	6.350	20	.050 1.270	26	.038 0.977	20	.050 1.270	28	.036 0.907
5/16"	7.938	18	.055 1.411	22	.045 1.154	18	.055 1.411	24	.041 1.058
3/8"	9.525	16	.062 1.588	20	.050 1.270	16	.062 1.588	24	.041 1.058
7/16"	11.112	14	.071 1.814	18	.055 1.411	14	.071 1.814	20	.050 1.270
1/2"	12.700	12	.083 2.117	16	.062 1.588	13	.077 1.954	20	.050 1.270
9/16"	14.288	12	.083 2.117	16	.062 1.588	12	.083 2.117	18	.055 1.411
5/8"	15.875	11	.091 2.309	14	.071 1.814	11	.091 2.309	18	.055 1.411
11/16"	17.462	11	.091 2.309	14	.071 1.814	--	-- --	--	-- --
3/4"	19.050	10	.100 2.540	12	.083 2.117	10	.100 2.540	16	.062 1.588
7/8"	22.225	9	.111 2.822	11	.091 2.309	9	.111 2.822	14	.071 1.814
1"	25.400	8	.125 3.175	10	.100 2.540	8	.125 3.175	12	.083 2.117
1.1/8"	28.575	7	.143 3.629	9	.111 2.872	7	.143 3.629	12	.083 2.117
1.1/4"	31.750	7	.143 3.629	9	.111 2.872	7	.143 3.629	12	.083 2.117
1.3/8"	34.925	6	.166 4.233	8	.125 3.175	6	.166 4.233	12	.083 2.117
1.1/2"	38.100	6	.166 4.233	8	.125 3.175	6	.166 4.233	12	.083 2.117
1.5/8"	41.275	5	.200 5.080	8	.125 3.175	--	-- --	--	-- --
1.3/4"	44.450	5	.200 5.080	7	.143 3.629	5	.200 5.080	--	-- --
2"	50.800	4.5	.222 5.644	7	.143 3.629	4.5	.222 5.644	--	-- --
2.1/4"	57.150	4	.250 6.350	6	.166 4.233	4.5	.222 5.644	--	-- --
2.1/2"	63.500	4	.250 6.350	6	.166 4.233	4	.250 6.350	--	-- --
2.3/4"	69.850	3.5	.285 7.257	6	.166 4.233	4	.250 6.350	--	-- --
3"	76.200	3.5	.285 7.257	5	.200 5.080	4	.250 6.350	--	-- --
3.1/2"	88.900	3.25	.308 7.832	--	-- --	--	-- --	--	-- --
4"	101.600	3	.333 8.458	--	-- --	--	-- --	--	-- --
5"	127.000	2.75	.363 9.220	--	-- --	--	-- --	--	-- --
6"	152.400	2.5	.400 10.160	--	-- --	--	-- --	--	-- --

All Metric Dimensions are in Millimetres.

No. 1 to No. 12 are American NC & NF Thread.

As per ANSI Specification, TPI for Dia 1/4" to 7/8" remains same as UNC TPI, where as TPI for 1" to 4" Dia sizes Stud/Nut is all 8 UN

## THREADING THEORY ... IN PITCH & TPI 1 mm to 150 mm Dia

<b>Basic dia</b>	<b>Pitch</b>	<b>TPI</b>
<b>1</b>	0.25	101.6
<b>1.4</b>	0.3	84.6
<b>1.6</b>	0.35	72.6
<b>1.8</b>	0.35	72.6
<b>2</b>	0.4	63.5
<b>2.2</b>	0.45	56.4
<b>2.3</b>	0.45	56.4
<b>2.5</b>	0.45	56.4
<b>2.6</b>	0.45	56.4
<b>3</b>	0.5	50.8
<b>3.5</b>	0.6	42.3
<b>4</b>	0.7	36.2
<b>4.5</b>	0.75	33.8
<b>5</b>	0.8	31.7
<b>6</b>	1	25.4
<b>7</b>	1	25.4
<b>8</b>	1.25	20.3
<b>9</b>	1.25	20.3
<b>10</b>	1.5	16.9
<b>11</b>	1.5	16.9
<b>12</b>	1.75	14.5
<b>14</b>	2	12.7
<b>16</b>	2	12.7
<b>18</b>	2.5	10.1
<b>20</b>	2.5	10.1
<b>22</b>	2.5	10.1
<b>24</b>	3	8.4
<b>25</b>	3	8.4

<b>Basic dia</b>	<b>Pitch</b>	<b>TPI</b>
<b>27</b>	3	8.4
<b>30</b>	3.5	7.2
<b>33</b>	3.5	7.2
<b>36</b>	4	6.3
<b>39</b>	4	6.3
<b>42</b>	4.5	5.6
<b>45</b>	4.5	5.6
<b>48</b>	5	5.1
<b>52</b>	5	5.1
<b>56</b>	5.5	4.6
<b>60</b>	5.5	4.6
<b>64</b>	6	4.2
<b>68</b>	6	4.2
<b>72</b>	6	4.2
<b>76</b>	6	4.2
<b>80</b>	6	4.2
<b>85</b>	6	4.2
<b>90</b>	6	4.2
<b>95</b>	6	4.2
<b>100</b>	6	4.2
<b>105</b>	6	4.2
<b>110</b>	6	4.2
<b>115</b>	6	4.2
<b>120</b>	6	4.2
<b>125</b>	6	4.2
<b>130</b>	6	4.2
<b>140</b>	6	4.2
<b>150</b>	6	4.2

## LIST OF 'INDIAN' SPECIFICATION FOR FASTENERS

S.N.	IS No.	Year	Part No	Equiv. ISO	Particular	
1	SP-6	1969	Part 4		ISI Handbook for Structural Engineers 4. Use of High Strength Friction Grip Bolts	
2	SP-29	1985	Part 1		Handbook on Industrial Fasteners Part 1	Withdrawn
3	SP-29	1987	Part 2		Handbook on Industrial Fasteners-Part 2: Bolts, Nuts & other Threaded Fasteners & Washers	Withdrawn
4	SP-29	1987	Part 3		Handbook on Industrial Fastness - Part 3 : Rivets, Pins, Nails, Keys & Keyways, Cotters & other Non-threaded Fasteners	Withdrawn
5	SP-42	1987			Survey of screw threads	
6	204	1991	Part 1		Specificaion for tower bolts: Part 1 Ferrous metals	
7	204	1992	Part 2		Specification for tower bolts: Part 2 Non-ferrous metals	
8	281	1991			Mild Steel Sliding door bolts for use with Padlocks (3rd Revision)	
9	288	1981			Arsenical copper rods for boiler stay bolts & rivets	
10	451	1999			Technical Supply Conditions for Wood Screws	
11	549	1974			Specification for Split Pins	
12	723	1972			Specification for Steel Countersunk Head Wire Nails	
13	725	1961			Specification for Copper Wire Nails	
14	730	1978			Specification for Hook Bolts for Corrugated Sheet Roofing	
15	740	1977			Wrought aluminium & aluminium alloy rivet stock for general engineering purposes (2nd Revision) - Reaffirmed 1991	
16	866	1957			Specification for Tinmen's Rivets	
17	886	1957			Dimensions for screw threads (below 6 mm)	Withdrawn
18	937	1981			Specification for washers for water fittings for fire fighting purposes	
19	1020	1963			Conversion Tables for ordinary use (Revised)	
20	1105	1957			Method for Precise Conversion of Inch & Metric Dimensions to ensure interchangeability-Reaffirmed 1990	
21	1120	1975			Specification for Coach Screws	
22	1148	1982			Hot-rolled rivet bars (upto 40 mm dia) for structural purposes(3rd Revision) - Reaffirmed 1992	
23	1149	1982			High Tensile Steel Rivet bars for structural purposes (3rd Revision) - Reaffirmed 1992	
24	1282	1968			Specification for Bicycle Cotter Pins, Washers & Nuts	
25	1284	1975			Wrought aluminium alloy bolt & screw stock for general engineering purposes	
26	1363	1967			Black Hex Bolts, Nuts & Lock Nuts (dia 6 to 39mm) & Black Hex Screws (dia 6 to 24mm)	
27	1363	1984	Part 1		Hex head bolts (size range M5 to M36) - Second Revision	
28	1363	1984	Part 2		Hex Head screws (size M5 to M36)	
29	1363	1984	Part 3		Hex Nuts (size M5 to M36)	
30	1363	1992	Part 1		Hex Head Bolts (Size range M5 to M64) 3rd Revision-ISO-4016-1988	
31	1363	1992	Part 2		Hex Head Screws (Size range M5 to M64) 3rd Revision ISO-4018-1988	
32	1363	2002	Part 1 4016 - 1999		Hex Head Bolts, Screws & Nuts of Product Grade 'C' - Part 1 : Hex Head Bolts (M 5 to M 64)	
33	1363	2002	Part 2 4018 - 1999		Hex Head Bolts, Screws & Nuts of Product Grade 'C' - Part 2 : Hex Head Screws (M 5 to M 64)	
34	1363	1992	Part 3 4034 - 1986		Hex Head Bolts, Screws & Nuts of Product Grade C - Part 3 : Hex Nuts (M5 to M64)	
35	1364	1967			Precision & Semi-precision Hex Bolts, Screws, nuts & Lock Nuts (dia 6 to 39mm)	
36	1364	1983	Part 1		Hex head bolts (size range M3 to M36) - Second revision	
37	1364	1983	Part 2		Hex Screws (size range M3 to M36) - Second revision	
38	1364	1983	Part 3		Hex Nuts (size range M16 to M36) - Second revision	
39	1364	1985	Part 4		Hex Thin Nuts (Chamfered) 1.6 to 36mm	
40	1364	1985	Part 5		Hex Thin Nuts (Unchamfered) 1.6 to 10mm - (2nd Revision) Reaffirmed 1990	
41	1364	1992	Part 1		Hex Head Bolts (1.6 to 64mm) 3rd Revision ISO-4014-1986	
42	1364	1992	Part 2		Hex Head Screws (1.6 to 64mm) 3rd Revision ISO-4017-1988	
43	1364	1992	Part 3		Hex Nuts (1.6 to 64mm) 3rd Revision ISO-4032-1986	

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44	1364	1992	Part 4	Hex thin Nuts (Chamfered) (1.6 to 64mm) 3rd Revision ISO-4035-1986
45	1364	2002	Part 1 4014 : 1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B-Part 1:Hex Head Bolts (M 1.6 to M 64)
46	1364	2002	Part 2 4017 : 1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B-Part 2:Hex Head Screws (M 1.6 to M 64)
47	1364	2002	Part 3 4032 : 1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B - Part 3 : Hex Nuts, Style (M 1.6 to M 64)
48	1364	2003	Part 4 4035:1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B-Part 4:Hex Thin Nuts (Chamfered)(M1.6 to M64)
49	1364	2002	Part 5 4036 : 1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B - Part 5 : Hex Thin Nuts Product Grade B (Unchamfered) (Size Range M 1.6 to M 10)
50	1364	2002	Part 6 4033 : 1999	Hex Head Bolts, Screws & Nuts of Product Grades A & B - Part 6 : Hex Nuts, Style 2
51	1365	1978		Specification for Slotted Countersunk Head Screws
52	1366	2002	1207 - 1992	Slotted Cheese Head Screws - Product Grade A
53	1367			Technical supply conditions for Threaded Fasteners
54	1367	1980	Part 1	Introduction & general information (2nd Revision) - Reaffirmed 1991
55	1367	1979	Part 2	Product grade & tolerances (2nd Revision) - Reaffirmed 1992
56	1367	1991	Part 3	Mechanical properties & test methods for Bolts, Screws & Studs with full loadability-3rd Revision
57	1367	1980	Part 5	Mechanical properties & test methods for set screws not under tensile stresses - Reaffirmed 1992
58	1367	1980	Part 6	Mechanical properties & test methods for nuts with specified proof loads. (2nd Revision) Reaffirmed 1992
59	1367	1992	Part 8	Mechanical & Performance properties for prevailing torque type steel Hex nuts 2nd Revision
60	1367	1979	Part 9	Surface discontinuities on bolts, screws & studs (2nd Revision) - Reaffirmed 1992.
61	1367	1979	Part 10	Surface discontinuities on Nuts (2nd Revision) - Reaffirmed 1992
62	1367	1979	Part 11	Electroplated coatings on threaded fasteners
63	1367	1981	Part 12	Phosphate coatings on threaded fasteners (2nd Revision) - Reaffirmed 1992
64	1367	1983	Part 13	Hot Dip Galvanised coatings on threaded Fasteners (2nd Revision) - Reaffirmed 1991
65	1367	1984	Part 14	Stainless Steel threaded fasteners (2nd Revision) Reaffirmed 1990
66	1367	1979	Part 16	Designation system & symbols (1st Revision) - Reaffirmed 1991
67	1367	1979	Part 18	Marking & mode of delivery (2nd Revision) - Reaffirmed 1992
68	1367	2002	Part 1 8992 : 1986	Technical Supply Conditions for Threaded Steel Fasteners - Part 1 : General Requirements for Bolts, Screws & Studs
69	1367	2002	Part 2 4759-1:2000	Technical Supply Conditions for Threaded Steel Fasteners - Part 2 : Tolerances for Fasteners - Bolts, Screws, Studs & Nuts - Product Grades A, B & C
70	1367	2002	Part 3 898-1:1999	Technical Supply Conditions for Threaded Steel Fasteners - Part 3 : Mechanical Properties of Fasteners Made of Carbon Steel & Alloy Steel - Bolts, Screws & Studs
71	1367	2002	Part 5 898-5 : 1998	Technical Supply Conditions for Threaded Steel Fasteners - Part 5 : Mechanical Properties of Fasteners Made of Carbon Steel & Alloy Steel - Set Screws & Similar Threaded Fasteners not Under Tensile Stresses
72	1367	1994	Part 6 898-2 : 1992	Technical Supply Conditions for Threaded Steel Fasteners - Part 6 : Mechanical Properties & Test Methods for Nuts with Specified Proof Loads
73	1367	1980	Part 7	Technical supply conditions for threaded steel fasteners Part VII Mechanical properties & test methods for nuts without specified proof loads
74	1367	2002	Part 8 2320 : 1997	Technical Supply Conditions for Threaded Steel Fasteners - Part 8 : Prevailing Torque Type Steel Hex Nuts - Mechanical & Performance Properties
75	1367	1993	Part 9 6157-1 : 1988 Sec 1	Technical supply conditions for threaded steel fasteners Part 9 Surface discontinuities : Section 1 Bolts, screws & studs for general applications
76	1367	1993	Part 9 6157-3 : 1988 Sec 2	Technical supply conditions for threaded steel fasteners Part 9 Surface discontinuities : Section 2 Bolts, screws & studs for special applications
77	1367	2002	Part 10 6157-2 : 1995	Technical Supply Conditions for Threaded Steel Fasteners - Part 10 : Surface Discontinuities - Nuts
78	1367	2002	Part 11	Technical Supply Conditions for Threaded Steel Fasteners - Part 11 : Electroplated Coatings

