

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

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

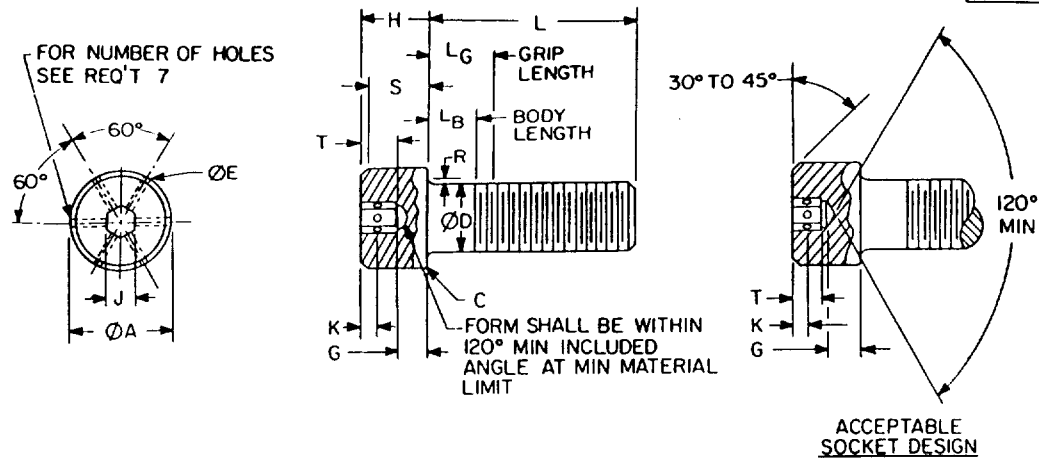


TABLE I. DASH NUMBERS AND DIMENSIONS

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								
	RECOMMENDED WIRE DIAMETER	MAX	.028	.028	.040	.040								
		MIN	.020	.020	.032	.032								
	ALIGNMENT PLUG DIAMETER	1/	.025	.025	.030	.030								
	TENSILE STRENGTH, LBS	2/ MIN	1,090	1,640	2,520	3,150								
L LENGTH	TOLERANCE	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</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		5			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

MS24677D 2 JAN 92

SUPERSEDING MS24677C 5 MARCH 1986  
AND MS24676

AMSC- N/A

FSC- 5305

A. Approved for public release; distribution is unlimited.

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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 MIN	.2500 .2435	.3125 .3053	.3750 .3678
Ø A HEAD	MAX MIN	.375 .365	.469 .457	.562 .550
H HEAD HEIGHT	MAX MIN	.250 .244	.312 .306	.375 .368
S HEAD SIDE HEIGHT	MIN	.225	.281	.337
J SOCKET WIDTH	MAX MIN	.1900 .1875	.2530 .2500	.3160 .3125
T KEY ENGAGEMENT	MIN	.120	.151	.182
G WALL THICKNESS	MIN	.095	.119	.143
C CHAMFER OR RADIUS	MAX	.008	.008	.008
R FILLET EXTENSION	MAX MIN	.014 .009	.017 .012	.020 .015
K HOLE LOCATION	MAX MIN	.085 .065	.104 .084	.123 .103
Ø E HOLE	MAX MIN	.050 .044	.050 .044	.067 .061
RECOMMENDED WIRE DIAMETER	MAX MIN	.040 .032	.040 .032	.057 .045
ALIGNMENT PUG DIAMETER	<sup>1/</sup>	.030	.030	.051
TENSILE STRENGTH, LBS	<sup>2/</sup> MIN	5,400	8,900	13,200
L LENGTH	TOLERANCE SIZE			
	.375 OR UNDER	.4375 AND OVER	DASH NO	L <sub>G</sub> MAX MIN
.375			32	
.500			33	
.625	+0.00	+0.00	34	
.750	-0.03	-0.03	35	
.875			36	
1.000			37	
1.250			38	
1.500			39	.50 .25
1.750	+0.00	+0.00	40	.50 .25
2.000	-0.04	-0.06	41	1.00 .75
2.250			42	1.00 .75
2.500			43	1.50 1.25
2.750			44	1.50 1.25
3.000			45	2.00 1.75
3.250	+0.00	+0.00		
3.500	-0.06	-0.08		
4.000				
4.500				
5.000				

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

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

MS24677D 2 JAN 92

SUPERSEDING MS24677C 5 MARCH 1986  
AND MS24676

AMSC-

N/A

FSC - 5305

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DD Form 672, MAY 88

PREVIOUS EDITIONS ARE OBSOLETE

GPO: 1985

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

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 ACROSS FLATS	MAX	.3790			.505 0			.6310			.7570			.7570		
		MIN	.3750			.500 0			.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 EXTENSION	MAX	.026			.032			.039			.044			.050		
		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>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</sub> MAX	L <sub>B</sub> MIN	DASH NO	L <sub>G</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

## INTERCHANGEABILITY DATA

<sup>1/</sup> SEE REQUIREMENT 8

<sup>2/</sup> SEE REQUIREMENT 9

<sup>3/</sup> INACTIVE FOR NEW DESIGN

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-  
REVIEW: MC,MI,SH,JS,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

**MS24677D** 2 JAN 92

SUPERSEDING MS24677C 5 MARCH 1986  
AND MS24676

AMSC- N/A

FSC - 5305

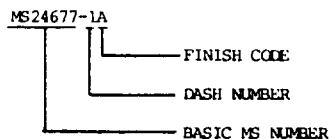
DISTRIBUTION STATEMENT

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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 4 of 4