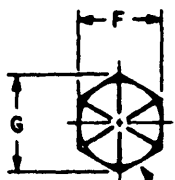
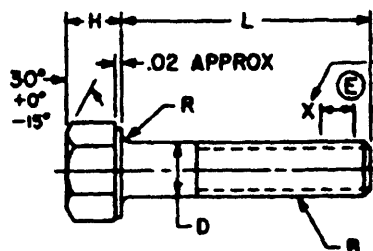


FED. SUP CLASS

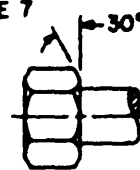
5305



SEE NOTE 6



SEE NOTE 7



OPTIONAL DESIGN

TABLE 1

| NOMINAL SIZE | | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | |
|------------------------------|----------------------|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| B | THREAD UNF-2A | 28 | 24 | 24 | 20 | 20 | 18 | 18 | |
| D | BODY DIAMETER | MAX MIN | .2500 .2450 | .3125 .3065 | .3750 .3690 | .4375 .4305 | .5000 .4930 | .5625 .5545 | .6250 .6170 |
| F | WIDTH ACROSS FLATS | MAX MIN | .4375 .4280 | .5000 .4890 | .5625 .5510 | .6250 .6120 | .7500 .7360 | .8125 .7980 | .9375 .9220 |
| G | WIDTH ACROSS CORNERS | MAX MIN | .505 .488 | .577 .557 | .650 .628 | .722 .698 | .866 .840 | .938 .910 | 1.083 1.051 |
| H | HEAD HEIGHT | MAX MIN | .163 .150 | .211 .195 | .243 .226 | .291 .272 | .323 .302 | .371 .348 | .403 .378 |
| R | RADIUS | MAX MIN | .025 .015 | .025 .015 | .025 .015 | .025 .015 | .025 .015 | .045 .020 | .045 .020 |
| * MIN TENSILE STRENGTH - LBS | | 5,450 | 8,700 | 13,200 | 17,800 | 24,000 | 30,400 | 38,400 | |

| L LENGTH | TOLERANCE | DASH NO. | DASH NO. | DASH NO. | DASH** NO. | DASH NO. | DASH** NO. | DASH NO. |
|----------|-----------|----------|----------|----------|------------|----------|------------|----------|
| .375 | | 1 | 27 | 53 | 79 | | | |
| .438 | | 2 | 28 | 54 | 80 | 104 | | |
| .500 | | 3 | 29 | 55 | 81 | 105 | 130 | |
| .562 | +0 | 4 | 30 | 56 | 82 | 106 | 131 | 155 |
| .625 | -.031 | 5 | 31 | 57 | 83 | 107 | 132 | 156 |
| .750 | | 6 | 32 | 58 | 84 | 108 | 133 | 157 |
| .875 | | 7 | 33 | 59 | 85 | 109 | 134 | 158 |
| 1.000 | | 8 | 34 | 60 | | | | |
| 1.125 | | 9 | 35 | 61 | 86 | 110 | 135 | 159 |
| 1.250 | | 10 | 36 | 62 | 87 | 111 | 136 | 160 |
| 1.375 | +0 | 11 | 37 | 63 | 88 | 112 | 137 | 161 |
| 1.500 | -.062 | 12 | 38 | 64 | 89 | 113 | 138 | 162 |
| 1.750 | | 13 | 39 | 65 | 90 | 114 | 139 | 163 |
| 2.000 | | 14 | 40 | 66 | 91 | 115 | 140 | 164 |
| 2.250 | | 15 | 41 | 67 | 92 | 116 | 141 | 165 |
| 2.500 | | 16 | 42 | 68 | 93 | 117 | 142 | 166 |
| 2.750 | | 17 | 43 | 69 | 94 | 118 | 143 | 167 |
| 3.000 | | 18 | 44 | 70 | 95 | 119 | 144 | 168 |
| 3.250 | | 19 | 45 | 71 | 96 | 120 | 145 | 169 |
| 3.500 | +0 | 20 | 46 | 72 | 97 | 121 | 146 | 170 |
| 3.750 | -.094 | 21 | 47 | 73 | 98 | 122 | 147 | 171 |
| 4.000 | | 22 | 48 | 74 | 99 | 123 | 148 | 172 |
| 4.250 | | 23 | 49 | 75 | 100 | 124 | 149 | 173 |
| 4.500 | | 24 | 50 | 76 | 101 | 125 | 150 | 174 |
| 4.750 | | 25 | 51 | 77 | 102 | 126 | 151 | 175 |
| 5.000 | | 26 | 52 | 78 | 103 | 127 | 152 | 176 |
| 5.500 | | | | | | 128 | 153 | 177 |
| 6.000 | | | | | | 129 | 154 | 178 |