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79	1367	1981	Part 12	Technical Supply Conditions for Threaded Steel Fast.-Part XII: Phosphate Coatings on Threaded Fasteners
80	1367	1983	Part 13	Technical supply conditions for threaded steel fasteners Part XIII Hot-dip galvanized coatings on threaded fasteners
81	1367	1984	Part 14	Technical Supply Conditions for Threaded Steel Fasteners - Part 14 : Stainless-Steel Threaded Fasteners (Second Revision) (Superseding IS 5358)
82	1367	2002	Part 14 Sec 1	Technical Supply Conditions for Threaded Steel Fasteners - Part 14 : Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners - Section 1 : Bolts, Screws & Studs
83	1367	2002	Part 14 3506 : 1997 Sec 2	Technical Supply Conditions for - Threaded Steel Fasteners - Part 14 : Mechanical Properties of Corrosion-resistant Stainless-steel Fasteners - Section 2 : Nuts
84	1367	2002	Part 14 Sec 3	Technical Supply Conditions for Threaded Steel Fasteners - Part 14 : Mechanical Properties of Corrosion-resistant Stainless-steel Fasteners - Section 3 : Set Screws & Similar Fasteners not Under Tensile Stress
85	1367	2002	Part 16	Technical Supply Conditions for Threaded Steel Fasteners - Part 16 : Designation System for Fasteners
86	1367	1996	Part 17 3269 : 1988	Industrial fastners - Threaded steeel fasteners - Technical supply conditions Part 17 Inspection, smapling & acceptance procedure
87	1367	1996	Part 18	Industrial Fasteners - Threaded Steel Fasteners - Technical Supply Conditions - Part 18 : Packaging
88	1367	1997	Part 19 3800 : 1993	Industrial fasteners - Threaded steel fasteners - Technical supply conditions Part 19 Axial load fatigue testing of bolts, screws & studs
89	1367	1996	Part 20 898-7 : 1992	Industrial Fasteners - Threaded Steel Fasteners - Technical Supply Conditions - Mechanical Properties - Part 20 : Torsional Test & Minimum Torques for Bolts & Screws with Nominal Diameters 1mm To 10mm
90	1368	1987	4753 : 1983	Dimensions for ends of parts with external ISO metric threads
91	1369	1993	Part 1 3508 : 1976	Fasteners - Thread Run-Outs & Undercuts Part 1 Dimensions for Screw Thread Run-Outs for External ISO Metric Threads
92	1369	1993	Part 2 4755:1983	Fasteners-Threadrunout&undercutsPt.2DimensionsforscrewthreadundercutsforexternalISOmetricthreads
93	1369	1995	Part 3	Fasteners - Thread Run-Outs & Undercuts - Part 3 : Dimensions for Screw Thread Run-Outs & Undercuts for Internal Threads (Blind Tapped Holes)
94	1673	1984		Mild Steel wire for the manufacture of machine screws (by cold heading process)(2nd Revision)- Reaffirmed 1990
95	1708	1986	Part 15	Determination of nail & screw holding power - (SEE IS 1708 : PARTS 1 TO 18)
96	1812	1982		Specification for Carbon Steel Wire for the Manufacture of Wood Screws
97	1821	1987	273 : 1979	Dimensions for clearance holes for bolts & screws
98	1852	1985		Rolling & cutting tolerances for hot rolled steel products
99	1862	1975		Specification for Studs
100	1928	1961		Specification for Boiler Rivets (12 to 48 mm Diameter)
101	1929	1982		Specification for Hot Forged Steel Rivets for Hot Closing (12 to 36 mm Diameter)
102	1990	1973		Steel Rivet & Stay Bars for Boilers 1st Revision - Reaffirmed 1992
103	2014	1977		T-Bolts (1st Revision) - Reaffirmed 1990
104	2015	1977		T-Nuts (1st Revision) - Reaffirmed 1990
105	2016	1967		Specification for Plain Washers
106	2062	1992		Steel for General Structural Purposes 4th Revision (Supersedes IS 226:1975)
107	2155	1982		Specification for Cold Forged Solid Steel Rivets for Hot Closing (6 to 16 mm Diameter)
108	2186	1985		ISO Metric external screw threads for interference fit applications
109	2232	1967		Specification for Slotted & Castle Nuts
110	2255	1977		Specification for Mild Steel Wire Rod for the Manufacture of Machine Screws (By Cold Heading Process)
111	2269	2002		Hex Socket Head Cap Screws

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112	2306	1963	Dimensions for gauge limits for ISO metric screw thread (1.6 to 39 mm)	Withdrawn
113	2334	2001	ISO General Purpose Metric Screw Threads - Gauges & Gauging	
114	2388	1971	Slotted grub screws	
115	2389	1968	Precision Hex bolts, screws, nuts & lock nuts (dia range 1.6 to 5 mm)	Withdrawn
116	2393	1980	Specification for Cylindrical Pins	
117	2585	1968	Specification for Black Square Bolts & Nuts (Dia 6 to 39 mm) & Black Square Screws (Dia 6 to 24 mm)	
118	2609	1972	Specification for Coach Bolts	
119	2614	1969	Methods for sampling of fasteners	Withdrawn
120	2629	1985	Recommended practice for Hot-dip galvanising on iron & steel 1st Revision - Reaffirmed 1990	
121	2633	1986	Methods of Testing weight, thickness & uniformity of coating on Hot Dipped Galv. articles (2nd Revision) - Reaffirmed 1992	
122	2636	1972	Specification for Wing Nuts	
123	2368	1974	Flat Split Cotters - 1st Revision - Reaffirmed 1991	
124	2687	1991	Cap nuts - Specification	
125	2699	1982	Specification for Flats & Flats' Screws	
126	2728	1964	Memorandum on Screw Threads for Bicycle Components	
127	2907	1998	Non-Ferrous Rivets - Specification	
128	2998	1982	Specification for Cold Forged Steel Rivets for Cold Closing (1 to 16 mm Diameter)	
129	3063	1994	Fasteners - Single coil rectangular section spring lock washers - Specification	
130	3075	1986 Part 1	Specification for circlips:Part 1 For shafts	
131	3075	1986 Part 2	Specification for Circlips - Part 2 : For Bores	
132	3075	1986 Part 3	Specification for circlips:Part 3 Type E for shafts	
133	3082	1988	Specification for Hex Socket Screw Keys	
134	3121	1981	Specification for Rigging Screws & Stretching Screws	
135	3138	1966	Specification for Hexal Bolts & Nuts (M42 to M150)	Withdrawn
136	3139	1966	Dimensions for screw threads for bolts & nuts (dia range M42 to M150) [covered in IS 4218 : Part 5]	Withdrawn
137	3148	1991	Slide fasteners (general purpose)	
138	3174	1974	Pipe Union Bolt 1st Revision Reaffirmed 1992	
139	3175	1974	Specification for Sealing Washers for Pipe Unions	
140	3222	1989 Part 1	Instrument Screws - Specification - Part 1 : Fasteners for Drawing Instruments	
141	3460	1991	Knurled nuts - Specification	
142	3468	1991	Pipe nuts - Specification	
143	3477	1973	GO & NO GO Snap Gauge (3 to 250mm) First Revision - Reaffirmed 1990	
144	3485	1983	GO Plain Ring Gauges (1 to 315mm) 2nd Revision - Reaffirmed 1993	
145	3524	1982 Part 1	Specification for Threaded Taper Pins - Part II : With External Threads	
146	3524	1982 Part 2	Specification for Threaded Taper Pins - Part II : With External Threads	
147	3577	1992	Wrought aluminium & aluminium alloys rivet, bolt & screw stock - Dimensions & tolerances	
148	3640	1982	Specification for Hex Fit Bolts	
149	3726	2003	Thumb Screws - Specification	
150	3727	1966	Specification for Wing Screws	
151	3739	1987	Dimensional tolerances for carbon & alloy constructional steel products	
152	3757	1985	Specification for High Strength Structural Bolts	
153	3974	1967	Specification for Bifurcated Rivets for General Purposes	
154	4000	1992	Code of practice for high strength bolts in steel structures	

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155	4040	1998	Fasteners - Solid Drilled Tubular & Semi-Tubular Rivets - Specification	
156	4072	1975	Specification for Steel for Spring Washers	
157	4084	1978	Specification for Eyelets & Washers (Sail)	
158	4172	1987	Dimensions for radii under the head of bolts & screws	
159	4178	1967	Eyenuits with collars Reaffirmed 1991	
160	4206	1987	Dimensions for nominal lengths & thread lengths for bolts, screws & studs	
161	4211	1993	Gauges - Thread Pitch Gauges for ISO Metric Screw Threads (pitch range 0.4 to 6 mm) - Specification	
162	4218	2001 Part 1	ISO Metric Screw Threads - Part 1 : Basic & Design Profiles	
163	4218	2001 Part 2	ISO General Purpose Metric Screw Threads - Part 2 : General Plan	
164	4218	1999 Part 3	ISO General Purpose Metric Screw Threads - Part 3 : Basic Dimensions	
165	4218	2001 Part 4	ISO General Purpose Metric Screw Threads - Part 4 : Selected Sizes for Screws, Bolts & Nuts	
166	4218	1979 Part 5	ISO Metric screw threads Part V Tolerances	Withdrawn
167	4218	1978 Part 6	ISO Metric Screw Threads - Part VI : Limits of Sizes for Commercial Bolts & Nuts (diameter range 1 to 52 mm)	Withdrawn
168	4224	1972	Specification for Steel Wire for Staples, Pins & Clips	
169	4291	1967	Dimensions for C-Washers Reaffirmed 1991	
170	4297	1996	spherical washers & conical seats - specification	
171	4298	1967	Dimensions for swing C-Washers 1st Revision Reaffirmed 1991	
172	4499	1968	Dimensions for Depth of Holes for Studs	
173	4694	1968	Basic dimensions for square threads	Withdrawn
174	4695	1988 Part 1	General Purpose Knuckle Threads - Part 1 : Profile & Nominal Sizes	
175	4695	1988 Part 2	General Purpose Knuckle Threads - Part 2 : Deviations & Tolerances	
176	4732	1968	Specification for Rivets for Shipbuilding	
177	4741	1968	Specification for Fasteners (Four Pieces)	
178	4882	1979	Specification for Low Carbon Steel Wire for Rivets for Use in Bearing Industry	
179	5048	1969	Specification for Equipment Fasteners (Web Equipment Pattern)	
180	5049	1969	Gauge for wire diameter (Recommended for withdrawals)	
181	5053	1969	Dimensions for wrought copper & copper alloy rods for fasteners	
182	5200	1969	Bolt Clippers Reaffirmed 1991	
183	5308	1969	Slotted countersunk head & slotted raised countersunk head screws, small head series (diameter range 1.6 to 6 mm)	Withdrawn
184	5358	1969	Hot dip galvanized coatings on fasteners	Withdrawn
185	5368	1969	Specification for Thin Slotted & Castle Nuts (dia range 6 to 52 mm)	
186	5369	1975	General Requirements for Plain Washers & Lock Washers	
187	5370	1969	Specification for Plain Washers with Outside Diameter 3 X Inside Diameter	
188	5371	1982	Specification for - Multi-tooth Lock Washers	
189	5372	1975	Taper washers for channels (ISMС)	
190	5373	1969	Square washers for wood fastenings	
191	5374	1975	Taper washers for I-beams (ISMВ)	
192	5554	1991	Lock washers with lug - Specification	
193	5556	1991	Serrated Lock Washers - Specification	
194	5593	1980	Specification for Belt Fasteners (Alligator Type)	
195	5624	1993	Foundation bolts - Specification	
196	5652	1981	Method for Rockwell (A Scale) Hardness test for hardmetals 1st Revision Reaffirmed 1992	
197	5957	2003	Screw Threads for Thread Forming Tapping Screws - Dimensions	

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198	6094	1981	Specification for Hex Socket Set Screws
199	6101	1982	Specification for Slotted Pan Head Screws
200	6113	1970	Specification for Aluminium Fasteners for Building Purposes
201	6137	1983	Specification for Gauging Members for Plain Plug Gauges, GO & NO GO Members (Size Range from 1 up to & including 40 mm)
202	6148	1971	Specification for Head Fittings & Round Nuts Used with Ship's Blocks
203	6150	1971	Specification for ISO Metric Screw Thread Measuring Prisms
204	6244	1980	Specification for Gauging Members for Plain Plug Gauges GO & NO GO Members (Size Range Above 40 to 120 mm)
205	6246	1980	Specification for Gauging Members for Plain Plug Gauges GO & NO GO Members (size range above 120 up to & including 250 mm)
206	6293	1996	Assembly tools for screws & nuts - Nomenclature
207	6311	1978	Specification for ISO Metric Screw Thread Measuring Cylinders
208	6318	1971	Specification for plastic window stays & fasteners
209	6335	1971	Specification for Knurled Thumb Nuts (Fixtures)
210	6336	1989	Screws for thrust pads (fixtures) 1st Revision
211	6338	1989	Clamping screws (fixtures) - specification
212	6401	1986	Dowel pins for use in foundries
213	6610	1972	Specification for Heavy Washers for Steel Structures
214	6623	1985	Specification for High Strength Structural Nuts
215	6639	1972	Specification for Hex Bolts for Steel Structures
216	6649	1985	Specification for Hardened & Tempered Washers for High Strength Structural Bolts & Nuts
217	6688	1981	Specification for Taper Pins
218	6689	2003	Parallel Pins of Hardened Steel & Martensitic Stainless Steel (Dowel Pins)
219	6730	1972	Specification for Felt Nails
220	6732	1972	Specification for Double Point Nails
221	6733	1972	Specification for Wall & Roofing Nails
222	6734	1972	Cut lath & lath Nails - Reaffirmed 1990
223	6735	1994	Fasteners - Spring lock washers for screws with cylindrical heads - Specification
224	6736	1972	Specification for Slotted Raised Countersunk Head Wood Screws
225	6738	1972	Panel pins & lost head nails
226	6739	1972	Slotted round head wood screws
227	6755	1980	Double coil helical spring washers
228	6760	1972	Specification for Slotted Countersunk Head Wood Screws
229	6761	1994	Fasteners - Countersunk Head Screws with Hex Socket - Specification
230	6801	1999 Part 1 8319-1 : 1996	Orthopaedic Instruments - Drive Connections - Part 1 : Keys for Use with Screws with Hex Socket Heads
231	6801	1987 Part 2 8319-2 : 1986	Specification for Drive Connections for Orthopaedic Instruments - Part 2 : Screw Drivers for Single Slot Head Screws, Screws with Cruciate Slot & Cross-recessed Head Screws
232	6821	1973	Methods for sampling non-threaded fasteners
233	6832	1985	Specification for Fixing Screws & Fixing Washers for Buckets for Bucket Elevators
234	6836	1973	Specification for H& Snaps & Set-ups for Solid Rivets
235	6862	1981	Specification for Clevis Pins
236	6863	1973	Specification for Clevis Pins with Head
237	7002	1991	Prevailing Torque Type Hex Nuts (With Non-Metallic Insert), Style 1 Property Classes 5,8 & 10 - Specification
238	7008	1999 Part 1 2901 : 1993	ISO Metric Trapezoidal Screw Threads - Part 1 : Basic Profile & Maximum Material Profile

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239	7008	1988	Part 2	2902 : 1977	ISO Metric trapezoidal screw threads Part 2 Pitch diameter combinations
240	7008	1988	Part 3	2904 : 1977	ISO Metric trapezoidal screw threads Part 3 Basic dimensions
241	7008	1999	Part 4	2903 : 1993	ISO Metric Trapezoidal Screw Threads - Part 4 : Tolerances
242	7018	1983	Part 3		Technical supply conditions for gauges:Part 3 Assembly & identification of screw plug gauges for ISO metric screw threads (size range from M1 up to & including M200)
243	7169	1989			Slotted raised countersunk (oval) head tapping screws (common head style)
244	7170	1989			Slotted countersunk (flat) head tapping screws (common head style)
245	7173	1989			Slotted pan head tapping screws
246	7178	2002			Heat-Treated Steel Tapping Screws - Mechanical Properties
247	7368	1990			Grooved pins - Full length taper grooved - specification
248	7385	1990			Grooved Dowel Pins - 1st Revision
249	7386	1990			Grooved Socket Pins - 1st Revision
250	7478	1985			Dimensions for Cross Recesses - 1st Revision - Reaffirmed 1990
251	7483	1985			Specification for Cross Recessed Pan Head Screws
252	7485	1985			Specification for Cross Recessed Countersunk Head Screws
253	7486	1985			Specification for Cross Recessed Raised Countersunk Head Screws
254	7519	1974			Specification for Hammer Drive Screws
255	7534	1985			Specification for sliding locking bolts for use with padlocks
256	7547	1987			Steel Nails used as internal chills in steel castings
257	7557	1982			Steel wire : uartto 20 mm for the manufacture of cold forged rivets
258	7578	1975			Wedge & slot type roof bolt Reaffirmed 1991
259	7663	1975			Box spanners for rail screws
260	7684	1975			Limits of sizes for ISO metric trapezoidal nut threads (diameter range 8 to 100 mm)
261	7685	1975			Limits of sizes for ISO metric trapezoidal bolt threads diameter range 8 to 100 mm
262	7726	1975			Limits of sizes for ISO metric trapezoidal nut threads (diameter range 105 to 300 mm)
263	7727	1975			Limits of sizes for ISO metric trapezoidal bolt threads (diameter range 105 to 300 mm)
264	7736	1975			Specification for Screw, Myoma
265	7790	1991			Domed cap nuts - Specification
266	7795	1975			Hex Nuts with Collar - Specification
267	7800	1990			Thread cutting tapping screw - Screw threads & ends - Dimensions
268	7859	1975			Gauge Allowances & Manufacturing Tolerances for Plain Gauges for Inside Measurements for ISO Fit Sizes (nominal size up to 500 mm)
269	7876	1975			Gauge allowances & manufacturing tolerances for plain gauges for outside measurements for ISO fit sizes (nominal size up to 500 mm)
270	7887	1992			Mild steel wire rods for general engineering purposes
271	7904	1995			High carbon steel wire rods
272	7989	1976			Specification for Pliers for Internal Circlips
273	7990	1976			Specification for Pliers for External Circlips
274	8033	1976			Specification for Round Washers with Square Hole for Wood Fastenings
275	8053	1976			Specification for Steel Ingots & Billets for the Production of Steel Wire for the Manufacture of Wood Screws
276	8055	1976			Steel ingots & billets for the production of spring washers
277	8057	1976			Steel ingots & billets for the production of wire rod for the manufacture of machine screws : bart cold heading process
278	8068	1976			Specification for Tab Washers
279	8070	1991			Screws - Slotted capstan (tommy bolts) - Specification

