

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-92

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

Form Approved
OMB No. 0704-0188

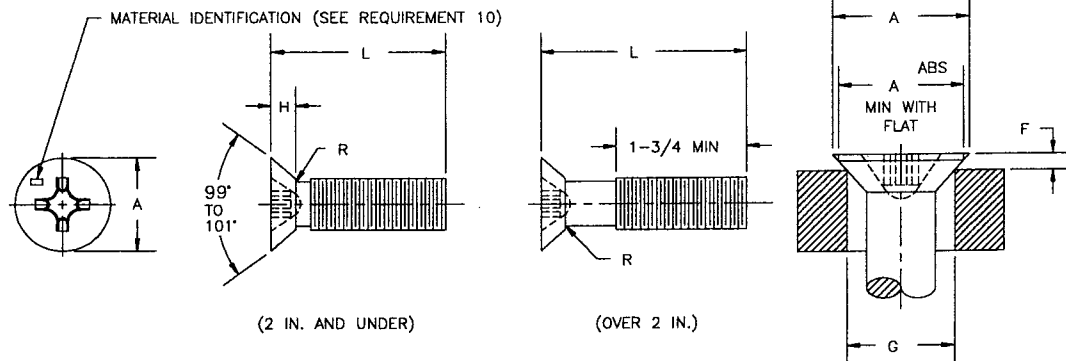


TABLE I

THREAD SIZE		.0600 (#0)	.0860 (#2)	.1120 (#4)		.1380 (#6)		.1640 (#8)		.1900 (#10)		.2500		.3125		.3750	
THREADS PER INCH		80 UNF	56 UNC	40 UNC	48 UNF	32 UNC	40 UNF	32 UNC	36 UNF	24 UNC	32 UNF	20 UNC	28 UNF	18 UNC	24 UNF	16 UNC	24 UNF
A HEAD DIAMETER	MAX SHARP	.119	.172	.225	.279	.332	.385	.507	.635	.762							
	MIN SHARP	.104	.156	.207	.257	.308	.359	.477	.600	.722							
	ABS. MIN	.096	.143	.191	.238	.285	.333	.442	.556	.670							
F PROTRUSION ABOVE GAGING DIAMETER	MAX	.020	.022	.025	.028	.031	.034	.040	.047	.053							
	MIN	.012	.014	.016	.017	.019	.021	.025	.030	.034							
G GAGING DIAMETER		.074	.121	.167	.214	.261	.307	.415	.526	.638							
H HEAD HEIGHT	REF	.026	.037	.049	.060	.072	.083	.110	.138	.165							
R FILLET RADIUS	MAX	.007	.008	.015	.015	.020	.020	.020	.025	.030							
	MIN	.003	.004	.010	.010	.010	.010	.010	.010	.015							

REQUIREMENTS:

- MATERIAL:**
ALUMINUM ALLOY PER QQ-A-225/6. BRASS PER ASTM B16, ASTM B36, ASTM B134 OR ASTM B206. COPPER-SILICON ALLOY PER ASTM B98 OR ASTM B99, UNS C65100, UNS C65500 OR UNS C66100. NICKLE-COPPER ALLOY PER QQ-N-281, TYPE A (UNS N04400). CARBON STEEL PER FED-STD-66. CORROSION RESISTANT STEEL PER FED-STD-66, COMPOSITION 302, 303, 304, 305 OR 316 OR EQUAL TO OR INTERCHANGEABLE WITH 16-18 OR 18-8 CHROMIUM-NICKLE ALLOY STEEL (DEVELOPED FOR COLD HEADING).
- PROTECTIVE COATING, PLATING OR TREATMENT:**
ANODIZE IN ACCORDANCE WITH MIL-A-8625, TYPE I OR II, CLASS 1. BLACK CHEMICAL FINISH IN ACCORDANCE WITH MIL-F-495. BLACK OXIDE COATING IN ACCORDANCE WITH MIL-C-13924. CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3. NICKLE PLATE IN ACCORDANCE WITH QQ-N-290, CLASS 1, GRADE E. CLEAN AND DESCALE IN ACCORDANCE WITH ASTM A380.
- MAGNETIC PERMEABILITY:**
CORROSION RESISTANT STEEL SCREWS SHALL HAVE A MAGNETIC PERMEABILITY IN ACCORDANCE WITH THE PROCUREMENT SPECIFICATION.
- HEAT TREATMENT:**
ALUMINUM ALLOY SCREWS, 62 KSI MINIMUM ULTIMATE TENSILE STRENGTH IN ACCORDANCE WITH MIL-H-6088.
- RECESS:**
THE RECESS SHALL BE IN ACCORDANCE WITH MS9006.
- THREADS:**
THREADS SHALL BE CLASS 2A IN ACCORDANCE WITH FED-STD-H28/2. ACCEPTABILITY OF SCREW THREADS SHALL BE IN ACCORDANCE WITH FED-STD-H28/20, SYSTEM 21.
- THREAD LENGTH:**
FOR SCREWS UP TO AND INCLUDING 2.000 INCHES IN LENGTH, THE COMPLETE THREADS SHALL EXTEND TO WITHIN TWO (2) THREADS OF THE BEARING SURFACE OF THE HEAD, OR CLOSER IF PRACTICABLE. SCREWS OF LONGER LENGTH SHALL HAVE A MINIMUM COMPLETE THREAD LENGTH OF 1.750 INCHES.

(H) DENOTES CHANGE(S)

INCH-POUND

PREPARING ACTIVITY: IS
CUSTODIANS: ARMY- AR NAVY- AS
AIR FORCE- 99

REVIEW: AT, AV, EA, MC, ME, MI, NS, SH (H)

USER:
PROJECT NUMBER: 5305-2059

DISTRIBUTION STATEMENT

MILITARY SPECIFICATION SHEET

TITLE
SCREW, MACHINE, FLAT COUNTERSUNK HEAD,
100°, CROSS RECESSED, UNC-2A AND UNF-2A

SPECIFICATION SHEET NUMBER

MS24693 26 OCT 94
REV H

SUPERSEDING MS24693G 17 DEC 93
AND AN501 21 APR 67

AMSC- N/A FSC 5305

A. Approved for public release; distribution is unlimited.

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DD Form 672, MAY 88

PREVIOUS EDITIONS ARE OBSOLETE

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8. UNTHREADED PORTION:
THE DIAMETER OF THE UNTHREADED PORTION OF SCREWS SHALL NOT BE LESS THAN THE MINIMUM PITCH DIAMETER NOR MORE THAN THE MAXIMUM MAJOR DIAMETER OF THE THREAD.
9. MANUFACTURER IDENTIFICATION:
ALL SCREWS WITH NOMINAL SIZES .1900 (#10) AND LARGER SHALL BE PERMANENTLY MARKED WITH A SYMBOL IDENTIFYING ITS MANUFACTURER OR PRIVATE LABEL DISTRIBUTOR. MARKINGS SHALL BE PLACED ON THE TOP OF HEAD AND INDENTED. METHOD AND SIZE OF MARKINGS SHALL CONFORM TO THE REQUIREMENTS FOR PERMANENT MARKINGS SPECIFIED IN SAE AS478.
10. MATERIAL IDENTIFICATION:
CORROSION RESISTING STEEL SCREWS WITH NOMINAL SIZES .1380 (#6) AND LARGER SHALL BE PERMANENTLY MARKED WITH ONE DASH (" - "). MARKING SHALL BE PLACED ON THE TOP OF HEAD AND INDENTED. METHOD AND SIZE OF MARKING SHALL CONFORM TO THE REQUIREMENTS FOR PERMANENT MARKINGS SPECIFIED IN SAE AS478.
11. POINTS:
SCREWS SHALL HAVE PLAIN SHEARED ENDS. HEADER POINTS ARE ACCEPTABLE IN ACCORDANCE WITH ANSI B18.6.3.
12. CODE:
- "A" BEFORE DASH NUMBER - ANODIZED, ALUMINUM ALLOY SCREW.
 - "B" BEFORE DASH NUMBER - UNCOATED, BRASS SCREW.
 - "BB" BEFORE DASH NUMBER - BLACK CHEMICAL FINISH, BRASS SCREW.
 - "C" BEFORE DASH NUMBER - CLEANED AND DESCALED, CORROSION RESISTANT STEEL SCREW.
 - "CB" BEFORE DASH NUMBER - CADMIUM PLATED, BRASS SCREW.
 - "N" BEFORE DASH NUMBER - UNCOATED, NICKLE-COPPER SCREW.
 - "NB" BEFORE DASH NUMBER - NICKLE PLATED, BRASS SCREW.
 - "S" BEFORE DASH NUMBER - CADMIUM PLATED, CARBON STEEL SCREW.
 - "U" BEFORE DASH NUMBER - UNCOATED, COPPER-SILICON SCREW.
 - "B" AFTER DASH NUMBER - BLACK OXIDE COATED, CORROSION RESISTANT STEEL SCREW.
13. PART NUMBER:
THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER WITH A DASH NUMBER CODE. ONLY ONE (1) DASH NUMBER CODE SHALL BE USED PER PART NUMBER. DO NOT USE UNASSIGNED DASH NUMBERS OR CODES. SEE TABLE II AND PART NUMBER EXAMPLES.