NOTE: For notes and additional sizes see sheet 2.

CROSS REFERENCE OF PART NUMBERS

The screws covered by dash numbers given in MS35302, MS35304 and MS35306 are cancelled after the dates indicated on the cancelled documents. Use dash numbers used in this standard. 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. Dash numbers representing old and new screws are identical, making it unnecessary to prepare an interchangeability table.

(E) For changes see sheets 1, 2, 3 and 4.

| | | |
|--------------------------------------|---|------------------------------|
| P.A. VC Other Case 82 | TITLE SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, CADMIUM PLATED, UNF-2A, (E) PLAIN AND SELF LOCKING | MILITARY STANDARD MS90727 |
| PROCUREMENT SPECIFICATION FF-S-85 | SUPERSEDES: See note 12 | SHEET 1 OF 4 |

DD FORM 672-1 (Continued)

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

5305-1179

* U.S. GOVERNMENT PRINTING OFFICE: 1981-703-023/3100

REVIEWER: AT AV MI DA
USER: ME MU PA CE UV OS MC MDA

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 applicable.

APPROVED 6 MAY 63 REVISED (A) 1 AUG 67 (B) 14 OCT 68 (C) 1 MAY 1969 (D) 22 OCT 1970 (E) 21 JUNE 1978

| TABLE II | | | | | | | FED. SUP CLASS 5305 | |
|------------------------------|------------|------------------|------------------|------------------|------------------|------------------|------------------------|------------------|
| NOMINAL SIZE | | 3/4 | 7/8 | 1 | 1-1/8 | 1-1/4 | 1-3/8 | 1-1/2 |
| B THREAD | UNF-2A | 16 | 14 | 12 | 12 | 12 | 12 | 12 |
| D BODY DIAMETER | MAX MIN | .7500 .7410 | .8750 .8660 | 1.0000 .9900 | 1.1250 1.1140 | 1.2500 1.2390 | 1.3750 1.3630 | 1.5000 1.4880 |
| F WIDTH ACROSS FLATS | MAX MIN | 1.1250 1.1000 | 1.3125 1.2850 | 1.5000 1.4690 | 1.6875 1.6310 | 1.8750 1.8120 | 2.0625 1.9940 | 2.2500 2.1750 |
| G WIDTH ACROSS CORNERS | MAX MIN | 1.299 1.254 | 1.516 1.465 | 1.732 1.675 | 1.949 1.859 | 2.165 2.066 | 2.382 2.273 | 2.598 2.480 |
| H HEAD HEIGHT | MAX MIN | .483 .455 | .563 .531 | .627 .591 | .718 .658 | .813 .749 | .878 .810 | .974 .902 |
| R RADIUS | MAX MIN | .045 .020 | .065 .040 | .095 .060 | .095 .060 | .095 .060 | .095 .060 | .095 .060 |
| * MIN TENSILE STRENGTH - LBS | | 56,000 | 76,400 | 99,400 | 128,400 | 161,000 | 197,200 | 237,200 |

