**MIL-C-3486B**
15 APRIL 1966
SUPERSEDING
MIL-C-3486A
21 MAY 1957
(SEE 6.2)

**MILITARY SPECIFICATION**

# COUPLINGS AND COUPLING HALVES-QUICK DISCONNECT, AIR HOSE, BOWES TYPE

*This specification is mandatory for use by all Departments and Agencies of the Department of Defense.*

## 1. SCOPE

# **1.1 Scope.** This specification covers quick-acting and self-locking couplings, coupling halves and fittings for use on pneumatic hose where rapid coupling and uncoupling are required.

# **1.2 Classification.** Couplings and coupling halves and fittings shall be of the following classes and sizes as specified (see 6.1):

Class H.M. — Male coupling end with hose end for 7/16-inch, 1/2-inch, 5/8-inch, and 1¼-inch hose.

Class H.F. — Female coupling end with hose end for 7/16-inch, 1/2-inch, 5/8-inch, and 1¼-inch hose.

Class O.M. — Male coupling end with pipe end (external thread) for ½-inch, ¾-inch, and 1¼-inch pipe.

Class O.F. — Female coupling end with pipe end (external thread) for ½-inch, ¾-inch, and 1¼-inch pipe.

Class Y.M. — Y-hose fittings (one female inlet and two male outlets) for 7/16-inch, 1/2-inch, 5/8-inch, and 1¼-inch hose.

## 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of the specification to the extent specified herein:

### SPECIFICATIONS

FEDERAL

QQ-W-401 — Wire, Phosphor Bronze, Spring.

MILITARY

MIL-H-775 — Hose, Rubber or Fabric (Including Tubing); and Fittings, Nozzles and Strainers, Packaging of.

FSC 4730

MIL-R-2765 — Rubber Material, Synthetic, Oil Resistant (Sheet Strip and Molded Shapes).

STANDARDS

MILITARY

MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-129 — Marking for Shipment and Storage.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications.—The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

NATIONAL BUREAU OF STANDARDS

Handbook H28 — Screw Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

## 3. REQUIREMENTS

3.1 Material.

3.1.1 Rolled or leaded Naval brass shall be used for all structural parts except that class Y.M. fittings may be made of cast bronze.

3.1.1.1 Rolled Naval brass shall be in accordance with composition a or b as specified in table I.

TABLE I. *Composition of rolled or leaded Naval brass.*

| Elements | Percent | |
|---|---|---|
| | Composition a | Composition b |
| Copper | 59.00–63.00 | 59.00–62.00 |
| Tin | 0.50– 1.00 | 0.50– 1.00 |
| Lead | 0.20 | 1.3 – 2.2 |
| Iron (maximum) | 0.10 | 0.10 |
| Other elements total (maximum). | 0.10 | 0.10 |
| Zinc | Remainder | Remainder |

3.1.1.2 Cast bronze shall be of the composition specified in table II.

TABLE II. *Composition of cast bronze.*

| Elements | Percent |
|---|---|
| Copper | 86.00–89.00 |
| Tin | 5.50– 6.50 |
| Zinc | 3.00– 5.00 |
| Lead | 1.00– 2.00 |
| Iron (maximum) | 0.25 |
| Nickel (maximum) | 1.00 |
| Phosphorus (maximum) | 0.05 |

3.1.2 *Miscellaneous parts.* Locking springs and retaining-ring clips shall be made of phosphor-bronze in accordance with QQ–W–401. Gaskets shall be of molded rubber and shall conform to MIL–R–2765.

**3.2 Interchangeability and operation.**

3.2.1 Coupling ends of all couplings and fittings for use with 7/16-inch, 1/2-inch, and 5/8-inch hose as well as for 1/2-inch and 3/4-inch pipe shall interchange indiscriminately and shall lock effectively.

3.2.2 Coupling ends of all couplings for use with 1¼-inch hose end and 1¼-inch pipe shall interchange indiscriminately and lock effectively.

**3.3 Hydrostatic pressure.** All couplings and fittings shall withstand, without leakage or other indications of failure, the hydrostatic pressure test specified in 4.3.2.

**3.4 Tolerances.** Where tolerances are not specifically mentioned, a plus or minus tolerance of 0.010 inch will be permitted in all dimensions in which such variations will not affect interchangeability (see 3.2).

**3.5 Fittings and coupling assembly.** Fittings and coupling assembly shall conform to figure 1.

**3.6 Class H. M. male coupling end with hose end.** The couplings shall have a male Bowes coupling at one end and a serrated hose shank at the other end, conforming to figure 2. Each of these couplings shall be fitted with self-locking clutch with spring and clutch-retaining ring.

**3.7 Class H. F. female coupling end with hose end.** The coupling shall have a female Bowes coupling at one end and a serrated hose shank at the other end, conforming to figure 3.

**3.8 Class O.M., male coupling end with pipe end (external thread).** The coupling halves shall have a male Bowes coupling fitted with self-locking clutch with spring and a clutch-retaining ring at one end, and the opposite end shall be threaded with American National standard taper pipe threads in accordance with Handbook H28. Couplings of this class shall be in accordance with figure 4.

