

THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DODISS SPECIFIED IN THE SOLICITATION: FF-S-86

APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE

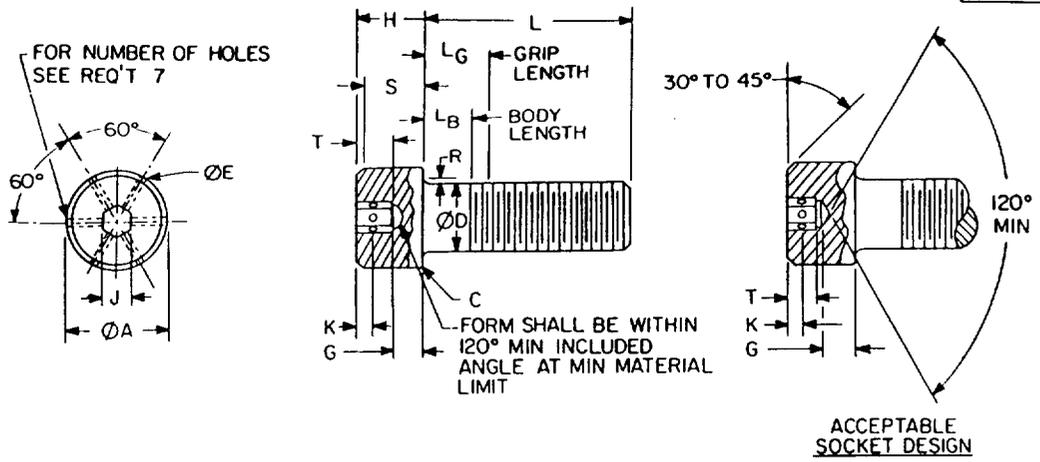


TABLE I. DASH NUMBERS AND DIMENSIONS

NOMINAL SIZE		#4 (.112)	#6 (.138)	#8 (.164)	#10 (.190)
THREAD SIZE		.112-40UNC-3A	.138-32UNC-3A	.164-32UNC-3A	.190-24UNC-3A
ØD BODY	MAX	.1120	.1380	.1640	.1900
	MIN	.1075	.1329	.1585	.1840
ØA HEAD	MAX	.183	.226	.270	.312
	MIN	.176	.218	.262	.303
H HEAD HEIGHT	MAX	.112	.138	.164	.190
	MIN	.108	.134	.159	.185
S HEAD SIDE HEIGHT	MIN	.101	.124	.148	.171
J SOCKET WIDTH ACROSS FLATS	MAX	.0952	.1111	.1426	.1587
	MIN	.0937	.1094	.1406	.1562
T KEY ENGAGEMENT	MIN	.051	.064	.077	.090
G WALL THICKNESS	MIN	.038	.047	.056	.065
C CHAMFER OR RADIUS	MAX	.005	.005	.005	.005
R FILLET EXTENSION	MAX	.009	.010	.012	.014
	MIN	.005	.006	.007	.009
K HOLE LOCATION	MAX	.040	.050	.060	.065
	MIN	.026	.035	.040	.045
ØE HOLE	MAX	.039	.039	.050	.050
	MIN	.033	.033	.044	.044
RECOMMEND WIRE DIAMETER	MAX	.028	.028	.040	.040
ALIGNMENT PLUG DIAMETER	MIN	.020	.020	.032	.032
TENSILE STRENGTH, LBS	MIN	.025	.025	.030	.030
TENSILE STRENGTH, LBS	MIN	1,090	1,640	2,520	3,150

L LENGTH	TOLERANCE	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN
.250		1			6			13					
.375		2			7			14			22		
.500	+0.00	3			8			15			23		
.625	-0.03	4			9			16			24		
.750					10			17			25		
.875					11			18			26		
1.000					12			19			27		
1.250								20	.38	.22	28	.38	.17
1.500	+0.00							21	.38	.22	29	.38	.17
1.750	-0.04										30	.88	.67
2.000											31	.88	.67

