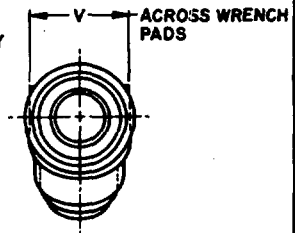
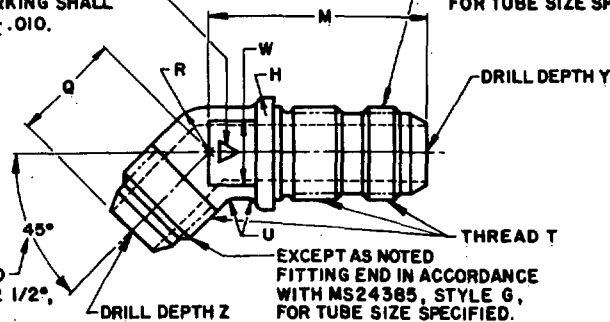


MARK EACH WRENCH PAD WITH AN EQUILATERAL TRIANGLE TO DENOTE PRECISION TYPE. MARKING SHALL BE DEPRESSED .025  $\pm$  .010.

FITTING END IN ACCORDANCE WITH MS24386, STYLE S, FOR TUBE SIZE SPECIFIED.

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TOLERANCE UP TO AND INCLUDING -6 SIZE  $\pm 2 \frac{1}{2}^\circ$ , ABOVE -6 SIZE  $\pm 1 \frac{1}{2}^\circ$ .



| DASH NO. | TUBING OD | THREAD T (REF)    | H RAD | M $\frac{+3}{-0}$ $\frac{+3}{-0}$ | Q $\frac{+3}{-0}$ $\frac{+3}{-0}$ | R RAD  | U RAD |
|----------|-----------|-------------------|-------|-----------------------------------|-----------------------------------|--------|-------|
| 2        | 1/8       | 5/16-24UNJF-3A    | 1/32  | 1- 3/8                            | 41/64                             | 5/32   |       |
| 3        | 3/16      | 3/8-24UNJF-3A     |       |                                   |                                   | 3/16   | 1/16  |
| 4        | 1/4       | 7/16-20UNJF-3A    | 1/16  | 1-17/32                           | 45/64                             | 7/32   |       |
| 5        | 5/16      | 1/2-20UNJF-3A     |       |                                   | 3/4                               | 1/4    |       |
| 6        | 3/8       | 9/16-18UNJF-3A    |       | 1-43/64                           | 13/16                             | 9/32   |       |
| 8        | 1/2       | 3/4-16UNJF-3A     |       | 1-15/16                           | 31/32                             | 3/8    | 3/32  |
| 10       | 5/8       | 7/8-14UNJF-3A     |       | 2-11/64                           | 1- 3/32                           | 7/16   |       |
| 12       | 3/4       | 1- 1/16-12UNJ -3A |       | 2- 7/16                           | 1-17/64                           | 17/32  |       |
| 16       | 1         | 1- 5/16-12UNJ -3A | 3/32  | 2- 9/16                           | 1-29/64                           | 21/32  |       |
| 20       | 1-1/4     | 1- 5/8-12UNJ -3A  |       | 2-21/32                           | 1-37/64                           | 13/16  | 1/8   |
| 24       | 1-1/2     | 1- 7/8-12UNJ -3A  |       | 2-43/64                           | 1-49/64                           | 15/16  |       |
| 28       | 1-3/4     | 2- 1/4-12UNJ -3A  |       | 2- 3/4                            | 1-61/64                           | 1- 1/8 | 3/16  |
| 32       | 2         | 2- 1/2-12UNJ -3A  |       | 2-29/32                           | 2-13/64                           | 1- 1/4 | 1/4   |

| DASH NO. | V      | W      | Y $\frac{+3}{-0}$ $\frac{+3}{-0}$ | Z $\frac{+3}{-0}$ $\frac{+3}{-0}$ |
|----------|--------|--------|-----------------------------------|-----------------------------------|
| 2        | 5/16   |        | 1-27/64                           | 23/32                             |
| 3        | 3/8    | 7/32   |                                   | 11/16                             |
| 4        | 7/16   |        | 1-19/32                           | 49/64                             |
| 5        | 1/2    | 5/16   |                                   | 13/16                             |
| 6        | 9/16   | 3/8    | 1- 3/4                            | 57/64                             |
| 8        | 3/4    | 1/2    | 2- 1/32                           | 1- 1/16                           |
| 10       | 7/8    | 5/8    | 2- 9/32                           | 1-13/64                           |
| 12       | 1-1/16 | 13/16  | 2- 9/16                           | 1-25/64                           |
| 16       | 1-5/16 | 1      | 2-47/64                           | 1- 5/8                            |
| 20       | 1-5/8  | 1- 1/4 | 2- 7/8                            | 1-51/64                           |
| 24       | 1-7/8  | 1- 1/2 | 2-15/16                           | 2- 1/32                           |
| 28       | 2-1/4  | 1- 3/4 | 3- 5/64                           | 2-17/64                           |
| 32       | 2-9/16 | 2      | 3- 1/32                           | 2-37/64                           |

(E) DENOTES CHANGES

This Military Standard is approved for use by HQ AFCL CASO/LODS, Federal Center, Battle Creek, MI 49016, Department of the Air Force, and is available for use by all Departments and agencies of the Department of Defense.

