

FED SUP CLASS  
5305

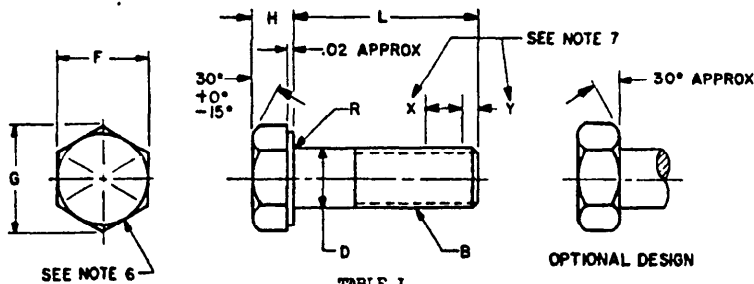


TABLE I

NOMINAL SIZE			1/4	5/16	3/8	7/16	1/2	9/16	5/8
B	THREAD	UNF-2A	28	24	24	20	20	18	18
D	BODY DIAMETER	MAX MIN	.2500 .2450	.3125 .3065	.3750 .3690	.4375 .4305	.5000 .4930	.5625 .5545	.6250 .6170
F	WIDTH ACROSS FLATS	MAX MIN	.4375 .4280	.5000 .4890	.5625 .5510	.6250 .6120	.7500 .7360	.8125 .7980	.9375 .9220
G	WIDTH ACROSS CORNERS	MAX MIN	.505 .488	.577 .557	.650 .628	.722 .698	.866 .840	.938 .910	1.083 1.051
H	HEAD HEIGHT	MAX MIN	.163 .150	.211 .195	.243 .226	.291 .272	.323 .302	.371 .348	.403 .378
R	RADIUS	MAX MIN	.025 .015	.025 .015	.025 .015	.025 .015	.025 .015	.045 .020	.045 .020
* MIN TENSILE STRENGTH - LBS			5,450	8,700	13,200	17,800	24,000	30,400	38,400

L LENGTH	TOLERANCE	DASH NO.	DASH NO.	DASH NO.	DASH** NO.	DASH NO.	DASH** NO.	DASH NO.
.375	+0 -.031	1	27	53	79	104	130	155
.438		2	28	54				
.500		3	29	55				
.562		4	30	56				
.625		5	31	57				
.750		6	32	58				
.875		7	33	59				
1.000		8	34	60				
1.125	+0 -.062	9	35	61	86	110	135	159
1.250		10	36	62	87	111	136	160
1.375		11	37	63	88	112	137	161
1.500		12	38	64	89	113	138	162
1.750		13	39	65	90	114	139	163
2.000		14	40	66	91	115	140	164
2.250		+0 -.094	15	41	67	92	116	141
2.500	16		42	68	93	117	142	166
2.750	17		43	69	94	118	143	167
3.000	18		44	70	95	119	144	168
3.250	19		45	71	96	120	145	169
3.500	20		46	72	97	121	146	170
3.750	21		47	73	98	122	147	171
4.000	22		48	74	99	122	148	172
4.250	21		49	75	100	124	149	173
4.500	24		50	76	101	125	150	174
4.750	25		51	77	102	126	151	175
5.000	26		52	78	103	127	152	176
5.500					128	153	177	
6.000					129	154	178	

NOTE: FOR NOTES AND ADDITIONAL SIZES SEE SHEET 2.

CROSS REFERENCE OF PART NUMBERS

THE SCREWS COVERED BY DASH NUMBERS GIVEN IN MS35302, MS35304 AND MS35306 ARE CANCELLED AFTER THE DATES INDICATED ON THE CANCELLED DOCUMENTS. USE DASH NUMBERS USED IN THIS STANDARD. THE CANCELLED SCREWS CANNOT ALWAYS REPLACE THE NEW SCREWS AND SHOULD BE USED UNTIL EXISTING STOCKS ARE DEPLETED. USE ONLY THE NEW SCREWS FOR DESIGN AND REPLACEMENT. DASH NUMBERS REPRESENTING OLD AND NEW SCREWS ARE IDENTICAL, MAKING IT UNNECESSARY TO PREPARE AN INTERCHANGEABILITY TABLE.