1/ SEE REQUIREMENT 8  
2/ SEE REQUIREMENT 9

Ⓢ ENTIRE STANDARD REVISED

INCH - POUND

PREPARING ACTIVITY: ARMY-AR CUSTODIANS: ARMY- NAVY- OS AIR FORCE-99 DLA- REVIEW: MC,MI,SH,IS,11 USER: AS,AT,ME PROJECT NUMBER: 5305-1916 DISTRIBUTION STATEMENT	MILITARY SPECIFICATION SHEET TITLE SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL, (UNC-3A)	SPECIFICATION SHEET NUMBER <b>MS24677D</b> 2 JAN 92
		SUPERSEDING MS24677C 5 MARCH 1986 AND MS24676
		AMSC- N/A FSC- 5305

A. Approved for public release; distribution is unlimited.

TABLE I. DASH NUMBERS AND DIMENSIONS - CONTINUED

NOMINAL SIZE			1/4 (.250)	5/16 (.3125)	3/8 (.375)	7/16 (.4375) <sup>3/</sup>								
THREAD SIZE			.250-20UNC-3A	.3125-18UNC-3A	.375-16UNC-3A	.4375-14UNC-3A								
Ø D	BODY	MAX	.2500	.3125	.3750	.4375								
		MIN	.2435	.3053	.3678	.4294								
Ø A	HEAD	MAX	.375	.469	.562	.656								
		MIN	.365	.457	.550	.642								
H	HEAD HEIGHT	MAX	.250	.312	.375	.438								
		MIN	.244	.306	.368	.430								
S	HEAD SIDE HEIGHT	MAX	.225	.281	.337	.394								
		MIN	.225	.281	.337	.394								
J	SOCKET WIDTH ACROSS FLATS	MAX	.1900	.2530	.3160	.3790								
		MIN	.1875	.2500	.3125	.3750								
T	KEY ENGAGEMENT	MIN	.120	.151	.182	.213								
G	WALL THICKNESS	MIN	.095	.119	.143	.166								
C	CHAMFER OR RADIUS	MAX	.008	.008	.008	.010								
R	FILLET EXTENSION	MAX	.014	.017	.020	.023								
		MIN	.009	.012	.015	.018								
K	HOLE LOCATION	MAX	.085	.104	.123	.141								
		MIN	.065	.084	.103	.121								
Ø E	HOLE	MAX	.050	.050	.067	.067								
		MIN	.044	.044	.061	.061								
	RECOMMENDED WIRE DIAMETER	MAX	.040	.040	.057	.057								
		MIN	.032	.032	.045	.045								
	ALIGNMENT PUG DIAMETER		.030	.030	.051	.051								
TENSILE STRENGTH, LBS			2/ MIN		5,400	8,900	13,200	18,100						
L LENGTH	TOLERANCE SIZE		DASH NO	L <sub>G</sub> MAX	L <sub>G</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>G</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>G</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>G</sub> MIN
	.375 OR UNDER	.4375 AND OVER												
.375			32			46								
.500			33			47								
.625	+0.00	+0.00	34			48			62			80		
.750	-0.03	-0.03	35			49			63			81		
.875			36			50			64			82		
1.000			37			51			65			83		
1.250			38			52			66			84		
1.500			39	.50	.25	53			67			85		
1.750	+0.00	+0.00	40	.50	.25	54	.62	.35	69	.50	.19	86		
2.000	-0.04	-0.06	41	1.00	.75	55	.62	.35	70	.50	.19	87		
2.250			42	1.00	.75	56	1.12	.85	71	1.00	.69	88	.62	.27
2.500			43	1.50	1.25	57	1.12	.85	72	1.00	.69	89	.62	.27
2.750			44	1.50	1.25	58	1.62	1.35	73	1.50	1.19	90	2.12	.77
3.000			45	2.00	1.75	59	1.62	1.35	74	1.50	1.19	91	1.12	.77
3.250	+0.00	+0.00				60	2.12	1.85	75	2.00	1.69	92	1.62	1.27
3.500	-0.06	-0.08				61	2.12	1.85	76	2.00	1.69	93	1.62	1.27
4.000									77	2.50	2.19	94	2.12	1.77
4.500									78	3.00	2.69	95	2.62	2.27
5.000									79	3.50	3.19			

