

FED SPEC CLASS  
5305

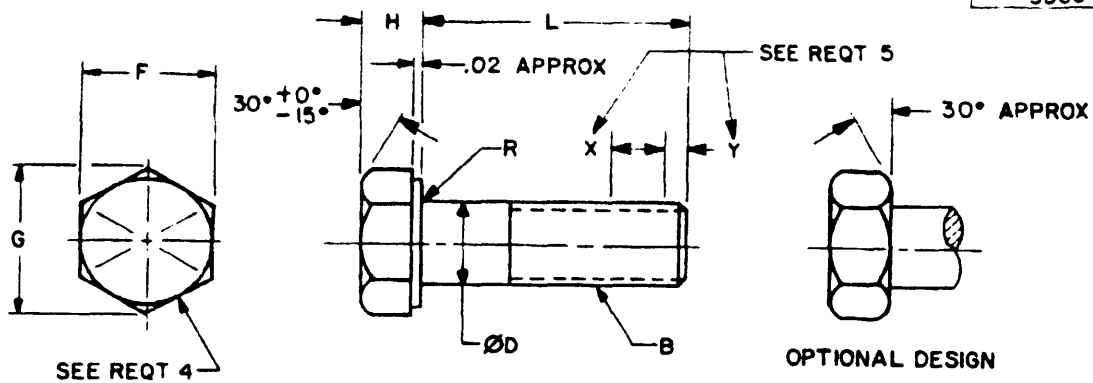


TABLE 1. DASH NUMBERS AND DIMENSIONS.