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280	8141	1976		Tolerances for screw threads used in aeronautics	
281	8156	1981		Fasteners, hook & look tape, synthetic 1st Revision - Reaffirmed 1991	
282	8227	1988	Part 1	Fasteners, arch & clip for files Part. 1. Arch Fasteners 1st Revision	
283	8227	1988	Part 2	Clip Fasteners 1st Revision	
284	8247	1976		Specification for Fastener, Paper, Prong Type, with Washer	
285	8266	1976		Specification for Expansion Shell Type Roof Bolts	
286	8351	1977		Specification for Spiral Pins (Heavy Duty Type)	
287	8352	1977		Specification for Flat Countersunk Square Neck Bolts	
288	8353	1977		Specification for Flat Countersunk Nib Bolts	
289	8412	1977		Specification for Slotted Countersunk Head Bolts for Steel Structures	
290	8513	1977		Aluminium alloy wire for cold forged rivets for aircraft purposes (Alloy 55000)	
291	8514	1977		Aluminium alloy wire for cold forged rivets for aircraft purposes (Alloy 24530)	
292	8515	1977		Specification for Aluminium Wire for Cold Forged Rivets for Aircraft Purposes (Alloy 19500)	
293	8535	1987	1891 : 1979	Bolts, screws, nuts & accessories - Terminology & nomenclature	
294	8536	1987	225 : 1983	Fasteners - Bolts, screws, studs & nuts - Symbols & designation of dimensions	
295	8537	1977		Nomenclature & terminology of fasteners	Withdrawn
296	8563	1977		Half round mild steel wire for the manufacture of split pins	
297	8620	1993		Clamping Nuts for Milling Arbors - Specification	
298	8621	1977		Specification for Retaining Screw for Milling Arbors	
299	8721	1978		Specification for Fish Bolts (Cup Oval Neck Bolts) for Collieries	
300	8722	1978		Fish Bolts with Square Head for Collieries - Reaffirmed 1991	
301	8788	2002		Dimensions for Metric External Taper & Internal Parallel Screw Threads	
302	8803	1987		Coupling nuts for oil hydraulic system	
303	8822	1978		Slotted mushroom head roofing bolts	
304	8856	1991		Hex weld nuts - Specification	
305	8869	1978		Specification for Washers for Corrugated Sheet Roofing	
306	8886	1980	Part 22	Ships' ordinary rectangular windows, Part 22 Details of swing bolts & wing nuts	
307	8911	1978		Specification for Slotted Raised Countersunk Head Screws	
308	8919	1978	Part 4	Specification for Adjustable Adaptors for Tools with Self-holding Taper Shanks - Part IV : Claming nuts	
309	8936	1978		Aluminium alloy for wire for cold forged rivets for aircraft purposes (Alloy 24350)	
310	8937	1978		Aluminium alloy wire for cold forged rivets for aircraft purposes (Alloy 22500)	
311	8938	1978		Aluminium alloy wire for cold forged rivets for aircraft purposes(Alloy 24345)	
312	8951	2001		Steel Cast Billet Ignots, Billets & Blooms for Production of High Carbon Steel Wire Rods - Specification	
313	8952	1995		Steel ingots,blooms & billets for production of mild steel wire rods for generl engineering purposes	
314	9086	2003		Aerospace - Universal Head Aluminium Alloy Rivets - Specification	
315	9087	2000		Aircraft - 100 Countersunk Aluminium Alloy Rivets - Specification	
316	9088	1979		Specification for Universal head nickel alloy rivets for aircraft	
317	9089	1996		Aircraft - Aluminium & wrought aluminium alloy rivets - General requirements	
318	9093	1979		Specification for 100 countersunk nickel alloy rivets for aircraft	
319	9141	1979		Code of practice for the packing of fasteners	Withdrawn
320	9405	1980		Method of test for conveyor belt fasteners	
321	9484	1980		Specification for Centre Bolts for Leaf Springs	
322	9519	1980		Dimensions for Width Across Flats for Hex Head Bolts & Nuts	
323	9549	1980		Dimensions for split pin holes, wire holes & head slots for bolts	

**S.N. IS No. Year Part No Equiv. ISO Particular**

324	9608	1985	Specification For Gauging Members for GO & NO GO Screw Plug Gauges & Screw Check Plug Gauges for ISO Metric Screw Threads (Size Range Above M40 up to & Including M120)
325	9610	1985	Specification for GO & NO GO Screw Ring Gauges for ISO Metric Screw Threads (M1 up to & Including M100)
326	9631	1983	Specification for Gauging Members for GO & NO GO Screw Plug Gauges & Screw Check Plug Gauges for ISO Metric Screw Threads (Size Range from M1 Up to & Including M40)
327	9645	1980	Specification for Threaded Plugs
328	9707	1994	Pneumatic Screw Drivers & Nut Runners (Non-impact Type) - Specification
329	9748	1981	Specification for Metallic Slide Fasteners (For Aviation Purposes)
330	9764	1994 Part 2	Plain bearings - Washers for plain bearings & wrapped bushes -Specification Part 2 Half thrust washers
331	9829	1981 Part 1	Metal bone screws : Part 1 screws with asymmetric thread, variable fitting (spherical) - Reaffirmed 1992
332	9829	1981 Part 2	Screws with asymmetric thread constant fitting (spherical) - Reaffirmed 1992.
333	9829	1986 Part 3	Screws with symmetrical thread conical under surfaces - Reaffirmed 1991
334	9965	1981	Limits of sizes for ISO metric external screw threads for high temperature applications
335	10019	1981	Specification for mild steel stays & fasteners
336	10102	1982	Technical supply conditions for rivets
337	10159	1982	Nail, supracondylar, Jewetts Pattern - Reaffirmed 1991
338	10222	1982	Code of practice for the packaging of nails
339	10238	2001	Fasteners - Threaded Steel Fastener - Step Bolts for Steel Structures
340	10248	1982	Specification for Cylindrical Pins with Internal Threads
341	10288	1982	Belt Fasteners, Plate type
342	10410	1983	Specification for Lock Nuts for Bulk Head Coupling Assembly for Oil-hydraulic Systems
343	10587	1983	Terminology for screw threads
344	10604	1983 Part 1	Machining allowances & tolerances for open die steel forgings Part 1 carbon & low alloy steel forgings
345	10628	1983	General requirements for aerospace bolts & nuts
346	10685	1983	Specification for Gauging Members for Go & no Go Screw Plug Gauges & Screw Check Plug Gauges for ISO Metric Screw Threads (Size Range Above M120 up to & Including M200)
347	10715	1999 Part 1	Technical Drawings - Screw Threads & Threaded Parts - Part 1 : General Conventions
348	10715	1999 Part 2	Technical Drawings - Screw Threads & Threaded Parts - Part 2 : Screw Thread Inserts
349	10715	1999 Part 3	Technical Drawings - Screw Threads & Threaded Parts - Part 3 : Simplified Representation
350	10728	1983	Nail, square ulna - Reaffirmed 1991
351	IS:10728	1983	Nail, square, radius - Reaffirmed 1991
352	IS:10729	1983	Nail, set, kuntscher - Reaffirmed 1989
353	10749	1983	Specification for Swivel Head Nut for Screw Type Mounts in Pusher Legs
354	10794	1984	Mild steel wire for cottor pins
355	10844	1984 2306 : 1972	Glossary of terms relating to slide fasteners
356	10952	1984	Recommendations for drills for use prior to tapping screw threads
357	10980	1984 Part 1	Specificaation for aerospace bolts & nuts (MJ threads) Part 1 Basic profile
358	10980	1984 Part 2	Specification for Aerospace Bolts & Nuts (MJ threads) - Part 2 : Dimensions for Bolts & Nuts
359	11073	1984	Specification for Expansion Bolts for Mountaineering
360	11362	1985 7721 : 1983	Head configuration & gauging of countersunk head screws
361	11379	1985	Specification for Wrenches for Retaining Screw for Milling Arbor
362	11505	1986 5396 : 1977	Recommendations on terminology of hardmetal heading dies
363	11512	1985	Specification for Faller Screws for Jute Drawing Frames
364	11613	1986	Specification for Renewable Lock Screw Locating Pins
365	11614	1986	Specification for Renewable Threaded Locating Pins

**S.N. IS No. Year Part No Equiv. ISO Particular**

366	11644	1999	Tolerances of Form & Position for Aerospace Bolts & Screws
367	11680	1986	Specification for Hexal Slotted (Castellated) Nuts (M J Series)
368	11698	1986 Part 1	ISO Miniature screw threads Part 1 Basic profile
369	11698	1986 Part 2	ISO Miniature screw threads Part 2 Basic dimensions for design profiles
370	11698	1986 Part 3	ISO Miniature screw threads Part 3 Tolerances
371	11698	1986 Part 4	ISO Miniature screw threads Part 4 Limits of sizes
372	11715	1986	Rolled threads for aerospace fasteners
373	11831	1988	Jig foot bolts
374	11843	1986	Specification for Jig Foot Nuts
375	12091	1987	Specification for Belt Fasteners, Hook Type
376	12096	1987	Specification for Hex Socket Screw Plugs with Parallel Screw Threads for Fluid Power System
377	12116	1987 Part 1	Specification for Hex Head Taper Plugs for Oil Hydraulic Systems - Part 1 : Made from forgings
378	12186	1987	Tolerances for ISO Metric trapezoidal screw threads for lead & feed screw assemblies
379	12241	1987 262:1973	ISO general purpose metric screw threads - Selected sizes for screw, bolts & nuts to be withdrawn Withdrawn
380	12262	1988	Trapezoidal steel wires for spring washers
381	12321	1988	Specification for Circular Screwing Dies for ISO Metric Threads
382	12324	1988	Specification for Hexal Die Nuts
383	12352	1988	Specification for Fuel injection pumps mounting bolts
384	12427	2001	Fasteners - Threaded Steel Fasteners - Hex Head Transmission Tower Bolts - Specification
385	12480	1988	Specification for Spiral Tapered Screw Extractors
386	12481	1988	Specification for Hexal Insert Bits for Hex Socket Head Cap Screws & Hex Socket Set Screws for Power Tools
387	12982	1991 8749 : 1986	Pins & grooved pins - Shear test
388	13096	2000 896-6 : 1994	Fasteners - Hex Nuts with Specified Proof Load Values - Fine Pitch Thread - Mechanical Properties
389	13153	1991	Aerospace plain - Hex nuts (MJ Series) - Strength classification 1100 MPa - Maximum operating temperature 235 Deg C - Specification
390	13178	1991	Clamping studs for machine tools - Specification
391	13219	1992	Rock Bolts for Mines (Cement Grouted) - General Requirements
392	13283	1991	Aerospace - self locking, Hex nuts (MJ Series) strength classification 1100 MPa - Maximum operating temperature 425°C-Specification
393	13338	1992	Hexal Head Screw Plugs with Shoulder & Parallel Screw Threads - Specification
394	13517	1992	Rock bolts - Resin type - Specification
395	13725	2002	Hex Head Screws with Metric Fine Pitch Thread - Product Grades A & B
396	13726	2002	Hex Head Bolts with Metric Fine Pitch Thread - Product Grades A & B
397	13941	1994	Automotive vehicles - Wheel fasteners & hub caps - General requirements
398	14181	2002 Part 1	Synthetic(Plastic) Slide Fasteners-Special Purpose-Part 1:Spec., Selection & Ordering Guide of the Product
399	14181	2002 Part 2	Synthetic (Plastic) Slide Fasteners - Special Purpose - Part 2 : Test & Measurement Methods
400	14181	2002 Part 3	Synthetic (Plastic) Slide Fasteners - Special Purpose - Part 3 : Test Report Formats
401	14181	1994	Synthetic (plastic) slide fasteners - Special purpose - Specification
402	14338	1996	Basic & design profile of screw threads for watch bezel & back covers
403	14394	1996	Industrial Fasteners - Hex Nuts of Product Grade C - Hot-Dip Galvanized - Specification (Size Range M12 to M36)
404	14424	1997	Rubber threads - Specification
405	14872	2000 Part 1	Ball Screws - Part 1 : Vocabulary & Designation
406	14872	2000 Part 2	Ball Screws - Part 2 : Nominal Diameters & Nominal Leads - Metric Series
407	14872	2000 Part 3 3408 : 1992	Ball Screws - Part 3 : Acceptance Conditions & Acceptance Tests

**S.N. IS No. Year Part No Equiv.ISO Particular**

408 14894 2001	Fasteners - Hex Head Bolts of Product Grade B - Reduced Shank (Shank Dia Pitch Dia) - Specification
409 14962 2001 Part 1	ISO General Purpose Metric Screw Therads - Tolerances - Part 1 : Principle & Basic Data
410 14962 2001 Part 2 965:1998	ISO General Purpose Metric Screw Threads - Tolerances : Part 2 Limits of Sizes for General Purpose External & Internal Screw Threads - Medium Quality
411 14962 2001 Part 3 965:1998	ISO General Purpose Metric Screw Threads - Tolerances : Part 3 Deviations for Constructional Screw Threads
412 14962 2001 Part 4 965:1998	ISO General Purpose Metric Screw Threads - Tolerances : Pt. 4 Limits of Sizes for Hot-Dip Galvanized External Screw Threads to Mate with Internal Screw Threads Tapped with Tolerance Position H or G after Galvanizing
413 14962 2001 Part 5 965 : 1998	ISO General Purpose Metric Screw Threads - Tolerances : Part 5 Limits of Sizes for Internal Screw Threads to Mate with Hot-Dip Galvanized External Screw Threads with Maximum Size of Tolerance Position h before Galvanizing
414 15192 2002	Aerospace - Nuts - Tolerances of Form & Position
415 15274 2003	Tolerances for Fasteners - Plain Washers for Bolts, Screws & Nuts - Product Grades A & C
416 15308 2003	Aerospace - Inserts, Self-Locking with MJ Threads, Closed Type, in Metallic Material, Coated or Uncoated - Dimensions
417 15411 2003	Rotary Tools for Threaded Fasteners - Performance Test Method

**NATIONAL STANDARDS ABBREVIATIONS**

<b>Country .....</b>	<b>Abbreviation</b>	<b>Country .....</b>	<b>Abbreviation</b>
Albania .....	BSA	Korea Dem. P. Rep of .....	CSK
Algeria .....	INAPI	Korea Rep. of .....	KBS
Australia .....	SAA	Lebanon .....	LIBNOR
Austria .....	ON	Libyan Arab Jamahiriya .....	LYSSO
Bangladesh .....	BDSI	Malaysia .....	SIRIM
Belgium .....	IBN	Mexico .....	DGN
Brazil .....	ABNT	Morocco .....	SNIMA
Bulgaria .....	DKC	Netherlands .....	NNI
Canada .....	SCC	New Zealand .....	SANZ
Chile .....	INN	Nigeria .....	NSO
China .....	CAS	Norway .....	NSF
Colombia .....	ICONTEC	Pakistan .....	PSI
Cuba .....	NC	Peru .....	ITINTEC
Czechoslovakia .....	CSN	Philippines .....	PS
Denmark .....	DS	Poland .....	PKNIM
Egypt, Arab Rep. of .....	EOS	Portugal .....	IGPAI
Ethiopie .....	ESI	Romania .....	IRS
Finland .....	SFS	Saudi Arabia .....	SASO
France .....	AFNOR	Singapore .....	SISIR
Germany, F.R. .....	DIN	South Africa, Rep. of .....	SABS
Ghana .....	GSB	Spain .....	IRANOR
Greece .....	ELOT	Sri Lanka .....	BCS
Hungary .....	MSZH	Sudan .....	SSD
India .....	ISI (BIS)	Sweden .....	SIS
Indonesia .....	YDNI	Switzerland .....	SNV
Iran .....	ISIRI	Thailand .....	TISI
Iraq .....	IOS	Turkey .....	TSE
Ireland .....	IIRS	United Kingdom .....	BSI
Israel .....	SII	USA .....	ANSI
Italy .....	UNI	USSR .....	GOST
Ivory Coast .....	BIN	Venezuela .....	COVENIN
Jamaica .....	JBS	Viet Nam, Socialist Rep. of .....	TCVN
Japan .....	JISC	Yugoslavia .....	JZS
Kenya .....	KEBS		

Example : **ANSI** : American National Standards Institute    **ISI** : Indian Standards Institute    **BIS** : Bureau of Indian Standards

