

MIL-C-52404E
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SUPERSEDING
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MILITARY SPECIFICATION

CONNECTIONS: HOSE, FIRE AND WATER

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

1. SCOPE

1.1 Scope. This specification covers hose and pipe connections for use in firefighting and water supply systems.

1.2 Classification. The connections shall be of the following types, classes, and sizes as specified (see 6.2):

Type XIII - Siamese connection, pipe-to-hose.
(Drawing C13218E0469)

Size:

1-1/2-inch external (NPT) by 1-1/2- by 1-1/2-inch
internal (NPSH)

Type XIV - Siamese connection, fire hose.
(Drawing C13218E0469)

Class A - Plain.

Size:

2-1/2-inch internal (NH) by 2-1/2- by 2-1/2-inch
external (NH)

Class B - Gated - internal to 2-outlet external.

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Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Mobility Equipment Research and Development Command, ATTN: DRDME-DS, Fort Belvoir, VA 22060 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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Size:

2-1/2-inch internal (NH) by 1-1/2- by 1-1/2-inch external (NH).

2-1/2-inch internal (NH) by 2-1/2- by 2-1/2-inch external (NH).

4-1/2-inch internal (NH) by 2-1/2- by 2-1/2-inch external (NH).

Class C - Gated - External to 3-outlet internal.

Size:

Class D - Gated - internal swivel to 3-outlet external.

Size:

2-1/2-inch internal swivel (NH) by 1-1/2- by 1-1/2- by 1-1/2-inch external (NH).

Class E - Gated - External to 2-outlet internal swivel.

Size:

2-1/2-inch external (NH) by 2-1/2- by 2-1/2-inch internal swivel (NH).

Type XV - Reducer, hose. (Drawing C13218E0470)

Class A - Double internal.

Size:

2-1/2-inch (NH) by 1-1/2-inch (NPSH).

2-1/2-inch (NH) by 1-1/2-inch (NH)

4-1/2-inch (NH) by 2-1/2-inch (NH).

4-1/2-inch swivel (NH) by 5-inch swivel (NH)

4-1/2-inch swivel (NH) by 6-inch swivel (NH)

Class B - Double external.

Size:

2-1/2-inch (NH) by 1-1/2-inch (NPSH)

2-1/2-inch (NH) by 1-1/2-inch (NH)

Class C - Internal to external.

Size:

1-1/2-inch (NPSH) by 3/4-inch chemical (NH).

1-1/2-inch (NH) by 3/4-inch chemical (NH).

1-1/2-inch (NPSH) by 1-inch chemical (NH).

1-1/2-inch (NH) by 1-inch chemical (NH).

2-1/2-inch (NH) by 1-1/2-inch (NPSH).

2-1/2-inch (NH) by 1-1/2-inch (NH).

2-1/2-inch (NH) by 2-inch (NPSH).

Class D - External to internal.

Size:

1 inch internal chemical (NH) by 3/4 inch garden (external)

2-1/2-inch internal (NH) by 1-1/2 inch external (NPSH)

2-1/2 inch internal (NH) by 1-1/2 inch external (NH)

5-inch internal (NH) by 4-1/2-inch external (NH)

6 inch internal (NH) by 4-1/2 inch external (NH)

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Type XVI - Adapter, straight, pipe-to-hose.

(Drawing C1118E0479)

Class A - Internal (NPSH) to external (NH).

Size:

1-inch by 3/4-inch chemical.

1-inch by 1-inch chemical.

1-1/2-inch by 1-1/2-inch.

2-inch by 2-1/2-inch.

Class B - External (NPT) to internal (NPSH).

Size:

1-inch by 1-inch.

1-1/2-inch by 1-1/2-inch.

1-1/2-inch by 2-inch.

2-inch by 1-1/2-inch.

2-inch by 2-inch.

Class C - External (NPT) to external (NPSH).

Size:

3/4-inch by 3/4-inch.

1-inch by 1-inch.

1-1/4-inch by 1-1/4-inch.

1-1/2-inch by 1-1/4-inch.

1-1/2-inch by 1-1/2-inch.

2-inch by 1-1/2-inch.

2-inch by 2-inch.

Class D - External (NPT) to external (NH).

Size:

1/2-inch by 3/4-inch garden.

1/2-inch by 3/4-inch chemical.