| NOMINAL SIZE                  | 1/4<br>.2500        | 5/16<br>.3125  | 3/8<br>.3750   | 7/16<br>.4375  | 1/2<br>.5000   | 9/16<br>.5625  | 5/8<br>.6250   | 3/4<br>.7500   | 7/8<br>.8750     |                  |             |    |     |     |     |     |     |
|-------------------------------|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|-------------|----|-----|-----|-----|-----|-----|
| B THREADS PER INCH            | 20UNC-2A            | 18UNC-2A       | 16UNC-2A       | 14UNC-2A       | 13UNC-2A       | 12UNC-2A       | 11UNC-2A       | 10UNC-2A       | 9UNC-2A          |                  |             |    |     |     |     |     |     |
| Ø D BODY DIAMETER             | MAX<br>MIN          | .2500<br>.2450 | .3125<br>.3065 | .3750<br>.3690 | .4375<br>.4305 | .5000<br>.4930 | .5625<br>.5545 | .6250<br>.6170 | .7500<br>.7410   | .8750<br>.8660   |             |    |     |     |     |     |     |
| F WIDTH ACROSS FLATS          | MAX<br>MIN          | .4375<br>.4280 | .5000<br>.4890 | .5625<br>.5510 | .6250<br>.6120 | .7500<br>.7360 | .8125<br>.7980 | .9375<br>.9220 | 1.1250<br>1.1000 | 1.3125<br>1.2850 |             |    |     |     |     |     |     |
| G WIDTH ACROSS CORNERS        | MAX<br>MIN          | .505<br>.488   | .577<br>.557   | .650<br>.628   | .722<br>.698   | .866<br>.840   | .938<br>.910   | 1.083<br>1.051 | 1.299<br>1.254   | 1.516<br>1.465   |             |    |     |     |     |     |     |
| H HEAD HEIGHT                 | MAX<br>MIN          | .163<br>.150   | .211<br>.195   | .243<br>.226   | .291<br>.272   | .323<br>.302   | .371<br>.348   | .405<br>.378   | .483<br>.455     | .563<br>.531     |             |    |     |     |     |     |     |
| R RADIUS                      | MAX<br>MIN          | .025<br>.015   | .025<br>.015   | .025<br>.015   | .025<br>.015   | .025<br>.015   | .045<br>.020   | .045<br>.020   | .045<br>.020     | .065<br>.040     |             |    |     |     |     |     |     |
| 1/ MIN TENSILE STRENGTH - LBS |                     | 4,750          | 7,850          | 11,600         | 15,900         | 21,300         | 27,300         | 33,900         | 50,100           | 69,300           |             |    |     |     |     |     |     |
| L LENGTH                      | TOLERANCE           |                | DASH NO.       | DASH NO.       | DASH NO.       | DASH 2/ NO.    | DASH NO.       | DASH 2/ NO.    | DASH NO.         | DASH NO.         | DASH 2/ NO. |    |     |     |     |     |     |
|                               | SIZE .750 AND UNDER | SIZE .875      |                |                |                |                |                |                |                  |                  |             |    |     |     |     |     |     |
| .375                          | +0<br>-.031         | +0<br>-.062    | 1              | 27             | 53             | 79             | 104            | 130            | 155              | 179              | 204         |    |     |     |     |     |     |
| .438                          |                     |                | 2              | 28             | 54             |                |                |                |                  |                  |             | 80 | 105 | 131 | 156 | 180 | 205 |
| .500                          |                     |                | 3              | 29             | 55             |                |                |                |                  |                  |             | 81 | 106 | 132 | 157 | 181 | 206 |
| .562                          |                     |                | 4              | 30             | 56             |                |                |                |                  |                  |             | 82 | 107 | 133 | 158 | 182 | 207 |
| .625                          |                     |                | 5              | 31             | 57             |                |                |                |                  |                  |             | 83 | 108 | 134 | 159 | 183 | 208 |
| .750                          |                     |                | 6              | 32             | 58             |                |                |                |                  |                  |             | 84 | 109 | 135 | 160 | 184 | 209 |
| .875                          |                     |                | 7              | 33             | 59             |                |                |                |                  |                  |             | 85 | 110 | 136 | 161 | 185 | 210 |
| 1.000                         |                     |                | 8              | 34             | 60             |                |                |                |                  |                  |             | 86 | 111 | 137 | 162 | 186 | 211 |
| 1.125                         | +0<br>-.062         | +0<br>-.125    | 9              | 35             | 61             | 87             | 112            | 138            | 163              | 187              | 212         |    |     |     |     |     |     |
| 1.250                         |                     |                | 10             | 36             | 62             | 88             | 113            | 139            | 164              | 188              | 213         |    |     |     |     |     |     |
| 1.375                         |                     |                | 11             | 37             | 63             | 89             | 114            | 140            | 165              | 189              | 214         |    |     |     |     |     |     |
| 1.500                         |                     |                | 12             | 38             | 64             | 90             | 115            | 141            | 166              | 190              | 215         |    |     |     |     |     |     |
| 1.750                         |                     |                | 13             | 39             | 65             | 91             | 116            | 142            | 167              | 191              | 216         |    |     |     |     |     |     |
| 2.000                         |                     |                | 14             | 40             | 66             | 92             | 117            | 143            | 168              | 192              | 217         |    |     |     |     |     |     |
| 2.250                         |                     |                | 15             | 41             | 67             | 93             | 118            | 144            | 169              | 193              | 218         |    |     |     |     |     |     |
| 2.500                         | +0<br>-.094         | +0<br>-.188    | 16             | 42             | 68             | 94             | 119            | 145            | 170              | 194              | 219         |    |     |     |     |     |     |
| 2.750                         |                     |                | 17             | 43             | 69             | 95             | 120            | 146            | 171              | 195              | 220         |    |     |     |     |     |     |
| 3.000                         |                     |                | 18             | 44             | 70             | 96             | 121            | 147            | 172              | 196              | 221         |    |     |     |     |     |     |
| 3.250                         |                     |                | 19             | 45             | 71             | 97             | 122            | 148            | 173              | 197              | 222         |    |     |     |     |     |     |
| 3.500                         |                     |                | 20             | 46             | 72             | 98             | 123            | 149            | 174              | 198              | 223         |    |     |     |     |     |     |
| 3.750                         |                     |                | 21             | 47             | 73             | 99             | 124            | 150            | 175              | 199              | 224         |    |     |     |     |     |     |
| 4.000                         |                     |                | 22             | 48             | 74             | 100            | 125            | 151            | 176              | 200              | 225         |    |     |     |     |     |     |
| 4.250                         |                     |                | 23             | 49             | 75             | 101            | 126            | 152            | 177              | 201              | 226         |    |     |     |     |     |     |
| 4.500                         |                     |                | 24             | 50             | 76             | 102            | 127            | 153            | 178              | 202              | 227         |    |     |     |     |     |     |
| 4.750                         |                     |                | 25             | 51             | 77             | 103            | 128            | 154            |                  |                  |             |    |     |     |     |     |     |
| 5.000                         |                     |                | 26             | 52             | 78             |                | 129            |                |                  |                  |             |    |     |     |     |     |     |
| 5.500                         |                     |                |                |                |                |                |                |                |                  |                  |             |    |     |     |     |     |     |
| 6.000                         |                     |                |                |                |                |                |                |                |                  |                  |             |    |     |     |     |     |     |