## BRITISH STANDARD ON FASTENERS BOLTS, NUTS, SCREW THREADS, RIVETS ETC.

### BOLTS, NUTS, SCREWS AND WASHERS

#### S.No. BS No. Year Pt. No. Particulars

1	57	: 1951	BA Screws, Bolts and Nuts (Obsolescent) Gr. 5
2	325	: 1947	Black Cup and countersunk Bolts and Nuts (Obsolescent) Gr. 4
3	450	: 1958	Machine Screws and Machine Screw Nuts (BSW and BSF threads) (Obsolescent) Gr. 7
4	768	: 1958	Slotted Grub Screws (Obsolescent) Gr. 4
5	856	: 1969	Wing Nuts Gr. 4
6	916	: 1953	Black Bolts, Screws and Nuts (Obsolescent) Gr. 4
7	1083	: 1965	Precision Hexagon Bolts, Screws and Nuts (BSW and BSF threads) (Obsolescent) Gr. 5
8	1210	: 1963	Wood Screws Gr. 7
9	1768	: 1963	Unified Precision Hexagon Bolts, Screws and Nuts (UNC and UNF threads). Normal Series Gr. 7
10	1769	: 1951	Unified Black Hexagon Bolts, Screws and Nuts (UNC and UNF threads). Heavy Series Gr. 4
11	1802	: 1951	Steel Spring Washers for general engineering and automobile purposes. (Obsolescent) Gr. 3
12	1936	: 1952 Part 1	Undercuts and runouts for screw threads Gr. 4
13	1936	: 1970 Part 2	ISO Metric Screw threads ( $\pm$ ISO 3508) Gr. 4
14	1981	: 1972	Unified Machine Screws and Machine Screw Nuts Gr. 9
15	2061	: 1953	Phosphor Bronze Spring Washers for general engineering purposes (Obsolescent) Gr. 3
16	2470	: 1973	Hexagon Socket Screws and Wrench keys. Inch series Gr. 8
17	2693	: 1956 Part 1	Screwed Studs - General purpose studs (Obsolescent) Gr. 4
18	2693	: 1964 Part 2	Recommendations for high grade studs Gr. 4
19	2708	: 1956	Unified black square and Hexagon Bolts, Screws and Nuts (UNC and UNF threads). Normal series Gr. 6
20	2827	: 1957	Machine Screw Nuts, pressed type (BA and Whitworth form threads) (Obsolescent) Gr. 2
21	3139	: 1959 Part 1	High Strength friction grip bolts for structural engineering - General grade bolts. Gr. 6
22	3294	: 1960 Part 1	The use of high strength friction grip bolts in structural steelwork - General grade bolts Gr. 4
23	3382	: 1961	Electroplated coatings on threaded components.
24	3401	: 1961	Beryllium copper crinkle washers. Gr. 2
25	3409	: 1961 Part 1	The tapping of holes to receive wire thread inserts (UNC and UNF threads) Dia 1/4" and over Gr. 5
26	3409	: 1966 Part 2	Diameters below 1/4" Gr. 4
27	3410	: 1961	Metal washers for general engineering purposes. Gr. 4
28	3692	: 1967	ISO metric precision hexagon bolts, screws and nuts ( $\neq$ ISO/R 272, 288, 733, ISO 885, 888, 898/1, 898/2) Gr. 7
29	4168	: 1967	Hexagon socket screws and wrench keys - metric series ( $\neq$ ISO/R 861, ISO 885, 888, 898/1; $\pm$ ISO 2343). Gr. 6
30	4168	: 1981 Part 1	Hex socket head cap screws ( $\pm$ ISO 4762) Gr. 3
31	4168	: 1981 Part 2	Hex socket screws with flat point ( $\neq$ ISO 4026) Gr. 3
32	4168	: 1981 Part 3	Hex socket screws with cone point ( $\neq$ ISO 4027) Gr. 3
33	4168	: 1981 Part 4	Hex socket screws with dog point ( $\neq$ ISO 4028) Gr. 3
34	4168	: 1981 Part 5	Hex socket set screws with cup point ( $\neq$ ISO 4029) Gr. 3
35	4168	: 1982 Part 6	Hex socket button head screws Gr. 3
36	4168	: 1982 Part 7	Hex socket shoulder screws Gr. 3
37	4168	: 1982 Part 8	Hex socket countersunk head screws Gr. 3
38	4174	: 1972	Self-tapping screws and metallic drive screws ( $\neq$ ISO/R 1478-83; $\pm$ ISO 2770) Gr. 9
39	4183	: 1967	Machine screws and machine screw nuts - metric series ( $\neq$ ISO 885, 888, 898/1, ISO 1207, ISO/R 1580, ISO 2009-10) Gr.7
40	4186	: 1967	Recommendations for clearance holes for metric bolts and screws ( $\neq$ ISO/R 273) Gr. 3
41	4190	: 1967	ISO metric black hexagon bolts, screws and nuts ( $\neq$ ISO/R 272, 733, ISO 885, 888, 898/1, 898/2) Gr. 7
42	4219	: 1967	Slotted grub screws - metric series ( $\neq$ ISO 888, 898/1; $\pm$ ISO 2342) Gr. 4
43	4320	: 1968	Metal washers for general engineering purposes ( $\neq$ ISO/R 887) Gr. 4
44	4395	: 1969 Part 1	High strength friction grip bolts and associated nuts and washers for structural engineering - general grade ( $\neq$ ISO 225, ISO/R 272, 733, ISO 885, 888) Gr. 6

**S.No. BS No. Year Pt. No. Particulars**

45	4395	: 1969 Part 2	High strength friction grip bolts and associated nuts and washers for structural engineering - Higher grade bolts & nuts & general grade washers ( $\neq$ ISO 225, ISO/R 272, 733, ISO 885, 888, 898/1, 898/2) Gr. 6
46	4395	: 1973 Part 3	High strength friction grip bolts and associated nuts and washers for structural engineering - Higher grade bolts (waisted shank), nuts & general grade washers ( $\neq$ ISO 225, ISO/R 272, 733, ISO 885, 888, 898/1, 898/2) Gr. 6
47	4439	: 1969	Screwed studs for general purposes ( $\neq$ ISO 225, ISO 888, 898/1) Gr. 6
48	4463	: 1969	Crinkle washers for general engineering purposes (metric series) Gr. 3
49	4464	: 1969	Spring washers for general engineering and automobile purposes (metric series) Gr. 4
50	4604	: 1970 Part 1	The use of high strength friction grip bolts in structural steelwork. Metric series - General grade Gr. 4
51	4604	: 1970 Part 2	The use of high strength friction grip bolts in structural steelwork. Metric series - Higher grade (Parallel shank) Gr. 4
52	4604	: 1973 Part 3	The use of high strength friction grip bolts in structural steelwork. Metric series - Higher grade (Waisted shank) Gr. 4
53	4882	: 1973	Bolting for flanges and pressure containing purposes Gr. 9
54	4929	: 1973 Part 1	Steel hexagon prevailing - torque type nuts - metric series ( $\neq$ ISO/R 272, 733, ISO 898/1, 898/2, 898/3, ISO 2320, 2358) Gr. 6
55	4929	: 1973 Part 2	Steel hexagon prevailing - torque type nuts - Unified (Inch) series ( $\neq$ ISO 898/1, 898/2, ISO 2359) Gr. 7
56	4933	: 1973	ISO metric black cup and countersunk head bolts and screws with hexagon nuts ( $\neq$ ISO 225, 888, 898/1) Gr. 7
57	5814	: 1979	Metal tab washers for general engineering purpose. Metric series Gr. 3
58	6040	: 1981	Nomenclature for bolts, screws, nuts and accessories (= ISO 1891) Gr. 9
59	6104	: 1981 Part 1	Mechanical properties of fasteners - Bolts, screws and studs ( $\pm$ ISO 898/1) Gr. 7
60	6104	: 1981 Part 3	Set screws and similar threaded fasteners not under tensile stresses (= ISO 898/5) Gr. 5
61	6105	: 1981	Corrosion - resistant stainless steel fasteners (=ISO 3506) Gr. 7
62	6322	: 1982 Part 1	Tolerance for fasteners - bolts, screws and nuts with thread diameters from 1.6mm and 150 mm and product grades A, B and C (=ISO 4759/1) Gr. 8
63	6322	: 1982 Part 2	Tolerance for fasteners - bolts, screws and nuts with thread diameters from 1 mm upto 3 mm and product grade F for fine mechanics (=ISO 4759/1) Gr. 4
64	6322	: 1982 Part 3	Tolerances of washers for metric bolts, screws & nuts with thread dia from 1mm upto & including 150 mm product grades A & C (=ISO 4759/3) Gr. 4

**SCREW THREADS**

1	84	: 1956	Parallel screw threads of Whitworth form Gr. 7
2	93	: 1951	British Association (BA) screw threads with tolerance for sizes 0 BA to 16 BA. Gr. 5
3	811	: 1950	Cycle threads Gr. 5
4	1580	: 1962 Part 1	Unified screw threads - Dia 1/4" and larger ( $\neq$ ISO 263, ISO/R 725) Gr. 9
5	1580	: 1965 Part 3	Unified screw threads - Dia below 1/4" ( $\neq$ ISO 263, ISO/R 725) Gr. 7
6	1936	: 1952 Part 1	Undercuts and runouts for screw threads Gr. 4
7	1936	: 1970 Part 2	ISO metric screw threads ( $\pm$ ISO 3508) Gr. 4
8	3643	: 1981 Part 1	ISO metric screw threads - Principle and basic data Gr. 9
9	3643	: 1981 Part 2	ISO metric screw threads - selected limits of size Gr. 9
10	4827	: 1972	ISO miniature screw threads ( $\neq$ ISO/R 1501) Gr. 6
11	5346	: 1976	ISO metric trapezoidal screw threads ( $\neq$ ISO 2901, 2902, 2903, 2904) Gr. 7

**RIVETS, PINS ETC.**

1	275	: 1927	Dimensions of rivets (1/2" to 1.3/4" diameter) Gr. 4
2	641	: 1951	Dimensions of small rivets for general purposes. Gr. 4
3	1109	: 1943	(1982) Cold forged mild steel rivets for cold closing. Gr. 1
4	1202	: 1974 Part 1	Nails - Steel nails. Gr. 7
5	1202	: 1974 Part 2	Nails - Copper Nails Gr. 5
6	1202	: 1974 Part 3	Nails - Aluminium Nails Gr. 5
7	1574	: 1972	Split cotter pins - metric and inch series ( $\neq$ ISO 1234) Gr. 4
8	1804	: 1966 Part 1	Parallel steel dowel pins. - Inch Series. Gr. 3
9	1804	: 1968 Part 2	Parallel steel dowel pins. - Metric Series. ( $\pm$ ISO 2338) Gr. 3
10	1804	: 1973 Part 3	Parallel & taper types, having screw threads for extraction purposes - Metric Series. Gr. 6

## LIST OF DIN (GERMAN) SPECIFICATION FOR FASTENER

S.N.	DIN	ISO	Particulars
1.	1	2339	Taper Pins
2.	7	2338	Parallel Pins
3.	63	--	Slotted countersunk head screws, Metric thread.
4.	84	1207	Slotted cheese head screws.
5.	85	1580	Slotted pan head screws.
6.	87	--	Slotted countersunk head screws, metric thread.
7.	88	--	Slotted raised countersunk head screws : metric thread
8.	91	--	Slotted raised countersunk head screws, metric thread.
9.	93	--	Washers with tap.
10.	94	1234	Split pins.
11.	95	--	Slotted raised countersunk (oval) head wood screws.
12.	96	--	Slotted round head wood screws.
13.	97	--	Slotted countersunk (flat) head wood screws.
14.	101	R1051	Rivets, technical specifications.
15.	124	R1051	Round head rivets, nominal diameters 10 to 36 mm
16.	125	7089	Medium washers for hexagonal bolts and nuts.
17.	126	7091	Coarse washers for hexagonal bolts and nuts.
18.	127	--	Single coil spring washers, positive pattern and plan pattern.
19.	128	--	Spring washers, curved crinkled.
20.	137	--	Spring wahsers.
21.	186	--	Tee-head bolts with square neck.
22.	258	--	Taper pins with thread and costant taper length.
23.	261	--	Tee head bolts.
24.	302	R1051	Countersunk head rivets, nominal diameters 10 to 36 mm.
25.	315	--	Wing Nuts.
26.	316	--	Wing Screws.
27.	404	--	Slotted drilled Filister head machine Screws.
28.	417	7435	Slotted set screws with full dog point.
29.	427	2342	Slotted headless screws with chamfered end
30.	432	--	Washers with external tab
31.	433	--	Washers for cheese head screws
32.	434	--	Square taper (bevelled) washers for channels.
33.	435	--	Square taper (bevelled) washers for I-Beam.
34.	436	--	Square Washers for wood constructions.
35.	438	7436	Slotted set screws with cup point.
36.	439	--	Hexagon thin nuts.
37.	440	7094	Round Washers for wood constructions.
38.	444	--	Eye Bolts
39.	463	--	Washers with two tabs
40.	464	--	Knurled thumb screws
41.	465	--	Slotted knurled thumb screws
42.	466	--	Knurled Nuts
43.	467	--	Flat Knurled Nuts.
44.	478	--	Square head bolts with collar.
45.	479	--	Square head bolts with half dog point, metric thread, metric fine thread.
46.	480	--	Square head bolts with collar and half dog point with rounded end.
47.	508	--	Nuts for T-Slots.
48.	522	4759/3	Washers technical specifications.
49.	525	--	Studs for welding.
50.	529	--	Stone bolts.
51.	546	--	Slotted round nuts.
52.	551	4766	Slotted set screws with chamfered ends.
53.	553	7434	Slotted set screws with cone end.
54.	555	4034	Hexagon Nuts, Metric thread, finish g
55.	561	--	Hexagon screws with full dog point, metric thread.
56.	562	--	Square thin nuts.
57.	564	--	Hexagon set screws with half dog point and cone end, metric thread.
58.	571	--	Hexagon head wood screws.
59.	580	--	Lifting eye bolts.
60.	582	--	Lifting eye nuts.
61.	601	4016	Hexagon bolts without and with nut, finishing.

S.N.	DIN	ISO	Particulars
62.	603	--	Cup square bolts without and with nut.
63.	604	--	Countersunk nip bolts without and with nut.
64.	605	--	Countersunk square bolts with log square without and with nut.
65.	607	--	Round head nip bolts without and with nut.
66.	609	--	Hexagon fitting bolts with long threaded portion.
67.	610	--	Hexagon fitting bolts with short threaded portion.
68.	653	--	Flat knurled thumb screws.
69.	660	R1051	Round head rivets, nominal diameters 1 to 8 mm.
70.	661	R1051	Countersunk head rivets, nominal diameters 1 to 8 mm.
71.	662	R1051	Mushroom head rivets, nominal diameters 1.6 to 6 mm.
72.	675	R1051	Flat Countersunk head rivets, nominal diameters 1.6 to 6 mm.
73.	792	--	Cylindrical countersunk screws.
74.	797	--	Special foundation bolts.
75.	798	--	Special foundation nuts.
76.	835	--	Studs, metalend 2 d.
77.	911	2936	Socket screw keys.
78.	912	4762	Hexagon socket head cap screws; ISO 4762 modified.
79.	913	4026	Hexagon socket set screws with flat point.
80.	914	4027	Hexagon socket set screws with cone point.
81.	915	4028	Hexagon socket set screws with dog point.
82.	916	4029	Hexagon socket set screws with cup point.
83.	917	--	Hexagon cap nuts.
84.	918	--	Fasteners, terminology and nomenclature, definitions abbreviations.
85.	920	--	Slotted pan head screws with small head.
86.	921	--	Slotted pan head screws with large head.
87.	922	--	Slotted pan head screws with small head and full dog point.
88.	923	--	Slotted pan head screws with shoulder.
89.	924	--	Slotted countersunk (oval) head screws with full dog point.
90.	925	--	Slotted countersunk (flat) head screws with full dog point.
91.	926	--	Slotted headless screws with full dog point.
92.	927	--	Slotted shoulder screws.
93.	928	--	Square weld nuts
94.	929	--	Hexagon weld nuts
95.	931	4014	Hexagon bolts, finish m and mg, metric coarse thread.
96.	933	4017	Hexagon screws, finish m and mg, metric fine thread
97.	934	4032	Hexagon nuts, metric thread, finish m and mg
98.	935	--	Castle nuts.
99.	936	--	Hexagon thin nuts.
100.	937	--	Hexagon thin slotted and castelated nuts.
101.	939	--	Studs, metal end - 1, 25 d.
102.	960	4014	Hexagon bolts, metric fine thread, finish m and mg.
103.	961	4017	Hexagon screws, finish m and mg.
104.	963	--	Slotted counter sunk (flat) head screws.
105.	964	--	Slotted raised countersunk (oval) head screws.
106.	965	--	Cross recessed countersunk head screws.
107.	966	--	Cross recessed countersunk (oval) head screws.
108.	975	--	Threaded rods.
109.	976	--	Threaded pins.
110.	979	--	Thin slotted and castle nuts.
111.	980	--	Prevailing torque type self locking nuts.
112.	982	--	Prevailing torque type self locking nuts.
113.	982	--	Hexagon Nuts, self-locking nuts, regular type (Heavy Type)
114.	985	--	Self-locking hexagon nuts, regular type.
115.	986	--	Self-locking domed cap nuts.
116.	1151	--	Round plain head nails.
117.	1160	--	Wire nails with extra large head.
118.	1440	--	Washers, Type Medium for Bolts.
119.	1587	--	Hexagon domed cap nuts.
120.	1804	--	Slotted round nut for hook spanner.
121.	2507T2	--	Bolts for Pipelines, directives for selection.
122.	2509	--	Double end studs.
123.	5903T1	--	Fish bolts with round head and oval neck.