**3.9 Class O.F., female coupling end with pipe end (external thread).** The couplings shall have a female Bowes coupling at one end fitted with a U-shaped rubber gasket with lip facing the pipe end. The opposite ends shall be threaded with American National standard taper pipe threads in accordance with Handbook H28. Couplings of this class shall conform to figure 5.

**3.10 Class Y. M., Y-hose fittings (female inlet and two male outlets).** The fittings shall have a female Bowes coupling at one end and two male Bowes couplings at the opposite end. The male ends shall be located approximately 30 degrees of arc on each side of the axis of the female coupling. If machined from bar stock, they shall be composed of a branch fitting and two class O.M. male pipe end couplings, properly assembled, or the fittings may be cast in a single piece. If of one piece construction, the fittings shall be in substantial compliance with the essential characteristics shown on figure 6.

**3.11 Marking.** Each coupling shall be marked in a plain and permanent manner with the manufacturer's name or with a trademark of such known character that the source of manufacture may be readily determined.

**3.12 Workmanship.** The workmanship shall be first class in every respect to guarantee conformity with the requirements contained herein. Exposed surfaces shall be free from projections which may cause the coupling to unlock when the hose is dragged over uneven surfaces. Couplings and coupling halves shall be machined and

free from rough surfaces which may injuriously affect the hands of the operator except that the locking clutch shall be knurled and grooved or otherwise designed to insure a firm grip for the fingers.

## 4. QUALITY ASSURANCE PROVISIONS

**4.1 Responsibility for inspection.** Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

**4.2 Sampling.**

4.2.1 *Lot.*

4.2.1.1 For the purpose of chemical analysis, a lot shall consist of all couplings and fittings made from the same heat or melt of metal. If the material cannot be identified, a lot shall consist of not more than 500 couplings or fittings of the same composition.

4.2.1.2 For the purpose of inspection, a lot shall consist of not more than 500 couplings or fittings of the same class and size offered for delivery at one time.

# 4.2.2 *Sampling procedure.*

4.2.2.1 *Sampling for chemical analysis.* One sample from each lot identified by heat or melt shall be selected for chemical analysis. When material cannot be identified by heat or melt, three separate samples from each lot shall be selected as specified in 4.2.1.1. Samples shall consist of not less than 2 ounces of drillings or millings and shall be fine, clean, free from oil, dirt, grit, or foreign matter.

4.2.2.2 *Sampling for visual and dimensional examination.* A random sample of couplings and fittings shall be selected from each lot in accordance with MIL–STD–105, using inspection level II with an acceptable quality level (AQL) of 1.5, and shall be subjected to the examination specified in 4.3.

4.2.2.3 *Sampling for pressure test.* A random sample of couplings and fittings shall be selected from each lot of material in accordance with table III for the test of 4.4.2.

TABLE III. *Sampling for pressure tests.*

| Number of couplings and fittings in lot | Number of couplings and fittings in sample | Acceptance number (defectives) | Rejection number (defectives) |
|---|---|---|---|
| Under 25 | 6 | 0 | 1 |
| 26 to 50 | 8 | 0 | 1 |
| 51 to 100 | 9 | 0 | 1 |
| 101 to 200 | 10 | 0 | 1 |
| 201 to 500 | 15 | 0 | 1 |

**4.3 Visual and dimensional examination.** Each of the sample couplings and fittings selected in accordance with 4.2.2.2 shall be visually and dimensionally examined to verify compliance with this specification. Any couplings and fittings in the sample containing one or more visual or dimensional defects shall be rejected, and if the number of defective couplings and fittings in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall be subject to rejection.

**4.4 Test procedures.**

4.4.1 *Chemical analysis.* The sample or samples selected in accordance with 4.2.2.1 shall be analyzed to determine compliance

with 3.1. If any sample fails to conform to this specification, the lot shall be subject to rejection.

4.4.2 *Pressure test.* The samples selected in accordance with table III shall be subjected to a hydrostatic pressure of 250 p.s.i. to determine compliance with 3.3. If any sample fails to conform to 3.3, the lot shall be subject to rejection.

## ≠ 5. PREPARATION FOR DELIVERY

### 5.1 Preservation and packaging.

5.1.1 *Level A.* Couplings and fittings shall be preserved and packaged in accordance with MIL–H–775.

5.1.2 *Level C.* Couplings and fittings shall be preserved and packaged in accordance with the manufacturer's commercial practice.

### 5.2 Packing.

5.2.1 *Level A.* Couplings and fittings, packaged as specified, shall be packed in accordance with the overseas requirements of MIL–H–775.

5.2.2 *Level B.* Couplings and fittings, packaged as specified, shall be packed in accordance with the domestic shipment and storage requirements of MIL–H–775.

5.2.3 *Level C.* Couplings and fittings, packaged in accordance with level A or C, shall be packed in a manner to insure safe delivery and acceptance at destination. Containers or method of shipment shall comply with the Uniform Freight Classification Ratings, Rules and Regulations or other carrier regulations applicable to the mode of transportation.

5.3 **Marking.** In addition to any special marking requirements, interior and exterior shipping containers shall be marked in accordance with MIL–STD–129.