1/ SEE NOTE 2  
2/ INACTIVE FOR NEW DESIGN AFTER 21 JUN 76

Ⓞ DENOTES CHANGES

|                           |                   |                        |  |                   |
|---------------------------|-------------------|------------------------|--|-------------------|
| P A                       | AR                | INTERNATIONAL INTEREST | TITLE  | MILITARY STANDARD |
| Other Cust                | 99                |                        | SCREW, CAP, HEXAGON HEAD (FINISH HEXAGON BOLT), ALLOY STEEL, GRADE 8, ZINC COATED PLAIN AND SELF-LOCKING, UNC-2A Ⓞ | MS90728           |
| PROCUREMENT SPECIFICATION | ANSI B18.2.1-1981 | SUPPLACES              | MS35301, MS35303, MS35305, BCVX7 IN PART, BUBX14, 14.1, 15, 15.1, 16 AND 16.1                                      | PAGE 1 OF 3       |

USER ACTIVITIES:  
ARMY - MC  
NAVY - MC, OS, YD

REVIEWER ACTIVITIES:  
ARMY - AT, AV, MI  
AIR FORCE - 82  
NSA - NS  
DLA - IS

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.  
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.

7 MAY 63 REVISED (A) 14 OCT 68 (B) 1 MAY 69 (C) 22 OCT 70 (D) 21 JUNE 76 (E) 20 DEC 83 (F) 30 OCT 84 (G) 4 NOV 88 APPROVED

TABLE 1. DASH NUMBERS AND DIMENSIONS.

| NOMINAL SIZE       |                      | 1                          | 1-1/8           | 1-1/4            | 1-3/8            | 1-1/2            | 1-3/4            | 2                | 2-1/4            | 2-1/2            |                  |
|--------------------|----------------------|----------------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| B THREADS PER INCH |                      | 8UNC-2A                    | 7UNC-2A         | 7UNC-2A          | 6UNC-2A          | 6UNC-2A          | 5UNC-2A          | 4-1/2UNC-2A      | 4-1/2UNC-2A      | 4UNC-2A          |                  |
| Ø D                | BODY DIAMETER        | MAX<br>MIN                 | 1.0000<br>.9900 | 1.1250<br>1.1140 | 1.2500<br>1.2380 | 1.3750<br>1.3630 | 1.5000<br>1.4880 | 1.7500<br>1.7380 | 2.0000<br>1.9880 | 2.2500<br>2.2380 | 2.5000<br>2.4880 |
|                    | F                    | WIDTH ACROSS FLATS         | MAX<br>MIN      | 1.5000<br>1.4690 | 1.6875<br>1.6310 | 1.8750<br>1.8120 | 2.0625<br>1.9940 | 2.2500<br>2.1750 | 2.6250<br>2.5380 | 3.0000<br>2.9000 | 3.3730<br>3.2670 |
| G                  | WIDTH ACROSS CORNERS | MAX<br>MIN                 | 1.732<br>1.675  | 1.949<br>1.859   | 2.165<br>2.066   | 2.382<br>2.273   | 2.598<br>2.480   | 3.031<br>2.893   | 3.464<br>3.306   | 3.897<br>3.719   | 4.390<br>4.133   |
|                    | H                    | HEAD HEIGHT                | MAX<br>MIN      | .627<br>.591     | .718<br>.658     | .813<br>.749     | .878<br>.810     | .974<br>.902     | 1.134<br>1.054   | 1.263<br>1.175   | 1.423<br>1.327   |
| R                  | RADIUS               | MAX<br>MIN                 | .095<br>.060    | .095<br>.060     | .095<br>.060     | .095<br>.060     | .095<br>.060     | .095<br>.060     | .095<br>.060     | .095<br>.060     | .095<br>.060     |
|                    | 1/2                  | MIN TENSILE STRENGTH - LBS | 90,900          | 114,400          | 145,400          | 173,200          | 210,800          | 227,900          | 299,750          | 399,700          | 479,850          |

