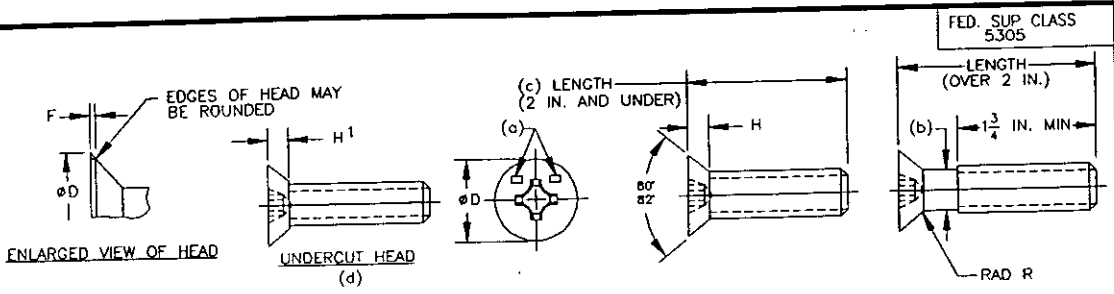


REVIEWER SYMBOLS:  
 ARMY - MI  
 AIR FORCE - BZ

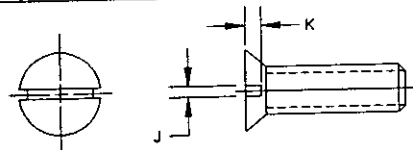
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DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS LIMITED.  
 NOTE: This drawing was approved by joint action of the Army, Navy and Air Force. This drawing is a preliminary drawing for the procurement of aeronautical supplies, or for use in new design not later than 6 months after the latest date of approval shown.  
 AIR FORCE - BZ  
 ARMY - MI  
 NAVY - AS  
 AIR FORCE - 99

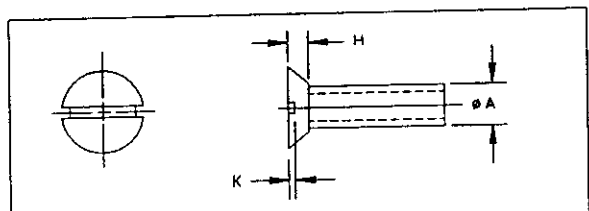


CROSS-RECESSED HEAD SCREW (DESIGN J)

THREAD SIZE	ØA		ØD		F	H REF			R RAD	H <sup>1</sup>		J		K	
	MAX	MAX SHARP	MIN SHARP	ABSOLUTE MIN WITH MAX F		MAX	MAX	MIN		MAX	MAX	MIN	MAX	MIN	MAX
NO. 0-80 UNF-2A	.060	.119	.105	.101	.011	.035	.026	.025	.025	.018	.024	.016	.015	.010	
NO. 1-72 UNF-2A	.073	.146	.130	.126	.013	.043	.033	.030	.030	.023	.026	.019	.019	.012	
NO. 2-64 UNF-2A	.086	.172	.156	.150	.014	.051	.040	.030	.036	.026	.031	.023	.023	.015	
NO. 3-56 UNF-2A	.099	.199	.181	.175	.015	.059	.048	.035	.041	.034	.035	.027	.027	.017	
NO. 4-48 UNF-2A	.112	.225	.207	.200	.016	.067	.055	.040	.047	.039	.039	.031	.030	.020	
NO. 5-44 UNF-2A	.125	.252	.232	.225	.018	.075	.062	.045	.053	.043	.043	.035	.034	.022	
NO. 6-40 UNF-2A	.138	.279	.257	.249	.019	.083	.069	.050	.058	.048	.048	.039	.038	.024	
NO. 8-36 UNF-2A	.164	.332	.308	.300	.022	.100	.084	.055	.070	.059	.054	.045	.045	.029	
NO. 10-32 UNF-2A	.190	.385	.359	.348	.025	.116	.098	.060	.081	.069	.060	.050	.053	.034	
1/4-28 UNF-2A	.250	.507	.477	.462	.031	.153	.131	.070	.107	.092	.075	.064	.070	.046	



SLOTTED HEAD SCREW (e)



UNDERCUT DIMENSIONS, SLOTTED HEAD SCREWS (e)