S.N.	DIN	ISO	Particulars
124.	5903T2	--	Fish bolts with square head.
125.	6303	--	Knurled nuts.
126.	6330	--	Thick hexagon nuts.
127.	6331	--	Thick hexagon nuts with collar.
128.	6791	R1051	Semi-tubular pan head rivets nominal diameter 1.6 to 10 mm.
129.	6792	R0151	Semi-tubular countersunk head rivets, nominal diameters 1.6 to 10 mm.
130.	6796	--	Council spring washers for screwed connections.
131.	6797	--	Toothed lock washers.
132.	6798	--	Serrated lock washers.
133.	6900	--	Screw and washer assemblies.
134.	6901	--	Tapping Screw assemblies.
135.	6902	--	Washers for screw assemblies.
136.	6903	--	Washers for tapping screw assemblies.
137.	6904	--	Curved spring washers for screw assemblies.
138.	6905	--	Spring washers for screw assemblies.
139.	6906	--	Lock washers for screw assemblies.
140.	6907	--	Serrat lock washers for screw assemblies.
141.	6908	--	Concical spring washers for screw assemblies.
142.	6912	--	Hexagon socket head cap screws, shallow head and pilot recess for wrench key.
143.	6913	--	Spring washers with safety rings.
144.	6914	DIS 7412	Heaxagon bolts with large, widths across flats.
145.	6915	DIS 7414	Hexagon nuts with large widths across flats for high tensile structural bolting.
146.	6916	DIS 7416	Washers for high-tensile structural bolting.
147.	6917	--	Square taper washers for I-sections in high-tensile structural bolting.
148.	6918	--	Square taper washers for channels in high-tensile structural bolting.
149.	7331	--	Compression rivets.
150.	7339	--	Tubular rivets (one piece), drawn from strip.
151.	7340	--	Tubular rivets, cut from the tube.
152.	7341	R1051	Rivet pins
153.	7349	--	Washers for bolts with heavy type spring pins.
154.	7513	--	Thread forming screws, hexagon and slotted head screws.
155.	7516	--	Thread forming screws, cross recessed head screws.
156.	7964	--	Hexagon bolts with reduced shank.
157.	7965	--	Screw in-serts
158.	7967	--	Self locking counter nuts.
159.	7968	--	Hexagon fit bolts for sheet structures.
160.	7969	--	Countersunk head bolts with forged slot for sheet structures.
161.	7971	--	Pan head tapping screws with slot.
162.	7972	--	Countersunk (flat) head tapping screws with slot.
163.	7973	--	Raised countersunk (oval) head wood screws.
164.	7975	--	Recessed countersunk (oval) head wood screws.
165.	7976	--	Hexagon head tapping screws.
166.	7977	--	Taper pins with thread and constant threaded part.
167.	7978	--	Taper pins with internal thread.
168.	7979	--	Parallel pins with internal thread.
169.	7980	--	Single coils square section spring washers for screws with cylindrical heads.
170.	7981	--	Pan head tapping screws with cross recessed.
171.	7982	--	Countersunk (flat) head tapping screws with cross recessed.
172.	7983	--	Raised countersunk (oval) head tapping screws with cross recessed.
173.	7984	--	Hexagon socket head cap screws with reduced height of head.
174.	7985	--	Cross recessed raised cheese head screws.
175.	7987	--	Cross recessed countersunk (flat) head screws.
176.	7988	--	Cross recessed raised countersunk (oval) head screws.
177.	7989	--	Washers for steel constructions.
178.	7990	--	Hexagon bolts and nuts for Steel structures.
179.	7991	--	Hexagon socket countersunk head screws metric thred.
180.	7992	--	Tee-head bolts with large heads.
181.	7995	--	Cross recessed raised countersunk (oval) head wood screws.
182.	7996	--	Cross recessed round head wood screws.
183.	7997	--	Cross recessed countersunk (flat) head wood screws.
184.	7999	--	Slotted cheese head screws for fine mechanics, M 0.3 to M 1.4
185.	8243	--	Hexagon fitted bolts with large widths across flats for steel structures.

## AMERICAN FASTENER SPECIFICATIONS AND STANDARDS

### ANSI Standards

(American National Standards Institute)

- B1.1 Unified Screw Threads
- B1.1a Unified Screw Threads-Metric Translation
- B1.2 Screw Thread Gauges and Gaging
- B1.5 Acme Screw Threads
- B1.7 Nomenclature, Definitions and Letter Symbols for Screw Threads
- B1.8 Stub Acme Screw Threads
- B1.10 Unified Miniature Screw Threads
- B1.12 Class 5 Interference - Fit Thread
- B1.13 Metric Screw Threads - Interpretive Document
- B1.14 UNK External Screw Threads
- B1.15 UNJ Internal and External Screw Threads
- B2.1 Pipe Threads (Except Dryseal)
- B2.2 Dryseal Pipe Threads
- B5.1 T-Slots-Their Bolts, Nuts, Tongues and Cutters
- B5.20 Machine Pins
- B16.5 Steel Pipe Flanges and Flanged Fittings
- B18.1 Small Solid Rivets ( to be redesignated B18.1.1 )
- B18.1.1 Clevis Pins and Cotter Pins
- B18.2.1 Square and Hex Bolts and Screws
- B18.2.2 Square and Hex Nuts
- B18.3 Socket Cap, Shoulder and Set Screws
- B18.4 Large Rivets ( To be Redesignated B18.1.2 )
- B18.5 Round Head Bolts
- B18.6.1 Slotted and Recessed Head Wood Screws
- B18.6.2 Cap and Set Screws
- B18.6.3 Slotted and Recessed Head machine Screws and Machine Screw Nuts
- B18.6.4 Slotted and Recessed Head Tapping Screws and Metallic Drive Screws
- B18.7 General Purpose Semi-Tubular Rivets, Full Tubular Rivets, Split Rivets and Rivet Caps
- B18.9 Plow Bolts
- B18.10 Track Bolts and Nuts
- B18.11 Miniature Screws
- B18.12 Glossary of Terms for Mechanical Fasteners
- B18.13 Screw and Washer Assemblies - Sems
- B18.17 Wing Nuts, Thumb Screws and Wing Screws
- B18.19 Projection Weld Studs (Threaded)
- B27.1 Lock Washers
- B27.2 Plain Washers
- B27.4 Beveled Washers
- B94.9 Taps, Cut and Ground Threads
- B94.11 Twist Drills, Straight Shank and Taper Shank
- Y14.6 Drafting Manual for Screw Threads

### ASTM SPECIFICATIONS

(American Society for Testing Material)

- A31 Boiler Rivet Steel and Rivets
- A66 Steel Screw Spikes
- A76 Low Carbon Steel Track Bolts and Nuts
- A84 Staybolt Wrought Iron, Solid
- A131 Structural Steel for Ships
- A152 Wrought - Iron Rivets and Rivet Rounds
- A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- A164 Electrodeposited Coatings of Zinc on Steel
- A183 Heat-Treated Carbon and Alloy-Steel Track Bolts and Carbon Steel Nuts
- A193 Alloy-Steel Bolting Materials for High Temperature Service
- A194 Carbon and Alloy-Steel Nuts for Bolts for High Pressure and High-Temperature Service
- A307 Low Carbon Steel Externally and Internally Threaded Standard Fasteners
- A320 Alloy Steel Bolting Materials for Low Temperature Service
- A325 High Strength Bolts for Structural Steel Joints, including Suitable Nuts and Plain Hardened Washers
- A354 Quenched and Tempered Alloy Steel Bolts and Studs with suitable Nuts
- A370 Mechanical Testing of Steel Products
- A394 Galvanised Steel Transmission Tower Bolts and Nuts
- A434 Quenched and Tempered Alloy Steel Bars, Hot Rolled or Cold Finished
- A437 Alloy Steel Turbine Type Bolting Material Specially Heat Treated for High Temperature Service
- A449 Quenched and Tempered Steel Bolts and Studs
- A453 High Strength, High Temperature Bolting Materials with Expansion Coefficients Comparable to Austenitic Steels
- A489 Carbon Steel Eyeballs
- A490 Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints
- A502 Specification for Steel Structural Rivets
- A540 Alloy Steel Bolting Materials for Special Applications
- A563 Carbon Steel Nuts
- A574 Alloy Steel Socket Head Cap Screws

## DIMENSIONS FOR HEX BOLTS, NUTS & LOCK NUTS

Sr. No.	Basic Dia	Equivalent Inch	Metric	Thread Specification	S H A N K				A/F Of Bolts & Nuts				Bolt Head Thickness				Std. Nut Thickness				Lock Nut Thickness						
					Max	Min	Metric	Inch	Max	Min	Metric	Inch	Max	Min	Metric	Inch	Max	Min	Metric	Inch	Max	Min					
1	1.6 mm	0.063	1.600	Metric	—	—	3.200	3.020	0.126	0.119	—	—	—	—	1.300	1.050	0.051	0.041	1.000	0.750	0.039	0.030					
2				[S:1364-83 IS:1364-92]	1.600	1.460	0.063	0.057	3.200	3.020	0.126	0.119	1.225	0.975	0.048	0.038	1.300	1.050	0.051	0.041	1.000	0.750	0.039	0.030			
3	10 BA	0.067	1.700	BA	BS:57-51	—	—	—	—	2.972	2.896	0.117	0.114	1.270	1.168	0.050	0.046	1.626	1.448	0.064	0.057	—	—	—	—		
4	2 mm	0.079	2.000	Metric	[S:1364-83 IS:1364-92]	2.000	1.860	0.079	0.073	—	—	4.000	3.820	0.157	0.150	—	—	—	—	1.600	1.350	0.063	0.053	1.200	0.950	0.047	0.037
5										4.000	3.820	0.157	0.150	1.525	1.275	0.060	0.050	1.600	1.350	0.063	0.053	1.200	0.950	0.047	0.037		
6	2.2 mm	0.087	2.200	Metric	[S:2389-68]	2.200	2.060	0.087	0.081	4.500	4.380	0.177	0.172	1.630	1.380	0.064	0.054	1.800	1.550	0.071	0.061	1.200	0.950	0.047	0.037		
7	8 BA	0.087	2.200	BA	BS:57-51	—	—	—	—	3.861	3.785	0.152	0.149	1.651	1.549	0.065	0.061	2.083	1.905	0.082	0.075	1.473	1.295	0.058	0.051		
8	2.5 mm	0.098	2.500	Metric	[S:1364-83 IS:1364-92]	2.500	2.360	0.098	0.093	—	—	5.000	4.820	0.197	0.190	—	—	—	—	2.000	1.750	0.079	0.069	1.600	1.350	0.063	0.053
9										5.000	4.820	0.197	0.190	1.825	1.575	0.072	0.062	2.000	1.750	0.079	0.069	1.600	1.350	0.063	0.053		
10	6 BA	0.110	2.800	BA	BS : 57-51	—	—	—	—	4.902	4.801	0.193	0.189	2.108	1.981	0.083	0.078	2.667	2.413	0.105	0.095	1.854	1.600	0.073	0.063		
11	3 mm	0.118	3.000	Metric	[S:1364-83 IS:1364-92]	3.000	2.860	0.118	0.112	5.500	5.320	0.216	0.209	2.120	1.880	0.083	0.074	2.400	2.150	0.094	0.085	1.800	1.550	0.071	0.061		
12										3.000	2.860	0.118	0.112	5.500	5.320	0.216	0.209	2.125	1.875	0.084	0.074	2.400	2.150	0.094	0.085		
13	1/8"	0.125	3.175	ESW	—	—	—	—	5.588	5.486	0.220	0.216	—	—	—	—	—	—	2.921	2.794	0.115	0.110	—	—	—	—	
14	3.5 mm	0.138	3.500	Metric	[S:1364-92]	3.500	3.320	0.138	0.131	6.000	5.820	0.236	0.229	2.525	2.275	0.099	0.090	2.800	2.550	0.110	0.100	2.000	1.750	0.079	0.069		
15	4 BA	0.142	3.600	BA	BS:57-51	—	—	—	—	6.299	6.172	0.248	0.243	2.692	2.540	0.106	0.100	3.429	3.175	0.135	0.125	2.388	2.134	0.094	0.084		
16	5/32"	0.156	3.969	ESW	—	—	—	—	6.299	6.172	0.248	0.243	—	—	—	—	—	—	3.302	3.175	0.130	0.125	—	—	—	—	
17	4 mm	0.157	4.000	Metric	[S:1364-83 IS:1364-92]	4.000	3.820	0.157	0.150	7.000	6.780	0.275	0.267	2.920	2.680	0.115	0.105	3.200	2.900	0.126	0.114	2.200	1.950	0.087	0.077		
18										4.000	3.820	0.157	0.150	7.000	6.780	0.275	0.267	2.925	2.675	0.115	0.105	3.200	2.900	0.126	0.114		
19	4.5 mm	0.177	4.500	Metric	[S:2389-68]	4.500	4.320	0.177	0.170	8.000	7.850	0.315	0.309	3.150	2.880	0.124	0.113	3.600	3.300	0.142	0.130	2.300	2.050	0.090	0.081		
20	2 BA	0.185	4.700	BA	BS:57-51	—	—	—	—	8.290	8.103	0.324	0.319	3.531	3.353	0.139	0.132	4.242	3.988	0.167	0.157	3.124	2.870	0.123	0.113		

Sr. No.	Basic Dia	Equivalent		Thread	Specification		SAF	SAF Of Bolts & Nuts	Bolt Head Thickness	Std. Nut Thickness	Lock Nut Thickness											
		Inch	Metric		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Metric	Inch		
21	3/16"	0.187	4.762	BSW	—	—	8.230	8.103	0.324	0.319	2.845	2.718	0.112	0.107	4.115	3.937	0.162	0.155	—	—		
22	5 mm	0.197	5.000	Metric	[S:1363-84]	5.480	4.520	0.216	0.178	8.000	7.640	0.315	0.301	3.875	3.125	0.153	0.123	5.600	4.400	0.220	0.173	
23					[S:1363-92]	5.480	4.520	0.216	0.178	8.000	7.640	0.315	0.301	3.875	3.125	0.153	0.123	5.600	4.400	0.220	0.173	
24					[S:1364-83]	5.000	4.820	0.197	0.190	8.000	7.780	0.315	0.306	3.650	3.350	0.144	0.132	4.700	4.400	0.185	0.173	
25					[S:1364-92]	5.000	4.820	0.197	0.190	8.000	7.780	0.315	0.306	3.650	3.350	0.144	0.132	4.700	4.400	0.185	0.173	
26	0 BA	0.236	6.000	BA	ES:57-51	—	—	—	—	10.490	10.363	0.413	0.408	4.496	4.293	0.177	0.169	5.410	5.156	0.213	0.203	
27	6 mm	0.236	6.000	Metric	[S:1363-67]	6.480	5.700	0.255	0.224	10.000	9.640	0.394	0.379	4.380	3.620	0.172	0.142	5.380	4.620	0.212	0.182	
28					[S:1363-84]	6.480	5.520	0.255	0.217	10.000	9.640	0.394	0.379	4.380	3.620	0.172	0.142	6.100	4.900	0.240	0.193	
29					[S:1363-92]	6.480	5.520	0.255	0.217	10.000	9.640	0.394	0.380	4.375	3.625	0.172	0.143	6.100	4.600	0.240	0.181	
30					[S:1364-67]	6.000	5.820	0.236	0.229	10.000	9.780	0.394	0.385	4.150	3.850	0.163	0.151	5.000	4.700	0.197	0.185	
31					[S:1364-83]	6.000	5.820	0.236	0.229	10.000	9.780	0.394	0.385	4.150	3.850	0.163	0.151	5.200	4.900	0.205	0.193	
32					[S:1364-92]	6.000	5.820	0.236	0.229	10.000	9.780	0.394	0.385	4.150	3.850	0.163	0.151	5.200	4.900	0.205	0.193	
33	1/4"	0.250	6.350	BSW-BSF	BS:916-57	7.112	—	0.280	—	11.303	11.049	0.445	0.435	4.724	4.216	0.186	0.166	5.588	5.080	0.220	0.200	
34					BSW-BSF	BS:1083-65	6.350	6.248	0.250	0.246	11.303	11.125	0.445	0.438	4.470	4.216	0.176	0.166	5.080	4.826	0.200	0.190
35					UNC-UNF	BS:1768-63	6.350	6.248	0.250	0.246	11.100	10.922	0.437	0.430	4.140	3.886	0.163	0.153	5.690	5.436	0.224	0.214
36					UNC-UNF	ANSI	6.604	—	0.260	—	11.125	10.795	0.438	0.425	4.775	3.810	0.188	0.150	5.740	5.385	0.226	0.212
37					[S:1363-67]	7.580	6.640	0.298	0.261	11.000	10.570	0.433	0.416	5.380	4.620	0.212	0.182	5.980	5.120	0.231	0.201	
38					[S:1364-67]	7.000	6.780	0.275	0.267	11.000	10.730	0.433	0.422	5.150	4.850	0.203	0.191	6.500	5.200	0.256	0.244	
39	5/16"	0.312	7.940	BSW-BSF	BS:916-57	8.687	—	0.342	—	13.335	13.081	0.525	0.515	5.791	5.283	0.228	0.208	6.858	6.350	0.270	0.250	
40					BSW-BSF	BS:1083-65	7.925	7.849	0.312	0.309	13.335	13.157	0.525	0.518	5.537	5.283	0.218	0.208	6.350	6.096	0.250	0.240
41					UNC-UNF	BS:1768-63	7.925	7.849	0.312	0.309	12.700	12.522	0.500	0.493	5.359	5.105	0.211	0.201	6.883	6.629	0.271	0.261
42					UNC-UNF	ANSI	8.230	—	0.324	—	12.700	12.924	0.500	0.484	5.969	4.953	0.235	0.195	6.934	6.553	0.273	0.258
43	8 mm	0.315	8.000	Metric	[S:1363-67]	8.900	7.640	0.350	0.301	13.000	12.570	0.512	0.495	5.880	5.120	0.231	0.201	6.950	6.050	0.274	0.238	
44					[S:1363-84]	8.580	7.420	0.338	0.292	13.000	12.570	0.512	0.495	5.680	4.920	0.224	0.194	7.900	6.400	0.311	0.252	
45					[S:1363-92]	8.580	7.420	0.338	0.292	13.000	12.570	0.512	0.495	5.675	4.925	0.223	0.194	7.900	6.400	0.311	0.252	
46					[S:1364-67]	8.000	7.780	0.315	0.306	13.000	12.730	0.512	0.501	5.650	5.350	0.222	0.211	6.500	6.140	0.256	0.242	
47					[S:1364-83]	8.000	7.780	0.315	0.306	13.000	12.730	0.512	0.501	5.450	5.150	0.214	0.203	6.800	6.440	0.268	0.253	
48					[S:1364-92]	8.000	7.780	0.315	0.306	13.000	12.730	0.512	0.501	5.450	5.150	0.215	0.203	6.800	6.440	0.268	0.254	