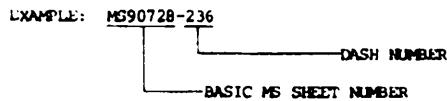
  

| L<br>LENGTH | TOLERANCE   | DASH NO. | DASH NO.    | DASH NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. | DASH NO. |
|-------------|-------------|----------|-------------|----------|----------|----------|----------|----------|----------|----------|
|             |             | 1.000    | +0<br>-.062 | 224      |          |          |          |          |          |          |
| 1.125       | +0<br>-.125 | 225      | 245         |          |          |          |          |          |          |          |
| 1.250       |             | 226      | 246         | 265      |          |          |          |          |          |          |
| 1.375       |             | 227      | 247         | 266      | 284      |          |          |          |          |          |
| 1.500       |             | 228      | 248         | 267      | 285      | 302      |          |          |          |          |
| 1.750       |             | 229      | 249         | 268      | 286      | 303      | 319      |          |          |          |
| 2.000       | 230         | 250      | 269         | 287      | 304      | 320      |          |          |          |          |
| 2.250       | +0<br>-.188 | 231      | 251         | 270      | 288      | 305      | 321      | 335      |          |          |
| 2.500       |             | 232      | 252         | 271      | 289      | 306      | 322      | 336      |          |          |
| 2.750       |             | 233      | 253         | 272      | 290      | 307      | 323      | 337      | 349      | 361      |
| 3.000       |             | 234      | 254         | 273      | 291      | 308      | 324      | 338      | 350      | 362      |
| 3.250       |             | 235      | 255         | 274      | 292      | 309      | 325      | 339      | 351      | 363      |
| 3.500       |             | 236      | 256         | 275      | 293      | 310      | 326      | 340      | 352      | 364      |
| 3.750       |             | 237      | 257         | 276      | 294      | 311      | 327      | 341      | 353      | 365      |
| 4.000       |             | 238      | 258         | 277      | 295      | 312      | 328      | 342      | 354      | 366      |
| 4.250       |             | 239      | 259         | 278      | 296      | 313      | 329      | 343      | 355      | 367      |
| 4.500       |             | 240      | 260         | 279      | 297      | 314      | 330      | 344      | 356      | 368      |
| 4.750       |             | 241      | 261         | 280      | 298      | 315      | 331      | 345      | 357      | 369      |
| 5.000       |             | 242      | 262         | 281      | 299      | 316      | 332      | 346      | 358      | 370      |
| 5.500       |             | 243      | 263         | 282      | 300      | 317      | 333      | 347      | 359      | 371      |
| 6.000       |             | 244      | 264         | 283      | 301      | 318      | 334      | 348      | 360      | 372      |

1/2 SEE NOTE 2

REQUIREMENTS:

- MATERIAL: ALLOY STEEL, SAE GRADE 8, IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- PROTECTIVE COATING: ZINC COATING IN ACCORDANCE WITH ASTM B633, TYPE 11, SC3.
- THREADS: THE THREADS SHALL BE IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- IDENTIFICATION MARKING: HEADS SHALL BE MARKED IN ACCORDANCE WITH PROCUREMENT SPECIFICATION.
- SELF-LOCKING ELEMENT:
  - THE SELF-LOCKING ELEMENT SHALL BE A PATCH TYPE OR LONGITUDINAL STRIP IN ACCORDANCE WITH MIL-F-18240.
  - FOR "X" AND "Y" DIMENSIONS AND DESIGN AND USAGE LIMITATIONS, SEE MS15981.
  - 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 PART NUMBER SHALL CONSIST OF THE BASIC MS SHEET NUMBER PLUS THE DASH NUMBER TAKEN FROM TABLE I OR II AS APPLICABLE. FOR SCREWS WITH SELF-LOCKING ELEMENT ADD THE LETTER "L" AFTER THE DASH NUMBER.



MS90728-236 INDICATES - SCREW, CAP, HEXAGON HEAD, ALLOY STEEL, SAE GRADE 8, ZINC COATED, NOMINAL SIZE 1.000-8UNC-2A, LENGTH 3.500, NO SELF-LOCKING ELEMENT.