SIZE	ØA		H		K	
	MAX	MAX	MIN	MAX	MIN	
NO. 0-80 UNF-2A	.060	.025	.018	.011	.007	
NO. 1-72 UNF-2A	.073	.030	.023	.014	.009	
NO. 2-64 UNF-2A	.086	.036	.028	.022	.015	
NO. 3-56 UNF-2A	.099	.041	.034	.025	.017	
NO. 4-48 UNF-2A	.112	.047	.039	.028	.020	
NO. 5-44 UNF-2A	.125	.053	.043	.024	.016	
NO. 6-40 UNF-2A	.138	.058	.048	.027	.017	
NO. 8-36 UNF-2A	.164	.070	.059	.032	.021	
NO. 10-32 UNF-2A	.190	.081	.069	.047	.034	
1/4-28 UNF-2A	.250	.107	.092	.061	.046	

- (a) SEE REQUIREMENT 10.
- (b) SEE REQUIREMENT 6.
- (c) SEE REQUIREMENT 5.
- (d) SEE REQUIREMENT 7.
- (e) SEE NOTE 7.

© ENTIRE STANDARD REVISED

AN510 HAS BEEN INACTIVATED AND CANCELLED IN PART - SEE NOTE 7.

P.A. DLA - IS	AIR FORCE - NAVY AERONAUTICAL STANDARD	AN510
Other Cust ARMY - AV NAVY - AS AIR FORCE - 99	SCREW, MACHINE, FLAT HEAD, 82 DEGREE, FINE THREAD	
PROCUREMENT SPECIFICATION FF-5-92	SUPERSEDES: FORMER AIR FORCE AND NAVY STANDARD ISSUES OF AN510 AND USAF DRAWINGS 42B4937, 42B5702.	SHEET 1 OF 3

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

PROJECT NO.: 5305-2027

APPROVED 17 MAY 43 REVISED 1 15 JUN 50 2 21 FEB 52 3 17 FEB 59 4 13 APR 64 5 10 MTR 83 6 30 JUN 94

REVIEWER SYMBOLS:  
ARMY - M1  
AIR FORCE - 82

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DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS LIMITED.  
NOTE: This drawing was approved by the Air Force and Navy Departments as an antecedent standard drawing for the same product and shall become effective for the procurement of aeronautical supplies, or for use in new design not later than 6 months after the latest date of approval shown.  
AM/SC N/A

FED. SUP CLASS  
5305

DASH NUMBERS FOR CARBON STEEL SCREWS (f)

L LENGTH	NO. 0-80	NO. 1-72	NO. 2-64	NO. 3-56	NO. 4-48	NO. 5-44	NO. 6-40	NO. 8-36	NO. 10-32	1/4-28
1/8 3/16 1/4	0-2 (d) 0-3 0-4	1-2 (d) 1-3 1-4	2-3 2-4	3-3 3-4	4-3 (d) 4-4	5-4	6-4	8-4 (d)	10-4(d)	
5/16 3/8 7/16 1/2	0-5 0-6 0-7 0-8	1-5 1-6 1-7 1-8	2-5 2-6 2-7 2-8	3-5 3-6 3-7 3-8	4-5 4-6 4-7 4-8	5-5 5-6 5-7 5-8	6-5 6-6 6-7 6-8	8-5 8-6 8-7 8-8	10-5 10-6 10-7 10-8	416-6 (d) 416-7 (d) 416-8
9/16 5/8 11/16 3/4			2-9 2-10 2-11 2-12	3-9 3-10 3-11 3-12	4-9 4-10 4-11 4-12	5-9 5-10 5-11 5-12	6-9 6-10 6-11 6-12	8-9 8-10 8-11 8-12	10-9 10-10 10-11 10-12	416-9 416-10 416-11 416-12
13/16 7/8 15/16 1					4-13 4-14 4-15 4-16	5-13 5-14 5-15 5-16	6-13 6-14 6-15 6-16	8-13 8-14 8-15 8-16	10-13 10-14 10-15 10-16	416-13 416-14 416-15 416-16
1-1/8 1-1/4 1-3/8 1-1/2					4-18 4-20 4-22 4-24	5-18 5-20 5-22 5-24	6-18 6-20 6-22 6-24	8-18 8-20 8-22 8-24	10-18 10-20 10-22 10-24	416-18 416-20 416-22 416-24
1-5/8 1-3/4 1-7/8 2					4-26 4-28	5-26 5-28	6-26 6-28 6-30 6-32	8-26 8-28 8-30 8-32	10-26 10-28 10-30 10-32	416-26 416-28 416-30 416-32
2-1/8 2-1/4 2-3/8 2-1/2							6-34 6-36 6-38 6-40	8-34 8-36 8-38 8-40	10-34 10-36 10-38 10-40	416-34 416-36 416-38 416-40
2-5/8 2-3/4 2-7/8 3								8-42 8-44 8-46 8-48	10-42 10-44 10-46 10-48	416-42 416-44 416-46 416-48

(d) SEE REQUIREMENT 7.  
(f) SEE REQUIREMENT 11.