1/2-inch by 1-inch chemical.

1-1/2-inch by 1-1/2-inch.

2-1/2-inch by 2-1/2-inch.

2-inch by 1-1/2-inch.

3-inch by 2-1/2-inch.

3-1/2-inch by 2-1/2-inch.

4-inch by 4-1/2-inch.

Class E - External (NPSH) to internal (NH).

Size:

1-1/2-inch by 1-1/2-inch.

2-inch by 2-1/2-inch.

Class F - External (grooved) to internal (NH).

Size:

6-inch.

Class G - External (NPT) to internal (NH).

Size:

2-1/2-inch by 2-1/2-inch.

3-inch by 2-1/2-inch.

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Class H - Internal (NPT) to external (NH).

Size:

3-inch by 2-1/2 inch.

Type XVII - Coupling, Hose. (Drawing C13218E0471)

Class A - Double internal, plain.

Size:

1-1/2-inch (NPSH) by 1-1/2-inch (NPSH).

1-1/2-inch (NH) by 1-1/2-inch (NH).

2-1/2-inch (NH) by 2-1/2-inch (NH).

4-1/2-inch (NH) by 4-1/2-inch (NH).

5-inch (NH) by 5-inch (NH).

6-inch (NH) by 6-inch (NH).

Class B - Internal to external, gated.

Size:

1-1/2-inch (NPSH) by 1-1/2-inch (NPSH).

2-1/2-inch (NH) by 2-1/2-inch (NH).

Type XVIII - Elbow, hose: 45-degree swivel type, internal
to external. (Drawing C13218E0472)

Size:

2-1/2-inch (NH) by 2-1/2-inch (NH).

Type XIX - Nipple, hose: double external. (Drawing C13218E0473)

Size:

1-1/2-inch (NPSH) by 1-1/2-inch (NPSH).

1-1/2-inch (NH) by 1-1/2-inch (NH).

2-1/2-inch (NH) by 2-1/2-inch (NH).

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

QQ-B-626	- Brass, Leaded and Nonleaded: Rod, Shapes, Forgings, and Flat Products with Finished Edges (Bar and Strip).
QQ-C-390	- Copper Alloy Castings (Including Cast Bar).
QQ-P-416	- Plating, Cadmium (Electrodeposited).
GGG-W-665	- Wrench, Spanner.

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MIL-P-775

- Packaging of Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles and Strainers.

MIL-A-8625

- Anodic Coatings, for Aluminum and Aluminum Alloys.

MIL-C-10387

- Coupling, Clamp, Pipe; with Bolts and Synthetic-Rubber Gasket for Grooved-End Pipe and Tube.

STANDARDS

MILITARY

MIL-STD-105

- Sampling Procedures and Tables for Inspection by Attributes.

DRAWINGS

ME

C13218E0469

- Siamese Connections.

C13218E0470

- Reducer, Hose.

C13218E0472

- Elbow, Hose.

C13218E0473

- Nipple, Hose.

C13218E0479

- Adapter, Straight, Pipe to Hose.

(Copies of specifications, standards and drawings required by contractors 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, DC 20402.)

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A47 - Malleable Iron Castings.
- B16 - Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines.
- B26 - Aluminum Alloy Sand Castings.
- B124 - Copper and Copper-Alloy Forging Rod, Bar, and Shapes.
- B584 - Copper Alloy Sand Castings for General Applications.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA No. 194

(Application for copies should be addressed to the National Fire Protection Association, 60 Battery March Street, Boston, MA 02110.)

UNDERWRITERS LABORATORIES, INC.

Fire Protection Equipment List.

(Application for copies should be addressed to the Underwriters Laboratories, Inc., 207 East Ohio Street, Chicago, IL 60611.)

3. REQUIREMENTS

3.1 Description. The connections shall be of heavy cast or forged construction and shall be fabricated of aluminum, brass, or malleable iron, as specified (see 6.2). The waterway openings shall be not less than 90 percent of the nominal hose or pipe ID. Lugs shall be of the rocker type and shall fit spanner wrenches conforming to GGG-W-665, Type IV. The swivels shall be permanently connected to the body in a manner to permit free rotation of the swivel and to prevent leakage. Retaining rings or similar components shall be of noncorrosive, wear-resistant metal. The connections shall withstand a working pressure of 250 psig without permanent deformation or damage.