USER ACTIVITIES:  
 ARMY - ME  
 NAVY - MC, OS, YD  
  
 REVIEWER ACTIVITIES:  
 ARMY - AT, AV, MI  
 AIR FORCE - 82  
 NSA - NS  
 DLA - IS  
  
 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.                      | AR                | INTERNATIONAL INTEREST | TITLE  | MILITARY STANDARD |
| Other Cust                | 99                |                        | SCREW, CAP, HEXAGON HEAD (FINISH HEXAGON BOLT), ALLOY STEEL, GRADE 8, ZINC COATED PLAIN AND SELF-LOCKING, UNC-2A | MS90728           |
| PROCUREMENT SPECIFICATION | ANSI B18.2.1-1981 | SUPERSEDES             | MS35301, MS35303, MS35305, BCVX7 IN PART, BUBX14, 14.1, 15, 15.1, 16 AND 16.1                                    | PAGE 2 OF 3       |

APPROVED 7 MAY 63  
 REVISED FOR CHANGES SEE PAGES 1, 2 AND 3

FED. SUP CLASS  
5305

- 7. **QUALITY ASSURANCE PROVISIONS:** QUALITY ASSURANCE PROVISIONS SHALL BE IN ACCORDANCE WITH ANSI B18.18.1M-1982. THREAD INSPECTION METHOD ACCEPTABILITY SHALL BE IN ACCORDANCE WITH FED-STD-H28/20, SYSTEM 21 AND ANSI B18.18.1M-1982, INSPECTION LEVEL B.
- 8. **PACKAGING:** PACKAGING SHALL BE IN ACCORDANCE WITH ASTM D3951-82.
- 9. **THREAD LENGTH:** MINIMUM THREAD LENGTH SHALL BE TWICE THE DIAMETER PLUS .250 INCH. THE TOLERANCE SHALL BE .187 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.

NOTES:

- 1. ALL DIMENSIONS ARE IN INCHES.
- 2. BASED ON MINIMUM ULTIMATE TENSILE STRENGTH OF 150,000 PSI FOR DIAMETERS THRU 1-1/2 INCHES AND 120,000 PSI FOR DIAMETERS OVER 1-1/2 INCHES, TENSILE STRENGTHS ARE CALCULATED BY THE STRESS AREAS INDICATED IN FED-STD-H28, APPENDIX A5, 3, STRENGTH FACTORS.
- 3. **CROSS REFERENCE OF PART NUMBERS:** THE SCREWS COVERED BY DASH NUMBERS GIVEN IN MS35301, MS35303 AND MS35305, 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.
- 4. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BIDS, OR REQUEST FOR PROPOSAL, EXCEPT THAT REFERENCED ADOPTED INDUSTRY DOCUMENTS SHALL GIVE THE DATE OF THE ISSUE ADOPTED.
- 5. FOR DESIGN FEATURE PURPOSES THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.
- ⑥ 6. THIS MILITARY STANDARD IS NOT INTENDED FOR USE IN AIRBORNE APPLICATIONS.

USER ACTIVITIES:  
ARMY - ME  
NAVY - MC, OS, YD

REVIEWER ACTIVITIES:  
ARMY - AT, AV, MI  
AIR FORCE - 82  
NSA - NS  
DLA - IS

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 7 MAY 63 REVISED ⑥ FOR CHANGES SEE PAGES 1, 2 AND 3

|  |            |   |   |  |
|--|------------|---|---|--|
| P.A.<br>Other Cust                             | AR<br>99   | INTERNATIONAL<br>INTEREST   | TITLE<br>SCREW, CAP, HEXAGON HEAD (FINISH HEXAGON BOLT), ALLOY STEEL, GRADE 8, ZINC COATED PLAIN AND SELF-LOCKING, UNC-2A ⑥ | <b>MILITARY STANDARD</b><br><b>MS90728</b> |
| PROCUREMENT SPECIFICATION<br>ANSI B18.2.1-1981 | SUPERSEDES | MS35301, MS35303, MS35305, BCVX7 IN PART, BUBX14, 14.1, 15, 15.1, 16 AND 16.1 |   | PAGE 3 OF 3                                |