Sr. No.	Basic Dia	Equivalent Inch	Metric Thread Specification	S H A N K				A/F Of Bolts & Nuts				Bolt Head Thickness				Std. Nut Thickness				Lock Nut Thickness		
				Metric Max	Metric Min	Inch Max	Inch Min	Metric Max	Metric Min	Inch Max	Inch Min	Metric Max	Metric Min	Inch Max	Inch Min	Metric Max	Metric Min	Inch Max	Inch Min	Metric Max	Metric Min	Inch Max
49	3/8"	0.375	9.525 ESW-BSF	BS:916-57	10.287	—	0.405	—	15.240	14.859	0.600	0.585	6.858	6.350	0.270	0.250	8.433	7.925	0.332	0.312	6.604	6.350
50			ESW-BSF	BS:1083-65	9.525	9.423	0.375	0.371	15.240	15.037	0.600	0.592	6.604	6.350	0.260	0.250	7.925	7.671	0.312	0.302	5.690	5.436
51			UNC-UNF	BS:1768-63	9.525	9.423	0.375	0.371	14.275	14.072	0.562	0.554	6.172	5.918	0.243	0.233	8.458	8.204	0.333	0.323	5.690	5.436
52			UNC-UNF	ANSI	9.855	—	0.388	—	14.275	13.818	0.562	0.544	6.807	5.740	0.268	0.226	8.560	8.128	0.337	0.320	5.766	5.334
53	10 mm	0.394	10.000 Metric	S:1363-67	10.900	9.640	0.429	0.379	17.000	16.570	0.669	0.652	7.450	6.550	0.293	0.258	8.450	7.550	0.333	0.297	5.380	4.620
54				S:1363-84	10.580	9.420	0.416	0.371	16.000	15.570	0.630	0.613	6.850	5.950	0.270	0.234	9.500	8.000	0.374	0.315	—	—
55				S:1363-92	10.580	9.420	0.416	0.371	16.000	15.570	0.630	0.613	6.850	5.950	0.270	0.234	9.500	8.000	0.374	0.315	—	—
56				S:1364-67	10.000	9.780	0.394	0.385	17.000	16.730	0.669	0.659	7.180	6.820	0.283	0.268	8.000	7.640	0.315	0.301	5.000	4.700
57				S:1364-83	10.000	9.780	0.394	0.385	16.000	15.730	0.630	0.619	6.580	6.220	0.259	0.245	8.400	8.040	0.331	0.316	5.000	4.700
58				S:1364-92	10.000	9.780	0.394	0.385	16.000	15.730	0.630	0.619	6.580	6.220	0.259	0.245	8.400	8.040	0.331	0.317	5.000	4.700
59	7/16"	0.437	11.112 ESW-BSF	BS:916-57	11.887	—	0.468	—	18.034	17.653	0.710	0.695	7.925	7.417	0.312	0.292	10.033	9.525	0.395	0.375	6.985	6.731
60			ESW-BSF	BS:1083-65	11.100	10.998	0.437	0.433	18.034	17.831	0.710	0.702	7.671	7.417	0.302	0.292	9.525	9.271	0.375	0.365	6.350	6.096
61			UNC-UNF	BS:1768-63	11.100	10.998	0.437	0.433	15.875	15.672	0.625	0.617	7.391	7.137	0.291	0.281	9.652	9.398	0.380	0.370	6.477	6.223
62			UNC-UNF	ANSI	11.481	—	0.452	—	15.875	15.316	0.625	0.603	8.026	6.901	0.316	0.272	9.779	9.271	0.385	0.365	6.604	6.096
63	12 mm	0.472	12.000 Metric	S:1363-67	13.100	11.570	0.516	0.456	19.000	18.480	0.748	0.727	8.450	7.550	0.333	0.297	10.450	9.550	0.411	0.376	7.450	6.550
64				S:1363-84	12.700	11.300	0.500	0.445	18.000	17.570	0.709	0.692	7.950	7.050	0.313	0.277	12.200	10.400	0.480	0.409	—	—
65				S:1363-92	12.700	11.300	0.500	0.445	18.000	17.570	0.709	0.692	7.950	7.050	0.313	0.278	12.200	10.400	0.480	0.409	—	—
66				S:1364-67	12.000	11.730	0.472	0.462	19.000	18.670	0.748	0.735	8.180	7.820	0.322	0.308	10.000	9.640	0.394	0.379	7.000	6.640
67				S:1364-83	12.000	11.730	0.472	0.462	18.000	17.730	0.709	0.698	7.680	7.320	0.302	0.288	10.800	10.370	0.425	0.408	6.000	5.700
68				S:1364-92	12.000	11.730	0.472	0.462	18.000	17.730	0.709	0.698	7.680	7.320	0.302	0.288	10.800	10.370	0.425	0.408	6.000	5.700
69		0.500	12.700 ESW-BSF	BS:916-57	13.462	—	0.530	—	20.828	20.320	0.820	0.800	9.220	8.458	0.363	0.333	11.862	11.100	0.467	0.437	7.620	7.366
70			ESW-BSF	BS:1083-65	12.700	12.598	0.500	0.496	20.828	20.625	0.820	0.812	8.712	8.458	0.343	0.333	11.100	10.846	0.437	0.427	7.391	7.137
71			UNC-UNF	BS:1768-63	12.700	12.598	0.500	0.496	19.050	18.847	0.750	0.742	8.204	7.950	0.323	0.313	11.227	10.973	0.442	0.432	8.052	7.798
72			UNC-UNF	ANSI	13.081	—	0.515	—	19.050	18.415	0.750	0.725	9.246	7.671	0.364	0.302	11.379	10.846	0.448	0.427	8.204	7.671
73	14 mm	0.551	14.000 Metric	S:1363-67	15.100	13.570	0.594	0.534	22.000	21.160	0.866	0.833	9.450	8.550	0.372	0.337	11.550	10.450	0.455	0.411	8.450	7.550
74				S:1363-92	14.700	13.300	0.579	0.524	21.000	20.160	0.827	0.794	9.250	8.350	0.364	0.329	13.900	12.100	0.547	0.476	—	—
75				S:1364-67	14.000	13.730	0.551	0.540	22.000	21.670	0.866	0.853	9.180	8.820	0.361	0.347	11.000	10.570	0.433	0.416	8.000	7.640
76				S:1364-92	14.000	13.730	0.551	0.541	21.000	20.670	0.827	0.814	8.980	8.620	0.354	0.339	12.800	12.100	0.504	0.476	7.000	6.420

Sr. No.	Basic Dia	S H A N K				A/F Of Bolts & Nuts				Bolt Head Thickness				Std. Nut Thick ness				Lock Nut Thickness									
		Equivalent Inch	Metric	Metric		Inch		Metric		Inch		Metric		Inch		Metric		Inch		Metric							
				Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min						
77	9/16"	0.562	14.290	BSW-BSF	BS:916-57	15.037	—	0.592	—	23.368	22.860	0.920	0.900	10.287	9.525	0.405	0.375	13.462	12.700	0.530	0.500	8.458	8.204	0.333	0.323		
78				BSW-BSF	BS:1083-65	14.275	14.173	0.562	0.558	23.368	23.165	0.920	0.912	9.525	9.271	0.375	0.365	12.700	12.446	0.500	0.490	8.458	8.204	0.333	0.323		
79				UNC-UNF	BS:1768-63	14.275	14.173	0.562	0.558	21.800	21.550	0.848	0.848	9.423	9.169	0.371	0.361	12.421	12.167	0.489	0.479	8.865	8.611	0.349	0.339		
80				UNC-UNF	ANSI	—	—	—	—	—	—	—	—	—	—	—	—	12.598	12.014	0.496	0.473	8.230	7.645	0.324	0.301		
81	5/8"	0.625	15.875	BSW-BSF	BS:916-57	16.891	—	0.665	—	25.654	25.019	1.010	0.985	11.354	10.592	0.447	0.417	15.291	14.275	0.602	0.562	10.414	9.525	0.410	0.375		
82				BSW-BSF	BS:1083-65	15.875	15.723	0.625	0.619	25.654	25.400	1.010	1.000	10.592	10.338	0.417	0.407	14.275	14.021	0.562	0.552	9.525	9.271	0.375	0.365		
83				UNC-UNF	BS:1768-63	15.875	15.723	0.625	0.619	23.800	23.597	0.937	0.929	10.236	9.982	0.403	0.393	14.021	13.767	0.552	0.542	9.652	9.398	0.380	0.370		
84				UNC-UNF	ANSI	16.307	—	0.642	—	23.825	23.012	0.938	0.906	11.278	9.601	0.444	0.378	14.199	13.589	0.559	0.535	9.830	9.220	0.387	0.363		
85	16 mm	0.630	16.000	Metric	S:1363-67	17.100	15.570	0.673	0.613	24.000	23.160	0.945	0.912	10.450	9.556	0.411	0.376	13.550	12.450	0.533	0.490	8.450	7.550	0.333	0.297		
86					S:1363-84	16.700	15.300	0.657	0.602	24.000	23.160	0.945	0.912	10.750	9.250	0.423	0.364	15.900	14.100	0.626	0.555	—	—	—	—	—	—
87					S:1363-92	16.700	15.300	0.657	0.602	24.000	23.160	0.945	0.912	10.750	9.250	0.423	0.364	15.900	14.100	0.626	0.555	—	—	—	—	—	—
88					S:1364-67	16.000	15.730	0.630	0.619	24.000	23.670	0.945	0.932	10.180	9.820	0.401	0.387	13.000	12.570	0.512	0.495	8.000	7.640	0.315	0.301		
89					S:1364-83	16.000	15.730	0.630	0.619	24.000	23.670	0.945	0.932	10.180	9.820	0.401	0.387	14.800	14.100	0.583	0.555	8.000	7.420	0.315	0.292		
90					S:1364-92	16.000	15.730	0.630	0.619	24.000	23.670	0.945	0.932	10.180	9.820	0.401	0.387	14.800	14.100	0.583	0.555	8.000	7.420	0.315	0.292		
91	18 mm	0.709	18.000	Metric	S:1363-67	19.100	17.570	0.752	0.692	27.000	26.160	1.063	1.030	12.550	11.450	0.494	0.451	15.550	14.450	0.612	0.569	9.450	8.550	0.372	0.337		
92					S:1363-92	18.700	17.300	0.736	0.681	27.000	26.160	1.063	1.030	12.400	10.600	0.488	0.417	16.900	15.100	0.665	0.594	—	—	—	—	—	—
93					S:1364-67	18.000	17.730	0.709	0.698	27.000	26.670	1.063	1.050	12.220	11.780	0.481	0.464	15.000	14.570	0.590	0.574	9.000	8.640	0.354	0.340		
94					S:1364-92	18.000	17.730	0.709	0.698	27.000	26.670	1.063	1.050	11.175	11.285	0.440	0.444	15.800	15.100	0.622	0.594	9.000	8.420	0.354	0.331		
95	3/4"	0.750	19.050	BSW-BSF	BS:916-57	20.066	—	0.790	—	30.480	29.845	1.200	1.175	13.462	12.700	0.530	0.500	18.491	17.450	0.728	0.587	12.446	11.633	0.490	0.458		
96				BSW-BSF	BS:1083-65	19.050	18.898	0.750	0.744	30.480	30.226	1.200	1.190	12.700	12.182	0.500	0.480	17.450	17.196	0.687	0.677	11.633	11.379	0.458	0.448		
97				UNC-UNF	BS:1768-63	19.050	18.898	0.750	0.744	28.575	28.321	1.125	1.115	12.268	11.760	0.483	0.463	16.535	16.027	0.651	0.631	10.973	10.465	0.432	0.412		
98				UNC-UNF	ANSI	19.507	—	0.768	—	28.575	27.635	1.125	1.088	13.310	11.557	0.524	0.455	16.891	15.672	0.665	0.617	11.328	10.109	0.446	0.398		
99	20 mm	0.787	20.000	Metric	S:1363-67	21.300	19.480	0.838	0.767	30.000	29.160	1.181	1.148	13.550	12.450	0.533	0.490	16.550	15.450	0.651	0.608	9.450	8.550	0.372	0.337		
100					S:1363-84	20.840	19.160	0.820	0.754	30.000	29.160	1.181	1.148	13.400	11.600	0.527	0.457	18.700	16.600	0.736	0.653	—	—	—	—	—	—
101					S:1363-92	20.840	19.160	0.820	0.754	30.000	29.160	1.181	1.148	13.400	11.600	0.528	0.457	19.000	16.900	0.748	0.665	—	—	—	—	—	—
102					S:1364-67	20.000	19.670	0.787	0.774	30.000	29.160	1.181	1.148	13.350	12.650	0.525	0.498	16.000	14.900	0.630	0.587	9.000	8.100	0.354	0.319		
103					S:1364-83	20.000	19.670	0.787	0.774	30.000	29.670	1.181	1.168	12.720	12.280	0.501	0.483	18.000	16.900	0.709	0.665	10.000	9.100	0.394	0.358		
104					S:1364-92	20.000	19.670	0.787	0.774	30.000	29.670	1.181	1.168	12.715	12.285	0.501	0.484	18.000	16.900	0.709	0.665	10.000	9.100	0.394	0.358		