Ⓡ DENOTES CHANGES

P.A. AR Other Cust 99	INTERNATIONAL INTEREST	TITLE SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, ZINC COATED, UNF-2A, PLAIN AND SELF-LOCKING Ⓡ	MILITARY STANDARD MS90727
PROCUREMENT SPECIFICATION FF-S-85	SUPERSEDES SEE NOTE 12	SHEET 1	OF 5

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 This military standard is approved for use by all Departments and Agencies of the Department of Defense.  
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USER ACTIVITIES:  
 ME MU PA CL WV OB MC NSA  
 REVIEWER ACTIVITIES:  
 AT AV MI EA

APPROVED 6 MAY 63  
 REVISED ⓐ 1 AUG 67 ⓑ 14 OCT 68 ⓒ 1 MAY 1969 ⓓ 22 OCT 1970 ⓔ 21 JUNE 1978 ⓕ 4 NOV 88

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TABLE II

NOMINAL SIZE		3/4	7/8	1	1-1/8	1-1/4	1-3/8	1-1/2
B	THREAD UNF-2A	16	14	12	12	12	12	12
D	BODY DIAMETER							
	MAX	.7500	.8750	1.0000	1.1250	1.2500	1.3750	1.5000
	MIN	.7410	.8660	.9900	1.1140	1.2390	1.3630	1.4880
F	WIDTH ACROSS FLATS							
	MAX	1.1250	1.3125	1.5000	1.6875	1.8750	2.0625	2.2500
	MIN	1.1000	1.2850	1.4690	1.6310	1.8120	1.9940	2.1750
G	WIDTH ACROSS CORNERS							
	MAX	1.299	1.516	1.732	1.949	2.165	2.382	2.598
	MIN	1.254	1.465	1.675	1.859	2.066	2.273	2.480
H	HEAD HEIGHT							
	MAX	.483	.563	.627	.718	.813	.878	.974
	MIN	.455	.531	.591	.658	.749	.810	.902
R	RADIUS							
	MAX	.045	.065	.095	.095	.095	.095	.095
	MIN	.020	.040	.060	.060	.060	.060	.060
* MIN TENSILE STRENGTH - LBS		56,000	76,400	99,400	128,400	161,000	197,200	237,200

L LENGTH	TOLERANCE		DASH NO.	DASH** NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
	SIZE .750	SIZE .875 AND OVER							
.750			179						
.875	+0	+0	180	202					
1.000	-.031	-.062	181	201	224				
1.125			182	204	225	245			
1.250	+0	+0	183	205	226	246	265		
1.375	-.062	-.125	184	206	227	247	266	284	
1.500			185	207	228	248	267	285	302
1.750			186	208	229	249	268	286	303
2.000			187	209	230	250	269	287	304
2.250			188	210	231	251	270	288	305
2.500			189	211	232	252	271	289	306
2.750			190	212	233	253	272	290	307
3.000			191	213	234	254	273	291	308
3.250			192	214	235	255	274	292	309
3.500	+0	+0	193	215	236	256	275	293	310
3.750	-.094	-.188	194	216	237	257	276	294	311
4.000			195	217	238	258	277	295	312
4.250			196	218	239	259	278	296	313
4.500			197	219	240	260	279	297	314
4.750			198	220	241	261	280	298	315
5.000			199	221	242	262	281	299	316
5.500			200	222	243	263	282	300	317
6.000			201	223	244	264	283	301	318

NOTES:

- MATERIAL: ALLOY STEEL, GRADE 8, IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- PROTECTIVE COATING: ZINC COATING IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- THREADS: THE THREADS SHALL BE IN ACCORDANCE WITH SCREW-THREAD STANDARDS FOR FEDERAL SERVICES, HANDBOOK H28.
- THREAD LENGTH: MINIMUM THREAD LENGTH SHALL BE TWICE THE DIAMETER PLUS 1/4 INCH. THE TOLERANCE SHALL BE PLUS 3/16 INCH OR 2-1/2 THREADS, WHICHEVER IS GREATER. ON SCREWS THAT ARE TOO SHORT FOR MINIMUM THREAD LENGTHS, THE DISTANCE FROM THE BEARING SURFACE OF THE HEAD TO THE FIRST COMPLETE THREAD SHALL NOT EXCEED THE LENGTH OF 2-1/2 THREADS FOR SIZES UP TO AND INCLUDING 1 INCH AND 3-1/2 THREADS FOR SIZES LARGER THAN 1 INCH.
- DIMENSIONS: ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
- HEAD MARKING: HEADS SHALL BE MARKED IN ACCORDANCE WITH MIL-HDBK-131. RAISED MARKINGS ARE PREFERRED, STAMPINGS ARE ACCEPTABLE.