| L LENGTH | TOLERANCE | | DASH NO. | DASH #N NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. |
|-------------|-------------|-----------------------|-------------|----------------|-------------|-------------|-------------|-------------|-------------|
| | SIZE .750 | SIZE .875 AND OVER | | | | | | | |
| .750 | +0 -.031 | +0 -.062 | 179 | 202 203 | 224 | | | | |
| .875 | | | 180 | | | | | | |
| 1.000 | | | 181 | | | | | | |
| 1.125 | +0 -.062 | +0 -.125 | 182 | 204 | 225 | 245 | 265 | 284 | 302 |
| 1.250 | | | 183 | 205 | 226 | 246 | | | |
| 1.375 | | | 184 | 206 | 227 | 247 | | | |
| 1.500 | | | 185 | 207 | 228 | 248 | | | |
| 1.750 | | | 186 | 208 | 229 | 249 | | | |
| 2.000 | | | 187 | 209 | 230 | 250 | | | |
| 2.250 | +0 -.094 | +0 -.189 | 188 | 210 | 231 | 251 | 270 | 288 | 305 |
| 2.500 | | | 189 | 211 | 232 | 252 | 271 | 289 | 306 |
| 2.750 | | | 190 | 212 | 233 | 253 | 272 | 290 | 307 |
| 3.000 | | | 191 | 213 | 234 | 254 | 273 | 291 | 308 |
| 3.250 | | | 192 | 214 | 235 | 255 | 274 | 292 | 309 |
| 3.500 | | | 193 | 215 | 236 | 256 | 275 | 293 | 310 |
| 3.750 | | | 194 | 216 | 237 | 257 | 276 | 294 | 311 |
| 4.000 | | | 195 | 217 | 238 | 258 | 277 | 295 | 312 |
| 4.250 | | | 196 | 218 | 239 | 259 | 278 | 296 | 313 |
| 4.500 | | | 197 | 219 | 240 | 260 | 279 | 297 | 314 |
| 4.750 | | | 198 | 220 | 241 | 261 | 280 | 298 | 315 |
| 5.000 | | | 199 | 221 | 242 | 262 | 281 | 299 | 316 |
| 5.500 | 200 | 222 | 243 | 263 | 282 | 300 | 317 | | |
| 6.000 | 201 | 223 | 244 | 264 | 283 | 301 | 318 | | |

NOTES:

- MATERIAL:** Alloy steel, Grade 8, in accordance with procurement specification.
- PROTECTIVE COATING:** Cadmium plating in accordance with procurement specification.
- THREADS:** The threads shall be in accordance with Screw-Thread Standards for Federal Services, Handbook H28.
- THREAD LENGTH:** Minimum thread length shall be twice the diameter plus 1/4 inch. The tolerance shall be plus 3/16 inch or 2-1/2 threads, whichever is greater. On screws that are too short for minimum thread lengths, the distance from the bearing surface of the head to the first complete thread shall not exceed the length of 2-1/2 threads for sizes up to and including 1 inch and 3-1/2 threads for sizes larger than 1 inch.
- DIMENSIONS:** All dimensions are in inches, unless otherwise specified.
- HEAD MARKING:** Heads shall be marked in accordance with MIL-MDBK-131. Raised markings are preferred, stampings are acceptable.
- SELF-LOCKING ELEMENT:** (a) The self-locking element shall be a patch type or longitudinal strip in accordance with MIL-F-18240.
(b) For "X" and "Y" dimensions and design and usage limitations, see MS15981.
(c) Maximum ring gage diameter that locking region of screw must pass thru freely or with finger pressure shall be the nominal size plus 0.010.
- PART NUMBER:** The MS part number consists of the MS number, plus the dash number.
For screws with self-locking element add the letter "L" after the dash number.
Example: MS90727-1 Plain screw.
MS90727-1L Self-locking screw.
- Based on minimum ultimate tensile strength of 150,000 p.s.i. Tensile strengths are calculated by the stress areas indicated in Screw-Thread Standards for Federal Services, Handbook H28.
- 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.
- Supersedes: MS35302 in part, MS35304 and MS35306, BCX18, BCY17 in part, BQLI4, BUXI17, 17.1, 18.18.1.19 and 19.1.
- * 13. INACTIVE FOR NEW DESIGN AFTER 21 JUNE 1976.

| | | |
|--------------------------------------|--|-------------------|
| P.O. No. 82 | TITLE | MILITARY STANDARD |
| | SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, CADMIUM PLATED, UNF-2A, (E) PLAIN AND SELF LOCKING | MS90727 |
| PROCUREMENT SPECIFICATION FF-S-85 | SUPERSEDES: See note 12. | SHEET 2 OF 4 |

REVIEWER: AE AY MI BA
UNCLAS: ME MD PA QZ WY CB MC NDA

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.