Sr. No.	Basic Dia	S H A N K						A/F Of Bolts & Nuts						Bolt Head Thickness						Std. Nut Thick ness							
		Equivalent		Metric		Inch		Metric		Inch		Metric		Inch		Metric		Inch		Metric		Inch		Metric		Inch	
		Inch	Metric	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
105	22 mm	0.866	22.000	Metric	IS:1363-67	23.300	21.480	0.917	0.846	32.000	31.000	1.260	1.220	14.550	13.450	0.573	0.529	18.550	17.450	0.730	0.687	10.450	9.550	0.411	0.376		
106		22.840	21.160		IS:1363-92	22.000	21.670	0.899	0.853	34.000	33.000	1.339	1.299	14.900	13.100	0.587	0.516	20.200	18.100	0.795	0.713	—	—	—	—	—	—
107		22.225	22.022		IS:1364-67	22.000	21.670	0.866	0.853	32.000	31.000	1.260	1.220	14.350	13.650	0.565	0.537	18.000	16.900	0.709	0.665	10.000	9.100	0.394	0.358		
108		22.000	21.670		IS:1364-92	22.000	21.670	0.866	0.853	34.000	33.380	1.339	1.314	14.215	13.785	0.560	0.543	19.400	18.100	0.764	0.713	11.000	9.900	0.433	0.390		
109	7/8"	0.875	22.225		BS:916-57	23.241	—	0.915	—	33.020	32.258	1.300	1.270	15.825	14.808	0.623	0.583	20.574	19.050	0.810	0.750	13.970	12.700	0.550	0.500		
110		22.225	22.022		BS:1083-65	22.225	22.022	0.875	0.867	33.020	32.715	1.300	1.288	14.808	14.300	0.583	0.563	19.050	18.796	0.750	0.740	12.700	12.446	0.500	0.490		
111		22.225	22.022		BS:1768-63	22.225	22.022	0.875	0.867	33.325	33.020	1.312	1.300	14.300	13.792	0.563	0.543	19.304	18.796	0.760	0.740	12.548	12.040	0.494	0.474		
112		22.733	—		ANSI	22.733	—	0.895	—	33.325	32.233	1.312	1.269	15.342	13.487	0.604	0.531	19.710	18.390	0.776	0.724	12.954	11.633	0.510	0.458		
113	24 mm	0.945	24.000		IS:1363-67	25.300	23.480	0.996	0.924	36.000	35.000	1.417	1.378	15.550	14.450	0.612	0.569	19.650	18.350	0.774	0.722	10.450	9.550	0.411	0.376		
114		24.840	23.160		IS:1363-84	24.840	23.160	0.978	0.912	36.000	35.000	1.417	1.378	15.900	14.100	0.626	0.555	22.300	20.200	0.878	0.795	—	—	—	—	—	—
115		24.840	23.160		IS:1363-92	24.840	23.160	0.978	0.912	36.000	35.000	1.417	1.378	15.900	14.100	0.626	0.555	22.300	20.200	0.878	0.795	—	—	—	—	—	—
116		24.000	23.670		IS:1364-67	24.000	23.670	0.945	0.932	36.000	35.000	1.417	1.378	15.350	14.650	0.604	0.577	19.000	17.700	0.748	0.697	10.000	9.100	0.394	0.358		
117		24.000	23.670		IS:1364-83	24.000	23.670	0.945	0.932	36.000	35.380	1.417	1.393	15.220	14.780	0.599	0.582	21.500	20.200	0.846	0.795	12.000	10.900	0.472	0.429		
118		24.000	23.670		IS:1364-92	24.000	23.670	0.945	0.932	36.000	35.380	1.417	1.393	15.215	14.785	0.599	0.582	21.500	20.200	0.846	0.795	12.000	10.900	0.472	0.429		
119	1"	1.000	25.400		BS:916-57	26.416	—	1.040	—	37.592	36.830	1.480	1.450	17.932	16.916	0.706	0.666	23.749	22.225	0.935	0.875	16.002	14.808	0.630	0.583		
120		25.400	25.197		BS:1083-65	25.400	25.197	1.000	0.992	37.592	37.287	1.480	1.468	16.916	16.154	0.666	0.636	22.225	21.971	0.875	0.865	14.808	14.554	0.563	0.573		
121		25.400	25.197		BS:1768-63	25.400	25.197	1.000	0.992	38.100	37.795	1.500	1.488	15.926	15.164	0.627	0.597	22.200	21.438	0.874	0.844	14.275	13.513	0.562	0.532		
122		25.959	—		ANSI	25.959	—	1.022	—	38.100	36.830	1.500	1.450	17.780	15.011	0.700	0.591	22.530	21.107	0.887	0.831	14.605	13.183	0.575	0.519		
123	27 mm	1.063	27.000		Metric	IS:1363-67	28.300	26.480	1.114	1.042	41.000	40.000	1.614	1.574	17.550	16.450	0.691	0.648	22.650	21.350	0.892	0.840	12.550	11.450	0.494	0.451	
124		27.840	26.160		IS:1363-92	27.000	26.670	1.096	1.050	41.000	40.000	1.614	1.575	17.900	16.100	0.705	0.634	24.700	22.600	0.972	0.890	—	—	—	—	—	—
125		27.000	26.670		IS:1364-67	27.000	26.670	1.063	1.050	41.000	40.000	1.614	1.574	17.350	16.650	0.683	0.655	22.000	20.700	0.866	0.815	12.000	10.900	0.472	0.497		
126		27.000	26.480		IS:1364-92	27.000	26.480	1.063	1.043	41.000	40.000	1.614	1.575	17.350	16.650	0.683	0.656	23.800	22.500	0.937	0.886	13.500	12.400	0.531	0.488		
127	1.125	28.575			BS:916-57	29.845	—	1.175	—	42.418	41.656	1.670	1.640	20.066	19.050	0.790	0.750	26.924	25.400	1.060	1.000	18.288	16.916	0.720	0.666		
128		28.575	28.372		BS:1083-65	28.575	28.372	1.125	1.117	42.418	41.656	1.670	1.640	19.050	18.034	0.750	0.710	25.400	25.146	1.000	0.990	16.916	16.662	0.666	0.656		
129		28.575	28.372		BS:1768-63	28.575	28.372	1.125	1.117	42.850	42.088	1.687	1.657	18.237	17.221	0.718	0.678	25.121	24.105	0.989	0.949	15.977	14.961	0.629	0.589		
130		29.185	—		ANSI	29.185	—	1.149	—	42.875	41.427	1.688	1.631	19.812	16.713	0.780	0.658	25.375	23.851	0.999	0.939	16.231	14.707	0.639	0.579		

Sr. No.	Basic Dia	Equivalent Inch	Metric	S H A N K			A/F Of Bolts & Nuts			Bolt Head Thickness			Std. Nut Thick ness			Lock Nut Thickness								
				Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Metric	Inch	Metric	Inch	Metric	Inch					
131	30 mm	1.181	30.000	Metric	31.300	29.480	1.232	1.161	46.000	45.000	1.811	1.772	19.650	18.350	0.774	0.722	26.650	23.350						
132				[S:1363-67]	[S:1363-84]	[S:1363-92]	30.840	29.160	1.214	1.148	46.000	45.000	1.811	1.772	19.750	17.650	0.777	0.695	26.400	24.300				
133				[S:1364-67]	[S:1364-83]	[S:1364-92]	30.840	29.160	1.214	1.148	46.000	45.000	1.811	1.772	19.750	17.650	0.778	0.695	26.400	24.300				
134				30.000	29.670	1.181	1.168	46.000	45.000	1.811	1.772	19.420	18.580	0.764	0.731	24.000	22.700	0.945	0.894	12.000	10.900			
135				30.000	29.670	1.181	1.168	46.000	45.000	1.811	1.772	19.120	18.280	0.753	0.718	25.600	24.300	1.008	0.957	15.000	13.900			
136				30.000	29.480	1.181	1.161	46.000	45.000	1.811	1.772	19.120	18.280	0.753	0.720	25.600	24.300	1.008	0.957	15.000	13.900			
137	1.1/4"	1.250	31.750	BSW-BSF	ES:916:57	33.020	—	1.300	—	47.224	46.101	1.860	1.815	22.606	21.082	0.890	0.830	30.607	28.575	1.205	1.125	20.574	19.050	
138				BSW-BSF	ES:1083:65	31.750	31.547	1.250	1.242	47.244	46.101	1.860	1.815	21.082	20.066	0.830	0.790	28.375	28.067	1.125	1.105	19.050	18.542	
139				UNC-UNF	ES:1768:63	31.750	31.547	1.250	1.242	47.625	46.482	1.875	1.830	20.650	19.634	0.813	0.773	27.610	26.340	1.087	1.037	18.898	17.628	
140				UNC-UNF	ANSI	32.436	—	1.277	—	47.625	46.025	1.875	1.812	22.250	19.025	0.876	0.749	27.788	26.162	1.094	1.030	19.075	17.450	
141	33 mm	1.299	33.000	Metric	[S:1363-67]	34.000	32.380	1.362	1.275	50.000	49.000	1.968	1.929	21.650	20.350	0.852	0.801	26.650	25.350	1.049	0.998	14.550	13.450	
142				[S:1363-92]	[S:1364-67]	[S:1364-92]	34.000	32.000	1.339	1.260	50.000	49.000	1.969	1.929	22.050	19.950	0.868	0.785	29.500	27.400	1.161	1.079	—	—
143				[S:1364-67]	[S:1364-92]	[S:1364-92]	33.000	32.610	1.300	1.284	50.000	49.000	1.968	1.929	21.420	20.580	0.843	0.810	26.000	24.700	1.024	0.92	14.000	12.900
144				[S:1364-92]	[S:1364-92]	[S:1364-92]	33.000	32.380	1.299	1.275	50.000	49.000	1.969	1.929	21.420	20.580	0.843	0.810	28.700	27.400	1.130	1.079	16.500	15.400
145	1.375	1.375	34.925	BSW-BSF	ES:916:57	36.195	—	1.425	—	52.070	50.927	2.050	2.005	24.892	23.368	0.980	0.920	33.782	31.750	1.330	1.250	22.606	21.158	
146				BSW-BSF	ES:1083:65	34.925	34.671	1.375	1.365	52.070	50.927	2.050	2.005	23.368	22.362	0.920	0.880	31.750	31.242	1.250	1.230	21.158	20.650	
147				UNC-UNF	ES:1768:63	34.925	34.671	1.375	1.365	52.375	51.232	2.062	2.017	22.301	21.295	0.878	0.838	30.404	29.134	1.197	1.147	20.472	19.202	
148				UNC-UNF	ANSI	35.662	—	1.404	—	52.375	50.648	2.062	1.994	23.876	20.574	0.940	0.810	30.632	28.905	1.206	1.138	20.701	18.974	
149	36 mm	1.417	36.000	Metric	[S:1363-67]	37.600	35.380	1.480	1.393	55.000	53.800	2.165	2.118	23.650	22.350	0.931	0.880	29.650	28.350	1.167	1.116	14.550	13.450	
150				[S:1363-84]	[S:1363-92]	[S:1363-92]	37.000	35.000	1.457	1.378	55.000	53.800	2.165	2.118	23.550	21.450	0.927	0.844	31.500	29.400	1.240	1.157	—	—
151				[S:1363-92]	[S:1364-67]	[S:1364-67]	36.000	35.610	1.417	1.402	55.000	53.800	2.165	2.118	23.420	22.580	0.922	0.889	29.000	27.700	1.142	1.090	14.000	12.900
152				[S:1364-67]	[S:1364-83]	[S:1364-92]	36.000	35.610	1.417	1.402	55.000	53.800	2.165	2.118	22.920	22.080	0.902	0.869	31.000	29.400	1.220	1.157	18.000	16.900
153				[S:1364-92]	[S:1364-92]	[S:1364-92]	36.000	35.380	1.417	1.393	55.000	53.800	2.165	2.118	22.920	22.080	0.902	0.869	31.000	29.400	1.220	1.157	18.000	16.900
154				[S:1364-92]	[S:1364-92]	[S:1364-92]	36.000	35.610	1.417	1.402	55.000	53.800	2.165	2.118	23.420	22.580	0.922	0.889	29.000	27.700	1.142	1.090	14.000	12.900
155	1.500	1.500	38.100	BSW-BSF	ES:916:57	39.370	—	1.550	—	56.388	55.245	2.220	2.175	26.924	25.400	1.060	1.000	36.957	34.925	1.455	1.375	24.892	23.266	
156				BSW-BSF	ES:1083:65	38.100	34.846	1.500	1.490	56.388	55.245	2.220	2.175	25.400	24.384	1.000	0.960	34.925	34.417	1.375	1.355	23.266	22.758	
157				UNC-UNF	ES:1768:63	38.100	37.846	1.500	1.490	57.150	56.007	2.205	2.205	24.740	23.724	0.974	0.934	33.299	31.775	1.311	1.251	22.200	20.676	
158				UNC-UNF	ANSI	38.887	—	1.531	—	57.150	55.245	2.250	2.175	26.134	22.911	1.036	0.902	33.452	31.623	1.317	1.245	22.352	20.523	

Sr. No.	Basic Dia	S H A N K				A/F Of Bolts & Nuts				Bolt Head Thickness				Std. Nut Thick ness				Lock Nut Thickness					
		Equivalent Inch	Metric	Specification Thread		Metric		Inch		Metric		Inch		Metric		Inch		Metric		Inch			
				Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min		
159	39 mm	1.535	39.000	Metric	[S:1363-67]	40.600	38.380	1.598	1.511	60.000	58.800	2.362	2.315	25.650	24.350	1.010	0.959	31.800	30.200	1.252	1.189	16.550	15.450
160				[S:1363-92]	40.000	38.000	1.575	1.496	60.000	58.800	2.362	2.315	26.050	23.950	1.026	0.943	34.300	31.800	1.350	1.252	—	—	
161				[S:1364-67]	39.000	38.610	1.535	1.520	60.000	58.800	2.362	2.315	25.420	24.580	1.001	0.968	31.000	29.400	1.220	1.157	16.000	14.900	
162				[S:1364-92]	39.000	38.380	1.535	1.511	60.000	58.800	2.362	2.315	25.420	24.580	1.001	0.968	33.400	31.800	1.315	1.252	19.500	18.200	
163	42 mm	1.653	42.000	Metric	[S:1363-92]	43.000	41.000	1.693	1.614	65.000	63.100	2.559	2.484	27.050	24.950	1.065	0.982	34.900	32.400	1.374	1.276	—	—
164				[S:1364-92]	42.000	41.380	1.654	1.629	65.000	63.100	2.559	2.484	26.420	25.580	1.040	1.007	34.000	32.400	1.339	1.276	21.000	19.700	
165	1.3/4"	1.750	44.450	BSW-BSF	[S:916-57]	45.974	—	1.810	—	65.592	64.008	2.580	2.520	32.258	29.718	1.270	1.170	43.815	41.275	1.725	1.625	29.464	27.508
166				BSW-BSF	[S:1083-65]	44.450	44.196	1.750	1.740	65.592	64.008	2.580	2.520	29.718	28.194	1.170	1.110	41.275	40.767	1.625	1.605	27.508	27.000
167				UNC-UNF	[S:1768-63]	44.450	44.196	1.750	1.740	66.675	65.151	2.265	2.565	28.804	27.280	1.134	1.074	38.862	37.338	1.530	1.470	25.375	23.851
168				ANSI	45.339	—	1.785	—	66.675	64.465	2.625	2.538	30.378	26.772	1.196	1.054	—	—	—	—	—	—	
169	45 mm	1.771	45.000	Metric	[S:1363-92]	46.000	44.000	1.811	1.732	70.000	68.100	2.756	2.681	29.050	26.950	1.144	1.061	36.900	34.400	1.453	1.354	—	—
170				[S:1364-92]	45.000	44.380	1.772	1.747	70.000	68.100	2.756	2.681	28.420	27.580	1.119	1.086	36.000	34.400	1.417	1.354	22.500	21.200	
171	48 mm	1.890	48.000	Metric	[S:1363-92]	49.000	47.000	1.929	1.850	75.000	73.100	2.953	2.878	31.050	28.950	1.222	1.140	38.900	36.400	1.531	1.433	—	—
172				[S:1364-92]	48.000	47.380	1.890	1.865	75.000	73.100	2.953	2.878	30.420	29.580	1.198	1.165	38.000	36.400	1.496	1.433	24.000	22.700	
173	2"	2.000	50.800	BSW-BSF	[S:916-57]	52.324	—	2.060	—	70.104	68.580	2.760	2.700	36.322	33.782	1.430	1.330	46.990	44.450	1.850	1.750	31.750	29.616
174				BSW-BSF	[S:1083-65]	50.800	50.546	2.000	1.990	70.104	68.580	2.760	2.700	33.782	32.258	1.330	1.270	44.450	43.942	1.750	1.730	29.616	29.108
175				UNC-UNF	[S:1768-63]	50.800	50.546	2.000	1.990	76.200	74.676	3.000	2.940	32.080	30.556	1.263	1.203	44.552	42.774	1.754	1.684	28.677	26.899
176				ANSI	51.791	—	2.039	—	76.200	73.660	3.000	2.900	35.255	29.845	1.388	1.175	—	—	—	—	—	—	
177	52 mm	2.047	52.000	Metric	[S:1363-92]	53.200	50.800	2.094	2.000	80.000	78.100	3.150	3.075	34.250	31.750	1.348	1.250	42.900	40.400	1.689	1.591	—	—
178				[S:1364-92]	52.000	51.260	2.047	2.018	80.000	78.100	3.150	3.075	33.500	32.500	1.319	1.280	42.000	40.400	1.654	1.591	26.000	24.700	
179	56 mm	2.205	56.000	Metric	[S:1363-92]	57.200	54.800	2.252	2.157	85.000	82.800	3.346	3.260	36.250	33.750	1.427	1.329	45.900	43.400	1.807	1.709	—	—
180				[S:1364-92]	56.000	55.260	2.205	2.176	85.000	82.800	3.346	3.260	35.500	34.500	1.398	1.358	45.000	43.400	1.772	1.709	28.000	26.700	
181	2.1/4"	2.250	57.150	BSW-BSF	[S:916-57]	—	—	—	—	80.100	78.486	3.150	3.090	40.640	38.100	1.600	1.500	50.165	47.625	1.975	1.875	36.322	31.750
182	60 mm	2.362	60.000	Metric	[S:1363-92]	61.200	58.800	2.409	2.315	90.000	87.800	3.543	3.457	39.250	36.750	1.545	1.447	48.900	46.400	1.925	1.827	—	—
183				[S:1364-92]	60.000	59.260	2.362	2.333	90.000	87.800	3.543	3.457	38.500	37.500	1.516	1.476	48.000	46.400	1.890	1.827	30.000	28.700	
184	2.1/2"	2.500	63.500	BSW-BSF	[S:916-57]	—	—	—	—	90.170	88.646	3.550	3.490	44.958	42.418	1.770	1.670	56.515	53.975	2.225	2.125	40.640	35.966

