

REVIEW: ME, EA, IS, AM, MI, AT  
USER: SM, AS, CL, BU, YO, PA, WY, MC

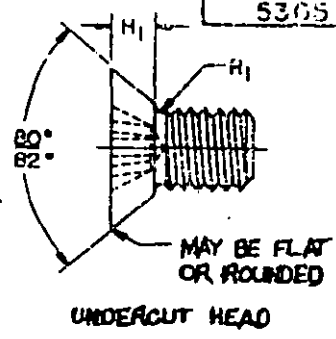
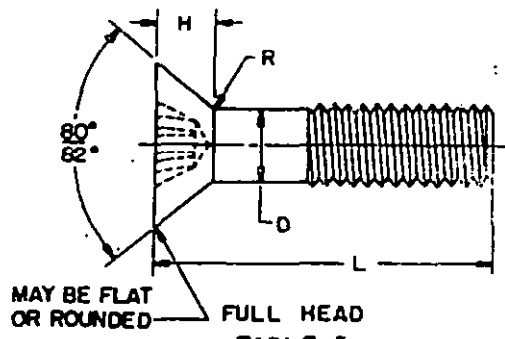
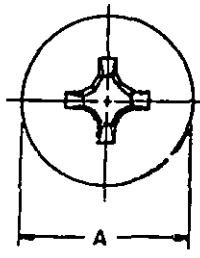


TABLE I

NOMINAL SIZE	(#0)	(#2)	(#4)	(#6)	(#8)	(#10)	(1/4)	(3/16)	(3/8)	
THREADS PER INCH, UNF-2A	80	64	48	40	36	32	28	24	24	
D BODY DIAMETER	MAX MIN	.0600 .0496	.0860 .0733	.1120 .0954	.1380 .1184	.1640 .1424	.1900 .1658	.2500 .2225	.3125 .2806	.3750 .3430
A HEAD DIAMETER	MAX SHARP MIN SHARP ABS MIN	.119 .105 .099	.172 .156 .147	.225 .207 .195	.279 .257 .244	.332 .308 .292	.385 .359 .340	.507 .477 .452	.638 .600 .568	.762 .722 .685
H HEAD HEIGHT	REF	.055	.051	.067	.083	.100	.116	.153	.191	.250
H1 HEAD HEIGHT UNDERCUT	MAX MIN	.025 .018	.036 .028	.047 .038	.059 .048	.070 .058	.081 .068	.107 .087	.134 .116	.161 .140
R RADIUS	MAX	.024	.034	.045	.055	.066	.076	.100	.125	.150
R1 RADIUS-UNDERCUT	MAX	.009	.013	.017	.021	.025	.029	.038	.047	.056
DRIVER SIZE		0	1	1	2	2	2	3	4	4
TENSILE STRENGTH (LBS) MIN		100	220	380	580	840	1140	1670	3310	5000
L LENGTH	TOLERANCE	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
.125	+.031	109	1	10	21	36	51	66	80	95
.188		110	2	11	22	37				
.250		111	3	12	23	38				
.312		112	4	13	24	39				
.375		113	5	14	25	40				
.438		6	15	26	41	53				
.500		7	16	27	42	54				
.562		8	17	28	43	55				
.750		9	18	29	44	56				
.875		19	30	45	46	57				
1.000	20	31	46	47	58					
1.250	+.062			32	47	60	74	87	98	
1.500				33	48	61	75	88	99	
1.750				34	49	62	76	89	100	
2.000	+.084			35	50	63	77	90	101	
2.250						64	78	91	102	
2.500						65	79	92	103	
2.750									104	
3.000									105	

NOTES:

- MATERIAL:** Brass in accordance with QQ-B-626 or QQ-V-321 having minimum ultimate tensile strength of 57,000 PSI.
- PROTECTIVE COATING:** Black Chemical Finish in accordance with MIL-P-495.
- THREADS:** The threads shall be in accordance with Screw-Thread Standards for Federal Services, Handbook H-28.
- THREAD LENGTH:** Screws 2.00 inches long and shorter shall have complete threads extending to within two threads of the head, or closer if practicable. Longer screws shall have a minimum thread length of 1.50 inches.
- RECESS:** The recess shall be in accordance with MS9006.
- DIMENSIONS:** All dimensions are in inches unless otherwise specified.
- UNDERCUT HEADS:** Screws above dotted lines shall have undercut heads.
- PART NUMBER:** The MS part number consists of the MS number plus the dash number.  
Example: MS15199-1.
- Referenced documents shall be of the issue in effect on date of invitations for bid.
- For design feature purposes, this standard takes precedence over procurement documents referenced herein.