APPROVED 6 MAY 63 REVISED (A) 1 AUG 67 (B) 14 OCT 68 (C) 1 MAY 1969 (D) 22 OCT 1970 (E) FOR CHANGES SEE SHEETS 1, 2, 3, AND 4

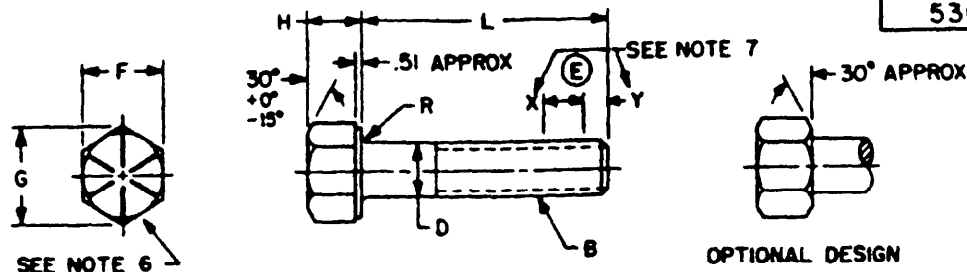


TABLE III
METRIC TRANSLATION OF TABLE I

| NOMINAL SIZE | MM | 6.350 | 7.938 | 9.525 | 11.112 | 12.700 | 14.288 | 15.875 |
|-----------------------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| B THREAD PITCH | (E) | 0.907 | 1.058 | 1.058 | 1.270 | 1.270 | 1.411 | 1.411 |
| D BODY DIAMETER | MAX MIN | 6.350 6.223 | 7.938 7.785 | 9.525 9.373 | 11.112 10.935 | 12.700 12.522 | 14.288 14.084 | 15.875 15.672 |
| F WIDTH ACROSS FLATS | MAX MIN | 11.112 10.871 | 12.700 12.421 | 14.288 13.995 | 15.875 15.545 | 17.463 17.133 | 19.050 18.694 | 20.638 20.269 |
| G WIDTH ACROSS CORNERS | MAX MIN | 12.827 12.395 | 14.656 14.148 | 16.510 15.951 | 18.339 17.729 | 20.168 19.500 | 21.996 21.264 | 23.825 23.000 |
| H HEAD HEIGHT | MAX MIN | 4.140 3.810 | 5.359 4.953 | 6.172 5.740 | 7.391 6.909 | 8.204 7.671 | 9.423 8.839 | 10.236 9.601 |
| R RADIUS | MAX MIN | .635 .381 | .635 .381 | .635 .381 | .635 .381 | .635 .381 | 1.143 .508 | 1.143 .508 |
| R * MIN TENSILE STRENGTH-KN | | 24.525 | 39.150 | 59.400 | 80.100 | 108.000 | 136.800 | 172.800 |
| L LENGTH | TOLERANCE | DASH NO. | DASH NO. | DASH NO. | DASH NO** | DASH NO. | DASH NO** | DASH NO. |
| 9.525 | +0 -.787 | 1 | 27 | 53 | 79 | 104 | 130 | 155 |
| 11.125 | | 2 | 28 | 54 | | | | |
| 12.700 | | 3 | 29 | 55 | | | | |
| 14.275 | | 4 | 30 | 56 | | | | |
| 15.875 | | 5 | 31 | 57 | | | | |
| 19.050 | | 6 | 32 | 58 | | | | |
| 22.225 | | 7 | 33 | 59 | | | | |
| 25.400 | | 8 | 34 | 60 | | | | |
| 28.575 | +0 -1.575 | 9 | 35 | 61 | 86 | 110 | 135 | 159 |
| 31.750 | | 10 | 36 | 62 | | | | |
| 34.925 | | 11 | 37 | 63 | | | | |
| 38.100 | | 12 | 38 | 64 | | | | |
| 44.450 | | 13 | 39 | 65 | | | | |
| 50.800 | | 14 | 40 | 66 | | | | |
| 57.150 | | 15 | 41 | 67 | | | | |
| 63.500 | +0 -2.388 | 16 | 42 | 68 | 93 | 117 | 141 | 165 |
| 69.850 | | 17 | 43 | 69 | | | | |
| 76.200 | | 18 | 44 | 70 | | | | |
| 82.550 | | 19 | 45 | 71 | | | | |
| 88.900 | | 20 | 46 | 72 | | | | |
| 95.250 | | 21 | 47 | 73 | | | | |
| 101.600 | | 22 | 48 | 74 | | | | |
| 107.950 | | 23 | 49 | 75 | | | | |
| 114.300 | | 24 | 50 | 76 | | | | |
| 120.650 | | 25 | 51 | 77 | | | | |
| 127.000 | | 26 | 52 | 78 | 102 | 126 | 151 | 175 |
| 139.700 | | | | | 103 | 127 | 152 | 176 |
| 152.400 | | | | | | 128 | 153 | 177 |
| | | | | | | 129 | 154 | 178 |