RATED STRENGTH IN POUNDS  
(FOR REFERENCE PURPOSES ONLY)

SIZE	MINIMUM TENSILE STRENGTH AT ROOT DIA.	MINIMUM ULTIMATE BREAKING STRENGTH AT ROOT DIA.	MINIMUM SINGLE SHEAR STRENGTH AT ROOT DIA.
NO. 0-80	82	49	
NO. 1-72	132	79	
NO. 2-64	187	112	
NO. 3-56	247	148	
NO. 4-48	313	188	
NO. 5-44	396	238	
NO. 6-40	478	287	
NO. 8-36	705	423	
NO. 10-32	960	575	
1/4-28	1790	1075	

ULTIMATE TENSILES BASED ON 55,000 PSI.  
SHEAR STRENGTHS 60% OF ULTIMATE TENSILES.

REQUIREMENTS:

- MATERIAL:**  
CARBON STEEL IN ACCORDANCE WITH ASTM A108, GRADE 1010 (UNS G10100)  
CORROSION RESISTANT STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 430 (UNS S43000) OR UNS S30430 (CLASS XM-7), ASTM A582, TYPE 303 (UNS S30300) OR TYPE 303a (UNS S30323) OR MIL-S-7720, COMPOSITION 302 (UNS S30200) FOR COLD UPSETTING PROCESS.  
BRASS IN ACCORDANCE WITH ASTM B16, ASTM B36, ASTM B121, ASTM B134, ASTM B159 OR ASTM B206 WITH A MINIMUM ULTIMATE TENSILE STRENGTH OF 55,000 PSI. ALUMINUM ALLOY 2024 (UNS A92024), IN ACCORDANCE WITH QQ-A-225/3 OR QQ-A-225/6.
- FINISH:**  
CARBON STEEL: CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3.  
BRASS: BLACK CHEMICAL FINISH IN ACCORDANCE WITH MIL-F-495 OR CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416.  
TYPE II, CLASS 3, DEPENDING ON PART NUMBER CODING (SEE REQUIREMENT 11).  
CORROSION RESISTANT STEEL: PASSIVATE IN ACCORDANCE WITH QQ-P-35.  
ALUMINUM ALLOY: ANODIZE IN ACCORDANCE WITH MIL-A-8625, TYPE I OR II, CLASS 1.

P.A. DLA - IS	AIR FORCE - NAVY AERONAUTICAL STANDARD	AN510
Other Cust ARMY - AV NAVY - AS AIR FORCE - 99	SCREW, MACHINE, FLAT HEAD, 82 DEGREE. FINE THREAD	
PROCUREMENT SPECIFICATION FF-S-92	SUPERSEDES FORMER AIR FORCE AND NAVY STANDARD ISSUES OF AN510 AND USAF DRAWINGS 42B4937, 42B5702.	SHEET 2 OF 3

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

PROJECT NO.: 5305-2027

APPROVED 17 MAY 43 REVISED 6 30 JUN 94

REVIEWER SYMBOLS:  
ARMY - MI  
AIR FORCE - 82

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DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS LIMITED.  
NOTE: This drawing was approved by joint action of the Air Force and Navy Departments of the Air Force-Navy standard for this product. This drawing supersedes all antecedent standard drawings for the same product and shall be used in design not later than 6 months after the latest date of approval shown.  
AMSC N/A