## 6. NOTES

6.1 **Ordering data.** Procurement documents should specify the following:

(a) Title, number and date of this specification.

(b) Class and size of couplings required (see 1.2 and applicable figures).

(c) Level of preservation, packaging and packing required (see 5.1).

6.2 **CHANGES FROM PREVIOUS ISSUE.** THE OUTSIDE MARGINS OF THIS DOCUMENT HAVE BEEN MARKED "#" TO INDICATE WHERE CHANGES (DELETIONS, ADDITIONS, ETC.) FROM THE PREVIOUS ISSUE HAVE BEEN MADE. THIS HAS BEEN DONE AS A CONVENIENCE ONLY AND THE GOVERNMENT ASSUMES NO LIABILITY WHATSOEVER FOR ANY INACCURACIES IN THESE NOTATIONS. BIDDERS AND CONTRACTORS ARE CAUTIONED TO EVALUATE THE REQUIREMENTS OF THIS DOCUMENT BASED ON THE ENTIRE CONTENT AS WRITTEN IRRESPECTIVE OF THE MARGINAL NOTATIONS AND RELATIONSHIP TO THE LAST PREVIOUS ISSUE.

**Custodians:**
Navy—SH
Army—MO
Air Force—69

**Review activities:**
Navy—SH, YD
Army—MO, WC

**User activities:**
Navy—WP

**Preparing activity:**
Navy—SH
(Project No. 4730–0366)

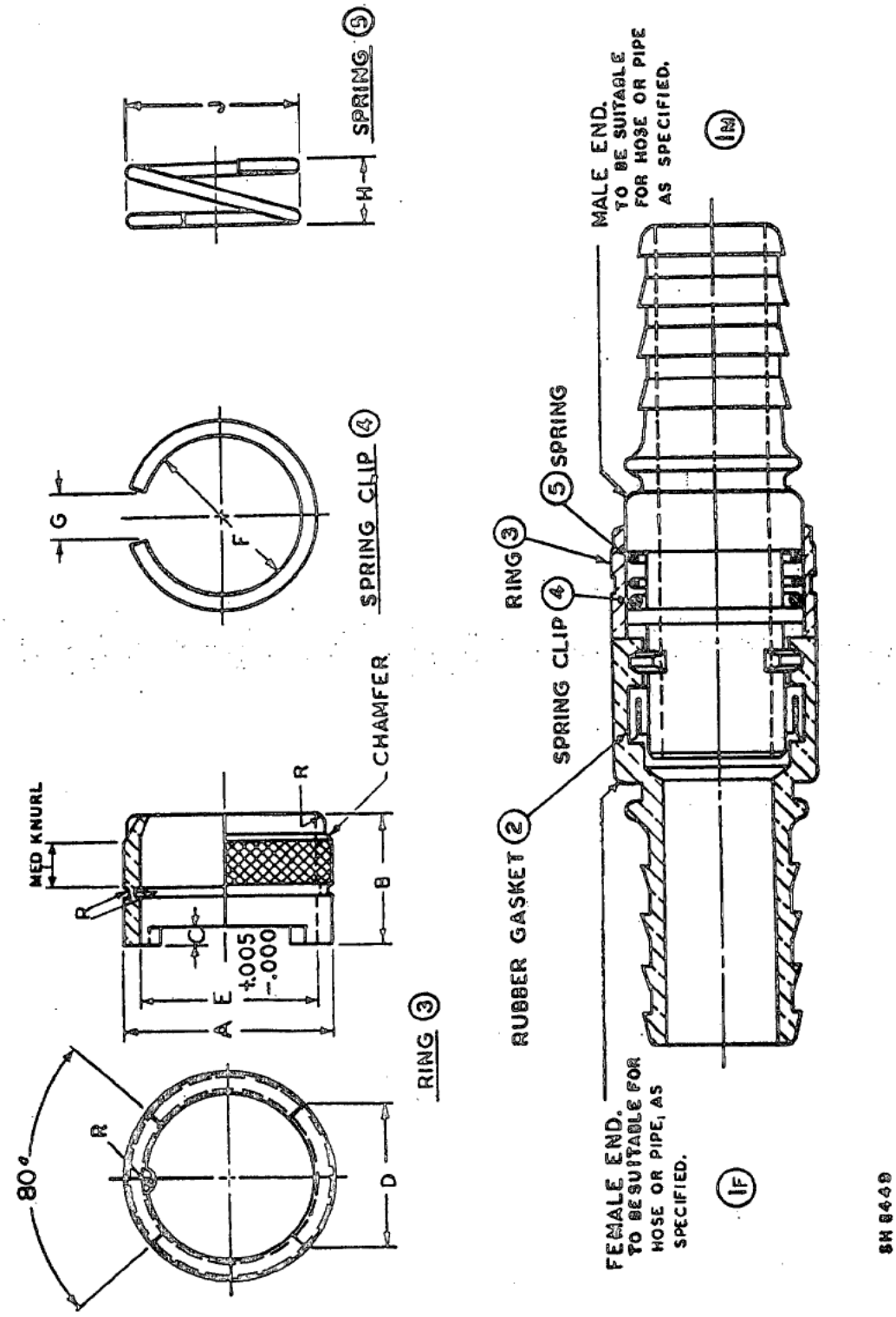


FIGURE 1. *Quick-acting coupling assembly.*

| Dimension | Nominal size of hose (inches) | |
|---|---|---|
| | 7/16, 1/2 and 5/8 | 1-1/4 |