P.A. Other Cust AR 99	INTERNATIONAL INTEREST	TITLE SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, ZINC COATED, UNF-2A, PLAIN AND SELF-LOCKING (F)	MILITARY STANDARD MS90727
PROCUREMENT SPECIFICATION FF-S-85	SUPERSEDES SEE NOTE I2	SHEET 2	OF 5

USER ACTIVITIES:  
ME MU PA CL WV OB MC NSA

REVIEWER ACTIVITIES:  
AT AV MI EA

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APPROVED 6 MAY 63 REVISED (A) 1 AUG 67 (B) 14 OCT 68 (C) MAY 1969 (D) 22 OCT 1970 (E) FOR CHANGES SEE SHEETS 1,2,3,4, AND 5

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- 7. SELF-LOCKING ELEMENT:
  - (a) THE SELF-LOCKING ELEMENT SHALL BE A PATCH TYPE OR LONGITUDINAL STRIP IN ACCORDANCE WITH MIL-F-18240.
  - (b) FOR "X" AND "Y" DIMENSIONS AND DESIGN AND USAGE LIMITATIONS, SEE MS15981.
  - (c) MAXIMUM RING GAGE DIAMETER THAT LOCKING REGION OF SCREW MUST PASS THRU FREELY OR WITH FINGER PRESSURE SHALL BE THE NOMINAL SIZE PLUS 0.010.
- 8. PART NUMBER: THE MS PART NUMBER CONSISTS OF THE MS NUMBER, PLUS THE DASH NUMBER. FOR SCREWS WITH SELF-LOCKING ELEMENT ADD THE LETTER "L" AFTER THE DASH NUMBER.
  - EXAMPLE: MS90727-1 PLAIN SCREW.
  - MS90727-1L SELF-LOCKING SCREW.
- \*9. BASED ON MINIMUM ULTIMATE TENSILE STRENGTH OF 150,000 p.s.i. TENSILE STRENGTHS ARE CALCULATED BY THE STRESS AREAS INDICATED IN SCREW-THREAD STANDARDS FOR FEDERAL SERVICES, HANDBOOK H28.
- 10. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.
- 11. FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.
- 12. SUPERSEDES: MS35302 IN PART, MS35304 AND MS35306, BCAX8, BCVK7 IN PART, BQLX4, BUBX17, 17.1, 18, 18.1, 19 AND 19.1.
- \*13. INACTIVE FOR NEW DESIGN AFTER 21 JUNE 1976.
- (F) 14. THIS MILITARY STANDARD IS NOT INTENDED FOR USE IN AIRBORNE APPLICATIONS.

APPROVED 6 MAY 63 REVISED (A) 1 AUG 67 (B) 14 OCT 68 (C) 1 MAY 1969 (D) 22 OCT 1970 (E) FOR CHANGES SEE SHEETS 1, 2, 3, 4, AND 5

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PROCUREMENT SPECIFICATION FF-S-85	SUPERSEDES SEE NOTE 12	SHEET 3	OF 5

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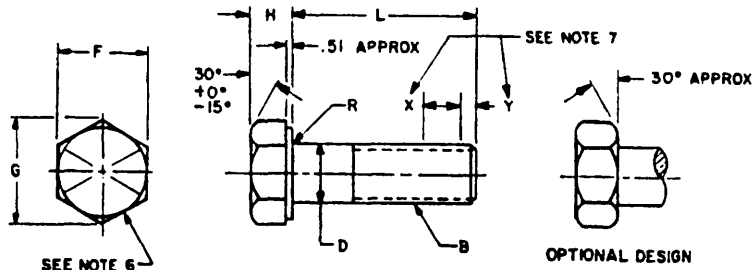


TABLE III  
METRIC TRANSLATION OF TABLE I

NOMINAL SIZE	MM	6.350	7.938	9.525	11.112	12.700	14.288	15.875
B THREAD PITCH		0.907	1.058	1.058	1.270	1.270	1.411	1.411
D BODY DIAMETER	MAX MIN	6.350 6.223	7.938 7.785	9.525 9.373	11.112 10.935	12.700 12.522	14.288 14.084	15.875 15.672
F WIDTH ACROSS FLATS	MAX MIN	11.112 10.871	12.700 12.421	14.288 13.995	15.875 15.545	19.050 18.694	20.638 20.269	23.812 23.419
G WIDTH ACROSS CORNERS	MAX MIN	12.827 12.395	14.656 14.148	16.510 15.951	18.339 17.729	21.996 21.336	23.825 23.114	27.508 26.695
H HEAD HEIGHT	MAX MIN	4.140 3.810	5.359 4.953	6.172 5.740	7.391 6.909	8.204 7.671	9.423 8.839	10.236 9.601
R RADIUS	MAX MIN	.635 .381	.635 .381	.635 .381	.635 .381	.635 .381	1.143 .508	1.143 .508
* MIN TENSILE STRENGTH-KN		24.525	39.150	59.400	80.100	108.000	136.800	172.800
L LENGTH	TOLERANCE	DASH NO.	DASH NO.	DASH NO.	DASH NO.**	DASH NO.	DASH NO.**	DASH NO.
9.525 11.125 12.700 14.275	+0 -.787	1 2 3 4	27 28 29 30	53 54 55 56	79 80 81	104 105	130	
15.875 19.050 22.225 25.400		5 6 7 8	31 32 33 34	57 58 59 60	82 83 84 85	106 107 108 109	131 132 133 134	155 156 157 158
28.575 31.750 34.925 38.100 44.450 50.800	+0 -1.575	9 10 11 12 13 14	35 36 37 38 39 40	61 62 63 64 65 66	86 87 88 89 90 91	110 111 112 113 114 115	135 136 137 138 139 140	159 160 161 162 163 164
57.150 63.500 69.850 76.200 82.550		15 16 17 18 19	41 42 43 44 45	67 68 69 70 71	94 93 94 95 96	116 117 118 119 120	141 142 143 144 145	165 166 167 168 169
88.900 95.250 101.600 107.950 114.300	+0 -2.388	20 21 22 23 24	46 47 48 49 50	72 73 74 75 76	97 98 99 100 101	121 122 123 124 125	146 147 148 149 150	170 171 172 173 174
120.650 127.000 139.700 152.400		25 26	51 52	77 78	102 103	126 127 128 129	151 152 153 154	175 176 177 178