Military standard is approved for use by all departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document, when available.

P.A. WC Other Cust 82	TITLE SCREW, MACHINE-FLAT COUNTERSUNK HEAD, 82°, CROSS-RECESSED, BRASS, BLACK CHEMICAL FINISH, UNF-2A	MILITARY STANDARD MS35199
PROCUREMENT SPECIFICATION FF-S-92	SUPERSEDES: 2-2, 2-3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105	SHEET 1 OF 1

APPROVED 25 JUN 53 REVISED (A) 21 MAR 63 (B) 14 JUN 67 (C)

TABLE II

The screws covered by the dash numbers given in MS35197, MS35246, MS35248 and AN510 in part are cancelled/inactivated after the dates indicated on the documents. Use the dash numbers given in the preceding sheets. The cancelled screws cannot always replace the superseding screws and should be used until existing stocks are depleted. Use only the superseding screws for design and replacement. Replacement shall be in accordance with this table.

CROSS REFERENCE OF PART NUMBERS

CANCELLED			SUPERSEDED BY		CANCELLED			SUPERSEDED BY	
MS35197	MS35246 MS35248	AN510	MS35199		MS35197	MS35246 MS35248	AN510	MS35199	
Dash Number			Dash Number		Dash Number			Dash Number	
	1	B0R2	B0-2	109			B5R4	B5-4	No Replacement
	2	B0R3	B0-3	110			B5R5	B5-5	No Replacement
	3	B0R4	B0-4	111			B5R6	B5-6	No Replacement
	4	B0R5	B0-5	112			B5R7	B5-7	No Replacement
	5	B0R6	B0-6	113			B5R8	B5-8	No Replacement
		B0R7	B0-7	No Replacement			B5R9	B5-9	No Replacement
		B0R8	B0-8	No Replacement			B5R10	B5-10	No Replacement
	6	B1R2	B1-2	No Replacement			B5R11	B5-11	No Replacement
	7	B1R3	B1-3	No Replacement			B5R12	B5-12	No Replacement
	8	B1R4	B1-4	No Replacement			B5R13	B5-13	No Replacement
	9	B1R5	B1-5	No Replacement			B5R14	B5-14	No Replacement
	10	B1R6	B1-6	No Replacement			B5R15	B5-15	No Replacement
	11	B1R7	B1-7	No Replacement			B5R16	B5-16	No Replacement
	12	B1R8	B1-8	No Replacement			B5R18	B5-18	No Replacement
1	13			1			B5R20	B5-20	No Replacement
2	14	B2R3	B2-3	2			B5R22	B5-22	No Replacement
3	15	B2R4	B2-4	3			B5R24	B5-24	No Replacement
4	16	B2R5	B2-5	4			B5R26	B5-26	No Replacement
5	17	B2R6	B2-6	5			B5R28	B5-28	No Replacement
6	18	B2R7	B2-7	6	21	33			21
7	19	B2R8	B2-8	7	22	34			22
		B2R9	B2-9	No Replacement	23	35	B6R4	B6-4	23
8	20	B2R10	B2-10	5	24	36	B6R5	B6-5	24
		B2R11	B2-11	No Replacement	25	37	B6R6	B6-6	25
9	21	B2R12	B2-12	9	26	38	B6R7	B6-7	26
		B3R3	B3-3	No Replacement	27	39	B6R8	B6-8	27
		B3R4	B3-4	No Replacement	28	40	B6R9	B6-9	No Replacement
		B3R5	B3-5	No Replacement	29	41	B6R10	B6-10	29
		B3R6	B3-6	No Replacement	30	42	B6R11	B6-11	No Replacement
		B3R7	B3-7	No Replacement	31	43	B6R12	B6-12	30
		B3R8	B3-8	No Replacement	32	44	B6R13	B6-13	No Replacement
		B3R9	B3-9	No Replacement	33	45	B6R14	B6-14	31
		B3R10	B3-10	No Replacement	34	46	B6R15	B6-15	No Replacement
		B3R11	B3-11	No Replacement	35	47	B6R16	B6-16	32
		B3R12	B3-12	No Replacement	36	48	B6R18	B6-18	No Replacement
10	22			10	37	49	B6R20	B6-20	33
11	23	B4R3	B4-3	11	38	50	B6R22	B6-22	No Replacement
12	24	B4R4	B4-4	12	39	51	B6R24	B6-24	34
13	25	B4R5	B4-5	13	40	52	B6R26	B6-26	No Replacement
14	26	B4R6	B4-6	14	41	53	B6R28	B6-28	35
15	27	B4R7	B4-7	15	42	54	B6R30	B6-30	No Replacement
16	28	B4R8	B4-8	16	43	55	B6R32	B6-32	36
		B4R9	B4-9	No Replacement	44	56	B6R34	B6-34	No Replacement
17	29	B4R10	B4-10	17	45	57	B6R36	B6-36	No Replacement
		B4R11	B4-11	No Replacement	46	58	B6R38	B6-38	No Replacement
18	30	B4R12	B4-12	18	47	59	B6R40	B6-40	No Replacement
		B4R13	B4-13	No Replacement	48	60			37
19	31	B4R14	B4-14	19	49	61			38
		B4R15	B4-15	No Replacement	50	62	B8R4	B8-4	39
20	32	B4R16	B4-16	20	51	63	B8R5	B8-5	40
		B4R18	B4-18	No Replacement	52	64	B8R6	B8-6	41
		B4R20	B4-20	No Replacement	53	65	B8R7	B8-7	42
		B4R22	B4-22	No Replacement	54	66	B8R8	B8-8	No Replacement
		B4R24	B4-24	No Replacement	55	67	B8R9	B8-9	No Replacement
		B4R26	B4-26	No Replacement	56	68	B8R10	B8-10	43
		B4R28	B4-28	No Replacement	57	69	B8R11	B8-11	No Replacement