3. HEAT TREATMENT:  
ALUMINUM ALLOY: 62,000 PSI MINIMUM ULTIMATE TENSILE STRENGTH, IN ACCORDANCE WITH MIL-H-6088.
4. THREADS:  
THREADS SHALL BE CLASS 2A IN ACCORDANCE WITH FED-STD-H2B/2. ACCEPTABILITY OF SCREW THREADS SHALL BE IN ACCORDANCE WITH FED-STD-H2B/20, SYSTEM 21.
5. THREAD LENGTH:  
FOR SCREWS UP TO AND INCLUDING 2 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 OF 1-3/4 INCHES.
6. UNTHREADED PORTION:  
THE DIAMETER OF THE UNTHREADED PORTION THE SCREWS SHALL NOT BE LESS THAN THE MINIMUM PITCH DIAMETER NOR MORE THAN THE MAXIMUM MAJOR DIAMETER OF THE THREAD.
7. UNDERCUT HEADS:  
DASH NUMBERS DESIGNATED BY (d) TO HAVE UNDERCUT HEADS.
8. HEAD DRIVE STYLE:  
CROSS-RECESS: RECESS IN ACCORDANCE WITH MS9006.  
SLOTTED HEAD: REFER TO TABLE FOR DIMENSIONS (SEE NOTE 7).
9. MANUFACTURER IDENTIFICATION:  
SCREWS WITH NOMINAL SIZES #10 (.1900) AND LARGER SHALL BE PERMANENTLY MARKED WITH A SYMBOL IDENTIFYING IT'S 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 RESISTANT STEEL SCREWS WITH NOMINAL SIZES #5 (.1250) AND LARGER SHALL BE PERMANENTLY MARKED WITH ONE DASH (" "). 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.
11. CODE:  
NO CODE BETWEEN FIRST AND SECOND DASH NUMBER = SLOTTED HEAD SCREW (SEE NOTE 7).  
"R" BETWEEN FIRST AND SECOND DASH NUMBER = CROSS-RECESSED HEAD SCREW.  
NO CODE BEFORE FIRST DASH NUMBER = CARBON STEEL SCREW WITH CADMIUM PLATING.  
"B" BEFORE FIRST DASH NUMBER = BRASS SCREW WITH BLACK CHEMICAL FINISH.  
"PB" BEFORE FIRST DASH NUMBER = BRASS SCREW WITH CADMIUM PLATING.  
"UB" BEFORE FIRST DASH NUMBER = BRASS SCREW WITH NO PLATING OR FINISH.  
"C" BEFORE FIRST DASH NUMBER = CORROSION RESISTANT STEEL SCREW, PASSIVATED.  
"D" BEFORE FIRST DASH NUMBER = ALUMINUM ALLOY SCREW, ANODIZED.

EXAMPLES:

- AN510-4-B = SLOTTED HEAD SCREW, CARBON STEEL, CADMIUM PLATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510-4RB = CROSS-RECESSED HEAD SCREW, CARBON STEEL, CADMIUM PLATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510B4-B = SLOTTED HEAD SCREW, BRASS, BLACK CHEMICAL FINISH, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510B4RB = CROSS RECESSED HEAD SCREW, BRASS, BLACK CHEMICAL FINISH, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510PB4-B = SLOTTED HEAD SCREW, BRASS, CADMIUM PLATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510PB4RB = CROSS-RECESSED HEAD SCREW, BRASS, CADMIUM PLATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510UB4-B = SLOTTED HEAD SCREW, BRASS, UNFINISHED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510UB4RB = CROSS-RECESSED HEAD SCREW, BRASS, UNFINISHED, 4-48 UNF-2A THREAD, 1/2 LONG.
- AN510C4-B = SLOTTED HEAD SCREW, CORROSION RESISTANT STEEL, PASSIVATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510C4RB = CROSS RECESSED HEAD SCREW, CORROSION RESISTANT STEEL, PASSIVATED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510D4-B = SLOTTED HEAD SCREW, ALUMINUM ALLOY, ANODIZED, 4-48 UNF-2A THREAD, 1/2 INCH LONG.
- AN510D6RB = CROSS-RECESSED HEAD SCREW, ALUMINUM ALLOY, ANODIZED, 6-40 UNF-2A THREAD, 1/2 INCH LONG.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
2. INTERPRET DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ANSI/ASME Y14.5M.
3. SCREWS SHALL BE FREE OF ALL LOOSE HANGING BURRS OR SLIVERS WHICH MAY BECOME DISLODGED DURING USAGE.
4. DO NOT USE UNASSIGNED DASH NUMBERS OR CODES.
5. IN CASE OF CONFLICT, THE REQUIREMENTS SPECIFIED HEREIN SHALL TAKE PRECEDENCE OVER THE REQUIREMENTS SPECIFIED IN SPECIFICATION FF-S-92. FOR DIMENSIONS AND TOLERANCES NOT SPECIFIED HEREIN OR FF-S-92, REFER TO ANSI B18.6.3.
6. THESE SCREWS ARE NOT TO BE USED IN THE CONSTRUCTION OF AIRFRAMES OR TO ATTACH EQUIPMENT TO THE AIRFRAME.
7. SLOTTED HEAD SCREWS ARE INACTIVE FOR NEW DESIGN AFTER 17 FEB 59. AN510 IS SUPERSEDED IN PART BY MS35191, MS35199, MS35203, AND MS51960.

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PROCUREMENT SPECIFICATION FF-S-92	SUPERSEDES: FORMER AIR FORCE AND NAVY STANDARD ISSUES OF AN510 AND USAF DRAWINGS 42B4937, 42B5702.	SHEET 3 OF 3

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

PROJECT NO.: 5305-2027

APPROVED 17 MAY 43 REVISED 6 30 JUN 94