

RELIANCE (SER) AT, OS, ME, PA, WY, TO, SH
 NVA, IS, GL, EA, MU, EL, AV, MI

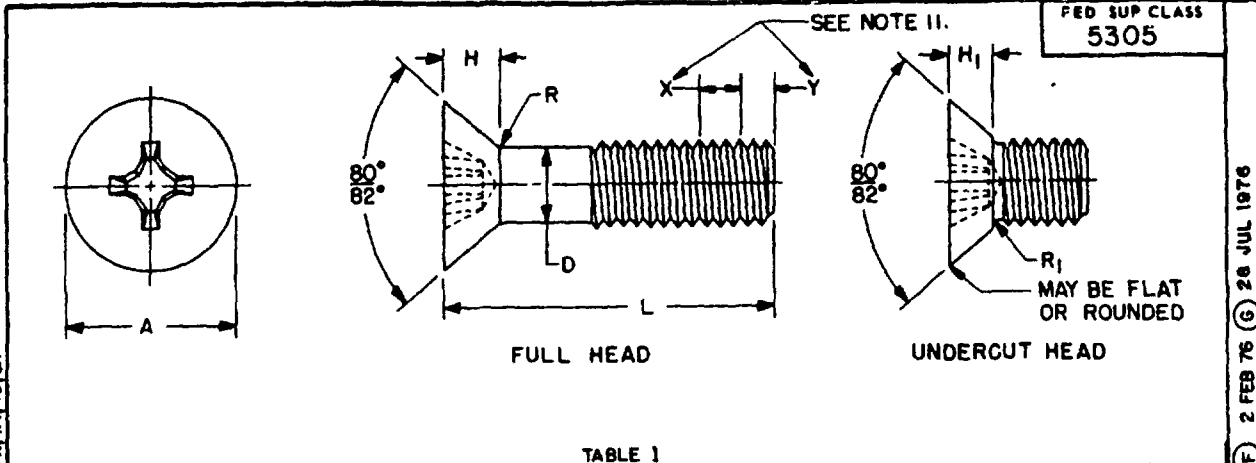


TABLE 1

NOMINAL SIZE	(#0)	(#1)	(#2)	(#4)	(#6)	(#8)	(#10)	(1/4)	(5/16)	(3/8)	(7/16)	(1/2)		
THREADS PER INCH UNF-2A	80	72	64	48	40	36	32	28	24	24	20	20		
D BODY DIAMETER	MAX MIN	0600 0496	0730 0615	0860 0733	.1120 .0954	.1380 .1184	.1640 .1424	1900 .1658	2500 .2225	.3125 .2806	.3750 .3430	.4375 .3995	.5000 .4619	
A HEAD DIA	MAX SHARP MIN SHARP ABS MIN	.119 .105 .099	146 130 123	.172 .156 .147	225 .207 .195	279 .257 .244	.332 .308 .292	.385 .359 .340	.507 .477 .452	.635 .600 .568	.762 .722 .685	.812 .767 .723	.875 .831 .775	
H HEAD HEIGHT	REF	.035	.043	.051	.067	.083	.100	.116	.153	.191	.230	.223	.223	
H1 HEAD HEIGHT- UNDERCUT	MAX MIN	.025 .018	.031 .023	.036 .028	.047 .038	.059 .048	.070 .058	.081 .068	.107 .092	.134 .116	.161 .140	.156 .133	.156 .130	
R RADIUS	MAX	.024	.029	.034	.045	.055	.066	.076	.100	.125	.150	.175	.200	
R1 RADIUS-UNDERCUT	MAX	.009	.011	.013	.017	.021	.025	.029	.038	.047	.056	.066	.075	
TENSILE STRENGTH LBS-MIN		105	165	235	395	605	880	1,200	2,180	3,480	5,260	7,120	9,590	
L LENGTH	TOL	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	
.125		201	206*	213	222	233	248	267	285	302	317	330*	342	
.188		202	207*	214	223	234	249							
.250		203	208*	215	224	235	250							
.312		204	209*	216	225	236	251							
.375	+0 -.031	205	210*	217	226	237	252	270	287	303	318	331*	343	
.438				218	227	238	253							
.500				211*	220	229	240							255
.625				212*	221	230	241							256
750				231	242	257	274	291	306	319	332*	344		
875				232	243	258	275							
1 000				244	259	277	294							
1.250				245	260	278	295							
1.500	+0			246	261	279	296	296	311	324	336*	347		
1.750				247	262	280	297							
2 000	-.062			263	281	298	313	298	314	326	338*	349		
2.250				264	282	299	314							
2.500				265	283	300	315							
2.750				266	284	301	316							
3 000	+0			266	284	301	316	301	316	329	341*	352		
3 000				266	284	301	316							