| A | 1- 3/8 | 1-7/8 |
| B | 1- 7/64 | 1-3/16 |
| C | 1/8 | 5/32 |
| D | 15/16 | 1-5/16 |
| E | 1- 1/8 | 1-5/8 |
| F | 61/64 | 1-1/2 |
| G | 3/8 | 7/16 |
| H | 19/32 | 9/16 |
| J | 1- 7/64 | 1-9/16 |
| R | Radius | Radius |

FIGURE 1. *Quick-acting coupling assembly* (cont'd).

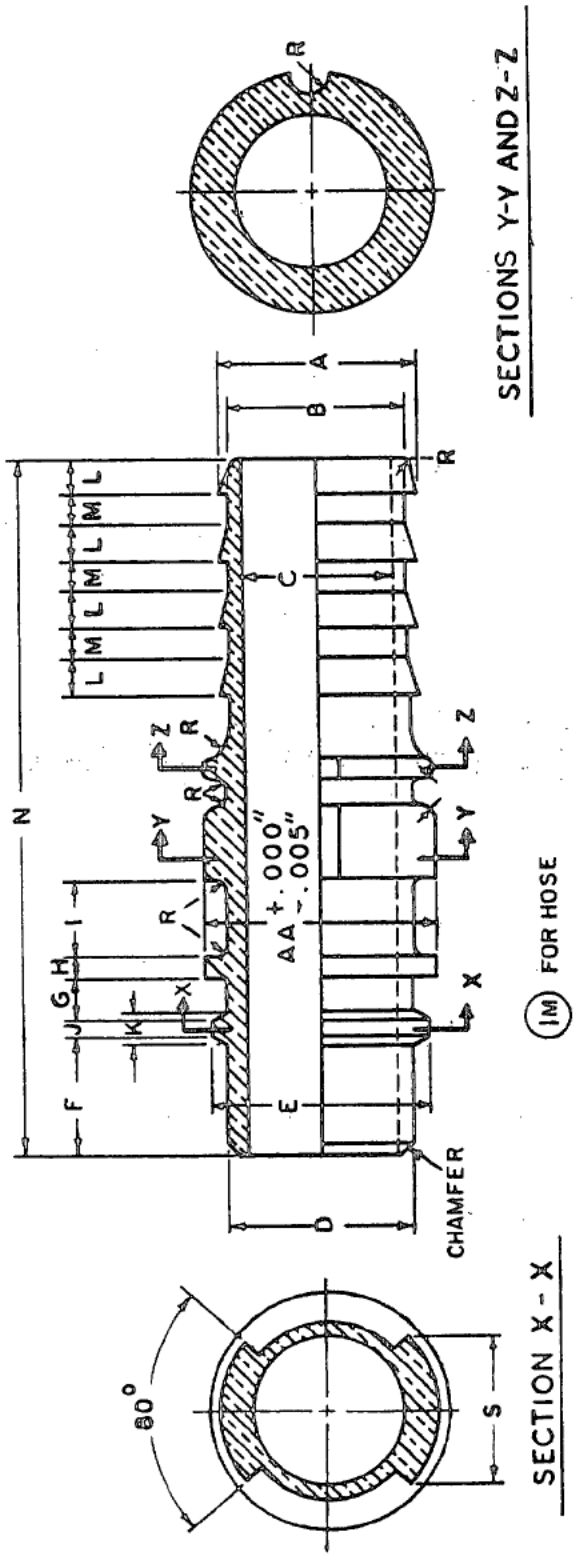


FIGURE 2. *Class H.M., male coupling end with hose end.*

| Dimensions | Nominal size of hose (inches) | | | |
|---|---|---|---|---|
| | 7/16 | 1/2 | 5/8 | 1-1/4 |
| A | 1/2 | 9/16 | 11/16 | 1-5/16 |
| B | 13/32 | 15/32 | 19/32 | 1-7/32 |
| C | 5/16 | 3/8 | 15/32 | 1-1/16 |
| D | 3/4 | 3/4 | 3/4 | 1-9/32 |
| E | 1-1/64 | 1-1/64 | 1-1/64 | 1-37/64 |
| F | 9/16 | 9/16 | 9/16 | 13/16 |
| G | 13/64 | 13/64 | 13/64 | 9/32 |
| H | 1/8 | 1/8 | 1/8 | 1/8 |
| I | 19/32 | 19/32 | 19/32 | 9/16 |
| J | 7/64 | 7/64 | 7/64 | 5/32 |
| K | 1/8 | 1/8 | 1/8 | 3/16 |
| L | 1/4 | 1/4 | 1/4 | 1/4 |
| M | 5/32 | 5/32 | 5/32 | 7/32 |
| N | 4-5/32 | 4-5/32 | 4-5/32 | 4-7/8 |
| R | Radius | Radius | Radius | Radius |
| S | 23/32 | 23/32 | 23/32 | 1-1/16 |
| AA | 1-1/8 | 1-1/8 | 1-1/8 | 1-5/8 |

FIGURE 2. *Class H.M., male coupling end with hose end* (cont'd).