EXAMPLES:

MS24693-A28 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1380-32 UNC-2A THREAD, ANODIZED, ALUMINUM ALLOY, .500 INCH LENGTH.

MS24693-B54 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1640-32 UNC-2A THREAD, UNCOATED, BRASS, 1.000 INCH LENGTH.

MS24693-BB80 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1900-24 UNC-2A THREAD, BLACK CHEMICAL FINISH, BRASS, 1.500 INCH LENGTH.

MS24693-C202 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-48 UNF-2A THREAD, CLEANED AND DESCALED, CORROSION RESISTANT STEEL, .250 INCH LENGTH.

MS24693-CB132 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .3125-18 UNC-2A THREAD, CADMIUM PLATED, BRASS, 3.000 INCH LENGTH.

MS24693-N254 = SCREWS, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1640-36 UNF-2A THREAD, UNCOATED, NICKEL-COPPER ALLOY, 1.000 INCH LENGTH.

MS24693-NB106 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .2500-20 UNC-2A THREAD, NICKEL PLATED, BRASS, 2.000 INCH LENGTH.

MS24693-S2 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-40 UNC-2A THREAD, CADMIUM PLATED, CARBON STEEL, .250 INCH LENGTH.

MS24693-U154 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .3750-16 UNC-2A THREAD, UNCOATED, COPPER-SILICON ALLOY, 3.000 INCH LENGTH.

MS24693-206B = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-48 UNF-2A THREAD, BLACK OXIDE COATED, CORROSION RESISTANT STEEL, .500 INCH LENGTH.

PREPARING ACTIVITY: IS CUSTODIANS: ARMY- AR NAVY- AS AIR FORCE- 99		MILITARY SPECIFICATION SHEET TITLE SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, UNC-2A AND UNF-2A		SPECIFICATION SHEET NUMBER 26 OCT 94 MS24693 REV H	
REVIEW: AT, AV, EA, MC, ME, MI, NS, SH (H) USER: PROJECT NUMBER: 5305-2059				SUPERSEDING MS24693G 17 DEC 93 AND AN501 21 APR 67	
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.				AMSC- N/A FSC 5305	
				Page 2 of 5	

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1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
2. UNLESS OTHERWISE SPECIFIED, ISSUES OF REFERENCED DOCUMENTS ARE THOSE IN EFFECT AT THE TIME OF SOLICITATION.
3. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS DOCUMENT AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS DOCUMENT SHALL TAKE PRECEDENCE.