* INACTIVE FOR NEW DESIGN AFTER 2 FEBRUARY 1976

(6) FOR CHANGE SEE SHEET 2.

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, when applicable.

P A WC Other Cost AS 52	TITLE SCREW, MACHINE - 82° FLAT COUNTERSUNK HEAD, CROSS-RECESSED, CARBON STEEL, CADMIUM PLATED, UNF-2A	MILITARY STANDARD MS 35191
		SHEET 1 OF 4
PROCUREMENT SPECIFICATION FF-S-92	SUPERSEDES MS35189, MS35193, MS35195, MS35238, MS35240, MS35242, MS35244; and in part MS24583(USAF), MS35358, MS35363, AN510	

APPROVED 25 JUN 1953 REVISED (A) 5 APR 1962 (B) 18 JUN 1962 (C) 10 DEC 1964 (D) 18 AUG 1966 (E) 22 OCT 1970 (F) 2 FEB 76 (G) 28 JUL 1976

FED SUP CLASS
5305

NOTES

1. **MATERIAL** Carbon steel in accordance with Fed. Std. No. 66 having minimum ultimate tensile strength of 60,000 PSI.
2. **PROTECTIVE COATING** Cadmium plated in accordance with Type II, Class 3 of QQ-P-416 or MIL-C-81562.
3. **THREADS** The threads shall be in accordance with Screw-Thread Standards for Federal Services, Handbook H-28.
4. **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.
5. **UNDERCUT HEADS.** Screws above dotted lines shall have undercut heads
6. **DIMENSIONS:** All dimensions are in inches, unless otherwise specified.
7. **RECESS:** The recess shall be in accordance with MS9006.
8. **PART NUMBER** The MS part number consists of the MS number, plus the dash number.
Example MS35191-209 plain screw or MS35191-209L self-locking screw.
9. Referenced documents shall be of the issue in effect on date of invitations for bids
10. For design feature purposes, this standard takes precedence over procurement documents referenced herein.
11. **SELF-LOCKING ELEMENT:**
 - (a) The self-locking element shall be a patch type or longitudinal strip in accordance with MIL-F-18240.
 - (b) Maximum ring gage diameter that locking region of screw must pass thru freely or with finger pressure shall be the nominal size plus 0.000
 - (c) For "I" and "Y" dimensions and design and usage limitations, see MS15981

REVIEWER: NS, IS, GL, EA, MU, EL, AM, MI
 USER: AT, OS, ME, PA, WV, YD, SH

TABLE II
INTERCHANGEABILITY

The screws covered by the following part numbers are cancelled after 5 April 1962. The cancelled screws cannot always replace the new screws and should be used until existing stocks are depleted. Use only the new screws for design and replacement. Replacement shall be in accordance with this table.