NOTE:

- All dimensions are in millimetres (mm), unless otherwise specified and are based on an approximate conversion factor of 25.4 mm equal one inch.
- For additional sizes see sheet 4.

(E) 003. INACTIVE FOR NEW DESIGN AFTER 21 JUNE 1976.

| | | |
|--------------------------------------|--|-------------------|
| P.A. VC | TITLE | MILITARY STANDARD |
| Other Code 82 | SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, CADMIUM PLATED, UNF-2A, (E) PLAIN AND SELF LOCKING | MS90727 |
| PROCUREMENT SPECIFICATION 77-S-85 | REPLACEMENT See note 12 | REPT 3 OF 4 |

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.

REVIEWER: AS AV NC BA
UNID: ME NU PA CE VT CB NC BA

APPROVED 6 MAY 1963 REVISED (A) 1 AUG 1967 (B) 14 OCT 1968 (C) 1 MAY 1969 (D) 22 OCT 1970 (E) FOR CHANGES SEE SHEETS 1, 2, 3, AND 4

FED. SUP CLASS
5305TABLE IX
METRIC TRANSLATION OF TABLE II

| NOMINAL SIZE | MM | 19.050 | 22.225 | 25.400 | 28.575 | 31.750 | 34.925 | 38.100 |
|-----------------------------|----------------|-------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| B THREAD PITCH | (E) | 1.588 | 1.814 | 2.117 | 2.117 | 2.117 | 2.117 | 2.117 |
| D BODY DIAMETER | MAX MIN | 19.050 18.821 | 22.225 21.996 | 25.400 25.146 | 28.575 28.296 | 31.750 31.471 | 34.925 34.620 | 38.100 37.795 |
| F WIDTH ACROSS FLATS | MAX MIN | 28.575 27.940 | 33.338 32.639 | 38.100 37.313 | 42.862 41.427 | 47.625 46.025 | 52.388 50.648 | 57.150 55.245 |
| G WIDTH ACROSS CORNERS | MAX MIN | 32.995 31.852 | 38.506 37.221 | 43.993 42.545 | 49.505 47.219 | 54.991 52.476 | 60.503 57.734 | 65.989 62.992 |
| H HEAD HEIGHT | MAX MIN | 12.268 11.557 | 14.300 13.487 | 15.926 15.011 | 18.237 16.713 | 20.650 19.025 | 22.301 20.574 | 24.740 22.911 |
| R RADIUS | MAX MIN | 1.143 .508 | 1.651 1.016 | 2.413 1.524 | 2.413 1.524 | 2.413 1.524 | 2.413 1.524 | 2.413 1.524 |
| (E) MIN TENSILE STRENGTH-KN | | 252.000 | 343.800 | 447.300 | 577.800 | 724.500 | 887.400 | 1067.400 |
| L LENGTH | TOLERANCE | | DASH NO. | DASH** NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. |
| | SIZE 19.050 | SIZE 22.225 AND OVER | | | | | | |
| 19.050 | +0 | +0 | 179 | 202 203 | | | | |
| 22.225 | -1.767 | -1.575 | 180 | | | | | |
| 25.400 | | | 181 | | 224 | | | |
| 28.575 | | | 182 | | 225 | 245 | | |
| 31.750 | +0 | +0 | 183 | | 226 | 246 | 265 | |