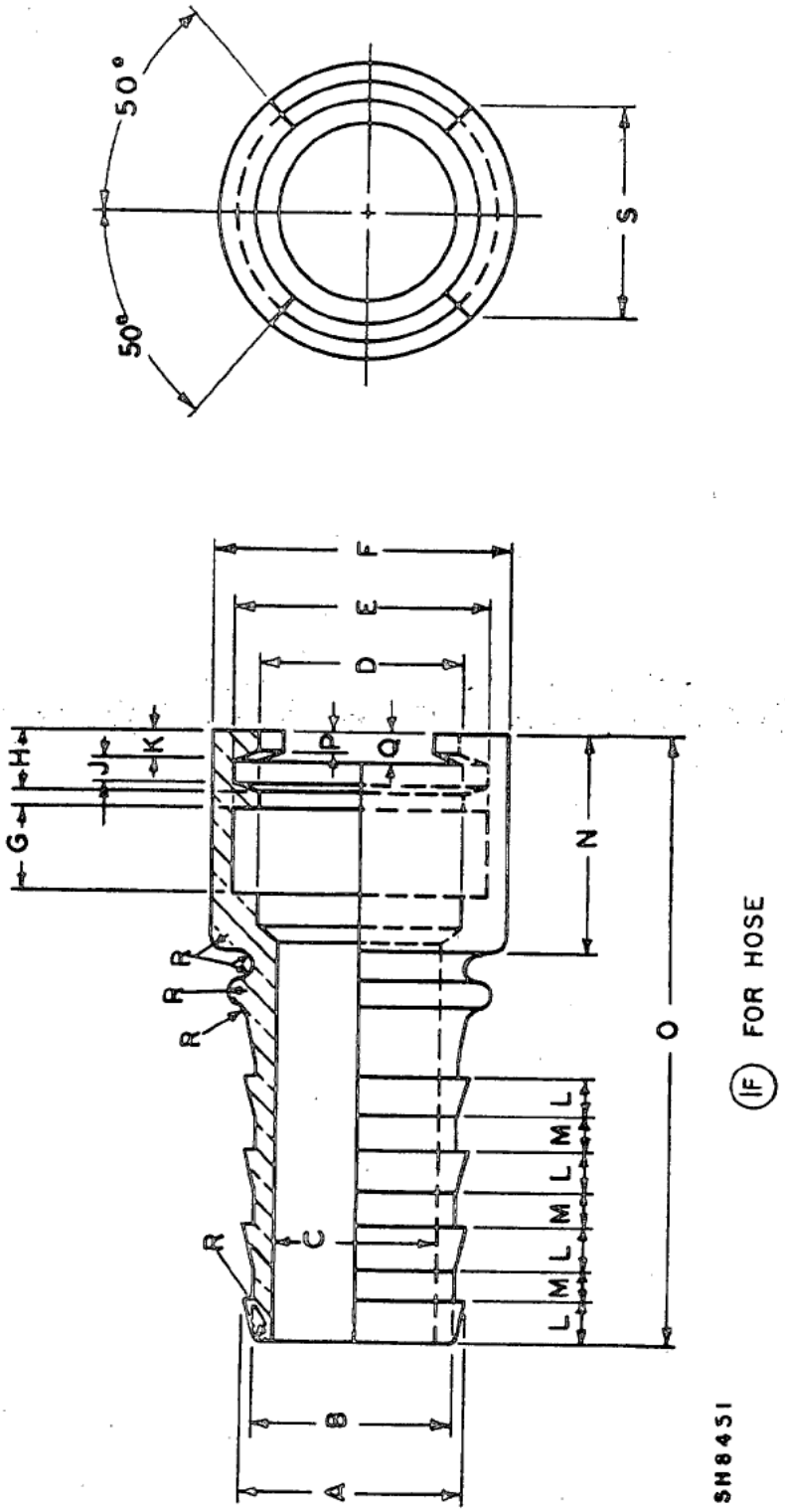


FIGURE 3. *Class H.F., female coupling end with hose end.*

| Dimension | Nominal size of hose (inches) | | | |
|---|---|---|---|---|
| | 7/16 | 1/2 | 5/8 | 1-1/4 |
| A | 1/2 | 9/16 | 11/16 | 1-5/16 |
| B | 13/32 | 15/32 | 19/32 | 1-7/32 |
| C | 5/16 | 3/8 | 15/32 | 1-1/16 |
| D | 25/32 | 25/32 | 25/32 | 1-5/16 |
| E | 1-1/16 | 1-1/16 | 1-1/16 | 1-5/8 |
| F | 1-3/8 | 1-3/8 | 1-3/8 | 1-7/8 |
| G | 11/32 | 11/32 | 11/32 | 17/32 |
| H | 1/4 | 1/4 | 1/4 | 11/32 |
| J | 1/8 | 1/8 | 1/8 | 3/16 |
| K | 7/64 | 7/64 | 7/64 | 9/64 |
| L | 1/4 | 1/4 | 1/4 | 1/4 |
| M | 5/32 | 5/32 | 5/32 | 7/32 |
| N | 1 | 1 | 1 | 1-5/16 |
| O | 3-3/16 | 3-3/16 | 3-3/16 | 3-3/4 |
| P | 3/32 | 3/32 | 3/32 | 1/8 |
| Q | 1/8 | 1/8 | 1/8 | 5/32 |
| R | Radius | Radius | Radius | Radius |
| S | 15/16 | 15/16 | 15/16 | 1-5/16 |