PART NUMBERS							
CANCELLED	NEW	CANCELLED	NEW	CANCELLED	NEW	CANCELLED	NEW
MS35189 MS35191 MS35193 MS35195	MS35191	MS35189 MS35191 MS35193 MS35195	MS35191	MS24583 MS35189 MS35191 MS35193 MS35195	MS35191	MS24583 MS35189 MS35191 MS35193 MS35195	MS35191
1	213	26	238	51	268	79	299
2	214	27	239	52	269	80	302
3	215	28	240	53	270	81	303
4	216	29	241	54	271	82	304
5	217	30	242	55	272	83	305
6	218	31	243	56	273	84	306
7	219	32	244	57	274	85	307
8	220	33	245	58	275	86	308
9	221	34	246	59	276	87	309
10	222	35	247	60	277	88	310
11	223	36	248	61	278	89	311
12	224	37	249	62	279	90	312
13	225	38	250	63	280	91	313
14	226	39	251	64	281	92	314
15	227	40	252	65	282	93	317
16	228	41	253	66	286	94	318
17	229	42	254	67	287	95	319
18	230	43	255	68	288	96	320
19	231	44	256	69	289	97	321
20	232	45	257	70	290	98	322
21	233	46	258	71	291	99	323
22	234	47	259	72	292	100	324
23	235	48	260	73	293	101	325
24	236	49	261	74	294	102	326
25	237	50	262	75	295	103	327
				76	296	104	328
				77	297	105	329
				78	298		

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APPROVED 25 JUN 1953 REVISED (A) 5 APR 1962 (B) 18 JUN 1962 (C) 10 DEC 1964 (D) 18 AUG 1966 (E) 22 OCT 1970 (F) FEB 1976 (G) FOR CHANGE SEE SHEET 2.

P.A. WC Other Cust AS 82	TITLE SCREW, MACHINE-82° FLAT COUNTERSUNK HEAD, CROSS-RECESSED, CARBON STEEL, CADMIUM PLATED, UNF-2A	MILITARY STANDARD MS35191
PROCUREMENT SPECIFICATION FF-S-92	SUPSEDES MS35189, MS35193, MS35195, MS35238, MS35240, MS35242, MS35244; and in part MS24583(USAF), MS35358, MS35363, ANS10	SHEET 2 OF 4