- 1/ SEE REQUIREMENT 8
- 2/ SEE REQUIREMENT 9
- 3/ INACTIVE FOR NEW DESIGN

THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DODISS SPECIFIED IN THE SOLICITATION: FF-S-86

DEPARTMENT OF DEFENSE

DEPARTMENT OF DEFENSE

PREPARING ACTIVITY: ARMY-AR  
CUSTODIANS: ARMY- NAVY- OS  
AIR FORCE-99 DLA-

MILITARY SPECIFICATION SHEET  
TITLE  
SCREW, CAP, SOCKET HEAD, HEXAGON,  
DRILLED ALLOY STEEL, (UNC-3A)

SPECIFICATION SHEET NUMBER  
**MS24677D** 2 JAN 92  
SUPERSEDING MS24677C 5 MARCH 1986  
AND MS24676  
AMSC- N/A FSC- 5305

DISTRIBUTION STATEMENT  
A. Approved for public release; distribution is unlimited.

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THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.

Form Approved  
OMB No. 0704-0188

TABLE I. DASH NUMBERS AND DIMENSIONS - CONTINUED

NOMINAL SIZE		1/2 (.500)	5/8 (.625)	3/4 (.750)	7/8 (.875) <sup>3/</sup>	1 (1.000)												
THREAD SIZE		.500-13UNC-3A	.625-11UNC-3A	.750-10UNC-3A	.875-9UNC-3A	1.000-8UNC-3A												
Ø D	BODY	MAX .5000	.6250	.7500	.8750	1.0000												
		MIN .4919	.6163	.7406	.8647	.9886												
Ø A	HEAD	MAX .750	.938	1.125	1.312	1.500												
		MIN .735	.921	1.107	1.293	1.479												
H	HEAD HEIGHT	MAX .500	.625	.750	.875	1.000												
		MIN .492	.616	.740	.864	.988												
S	HEAD SIDE HEIGHT	MIN .450	.562	.675	.787	.900												
J	SOCKET WIDTH	MAX .3790	.5050	.6310	.7570	.7570												
	ACROSS FLATS	MIN .3750	.5000	.6250	.7500	.7500												
T	KEY ENGAGEMENT	MIN .245	.307	.370	.432	.495												
G	WALL THICKNESS	MIN .190	.238	.285	.333	.380												
C	CHAMFER OR RADIUS	MAX .010	.010	.010	.015	.015												
R	FILLET	MAX .026	.032	.039	.044	.050												
	EXTENSION	MIN .020	.024	.030	.034	.040												
K	HOLE LOCATION	MAX .160	.198	.235	.273	.310												
		MIN .140	.178	.215	.253	.290												
Ø E	HOLE	MAX .067	.067	.097	.097	.097												
		MIN .061	.061	.091	.091	.091												
	RECOMMENDED WIRE DIAMETER	MAX .057	.057	.080	.080	.080												
		MIN .045	.045	.064	.064	.064												
	ALIGNMENT PLUG DIAMETER <sup>1/</sup>	.051	.051	.081	.081	.081												
	TENSILE STRENGTH, LBS <sup>2/</sup> MIN	24,100	38,400	56,800	78,500	103,000												
L LENGTH	TOLERANCE SIZE		DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>C</sub> MAX	L <sub>B</sub> MIN	
	.750	.875																
	OR UNDER	AND OVER																
.500			96															
.625	+0.00	+0.00	97															
.750	-0.03	-0.05	98															
.875			99															
1.000			100			116												
1.250			101			117				132								
1.500			102			118				133								
1.750	+0.00	+0.00	103			119				134								
2.000	-0.06	-0.10	104			120				135			147				159	
2.250			105	.75	.36	121				136			148				160	
2.500			106	.75	.36	122	.75	.30		137			149				161	
2.750			107	.75	.36	123	.75	.30		138			150				162	
3.000			108	1.50	1.12	124	.75	.30		139	1.00	.50	151				163	
3.250			109	1.50	1.12	125	1.50	1.04		140	1.00	.50	152	1.00	.44		164	
3.500			110	1.50	1.12	126	1.50	1.04		141	1.00	.50	153	1.00	.44	165	1.00	.38
4.000	+0.00	+0.00	111	2.25	1.86	127	2.25	1.80		142	2.00	1.50	154	2.00	1.44	166	2.00	1.38
4.500	-0.08	-0.14	112	3.00	2.62	128	2.25	1.80		143	2.00	1.50	155	2.00	1.44	167	2.00	1.38
5.000			113	3.00	2.62	129	3.00	2.54		144	3.00	2.50	156	2.00	1.44	168	2.00	1.38
5.500			114	3.75	3.36	130	3.75	3.30		145	3.00	2.50	157	3.00	2.44	169	3.00	2.38
6.000			115	4.50	4.12	131	3.75	3.30		146	4.00	3.50	158	3.00	2.44	170	3.00	2.38