FIGURE 3. *Class H.F., female coupling end with hose end* (cont'd).

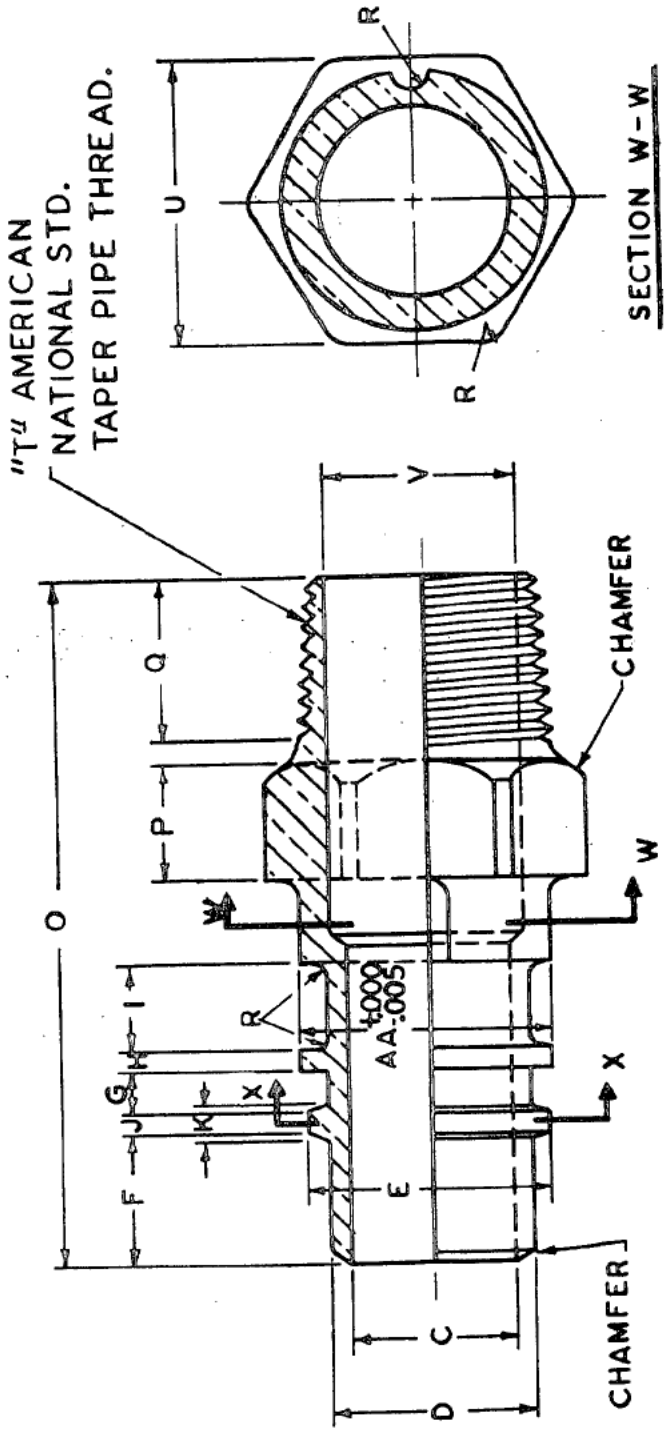


FIGURE 4. *Class O.M., male coupling end with pipe end (external thread).*

| Dimension | Nominal size of hose (inches) | | |
|---|---|---|---|
| | 1/2 | 3/4 | 1-1/4 |
| C | 1/2 | 1/2 | 1-1/16 |
| D | 3/4 | 3/4 | 1-9/32 |
| E | 1-1/64 | 1-1/64 | 1-37/64 |
| F | 9/16 | 9/16 | 13/16 |
| G | 13/64 | 13/64 | 9/32 |
| H | 1/8 | 1/8 | 1/8 |
| I | 19/32 | 19/32 | 9/16 |
| J | 7/64 | 7/64 | 5/32 |
| K | 1/8 | 1/8 | 3/16 |
| O | 3-1/8 | 3-1/2 | 4-1/2 |
| P | 13/32 | 7/16 | 3/4 |
| Q | 5/8 | 3/4 | 7/8 |
| R | Radius | Radius | Radius |
| T | 1/2 | 3/4 | 1-1/4 |
| U | 1 | 1-3/16 | 1-3/4 |
| V | 1/2 | 3/4 | 1-1/4 |
| AA | 1-1/8 | 1-1/8 | 1-5/8 |

FIGURE 4. *Class O.M., male coupling end with pipe end (external thread)* (cont'd).