3.2 First article (preproduction model). The contractor shall furnish one or more connections for examination and testing within the time frame specified (see 6.2), to prove prior to starting production that his production methods and choice of design detail will produce connections that comply with the requirements of this specification. Examination and tests shall be as specified in Section 4 and shall be subject to surveillance and approval by the Government (see 6.3).

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3.3 Material. Material shall be as specified herein. When specified (see 6.2), items which are listed in the current Fire Protection Equipment List of the Underwriters Laboratories, Inc. shall be considered as meeting the material requirements of this specification. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification (see 6.8).

3.3.1 Malleable cast iron. Malleable iron castings shall conform to ASTM A47, grade optional.

3.3.2 Cast aluminum. Aluminum castings shall conform to ASTM B26, Alloy 355.0, Condition T6 or Alloy 356.0, Condition T6 or Alloy 535.0.

3.3.2.1 Extruded aluminum. Extruded aluminum shall conform to Alloy 6061-T6 or 6262-T6.

3.3.2.2 Forged aluminum. Forged aluminum shall conform to Alloy 6262-T6.

3.3.2.3 Anodic coatings. All aluminum parts shall be protected by a hard anodic coating conforming to Type III, Class 1 of MIL-A-8625. All surfaces normally painted shall be painted in accordance with the manufacturers standard practice.

3.3.3 Brass.

3.3.3.1 Brass bars. Brass Bars shall conform to QQ-B-626, Composition 11 or ASTM B16.

3.3.3.2 Drop forged brass. Drop forged brass shall conform to ASTM B124, Alloy No. 377.

3.3.3.3 Cast brass. Brass castings shall conform to QQ-C-390, Alloy 836 or 844, or shall conform to ASTM B584, Alloy 836 or 844.

3.4 Rubber gaskets. Gaskets conforming to NFPA 194 shall be furnished with each connection having internal threads.

3.5 Threads. All threads shall conform to Handbook H28.

3.6 Performance. The connections shall show no evidence of distortion or damage that will affect the serviceability of the connections when subjected to a hydrostatic test pressure of 1,000 psig.

3.7 Plating. All iron surfaces, including threaded and sliding surfaces, shall be cadmium plated in accordance with QQ-P-416, Type I, Class 1.

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3.7.1 Unless otherwise specified, all (NH) National Hose Connection shall be chromium plated.

3.8 Identification marking. The connections shall be identified in accordance with the manufacturers standard practices.

3.9 Type XIII, Siamese connection, pipe to hose. Type XIII connection shall have one external threaded end and two internal threaded swivel ends with rocker lugs and shall be similar to Drawing C13218E0469 and Figure 1.

3.10 Type XIV, Siamese connection, fire hose.

3.10.1 Class A, plain. The Class A, plain Siamese connection shall have one internal threaded swivel end and two external threaded ends, and shall be similar to Drawing C13218E0469 and Figure 2.

3.10.2 Classes B, C, D, and E, gated-Siamese connections. The gated-Siamese connections shall be gated with 1/4-turn, long-handled, shut-off valves of the full-flow, ball or cylindrical, floating-gland type. The cylindrical floating gland type shall operate through bypasses in the body of the cylinder. The valves shall be operable and leakproof under a pressure of 250 psi, and shall be similar to Drawing C13218E0469 and Figures 3 through 6.

3.11 Type XV, reducer hose.

3.11.1 Class A, double internal. The Class A reducer shall be of the double swivel type similar to Drawing C13218E0470 and Figure 7. When specified (see 6.2), the ends shall be equipped with long handles.

3.11.2 Class B, double external. The Class B reducer shall be the double-external type consisting of a center piece and two external threaded ends similar to Figure 8 and to Drawing C13218E0470.

3.11.3 Class C, internal to external. The Class C reducer shall be of one-piece construction with an internal threaded end and an external threaded end. The coupling shall be similar to Figure 9 and to Drawing C13218E0470.

3.11.4 Class D, external to internal. The Class D reducer shall be of two types. The 1-inch by 3/4-inch size shall be one-piece construction similar to Figure 9. The 2-1/2-inch by 1-1/2-inch and the 6-inch by 4-1/2-inch size shall consist of an external end and an internally threaded swivel end equipped with lugs and shall be similar to Figure 10 and to Drawing C13218E0470. When specified (see 6.2), the ends shall have long arm handles.