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Form Approved
OMB No. 0704-0188

SPECIFICATION SHEET NUMBER		26 OCT 94
MS24693		REV H
SUPERSEDING	MS24693G 17 AND AN501	DEC 93 21 APR 67
AMSC-	N/A	FSC 5305

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TABLE III

NOMINAL SIZE	MINIMUM TENSILE STRENGTH 1/					CORROSION RESISTANT STEEL
	CARBON STEEL	BRASS	ALUMINUM ALLOY	COPPER-SILICON ALLOY	NICKLE-COPPER ALLOY	
	LBS	LBS	LBS	LBS	LBS	LBS
.0600-80 UNF-2A	105	95	110	105	140	140
.0860-56 UNC-2A	220	200	225	220	295	295
.1120-40 UNF-2A	360	330	370	360	480	480
.1120-48 UNF-2A	400	360	410	400	525	525
.1380-32 UNC-2A	545	500	560	545	725	725
.1380-32 UNF-2A	610	560	630	610	810	810
.1640-32 UNC-2A	840	770	870	840	1120	1120
.1640-36 UNF-2A	880	810	910	880	1180	1180
.1900-24 UNC-2A	1050	960	1090	1050	1400	1400
.1900-32 UNF-2A	1200	1100	1240	1200	1600	1600
.2500-20 UNC-2A	1910	1750	1970	1910	2540	2540
.2500-28 UNF-2A	2180	2000	2250	2180	2910	2910
.3125-18 UNC-2A	3140	2880	3250	3140	4190	4190
.3125-24 UNF-2A	3480	3190	3600	3480	4640	4640
.3750-16 UNC-2A	4650	4260	4800	4650	6200	6200
.3170-24 UNF-2A	5270	4830	5440	5270	7020	7070

1/ BASED ON 60 KSI MINIMUM ULTIMATE TENSILE STRENGTH FOR CARBON STEEL, 55 KSI FOR BRASS, 62 KSI FOR ALUMINUM ALLOY, 80 KSI FOR COPPER-SILICON ALLOY, 80 KSI FOR NICKLE-COPPER ALLOY AND 80 KSI FOR CORROSION RESISTANT STEEL. LOAD POUNDS ARE CALCULATED BY THE STRESS AREAS INDICATED IN SCREW THREAD STANDARDS FOR FED-STD-H28.

PREPARING ACTIVITY: IS CUSTODIANS: ARMY- AR NAVY- AS AIR FORCE- 99 REVIEW: AT, AV, EA, MC, ME, MI, NS, SH (H) USER: PROJECT NUMBER: 5305-2059		MILITARY SPECIFICATION SHEET TITLE SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, UNC-2A AND UNF-2A		SPECIFICATION SHEET NUMBER MS24693 26 OCT 94 REV H SUPERSEDING MS24693G 17 DEC 93 AND AN501 21 APR 67 AMSC- N/A FSC 5305	
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TABLE IV
INTERCHANGEABILITY - (Using Coded Dash Numbers)

After 21 April 1967, screws given on AN507 are canceled, but their existing stock should be used for maintenance purposes until depleted. USE ONLY THE NEW MS24693 SCREWS FOR NEW DESIGN AND ENGINEERING.

Codes for canceled and new dash numbers:

- (1) For cadmium plated, carbon steel screws: The following AN dash numbers are superseded by the following MS dash numbers with a prefix "S" added. Example: AN507-420R5 superseded by MS24693-S91.
- (2) For plain brass screws: AN dash numbers with a prefix "UB" superseded by MS dash numbers with a prefix "B". Example: AN507UB420R5 superseded by MS24693-B91.
- (3) For black chemical finish brass screws: AN dash numbers with a prefix "B" superseded by MS dash numbers with a prefix "BB". Example: AN507B420R5 superseded by MS24693-BB91.
- (4) For cadmium plated, brass screws: AN dash numbers with a prefix "PB" superseded by MS dash numbers with a prefix "CB". Example: AN507PB420R5 superseded by MS24693-CB91.
- (5) For passivated, corrosion resisting steel screws: AN dash numbers with a prefix "C" superseded by MS dash numbers with a prefix "C". Example: AN507C420R5 superseded by MS24693-C91.
- (6) For anodized, aluminum alloy screws: AN dash numbers with a prefix "DD" superseded by MS dash numbers with a prefix "A". Example: AN507DD420R5 superseded by MS24693-A91.
- (7) For AN507, part number inactive for design after 17 February 1959: Optional design II cross recessed ("R" between first and second dash numbers) and slotted head screws ("-" between first and second dash numbers) are canceled and superseded by the appropriately coded MS dash number. Example: AN507-420R5 or AN507-420-5 superseded by MS24693-S91.

CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS
420R5	91	448R14	209	624R48	354	836R7	249
420R6	92	448R16	210	632R3	23	836R8	250
420R7	93	448R18	211	632R4	24	836R10	251
420R8	94	448R20	212	632R5	25	836R12	252
420R10	95	448R22	213	632R6	26	836R14	253
420R12	96	448R24	214	632R7	27	836R16	254
420R14	97	448R26	215	632R8	28	836R18	255
420R16	98	448R28	216	632R10	29	836R20	256
420R18	99	518R8	116	632R12	30	836R22	257
420R20	100	518R10	117	632R14	31	836R24	258
420R24	102	515R12	118	632R16	32	836R26	256
420R28	104	518R14	119	632R18	33	836R28	260
420R32	106	518R16	120	632R20	34	836R30	261
420R40	108	518R18	121	632R24	36	836R32	262
420R48	110	518R20	122	632R28	38	836R36	263
428R6	292	518R24	124	632R32	40	836R40	264
428R7	293	518R28	126	632R40	42	836R44	265
428R8	294	518R32	128	640R4	224	836R48	266
428R10	295	518R40	130	640R5	225	1024R5	69
428R12	296	518R48	132	640R6	226	1024R6	70
428R14	297	524R8	316	640R7	227	1024R7	71
428R16	298	524R10	317	640R8	228	1024R8	72
428R18	299	524R12	318	640R10	229	1024R10	73
428R20	300	524R14	319	640R12	230	1024R12	74
428R22	301	524R16	320	640R14	231	1024R14	75
428R24	302	524R18	321	640R16	232	1024R16	76
428R26	303	524R20	322	640R18	233	1024R18	77
428R28	304	524R24	324	640R20	234	1024R20	78
428R30	305	524R28	326	640R22	235	1024R24	80
428R32	306	524R32	328	640R24	236	1024R28	82
428R36	307	524R40	330	640R26	237	1024R32	84
428R40	308	524R48	332	640R28	238	1024R40	86
428R44	309	616R8	138	640R30	239	1024R48	88
428R48	310	616R10	139	640R32	240	1032R4	268
440R3	1	616R12	140	640R36	241	1032R5	269
440R4	2	616R14	141	640R40	242	1032R6	270
440R5	3	616R16	142	832R4	46	1032R7	271
440R6	4	616R18	143	832R5	47	1032R8	272
440R7	5	616R20	144	832R6	48	1032R10	273
440R8	6	616R24	146	832R7	49	1032R12	274
440R10	7	616R28	148	832R8	50	1032R14	275
440R12	8	616R32	150	832R10	51	1032R16	276
440R14	9	616R40	152	832R12	52	1032R18	277
440R16	10	615R48	154	832R14	53	1032R20	278
440R18	11	624R8	338	832R16	54	1032R22	279
440R20	12	624R10	339	832R18	55	1032R24	280
440R24	14	624R12	340	832R20	56	1032R26	281
448R3	201	624R14	341	832R24	58	1032R28	282
448R4	202	624R16	342	832R28	60	1032R30	283
448R5	203	624R18	343	832R32	62	1032R32	284
448R6	204	624R20	344	832R40	64	1032R36	285
448R7	205	624R24	346	832R48	66	1032R40	286
448R8	206	614R28	348	836R4	246	1032R44	287
448R10	207	624R32	350	836R5	247	1032R48	288
448R12	208	624R40	352	836R6	248		

PREPARING ACTIVITY: IS	MILITARY SPECIFICATION SHEET	SPECIFICATION SHEET NUMBER
CUSTODIANS: ARMY- AR NAVY- AS	TITLE	MS24693 26 OCT 94
AIR FORCE- 99	SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, UNC-2A AND UNF-2A	REV H
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