(Continued on Sheet 3)

P.A.	WC	TITLE	MILITARY STANDARD
Other Code	82	SCREW, MACHINE-FLAT COUNTERSUNK HEAD, 82°, CROSS-RECESSED, BRASS, BLACK CHEMICAL FINISH, UNF-2A	MS35199
PROCUREMENT SPECIFICATION	FF-3-92	SUPERSEDES: MS35197, MS35246, MS35248, MS35249 IN PART, MS35248 IN PART, ALSO IN PART, BCLX, S.I., S.S., S.S., 4, BCLX IN PART, BCLX, S.I., BCLX IN PART, BCLX IN PART, BCLX IN PART	SHEET 2 OF 4

REVIEW: ME, EA, B, AV, MI, AT  
USER: SH, AR, OL, MI, VA, PA, WV, MC

This military standard is approved for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document, per AR 600-10.

APPROVED 29 JUNE 53 REVISED 4 21 MAR 1963 (B) FOR CHANGES SEE SHEET 1.

FED. SUP CLASS  
5305

REVIEW: ME, EA, IS, AV, MA, AT  
USER: SA, AS, GL, MU, YD, PA, WY, MC

CROSS REFERENCE OF PART NUMBERS									
CANCELLED				SUPERSEDED BY		CANCELLED			SUPERSEDED BY
MS35197	MS35246 MS35248	AN510		MS35199	MS35197	MS35246 MS35248	AN510		MS35199
Dash Number				Dash Number		Dash Number			Dash Number
44	56	B8R12	B8-12	44	70	90	B416R9	B416-9	No Replacement
		B8R13	B8-13	No Replacement			B416R10	B416-10	70
45	57	B8R14	B8-14	45	71	91	B416R11	B416-11	No Replacement
		B8R15	B8-15	No Replacement			B416R12	B416-12	71
46	58	B8R16	B8-16	46	72	92	B416R13	B416-13	No Replacement
		B8R19	B8-19	No Replacement			B416R14	B416-14	72
47	59	B8R20	B8-20	47	73	93	B416R15	B416-15	No Replacement
		B8R22	B8-22	No Replacement			B416R16	B416-16	73
48	60	B8R24	B8-24	48	74	94	B416R19	B416-19	No Replacement
		B8R26	B8-26	No Replacement			B416R20	B416-20	74
49	61	B8R28	B8-28	49	75	95	B416R22	B416-22	No Replacement
		B8R30	B8-30	No Replacement			B416R24	B416-24	75
50	62	B8R32	B8-32	50	76	96	B416R26	B416-26	No Replacement
		B8R34	B8-34	No Replacement			B416R28	B416-28	76
	63	B8R36	B8-36	No Replacement			B416R30	B416-30	No Replacement
		B8R38	B8-38	No Replacement	77	97	B416R32	B416-32	77
		B8R40	B8-40	No Replacement			B416R34	B416-34	No Replacement
	64	B8R42	B8-42	No Replacement	78	98	B416R36	B416-36	78
		B8R44	B8-44	No Replacement			B416R38	B416-38	No Replacement
	65	B8R46	B8-46	No Replacement	79	99	B416R40	B416-40	79