Sr. No.	Basic Dia	Equivalent Inch	Thread	S H A N K		A/F Of Bolts & Nuts				Bolt Head Thickness				Std. Nut Thickness				Lock Nut Thickness				
				Specification	Metric Max	Inch Max	Metric Min	Inch Min	Metric Max	Inch Max	Metric Min	Inch Max	Metric Max	Inch Max	Metric Min	Inch Max	Metric Max	Inch Max				
185	64 mm	2.520	64.000	Metric	65.200	62.800	2.567	2.472	95.000	92.800	3.740	3.654	41.250	38.750	1.624	1.526	52.400	49.400	2.063	—		
186	68 mm	2.677	68.000	Metric	64.000	63.260	2.520	2.491	95.000	92.800	3.740	3.654	40.500	39.500	1.594	1.555	51.000	49.100	2.008	1.933		
187	72 mm	2.834	72.000	Metric	68.850	BSW-BSF	—	—	—	—	100.000	98.600	3.937	3.882	43.500	42.500	1.712	1.673	54.000	52.800	2.126	2.079
188	76 mm	2.992	76.000	Metric	72.000	BSW-BSF	—	—	—	—	98.806	97.282	3.890	3.830	49.022	46.482	1.930	1.830	62.865	60.325	2.475	2.375
189	80 mm	3.149	80.000	Metric	76.200	BSW-BSF	—	—	—	—	105.000	103.600	4.134	4.079	45.500	44.500	1.791	1.752	58.000	56.800	2.283	2.236
190	85 mm	3.346	85.000	Metric	80.000	BSW-BSF	—	—	—	—	110.000	108.600	4.331	4.275	48.500	47.580	1.909	1.873	61.000	59.800	2.401	2.354
191	90 mm	3.543	90.000	Metric	85.000	BSW-BSF	—	—	—	—	106.172	103.632	4.180	4.080	54.610	50.800	2.150	2.000	70.485	66.675	2.775	2.625
192	95 mm	3.740	95.000	Metric	90.000	BSW-BSF	—	—	—	—	115.000	113.600	4.527	4.472	50.500	49.500	1.988	1.949	64.000	62.800	2.520	2.472
193	100 mm	3.937	100.000	Metric	95.000	BSW-BSF	—	—	—	—	120.000	118.600	4.724	4.669	54.600	53.400	2.150	2.102	68.000	66.800	2.677	2.630
194	105 mm	4.133	105.000	Metric	100.000	BSW-BSF	—	—	—	—	130.000	128.400	5.118	5.055	57.600	56.400	2.268	2.220	72.000	70.800	2.835	2.787
195	110 mm	4.330	110.000	Metric	105.000	BSW-BSF	—	—	—	—	135.000	133.400	5.315	5.252	60.600	59.400	2.385	2.338	76.000	74.800	2.992	2.945
196	115 mm	4.527	115.000	Metric	110.000	BSW-BSF	—	—	—	—	145.000	143.400	5.709	5.646	63.600	62.400	2.504	2.457	80.000	78.800	3.150	3.102
197	120 mm	4.724	120.000	Metric	115.000	BSW-BSF	—	—	—	—	150.000	148.400	5.905	5.842	66.600	65.400	2.622	2.575	84.000	82.600	3.307	3.252
198	125 mm	4.921	125.000	Metric	120.000	BSW-BSF	—	—	—	—	155.000	153.400	6.102	6.039	69.600	68.400	2.740	2.693	88.000	86.600	3.464	3.409
199	130 mm	5.118	130.000	Metric	125.000	BSW-BSF	—	—	—	—	165.000	163.400	6.496	6.433	72.600	71.400	2.858	2.811	92.000	90.600	3.622	3.567
200	135 mm	5.511	140.000	Metric	130.000	BSW-BSF	—	—	—	—	170.000	168.400	6.693	6.630	76.600	75.400	3.016	2.968	96.000	94.600	3.779	3.724
201	140 mm	5.905	150.000	Metric	140.000	BSW-BSF	—	—	—	—	180.000	178.400	7.087	7.024	79.600	78.400	3.134	3.087	100.000	98.600	3.937	3.882
202	145 mm	6.302	160.000	Metric	150.000	BSW-BSF	—	—	—	—	185.000	183.150	7.283	7.211	82.700	81.300	3.201	3.104	104.000	102.600	4.094	4.039
203	150 mm	6.699	170.000	Metric	160.000	BSW-BSF	—	—	—	—	200.000	198.150	7.874	7.801	88.700	87.300	3.492	3.457	112.000	110.600	4.409	4.354
204	155 mm	7.096	180.000	Metric	170.000	BSW-BSF	—	—	—	—	210.000	208.150	8.268	8.195	95.700	94.300	3.768	3.712	120.000	118.600	4.724	4.669

**DIMENSIONS FOR HEAVY HEX UNC 2H NUTS AS PER ASTM SPECIFICATION**

SR. No.	<b>BASIC DIA</b>	<b>EQUIVALENT METRIC</b>	<b>INCH</b>	<b>ACROSS FLAT</b>				<b>METRIC</b>				<b>THICKNESS</b>	
				<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>
1	1/4" x 20 UNC	6.350	0.2500	12.70	12.40	0.50	0.49	6.35	5.54	0.25	0.22		
2	5/16" x 18 UNC	7.940	0.3125	14.28	13.87	0.56	0.55	7.98	7.11	0.31	0.28		
3	3/8" x 16 UNC	9.525	0.3750	17.48	17.00	0.69	0.67	9.58	8.66	0.38	0.34		
4	7/16" x 14 UNC	11.112	0.4375	19.05	18.49	0.75	0.73	11.20	10.24	0.44	0.40		
5	1/2" x 13 UNC	12.700	0.5000	22.22	21.60	0.87	0.85	12.80	11.79	0.50	0.46		
6	9/16" x 12 UNC	14.290	0.5625	23.83	23.09	0.94	0.91	14.43	13.36	0.57	0.53		
7	5/8" x 11 UNC	15.875	0.6250	26.99	26.19	1.06	1.03	16.03	14.91	0.63	0.59		
8	3/4" x 10 UNC	19.050	0.7500	31.75	30.79	1.25	1.21	19.25	18.03	0.76	0.71		
9	7/8" x 9 UNC	22.225	0.8750	36.53	35.41	1.44	1.39	22.48	21.16	0.89	0.83		
10	1" x 8 UNC	25.400	1.0000	41.28	40.01	1.63	1.58	25.70	24.30	1.01	0.96		
11	1.1/8" x 8 UNC	28.575	1.1250	46.03	44.60	1.81	1.76	28.93	27.41	1.14	1.08		
12	1.1/4" x 8 UNC	31.750	1.2500	50.80	49.23	2.00	1.94	31.78	30.15	1.25	1.19		
13	1.3/8" x 8 UNC	34.925	1.3750	55.58	53.82	2.19	2.12	35.00	33.26	1.38	1.31		
14	1.1/2" x 8 UNC	38.100	1.5000	60.33	58.42	2.38	2.30	38.23	36.40	1.51	1.43		
15	1.5/8" x 8 UNC	41.275	1.6250	65.08	63.02	2.56	2.48	41.45	39.53	1.63	1.56		
16	1.3/4" x 8 UNC	44.450	1.7500	69.85	67.62	2.75	2.66	44.68	42.65	1.76	1.68		
17	1.7/8" x 8 UNC	47.625	1.8750	74.63	72.24	2.94	2.84	47.90	45.77	1.89	1.80		
18	2" x 8 UNC	50.800	2.0000	79.38	76.84	3.13	3.03	51.13	48.90	2.01	1.93		
19	2.1/4" x 8 UNC	57.150	2.2500	88.90	86.06	3.50	3.39	57.18	54.74	2.25	2.16		
20	2.1/2" x 8 UNC	63.500	2.5000	98.43	95.25	3.88	3.75	63.63	60.99	2.51	2.40		
21	2.3/4" x 8 UNC	69.850	2.7500	107.95	104.25	4.25	4.10	70.08	67.23	2.76	2.65		
22	3" x 8 UNC	76.200	3.0000	117.48	113.67	4.63	4.48	76.46	73.48	3.01	2.89		
23	3.1/4" x 8 UNC	82.550	3.2500	127.00	122.90	5.00	4.84	82.60	79.35	3.25	3.12		
24	3.1/2" x 8 UNC	88.900	3.5000	136.53	132.08	5.38	5.20	89.05	85.00	3.51	3.35		
25	3.3/4" x 8 UNC	95.250	3.7500	146.05	141.28	5.75	5.56	95.50	91.85	3.76	3.62		
26	4" x 8 UNC	101.600	4.0000	155.58	150.58	6.13	5.93	101.96	98.10	4.01	3.86		

### DIMENSIONS FOR

"PUNCHED WASHERS", TYPE A, - IS:2016 / 67  
FOR HEXAGONAL BOLTS AND SCREWS

FOR BOLT OR SCREW SIZE	I.D.	O.D.	THICKNESS
M 1.6	1.8	4	0.4
M 1.8	2.1	5	0.4
M 2	2.4	5	0.4
M 2.2	2.6	6	0.5
M 2.5	2.9	6.5	0.5
M 3	3.4	7	0.5
M 3.5	4	8	0.8
M 4	4.5	9	0.8
M 4.5	5	10	1
M 5	5.5	10	1
M 6	6.6	12.5	1.6
M 7	7.6	14	1.6
M 8	9	17	1.6
M 10	11	21	2
M 12	14	24	2.5
M 14	16	28	2.5
M 16	18	30	3.15
M 18	20	34	3.15
M 20	22	37	3.15
M 22	24	39	3.15
M 24	26	44	4
M 27	30	50	4
M 30	33	56	4
M 33	36	60	5
M 36	39	66	5
M 39	42	72	6
M 42	45	78	6
M 45	48	85	8
M 48	52	92	8
M 52	54	98	8
M 56	58	105	9
M 60	62	110	9
M 64	66	115	9
M 68	70	120	10
M 72	74	125	10

### DIMENSIONS FOR

"MACHINED WASHERS" - IS:2016 / 67  
FOR HEXAGONAL BOLTS AND SCREWS

FOR BOLT OR SCREW SIZE	I.D.	O.D.	THICKNESS
M 1.6	1.7	4	0.3
M 1.8	2	5	0.3
M 2	2.2	5	0.3
M 2.2	2.4	6	0.5
M 2.5	2.7	6.5	0.5
M 3	3.2	7	0.5
M 3.5	3.7	8	0.8
M 4	4.3	9	0.8
M 4.5	4.8	10	1
M 5	5.3	10	1
M 6	6.4	12.5	1.6
M 7	7.4	14	1.6
M 8	8.4	17	1.6
M 10	10.5	21	2
M 12	13	24	2.5
M 14	15	28	2.5
M 16	17	30	3
M 18	19	34	3
M 20	21	37	3
M 22	23	39	3
M 24	25	44	4
M 27	28	50	4
M 30	31	56	4
M 33	34	60	5
M 36	37	66	5
M 39	40	72	6
M 42	43	78	7
M 45	46	85	7
M 48	50	92	8
M 52	54	98	8
M 56	58	105	9
M 60	62	110	9
M 64	66	115	9
M 68	70	120	10
M 72	74	125	10

For Washers as per IS : 6610, while ID & OD remains same as above punched washers, but thickness changes to 8mm for all sizes (from 12mm to 39 mm bolt size)

### DIMENSIONS FOR "PUNCHED WASHERS", TYPE B, - IS:2016 / 67 FOR ROUND AND CHEESE HEAD SCREWS

FOR SCREW SIZE	I.D.	O.D.	THICKNESS
M 1.6	1.8	3.5	0.4
M 1.8	2.1	3.5	0.4
M 2	2.4	4.5	0.4
M 2.2	2.6	4.5	0.5
M 2.5	2.9	5	0.5
M 3	3.4	6	0.5
M 3.5	4	7	0.5
M 4	4.5	8	0.8

FOR SCREW SIZE	I.D.	O.D.	THICKNESS
M 4.5	5	9	0.8
M 5	5.5	9.5	1
M 6	6.6	11	1.6
M 7	7.6	13	1.6
M 8	9	14	1.6
M 10	11	18	2
M 12	14	20	2.5
M 16	18	27	3.15

## THREADING LENGTH

Different specification have different thread length. We cover all the details together for easy reference.

**1. Standard Hex Bolt to IS:1363, 1364, BS:4190, DIN:601. From 5mm to 36mm dia size**

- i) Bolt length upto 125mm : double the dia + 6mm
- ii) from 125 to 200mm : double the dia + 12mm
- iii) above 200mm : double the dia + 25mm

**2. Metric Hex Bolts for Steel structures to IS:6639 - 72, IS:12427 - 88, DIN:7990**

This specification has fixed thread length for each dia. as follows : (Except thread length difference, all other dimension of Bolts are as per IS:1363)

Dia	12mm	16mm	20mm	22mm	24mm	27mm	30mm	33mm	36mm	39mm
T.L.	20	23	26	28	30	33	35	38	40	43

**3. BSW-BSF Hex Bolts to BS:916**

Length of Bolts	All diameters upto & including 1/2" & all drilled bolts	All dia over 1/2"
upto / including 4"	2" x dia	1.1/2" x dia
over 4" upto/including 8"	2" x dia	2" x dia
over 8"	2.1/2" x dia	2.1/2" x dia

**3a Bolts faced under the head with or without turning on the shank**

Length of bolt	All diameters
All lengths	2" x dia

Bolts that are too short for minimum thread length shall be threaded as screws.

**4. BSW-BSF Precision Hex Bolts to BS:1083-65**

All dia and length : Minimum double the dia

**5. UNC-UNF Bolts to BS:1768-63**

Bolt length upto/including 6" Double the dia + 1/4"

Bolt length over 6" Double the dia + 1/2"

## MECHANICAL PROPERTIES OF BOLTS, SCREWS AND STUDS

Mechanical Properties	4.6	4.8	5.6	5.8	6.8	< M16	> M16	9.8	10.9	12.9	
Tensile Strength, R/M N/mm <sup>2</sup>	Nom	400	400	500	500	600	800	800	900	1000	1200
	Min	400	420	500	520	600	800	830	900	1040	1220
Vickers hardened HV	Min	120	130	155	160	190	230	255	280	310	372
Brinell hardness, F-30D2 HB	Max	220	220	220	220	250	300	336	360	382	434
	Min	114	124	147	152	181	219	242	266	295	353
Roxkwell hardness HR	Max	209	209	209	209	238	285	319	342	362	412
	HR	67	71	79	82	89	--	--	--	--	--
	HRC	--	--	--	--	--	20	23	27	31	38
	HRB	95	95	95	95	99	--	--	--	--	--
	Max	--	--	--	--	--	30	34	36	39	44
Surface hardness, HV Max	Max	--	--	--	--	--	320	356	380	402	454
Yield Stress, Rel, N/mm <sup>2</sup>	Nom	240	320	300	400	480	--	--	--	--	--
	Min	240	340	300	420	480	--	--	--	--	--
Stress at perman set N/mm <sup>2</sup>	Nom	--	--	--	--	--	640	640	720	900	1080
limit, R	Min	--	--	--	--	--	640	660	720	940	1100
Sp/ReL	0.94	0.91	0.94	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88
Stress under proof load, S N/mm <sup>2</sup>	225	310	280	380	440	580	600	650	830	970	
Elongation after fracture A%	Min	22	14	20	10	8	12	12	10	9	8
Strength under wedge loadin		The values for full size bolts and screws (not studs) should equal the minimum values for tensile strength shown in 4.2									
Impact strength	Min	--	25		--	30	30	25	20	15	
Head soundness		No fracture									
Minimum height on non decarburized thread zone, E		--			1/2H1	2/3H1			3/4H1		
Maximum depth of complete decarburization, G mm		0.015									

**M. OCHHAVLAL & CO.**

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## **NOTES**

## BOLTS

Hex Head | Carriage  
Foundation | HSFG etc.



## NUTS



## SCREWS

CSK | Round | Cheese | Pan Head  
Allen Cap | Grub | Self Tapping  
Phillips Recess Head etc.



## WASHERS

Punched | Machined  
Taper | Spring Washers  
Star Washers etc.



## SIZE

From 1.6mm to 100mm and  
equally in Inch Size



## THREAD

Metric | BSW | BSF | UNC | UNF  
Left Hand etc. in coarse and Fine Pitch

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