NOTE:

- ALL DIMENSIONS ARE IN MILLIMETERS (mm), UNLESS OTHERWISE SPECIFIED AND ARE BASED ON AN APPROXIMATE CONVERSION FACTOR OF 25.4 mm EQUAL ONE INCH.
- FOR ADDITIONAL SIZES SEE SHEET 4.
- INACTIVE FOR NEW DESIGN AFTER 21 JUNE 1976.

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PROCUREMENT SPECIFICATION FF-S-85	SUPERSEDES SEE NOTE 12	SHEET 4	OF 5

USER ACTIVITIES:  
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REVIEWER ACTIVITIES:  
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AMSC N/A

DD FORM 672-1 (COORDINATED)

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

5305-1747

969 (D) 22 OCT 1970 (F) FOR CHANGES SEE SHEETS 1,2,3,4, AND 5

REVISED (A) 1 AUG 1967 (B) 14 OCT 1968 (C) 1

APPROVED 6 MAY 63

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TABLE IV  
METRIC TRANSLATION OF TABLE II

NOMINAL SIZE	MM	19.050	22.225	25.400	28.575	31.750	34.925	38.100
B THREAD PITCH		1.588	1.814	2.117	2.117	2.117	2.117	2.117
D BODY DIAMETER	MAX MIN	19.050 18.821	22.225 21.996	25.400 25.146	28.575 28.296	31.750 31.471	34.925 34.620	38.100 37.795
F WIDTH ACROSS FLATS	MAX MIN	28.575 27.940	33.338 32.639	38.100 37.313	42.862 41.427	47.625 46.025	52.388 50.648	57.150 55.245
G WIDTH ACROSS CORNERS	MAX MIN	32.995 31.852	38.506 37.211	43.993 42.545	49.505 47.219	54.991 52.476	60.503 57.734	65.989 62.992
H HEAD HEIGHT	MAX MIN	12.268 11.557	14.300 13.487	15.926 15.011	18.237 16.713	20.650 19.025	22.301 20.574	24.740 22.911
R RADIUS	MAX MIN	1.143 .508	1.651 1.016	2.413 1.524	2.413 1.524	2.413 1.524	2.413 1.524	2.413 1.524
**MIN TENSILE STRENGTH-KN		252.000	343.800	447.300	577.800	724.500	887.400	1067.400
L LENGTH	TOLERANCE		DASH NO.	DASH** NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
	SIZE 19.050	SIZE 22.225 AND OVER						
19.050 22.225 25.400	+0 -.787	+0 -1.575	179 180 181	<del>202 203</del>	224			
28.575 31.750 34.925 38.100 44.450 50.800	+0 -1.575	+0 -3.175	182 183 184 185 186 187	<del>204 205 206 207 208 209</del>	225 226 227 228 229 230	245 246 247 248 249 250	265 266 267 268 269	284 285 286 287 302 303 304
57.150 63.500 69.850 76.200 82.550			188 189 190 191 192	<del>210 211 212 213 214</del>	231 232 233 234 235	251 252 253 254 255	270 271 272 273 274	288 289 290 291 292 305 306 307 308 309
88.900 95.250 101.600 107.950 114.300	+0 -2.388	+0 -4.775	193 194 195 196 197	<del>215 216 217 218 219</del>	236 237 238 239 240	256 257 258 259 260	275 276 277 278 279	293 294 295 296 297 310 311 312 313 314
120.650 127.000 139.700 152.400			198 199 200 201	<del>220 221 222 223</del>	241 242 243 244	261 262 263 264	280 281 282 283	298 299 300 301 315 316 317 318

NOTE:

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PROCUREMENT SPECIFICATION FF-S-85	SUPERSEDES: SEE NOTE 12	SHEET 5	OF 5