TABLE II - CONT'D

PART NUMBERS													
CANCELLED			NEW	CANCELLED			NEW	CANCELLED			NEW	CANC	NEW
MS35238	ANS10		MS35191	MS35238	ANS10		MS35191	MS35238	ANS10		MS35191	MS35238	MS35191
MS35240				MS35240				MS35240				MS35240	
MS35242				MS35242				MS35242				MS35242	
MS35244				MS35244				MS35244				MS35244	
1	0-2	OR2	201	34			234	68	10-4	10R4	268	102	302
2	0-3	OR3	202	35	6-4	6R4	235	69	10-5	10R5	269	103	303
3	0-4	OR4	203	36	6-5	6R5	236	70	10-6	10R6	270	104	304
4	0-5	OR5	204	37	6-6	6R6	237	71	10-7	10R7	271	105	305
5	0-6	OR6	205	38	6-7	6R7	238	72	10-8	10R8	272	106	306
	0-7	OR7	*	39	6-8	6R8	239		10-9	10R9	*	107	307
	0-8	OR8	*		6-9	6R9	*	73	10-10	10R10	273	108	308
6	1-2	1R2	206	40	6-10	6R10	240		10-11	10R11	*	109	309
7	1-3	1R3	207		6-11	6R11	*	74	10-12	10R12	274	110	310
8	1-4	1R4	208	41	6-12	6R12	241		10-13	10R13	*	111	311
9	1-5	1R5	209		6-13	6R13	*	75	10-14	10R14	275	112	312
10	1-6	1R6	210	42	6-14	6R14	242		10-15	10R15	*	113	313
11	1-7	1R7	211		6-15	6R15	*	76	10-16	10R16	276	114	314
12	1-8	1R8	212	43	6-16	6R16	243		10-18	10R18	*	115	315
13			213		6-18	6R18	*	77	10-20	10R20	277	116	316
14	2-3	2R3	214	44	6-20	6R20	244		10-22	10R22	*	117	317
15	2-4	2R4	215		6-22	6R22	*	78	10-24	10R24	278	118	318
16	2-5	2R5	216	45	6-24	6R24	245		10-26	10R26	*	119	319
17	2-6	2R6	217		6-26	6R26	*	79	10-28	10R28	279	120	320
18	2-7	2R7	218	46	6-28	6R28	246		10-30	10R30	*	121	321
19	2-8	2R8	219		6-30	6R30	*	80	10-32	10R32	280	122	322
	2-9	2R9	*	47	6-32	6R32	247		10-34	10R34	*	123	323
20	2-10	2R10	220		6-34	6R34	*	81	10-36	10R36	281	124	324
	2-11	2R11	*		6-36	6R36	*		10-38	10R38	*	125	325
21	2-12	2R12	221		6-38	6R38	*	82	10-40	10R40	282	126	326
	3-3	3R3	*		6-40	6R40	*		10-42	10R42	*	127	327
	THRU	THRU	*	48			248	83	10-44	10R44	283	128	328
	3-12	3R12	*	49			249		10-46	10R46	*	129	329
22			222	50	8-4	8R4	250	84	10-48	10R48	284	130	330
23	4-3	4R3	223	51	8-5	8R5	251	85			285	131	331
24	4-4	4R4	224	52	8-6	8R6	252	86			286	132	332
25	4-5	4R5	225	53	8-7	8R7	253	87	416-6	416R6	287	133	333
26	4-6	4R6	226	54	8-8	8R8	254	88	416-7	416R7	288	134	334
27	4-7	4R7	227		8-9	8R9	*	89	416-8	416R8	289	135	335
28	4-8	4R8	228	55	8-10	8R10	255		416-9	416R9	*	136	336
	4-9	4R9	*		8-11	8R11	*	90	416-10	416R10	290	137	337
29	4-10	4R10	229	56	8-12	8R12	256		416-11	416R11	*	138	338
	4-11	4R11	*		8-13	8R13	*	91	416-12	416R12	291	139	339
30	4-12	4R12	230	57	8-14	8R14	257		416-13	416R13	*	140	340
	4-13	4R13	*		8-15	8R15	*	92	416-14	416R14	292	141	341
31	4-14	4R14	231	58	8-16	8R16	258		416-15	416R15	*	142	342
	4-15	4R15	*		8-18	8R18	*	93	416-16	416R16	293	143	343
32	4-16	4R16	232	59	8-20	8R20	259		416-18	416R18	*	144	344
	4-18	4R18	*		8-22	8R22	*	94	416-20	416R20	294	145	345
	4-20	4R20	*	60	8-24	8R24	260		416-22	416R22	*	146	346
	4-22	4R22	*		8-26	8R26	*	95	416-24	416R24	295	147	347
	4-24	4R24	*		8-28	8R28	261		416-26	416R26	*	148	348
	4-26	4R26	*	61	8-30	8R30	262		416-28	416R28	296	149	349
	4-28	4R28	*	62	8-32	8R32	262		416-30	416R30	*	150	350
	5-4	5R4	*		8-34	8R34	*	97	416-32	416R32	297	151	351
	THRU	THRU	*	63	8-36	8R36	263		416-34	416R34	*	152	352
5-16	5R16		*		8-38	8R38	*	98	416-36	416R36	298	153	*
5-18	5R18		*	64	8-40	8R40	264		416-38	416R38	*	THRU	*
5-20	5R20		*		8-42	8R42	*	99	416-40	416R40	299	181	*
5-22	5R22		*	65	8-44	8R44	265		416-42	416R42	*		
5-24	5R24		*		8-46	8R46	*	100	416-44	416R44	300		
5-26	5R26		*	66	8-48	8R48	266		416-46	416R46	*		
5-28	5R28		*	67			267	101	416-48	416R48	301		

* No Replacement

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USER AT, OS, ME, PA, WV, YD, SH