- <sup>1/</sup> SEE REQUIREMENT 8
- <sup>2/</sup> SEE REQUIREMENT 9
- <sup>3/</sup> INACTIVE FOR NEW DESIGN

INTERCHANGEABILITY DATA

EFFECTIVE 7 JULY 1975, MS24676 WAS CANCELLED AND SUPERSEDED BY MS24677

MS24676 AND THE SCREWS COVERED BY THE PART NUMBERS LISTED IN THE STANDARD ARE CANCELLED AFTER THE DATE INDICATED ON THIS DOCUMENT.

USE ONLY THE PART NUMBER FROM MS24677 FOR DESIGN AND REPLACEMENT.

CANCELLED MS24676 SCREWS CANNOT ALWAYS REPLACE MS24677 SCREWS AND SHOULD BE USED ONLY WHERE APPLICABLE UNTIL EXISTING STOCK IS DEPLETED.

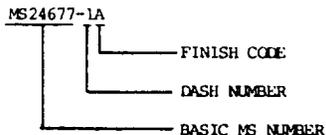
MS24677 SCREWS SHALL BE USED IN LIEU OF THE CANCELLED MS24676 SCREWS OF THE SAME DASH NUMBERS. FOR EXAMPLE:

SCREWS MS24676-1 THROUGH MS24676-170  
ARE CANCELLED AND SUPERSEDED BY  
SCREWS MS24677-1 THROUGH MS24677-170

PREPARING ACTIVITY: ARMY-AR CUSTODIANS: ARMY- NAVY- OS AIR FORCE- 99 DLA-	MILITARY SPECIFICATION SHEET TITLE SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL, (UNC-3A)	SPECIFICATION SHEET NUMBER <b>MS24677D</b> 2 JAN 92 SUPERSEDING MS24677C 5 MARCH 1986 AND MS24676 AMSC- N/A FSC- 5305
REVIEW: MC,MI,SH,IS,11 USER: AS,AT,ME PROJECT NUMBER: 5305-1916		DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.
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REQUIREMENTS:

1. MATERIAL: ALLOY STEEL IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
2. PROTECTIVE COATING AND SURFACE TREATMENT: UNCOATED, CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3, OR ALUMINUM ION VAPOR DEPOSITED IN ACCORDANCE WITH MIL-C-83488, TYPE II, CLASS 3 (SEE REQ'T 11).
  - (a) DO NOT USE CADMIUM PLATED SCREWS FOR TEMPERATURES ABOVE 450°.
  - (b) ALUMINUM ION VAPOR DEPOSITED COATING CAN BE USED FOR TEMPERATURES UP TO 850°F.
3. HARDNESS: IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
4. THREADS: THREADS SHALL BE IN ACCORDANCE WITH FED-STD-H28/2. ACCEPTABILITY OF SCREW THREADS SHALL BE IN ACCORDANCE WITH FED-STD-H28/20, SYSTEM 22.
5. THREAD LENGTH: SCREWS ABOVE HEAVY LINE SHALL HAVE COMPLETE (FULL FORM) THREADS EXTENDING WITHIN TWO THREADS OF THE HEAD.
6. HEAD: HEAD MAY OR MAY NOT BE KNURLED AT MANUFACTURER'S OPTION. TYPE OF KNURLING OPTIONAL. DIAMETER OF KNURLED HEAD SHALL NOT EXCEED THE MAXIMUM HEAD DIAMETER SPECIFIED.
7. DRILLED HOLE DATA:
  - (a) SCREWS #6 (.138) SHALL HAVE ONE (1) HOLE DRILLED THROUGH THE HEAD. SCREWS #8 (.164) AND LARGER SHALL HAVE (3) HOLES DRILLED THROUGH THE HEAD.
  - (b) ON SCREWS SMALLER THAN #8 (.164) THE DRILLED HOLE SHALL BE CENTERED AS CLOSE AS PRACTICABLE ON THE FLAT OF THE HEXAGON SOCKET. ON SCREWS #8 (.164) AND LARGER THE DRILLED HOLES SHALL BE WITHIN THE FLATS ON THE HEXAGON SOCKET AND SHALL NOT BREAK THE CORNERS OF THE HEXAGON SOCKET.
  - (c) EDGES OF THE HOLES ON THE OUTSIDE OF THE HEAD SHALL BE CHAMFERED 45° BY 0.010 TO 0.020 DEEP.
8. ALIGNMENT PLUG: PLUG SHALL PASS COMPLETELY THROUGH THE DRILLED HOLES IN THE HEAD WITHOUT DEFLECTION.
9. TENSILE STRENGTH: BASED ON MINIMUM ULTIMATE TENSILE OF 180,000 PSI FOR SIZES #4 (.112) THRU #10 (.190) AND 170,000 PSI FOR SIZES OVER #10 (.190). LOAD POUNDS CALCULATED BY THE STRESS AREAS INDICATED IN FED-STD-H28/2.
10. FINISH CODE:
  - A - ALUMINUM COATING
  - U - NO PROTECTIVE COATING OR SURFACE TREATMENT
  - NO CODE - CADMIUM PLATE (NOTE: MS24677C PART NUMBERS IN GOVERNMENT INVENTORY WITH ADDED "C" SHALL BE USED UNTIL STOCK IS DEPLETED.)
11. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER TAKEN FROM TABLE I, FOLLOWED BY A FINISH CODE LETTER, IF APPLICABLE.



MS24677-1A INDICATES - SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL; .112-40 UNC-3A; LENGTH .250; ALUMINUM COATING.

MS24677-1 INDICATES - SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL; .112-40 UNC-3A; LENGTH .250; CADMIUM PLATE.

MS24677-1U INDICATES - SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL, .112-40 UNC-3A, LENGTH .250; NO PROTECTIVE COATING OR SURFACE TREATMENT.

12. SOURCE MARKING IDENTIFICATION: SCREWS WITH NOMINAL SIZES .190 AND LARGER SHALL BE PERMANENTLY MARKED TO IDENTIFY THE SOURCE ACCEPTING RESPONSIBILITY FOR THE SCREWS MEETING THE REQUIREMENTS SPECIFIED HEREIN. THE MARKING SHALL BE A SOURCE IDENTIFYING SYMBOL FOR A MANUFACTURER IN ACCORDANCE WITH GOVERNMENT REGULATIONS OR A PRIVATE LABEL DISTRIBUTOR'S SYMBOL AS APPLICABLE.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.
3. REFERENCED GOVERNMENT (OR NON-GOVERNMENT) DOCUMENTS OF THE ISSUE LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) SPECIFIED IN THE SOLICITATION FORM A PART OF THIS STANDARD TO THE EXTENT SPECIFIED HEREIN.

PREPARING ACTIVITY: ARMY-AR CUSTODIANS: ARMY-                      NAVY- OS AIR FORCE- 99                      DLA- REVIEW: MC, MI, SH, IS, 11 USER: AS, AT, ME PROJECT NUMBER: 5305-1916	MILITARY SPECIFICATION SHEET TITLE SCREW, CAP, SOCKET HEAD, HEXAGON, DRILLED ALLOY STEEL, (UNC-3A)	SPECIFICATION SHEET NUMBER <b>MS24677D</b> 2 JAN 92 SUPERSEDING MS24677C 5 MARCH 1986 AND MS24676 AMSC-    N/A                      FSC - 5305
DISTRIBUTION STATEMENT A Approved for public release; distribution is unlimited.		Page <u>4</u> of <u>4</u>

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