



Review Activities:
AR - AF, CI, ME
Air Force - 82
DA - CS

User Activities:
AR - AV
Navy - OS, MC

(E)

TABLE I

| DASH NUMBER | | TUBE | A | B | D | M ₁ | N ₁ | Y ₁ |
|-------------|-------|--------------|---------------------|-----------------------------|--------------|----------------|----------------|----------------|
| ASSY | *EODY | O. D. NOM | PIPE THREAD NPTF | STRAIGHT THREAD CLASS 2A | DIA DRILL | ±.03 | ±.03 | ±.020 |
| 1 | 21 | 1/8 | 1/8 | 5/16-24UNF | 0.093 | 0.63 | 0.66 | 0.562 |
| 2 | 22 | 3/16 | 1/8 | 3/8-24UNF | 0.125 | 0.83 | 0.66 | 0.562 |
| 3 | 23 | 1/4 | 1/8 | 7/16-20UNF | 0.203 | 0.89 | 0.66 | 0.562 |
| 4 | 24 | 5/16 | 1/8 | 1/2-20UNF | 0.234 | 0.95 | 0.66 | 0.562 |
| 5 | 25 | 3/8 | 1/4 | 9/16-18UNF | 0.281 | 1.05 | 0.88 | 0.750 |
| 6 | 26 | 1/2 | 3/8 | 3/4-16UNF | 0.422 | 1.23 | 1.02 | 0.875 |
| 7 | 27 | 5/8 | 1/2 | 7/8-14UNF | 0.500 | 1.42 | 1.23 | 1.062 |
| 8 | 28 | 3/4 | 3/4 | 1-1/16-12UN | 0.656 | 1.58 | 1.36 | 1.312 |
| 9 | 29 | 7/8 | 3/4 | 1-3/16-12UN | 0.718 | 1.62 | 1.42 | 1.312 |
| 10 | 30 | 1 | 1 | 1-5/16-12UN | 0.875 | 1.73 | 1.62 | 1.625 |
| 11 | 31 | 1-1/4 | 1-1/4 | 1-5/8-12UN | 1.093 | 2.08 | 1.70 | 1.875 |
| 12 | 32 | 1-1/2 | 1-1/2 | 1-7/8-12UN | 1.344 | 2.58 | 2.08 | 2.562 |
| 13 | 33 | 2 | 2 | 2-1/2-12UN | 1.813 | 2.64 | 2.39 | 2.812 |

FOR NOTES SEE SHEET 2.

(E) Denotes change

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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. Other Cust 99 | AR | TITLE | MILITARY STANDARD |
| | | ELBOW, PIPE TO TUBE, 90°, FEMALE PIPE END, FLARELESS TYPE, HYDRAULIC | MS51813 |
| PROCUREMENT SPECIFICATION MIL-F-18866 | SUPERSEDES | CNHX6 in part | SHEET 1 OF 2 |

APPROVED 29 DEC 1967 REVISED 30 DEC 1970 22 NOV 1974 13 MAY 77 17 June 1982 30 July 1987

NOTES:

1. **MATERIAL:** Steel, carbon in accordance with the procurement specification.
Steel, corrosion-resisting in accordance with the procurement specification.
2. **PROTECTIVE COATING:** Cadmium plated in accordance with procurement specification.
Zinc plated in accordance with procurement specification.
Phosphate coating in accordance with procurement specification.
Passivation treatment in accordance with procurement specification.
3. **DIMENSIONS AND TOLERANCES:** Dimensions and tolerances not shown shall be in accordance with the SAE Standard for Flareless Tube Fittings (SAE J514).
4. **THREADS:** Threads shall be in accordance with Screw-Thread Standards for Federal Services, FED-STD-H28.
5. **PART NUMBER:** The MS part number consists of the MS number, plus the dash number and (for complete assembly) the applicable MS51825 sleeve style designator.
 - A. For complete assembly (with nut and sleeve), cadmium plated, use the MS number, plus the assembly dash number and the sleeve style designator. Example: MS51813-1A or MS51813-1B.
 - B. For the body only, cadmium plated, use the MS number and the body dash number. Example: MS51813-21.
 - C. For zinc coating add "Z" and (for complete assembly) the sleeve style designator to the dash number. Example: MS51813-1ZA or MS51813-1ZB or MS51813-21Z.
 - D. For phosphate coating add "P" and (for complete assembly) the sleeve style designator to the dash number. Example: MS51813-1PA or MS51813-1PB or MS51813-21P.
 - E. For corrosion-resisting steel add "SS" and (for complete assembly) the sleeve style designator to the dash number. Example: MS51813-1SSA or MS51813-1SSB or MS51813-21SS.
6. For design feature purposes, this standard takes precedence over procurement documents referenced herein.
7. Reference documents shall be of the issue in effect on date of invitations for bid.
8. The illustration is for identification and is not intended to restrict designs or shapes not dimensioned.
- * 9. After 22 NOV 1974, bodies will be used for production only and **SHALL NOT** be stocked for maintenance. Existing stock of bodies should be used until depleted.
10. **CAUTION:** The following data is furnished for the purpose of new design only and is not intended to imply interchangeability.

MS51813 will replace MS39200 for new design after approval date on this document. Table II below gives reference data for coordination of equivalent tube sizes, in both compression and hydraulic type elbows. Assembly replacement is authorized.

TABLE II (FOR INFORMATION ONLY)
ASSEMBLY EQUIVALENCY

| PART NUMBER | | PART NUMBER | | PART NUMBER | |
|-------------|-----------|-------------|-----------|-------------|-----------|
| COMPRESSION | HYDRAULIC | COMPRESSION | HYDRAULIC | COMPRESSION | HYDRAULIC |
| MS39200-1 | MS51813-1 | MS39200-5 | MS51813-5 | MS39200-9 | MS51813-9 |
| -2 | -2 | -6 | -6 | -10 | -10 |
| -3 | -3 | -7 | -7 | -11 | -11 |
| -4 | -4 | -8 | -8 | -12 | -12 |

| | | |
|--|--|--------------------------------------|
| P.A. AR Other Cust 99 | TITLE ELBOW, PIPE TO TUBE, 90°, FEMALE PIPE END, FLARELESS TYPE, HYDRAULIC | MILITARY STANDARD MS51813 |
| PROCUREMENT SPECIFICATION MIL-F-18866 | SUPERSEDES CNHX6 in part | SHEET 2 OF 2 |

User Activities:
Army - AV
Navy - OS, NC

Reviewer Activities:
Army - AT, CI, ME
Air Force - 82
DLA - CS

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30 July 1987

17 June 1982

FOR CHANGES SEE SHEET 2.

FOR CHANGES SEE SHEET 1

APPROVED 29 DEC 1967