P.A. WC	TITLE	MILITARY STANDARD
Other Cust AS 82	SCREW, MACHINE - 82° FLAT COUNTERSUNK HEAD, CROSS-RECESSED, CARBON STEEL, CADMIUM PLATED, UNF-2A	MS 35191
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FED SUP CLASS
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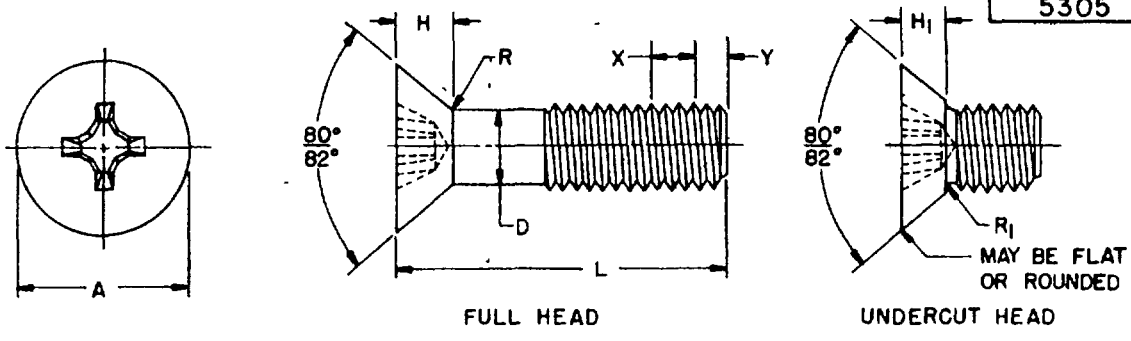


TABLE III
METRIC TRANSLATION OF TABLE I

NOMINAL SIZE	MM	1.524	1.854	2.184	2.845	3.505	4.166	4.826	6.350	7.938	9.525	11.112	12.700
PITCH		.32	.35	.40	.53	.64	.71	.79	.91	1.06	1.06	1.27	1.27
D BODY DIA	MAX MIN	1.52 1.26	1.85 1.56	2.18 1.86	2.85 2.42	3.51 3.01	4.17 3.62	4.83 4.21	6.35 5.65	7.94 7.13	9.53 8.71	11.11 10.15	12.70 11.73
A HEAD DIA	MAX SHARP MIN SHARP ABS MIN	3.02 2.67 2.52	3.71 3.30 3.12	4.37 3.96 3.73	5.72 5.26 4.92	7.09 6.53 6.20	8.43 7.82 7.42	9.78 9.12 8.64	12.88 12.12 11.48	16.13 15.24 14.43	19.36 18.34 17.40	20.63 19.48 18.36	22.23 21.11 19.69
H HEAD HEIGHT	REF	.89	1.09	1.30	1.70	2.11	2.54	2.95	3.89	4.85	5.84	5.66	5.66
H1 HEAD HEIGHT UNDERCUT	MAX MIN	.64 .46	.79 .58	.91 .71	1.19 .97	1.50 1.22	1.78 1.47	2.06 1.73	2.72 2.34	3.40 2.95	4.09 3.56	3.96 3.38	3.96 3.30
R RADIUS	MAX	.61	.74	.86	1.14	1.40	1.68	1.93	2.54	3.18	3.81	4.45	5.08
R1 RADIUS-UNDERCUT	MAX	.23	.28	.33	.43	.53	.64	.74	.97	1.19	1.42	1.68	1.91
TENSILE STRENGTH KN - MIN		.48	.73	1.05	1.76	2.69	3.92	5.34	9.70	15.5	23.4	31.7	42.7
L LENGTH	TOL	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
3.18 4.78 6.35 7.93		201 202 203 204	206* 207* 208* 209*	213 214 215 216	222 223 224 225	233 234 235 236	248 249 250 251	267 268 269					
9.53 11.13 12.70 15.88	+0 -.79	205	210* 211* 212*	217 218 219 220	226 227 228 229	237 238 239 240	252 253 254 255	270 271 272 273	287 288 289 290	302 303 304 305	317 318	330*	
19.05 22.23 25.40				221	230 231 232	241 242 243	256 257 258	274 275 276	291 292 293	306 307 308	319 320 321	331* 332* 333*	342 343 344
31.75 38.10 44.45 50.80	+0 -1.58					244 245 246 247	259 260 261 262	277 278 279 280	294 295 296 297	309 310 311 312	322 323 324 325	334* 335* 336* 337*	345 346 347 348
57.15 63.50 69.85 76.20	+0 -2.39						263 264 265 266	281 282 283 284	298 299 300 301	313 314 315 316	326 327 328 329	338* 339* 340* 341*	349 350 351 352

NOTE: All dimensions are in millimeters (MM), unless otherwise specified.

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