| 34.925 | -1.575 | -3.175 | 184 | | 227 | 247 | 266 | 284 |
| 38.100 | | | 185 | | 228 | 248 | 267 | 285 |
| 44.450 | | | 186 | 208 | 229 | 249 | 268 | 286 |
| 50.800 | | | 187 | 209 | 230 | 250 | 269 | 287 |
| 57.150 | | | 188 | 210 | 231 | 251 | 270 | 288 |
| 63.500 | | | 189 | 211 | 232 | 252 | 271 | 289 |
| 69.850 | | | 190 | 212 | 233 | 253 | 272 | 290 |
| 76.200 | | | 191 | 213 | 234 | 254 | 273 | 291 |
| 82.550 | | | 192 | 214 | 235 | 255 | 274 | 292 |
| 88.900 | +0 | +0 | 193 | 215 | 236 | 256 | 275 | 293 |
| 95.250 | -2.388 | -4.775 | 194 | 216 | 237 | 257 | 276 | 294 |
| 101.600 | | | 195 | 217 | 238 | 258 | 277 | 295 |
| 107.950 | | | 196 | 218 | 239 | 259 | 278 | 296 |
| 114.300 | | | 197 | 219 | 240 | 260 | 279 | 297 |
| 120.650 | | | 198 | 220 | 241 | 261 | 280 | 298 |
| 127.000 | | | 199 | 221 | 242 | 262 | 281 | 299 |
| 133.700 | | | 200 | 222 | 243 | 263 | 282 | 300 |
| 152.400 | | | 201 | 223 | 244 | 264 | 283 | 301 |

NOTE:

- All dimensions are in millimetres (mm), unless otherwise specified and are based on an approximate conversion factor of 25.4 mm equal one inch.
- THREAD LENGTH: Minimum thread length shall be twice the diameter plus 6.350 mm. The tolerance shall be plus 4.775 mm or 2-1/2 threads, whichever is greater. On screws that are too short for minimum thread lengths, the distance from the bearing surface of the head to the first complete thread shall not exceed the length of 2-1/2 threads for sizes up to and including 25.400 mm and 3-1/2 threads for sizes larger than 25.400 mm.

(E) **3. INACTIVE FOR NEW DESIGN AFTER 21 JUNE 1976.

U.S. GOVERNMENT PRINTING OFFICE: 1976-803-766/5000

| | | |
|--------------------------------------|---|-------------------------------|
| P.A. 6C Other Case 82 | TITLE SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), ALLOY STEEL, GRADE 8, CADMIUM PLATED, UNF-2A, (E) PLAIN AND SELF LOCKING | MILITARY STANDARD MS 90727 |
| PROCUREMENT SPECIFICATION FF-S-85 | SUPERSEDES: See note 12 | SHEET 4 OF 4 |

DD FORM 672-1 (Continued)

PROVIDED ON FILE OF THE FORM AND SERIALS

5305-1179

APPROVED 6 MAY 1963 REVISED (A) 1 AUG 1967 (B) 14 OCT 1968 (C) 1 MAY 1969 (D) 22 OCT 1970 (E) FOR CHANGES SEE SHEETS 1, 2, 3, AND 4

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.

REVIEWER: AT AV NI RA
USER: ME MU PA CL VV OS MC MEA