User activities:  
Review activities: ARMY-ME, AV  
NAVY-AS  
DSC-CS

|   |  |                               |
|---|--|-------------------------------|
| P.A. AIRFORCE-99<br>Other Cast<br>AIRFORCE-99 | (E) TITLE<br>ELBOW, TUBE, BULKHEAD, 45°,<br>PRECISION TYPE | MILITARY STANDARD<br>MS 24396 |
| PROCUREMENT SPECIFICATION<br>MIL-F-8509       | SUPERSEDES:<br>-AN87 (E)                                   | SHEET 1 OF 2                  |

DD FORM 672-1 Limited  
Coordination

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

4730-F277

APPROVED 26 FEB 57 REVISED (A) 6 MAR 58 (B) 10 FEB 58 (C) 16 JUN 78 (D) 22 MAR 79 (E) 16 Apr 82

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MATERIAL: STEEL; ALUMINUM ALLOY; CORROSION RESISTANT STEEL (CRES); TITANIUM ALLOY; BARS, SHAPES, OR FORGINGS (SEE PROCUREMENT SPECIFICATION).

FINISH: SEE PROCUREMENT SPECIFICATION.

NO CODE LETTER IN PART NUMBER FOR STEEL.

ADD W IN PLACE OF DASH FOR 7075-T73 ALUMINUM ALLOY.

ADD D IN PLACE OF DASH FOR ALUMINUM ALLOY. (EXCEPT 7075-T73)

ADD J IN PLACE OF DASH FOR CRES, TYPE 304.

ADD K IN PLACE OF DASH FOR CRES, TYPE 316.

ADD S IN PLACE OF DASH FOR CRES, TYPE 347.

ADD T IN PLACE OF DASH FOR TITANIUM ALLOY.

TITANIUM IS NOT RECOMMENDED FOR USE IN OXYGEN SYSTEMS.

EXAMPLE OF PART NUMBERS:

MS24396-R - ELBOW, 1/2 TUBING, STEEL.

MS24396DR - ELBOW, 1/2 TUBING, ALUMINUM ALLOY (EXCEPT 7075-T73).

MS24396JH - ELBOW, 1/2 TUBING, CRES, TYPE 304.

MS24396KH - ELBOW, 1/2 TUBING, CRES, TYPE 316.

MS24396S6 - ELBOW, 1/2 TUBING, CRES, TYPE 347.

MS24396T8 - ELBOW, 1/2 TUBING, TITANIUM ALLOY.

MS24396WR - ELBOW, 1/2 TUBING, 7075-T73 ALUMINUM ALLOY.

BREAK ALL SHARP EDGES AND REMOVE ALL HANGING BURRS AND SLIVERS.

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCE: FRACTIONS  $\pm 1/64$ .

IN ADDITION TO THE SAMPLING REQUIREMENTS OF THE PROCUREMENT SPECIFICATION, THE SURFACE OF THE CONE

ENDS ON 100% OF THE ELBOWS OF A LOT SHALL BE INSPECTED.

FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.

REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.

User activities:

Review activities: ARMY-ME-AV  
NAVY-AS  
DSA-CS

This Military Standard is approved for use by HQ AFLC, CASO/LODS, Federal Center, Bolling Creek, Md. 49016, Department of the Air Force and is available for use by all Departments and agencies of the Department of Defense.

APPROVED 26 FEB 57 REVISED (E) FOR CHANGES SEE PAGES 1 &amp; 2. 16 Apr 82

|   |                          |  |                          |
|---|--------------------------|--|--------------------------|
| P.A. AIR FORCE-99<br>Other Cast         | (E)                      | TITLE<br><b>ELBOW, TUBE, BULKHEAD, 45°,<br/>PRECISION TYPE</b> | <b>MILITARY STANDARD</b> |
| AIR FORCE-99                            |                          |  | <b>MS 24396</b>          |
| PROCUREMENT SPECIFICATION<br>MIL-F-8509 | SUPERSEDES:<br>AN837 (E) |  | SHEET 2 OF 2             |

DD FORM 672-1 Limited  
Coordination

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

4730-F277