		B8R48	B8-48	No Replacement			B416R42	B416-42	No Replacement
	66			No Replacement		100	B416R44	B416-44	No Replacement
	67			51			B416R46	B416-46	No Replacement
51	68	B10R4	B10-4	51	90	101	B416R48	B416-48	No Replacement
52	69	B10R5	B10-5	52	91	102			90
53	70	B10R6	B10-6	53	92	103			91
54	71	B10R7	B10-7	54	93	104			92
55	72	B10R8	B10-8	55	94	105			93
		B10R9	B10-9	No Replacement					94
	73	B10R10	B10-10	56	95	106			95
		B10R11	B10-11	No Replacement	96	107			96
57	74	B10R12	B10-12	57	97	108			97
		B10R13	B10-13	No Replacement	98	109			98
58	75	B10R14	B10-14	58	99	110			99
		B10R15	B10-15	No Replacement	90	111			90
59	76	B10R16	B10-16	59	91	112			91
		B10R18	B10-18	No Replacement	92	113			92
60	77	B10R20	B10-20	60	93	114			No Replacement
		B10R22	B10-22	No Replacement	94	115			No Replacement
61	78	B10R24	B10-24	61	95	116			93
		B10R26	B10-26	No Replacement	96	117			94
62	79	B10R28	B10-28	62	97	118			95
		B10R30	B10-30	No Replacement	98	119			96
	80	B10R32	B10-32	63	99	120			97
		B10R34	B10-34	No Replacement	100	121			98
64	81	B10R36	B10-36	64	101	122			99
		B10R38	B10-38	No Replacement	102	123			100
65	82	B10R40	B10-40	65	103	124			101
		B10R42	B10-42	No Replacement	104	125			102
	83	B10R44	B10-44	No Replacement	105	126			103
		B10R46	B10-46	No Replacement		127			104
	84	B10R48	B10-48	No Replacement		128			105
	85			No Replacement		129			
66	86	B416R6	B416-6	66		130 thru			No Replacement
67	87	B416R7	B416-7	67		151			
68	88	B416R8	B416-8	68					
69	89	B416R9	B416-9	69					

This standard is approved for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document, when available.

REVISED 21 MAR 1963 (B) FOR CHANGES SEE SHEET 1  
APPROVED 25 JUNE 53

P.A. MC Other Case	82	TITLE SCREW, MACHINE-FLAT COUNTERSUNK HEAD, 82°, CROSS-RECESSED, BRASS, BLACK CHEMICAL FINISH, UNF-2A	MILITARY STANDARD MS35199
PROCUREMENT SPECIFICATION PF-5-92	SUPERSEDES: MS35197, MS35246, MS35248, MS35266 IN PART, MS35248 IN PART, AN510 IN PART, BCLYK, B.L.Z.B., B.L.G., BCL22, F.L. BOLDS IN PART, BOLDS, I AND M, S IN PART.		SHEET 3 OF 4