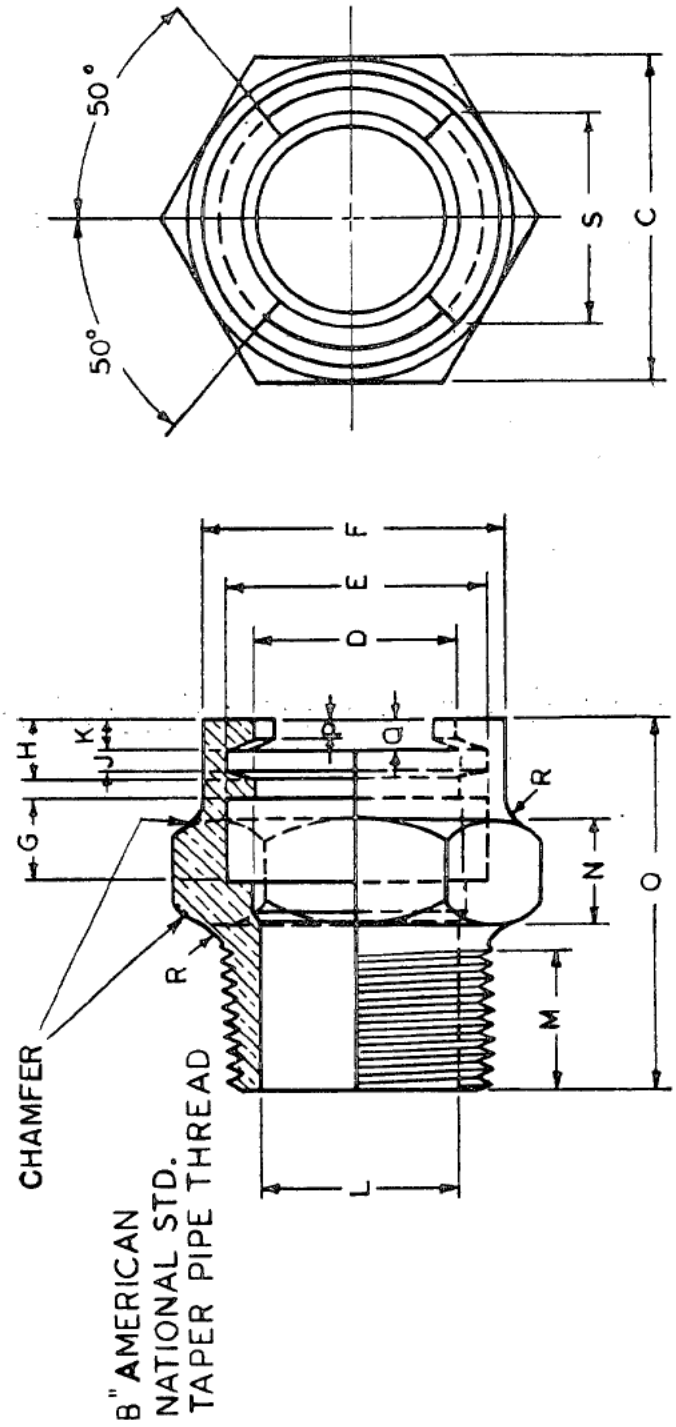


FIGURE 5. *Class O.F., female coupling end with pipe end (external thread).*

| Dimension | Nominal size of hose (inches) | | |
|---|---|---|---|
| | 1/8 | 3/4 | 1-1/4 |
| B | 1/2 | 3/4 | 1-1/4 |
| C | 1-3/8 | 1-3/8 | 2 |
| D | 25/32 | 25/32 | 1-5/16 |
| E | 1-1/16 | 1-1/16 | 1-5/8 |
| F | 1-3/8 | 1-3/8 | 1-7/8 |
| G | 11/32 | 11/32 | 17/32 |
| H | 1/4 | 1/4 | 11/32 |
| J | 1/8 | 1/8 | 3/16 |
| K | 7/64 | 7/64 | 9/64 |
| L | 1/2 | 9/16 | 1-1/4 |
| M | 5/8 | 5/8 | 7/8 |
| N | 1/4 | 1/4 | 5/8 |
| O | 2 | 2 | 2-1/4 |
| P | 3/32 | 3/32 | 1/8 |
| Q | 1/8 | 1/8 | 5/32 |
| R | Radius | Radius | Radius |
| S | 15/16 | 15/16 | 1-5/16 |

FIGURE 5. *Class O.F., female coupling end with pipe end (external thread)* (cont'd).