REVISION: SEE EA, IS, AK, MI, AT  
 USER: SA, AS, CL, ML, YO, PA, WV, MC

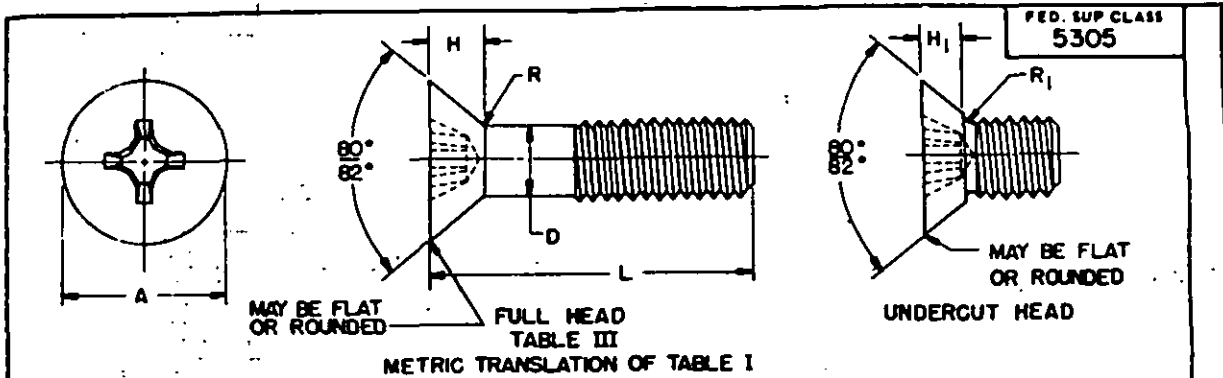


TABLE III  
 METRIC TRANSLATION OF TABLE I

NOMINAL SIZE	MM	1.524	2.184	2.845	3.505	4.166	4.826	6.350	7.938	9.525
PITCH		.32	.40	.53	.64	.71	.79	.91	1.06	1.06
D BODY DIAMETER	MAX MIN	1.524 1.260	2.184 1.862	2.845 2.423	3.505 3.007	4.166 3.617	4.826 4.211	6.350 5.652	7.938 7.127	9.525 8.712
A HEAD DIAMETER	MAX SHARP MIN SHARP ABS MIN	3.023 2.667 2.515	4.369 3.962 3.734	5.715 5.258 4.923	7.087 6.528 6.198	8.433 7.823 7.417	9.779 9.119 8.636	12.878 12.116 11.481	16.129 15.240 14.427	19.355 18.339 17.399
H HEAD HEIGHT	REF	.889	1.295	1.702	2.108	2.540	2.946	3.886	4.851	5.842
H <sub>1</sub> HEAD HEIGHT UNDERCUT	MAX MIN	.635 .457	.914 .711	1.194 .965	1.499 1.219	1.778 1.473	2.057 1.727	2.718 2.337	3.404 2.946	4.089 3.555
R RADIUS	MAX	.610	.864	1.143	1.397	1.676	1.930	2.540	3.175	3.810
R <sub>1</sub> RADIUS-UNDERCUT	MAX	.229	.330	.432	.533	.635	.737	.965	1.194	1.422
DRIVER SIZE		0	1	1	2	2	2	3	4	4
TENSILE STRENGTH, KN-MIN		.448	.986	1.703	2.599	3.738	5.109	9.278	14.836	22.411
L LENGTH	TOLERANCE	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
3.175		109	1	10	21	36				
4.775		110	2	11	22	37				
6.350		111	3	12	23	38	51			
7.925		112	4	13	24	39	52	66		
9.525		.113	5	14	25	40	53	67	80	
11.125	+0		6	15	26	41	54	68	81	
12.700	-.787		7	16	27	42	55	69	82	93
15.875			8	17	28	43	56	70	83	94
19.050			9	18	29	44	57	71	84	95
22.225				19	30	45	58	72	85	96
25.400				20	31	46	59	73	86	97
31.750					32	47	60	74	87	98
38.100	+0				33	48	61	75	88	99
44.450	-1.575				34	49	62	76	89	100
50.800					35	50	63	77	90	101
57.150							64	78	91	102
63.500	+0						65	79	92	103
69.850	-2.388									104
76.200										105

NOTE: All dimensions are in millimetres (mm), unless otherwise specified, and are based on an approximate conversion factor of 25.4mm equals one inch.

This military standard is approved for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document, per ARJCMR.

APPROVED 29 JUN 1953 REVISED (A) 21 MAR 1963 (B) FOR CHANGES SEE SHEET 1.

P.A. VC Other Case 82	TITLE SCREW, MACHINE-FLAT COUNTERSUNK HEAD, 82°, CROSS-RECESSED, BRASS, BLACK CHEMICAL FINISH, UNF-2A	MILITARY STANDARD MS35199
PROCUREMENT SPECIFICATION FF-S-92	SUPERSEDES: MS3519T, MS3519A, MS3519B, MS3519C, MS3519D, MS3519E, MS3519F, MS3519G, MS3519H, MS3519I, MS3519J, MS3519K, MS3519L, MS3519M, MS3519N, MS3519O, MS3519P, MS3519Q, MS3519R, MS3519S, MS3519T, MS3519U, MS3519V, MS3519W, MS3519X, MS3519Y, MS3519Z	SHEET 4 OF 4