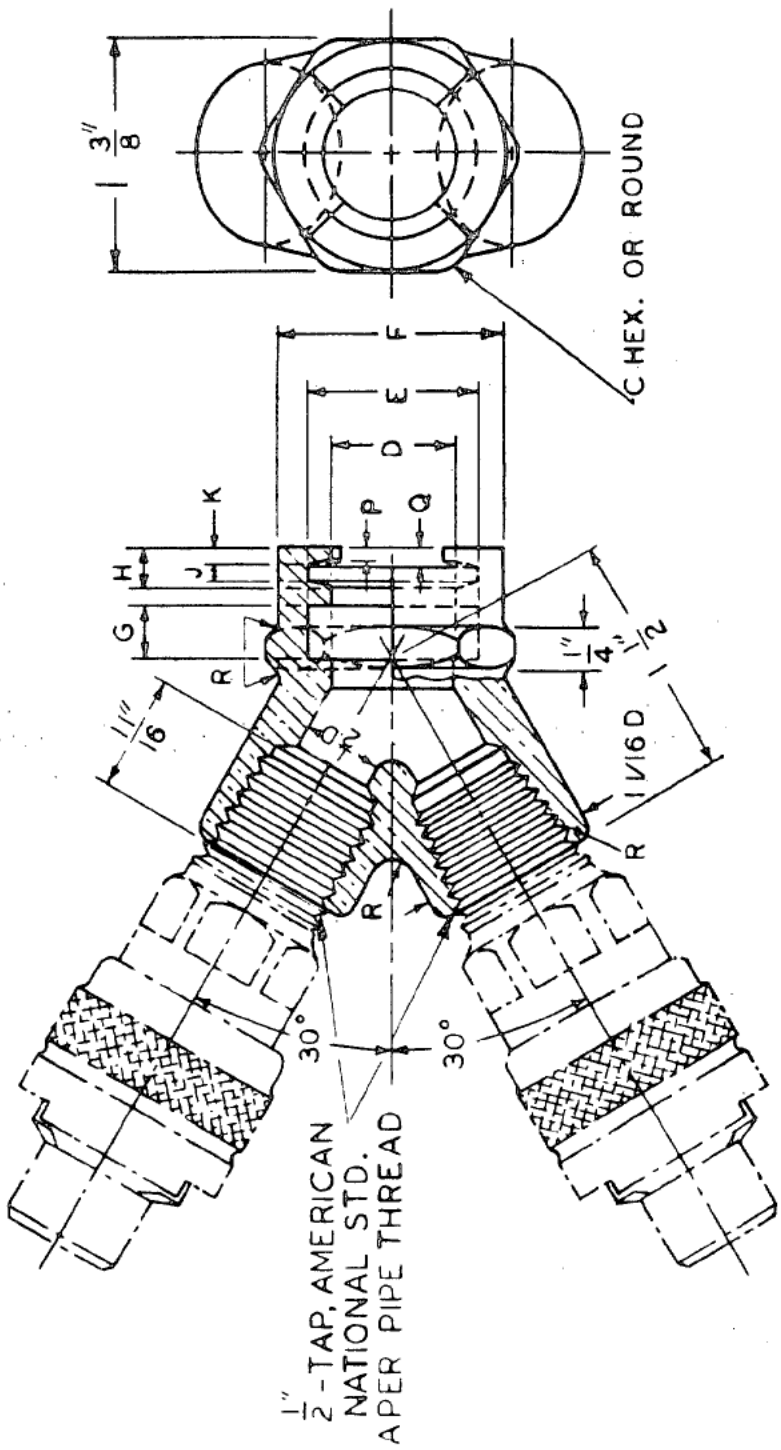


FIGURE 6. *Class Y-M, Y-hose fitting.*

| Dimension | Nominal size of hose (inches) | | | |
|---|---|---|---|---|
| | 7/16 | 1/2 | 5/8 | 1-1/4 |
| C | 1-3/8 | 1-3/8 | 1-3/8 | 1-7/8 |
| D | 25/32 | 25/32 | 25/32 | 1-5/16 |
| E | 1-1/16 | 1-1/16 | 1-1/16 | 1-5/8 |
| F | 1-3/8 | 1-3/8 | 1-3/8 | 1-7/8 |
| G | 11/32 | 11/32 | 11/32 | 17/32 |
| H | 1/4 | 1/4 | 1/4 | 11/32 |
| J | 1/8 | 1/8 | 1/8 | 3/16 |
| K | 7/64 | 7/64 | 7/64 | 9/64 |
| P | 3/32 | 3/32 | 3/32 | 1/8 |
| Q | 1/8 | 1/8 | 1/8 | 5/32 |
| R | Radius | Radius | Radius | Radius |

FIGURE 6. *Class Y.M., Y-hose fitting* (cont'd).

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

*(See Instructions – Reverse Side)*

| 1. DOCUMENT NUMBER | 2. DOCUMENT TITLE |
|---|---|
| | |

| 3a. NAME OF SUBMITTING ORGANIZATION | 4. TYPE OF ORGANIZATION *(Mark one)* |
|---|---|
| | ☐ VENDOR |
| b. ADDRESS *(Street, City, State, ZIP Code)* | ☐ USER |
| | ☐ MANUFACTURER |
| | ☐ OTHER *(Specify)*: _____ |

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

| 7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional | b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional |
|---|---|
| c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional | 8. DATE OF SUBMISSION *(YYMMDD)* |
| | |

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*(TO DETACH THIS CUT ALONG THIS LINE.)*