3.12 Type XVI, adapter, straight, pipe to hose.

3.12.1 Class A, internal to external. Unless otherwise specified (see 6.2), the Type XVI, Class A adapter shall consist of an internal threaded swivel end and an external threaded end similar to Figure 10. When specified (see 6.2), the Type XVI, Class A adapter shall be a rigid one-piece construction without swivel.

3.12.2 Class B, external to internal. The Class B adapter shall be of one-piece construction, shall consist of an external threaded end and an internal threaded end, and shall be similar to Figure 11. A hexagonal-shaped wrenching feature shall be provided.

3.12.3 Class C, external to external. The Class C adapter shall be of one-piece construction, shall have an external thread on each end, and shall be similar to Figure 12. The center portion shall be provided with a hexagon-shaped wrenching feature.

3.12.4 Class D, external to external. The Class D adapter shall be of one-piece construction and shall have an external thread on each end. The center piece shall be equipped with rocker-type lugs. The adapters shall be similar to Figure 13.

3.12.5 Class E, external to internal. Unless otherwise specified (see 6.2), the Class E adapter shall consist of an external threaded end and an internal threaded swivel end equipped with lugs. When specified (see 6.2), the external threaded end shall be provided with a cap attached to the main body by a matching metal chain. When specified (see 6.2), the adapter shall be rigid, one-piece construction without swivel. The adapters shall be similar to Figure 14.

3.12.6 Class F, external to internal. The Class F adapter shall be of one-piece construction with one 6-inch internal threaded end equipped with lugs and one 6-inch external grooved end. The 6-inch grooved end shall conform to the dimensions and tolerances specified in MIL-C-10387. The grooved adapter shall be similar to Figure 15.

3.12.7 Class G, external to internal. The Class G adapter shall be of one-piece construction and shall have one external and one internal threaded end. The internal threaded end shall be equipped with lugs. The adapter shall be similar to Figure 16.

3.12.8 Class H, internal to external. The Class H adapter shall be of one-piece construction and shall have one internal and one external threaded end. The internal threaded end shall be equipped with lugs and shall be similar to Figure 16.

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3.13 Type XVII, coupling, hose. The couplings shall be similar to Drawing C13218E0471 and Figures to 17 and 18.

3.13.1 Class A, double internal, plain. The Class A coupling shall be of the double-swivel type consisting of a center piece and two internal threaded swivel ends equipped with lugs. The 4-1/2-inch size shall have long arm handles.

3.13.2 Class B, internal to external, gated. The Class B coupling shall consist of a centerpiece in which is located a valve with a handle, an internal threaded swivel end equipped with lugs, and an external threaded end. The valve shall be of the sliding-gate type with a full-size waterway. The valves shall be operable and leakproof under a pressure of 250 psi.

3.14 Type XVIII, elbow, hose, 45-degree swivel type, internal to external. The hose elbow connection shall consist of a 45-degree elbow with one external threaded end and one internal threaded swivel end equipped with lugs. The elbow shall be similar to Figure 19 and to Drawing C13218E0472.

3.15 Type XIX, nipple hose: double external. The hose nipple shall be of one-piece construction and shall consist of two external threaded ends on a center section equipped with lugs. The nipple shall be similar to Figure 20 and to Drawing C13218E0473.

3.16 Workmanship. All parts, components, and assemblies of the connections including castings, forgings, and machined surfaces shall be clean and free from sand, dirt, fins, pits, sprues, scale, or other harmful extraneous material. All edges shall be rounded or beveled, with no sharp, ragged, or rough edges.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities, suitable for the performance of the inspection requirements specified herein, unless disapproved by 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.

4.1.1 Component and material inspection. The contractor is responsible for insuring that components and material used are manufactured, examined, and tested in accordance with referenced specifications and standards.

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4.1.2 Acceptability criteria. Connections which conform to all requirements in Sections 3 and 5 of this specification and pass all applicable examinations and tests in Section 4 of this specification will be considered acceptable by the Government.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) Preproduction inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).
- (c) Inspection of packaging (see 4.6).

4.3 Preproduction inspection.

4.3.1 Examination. The preproduction connections shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The preproduction connections shall be tested as specified in 4.5.2. Failure of any test shall be cause for rejection.

4.4 Quality conformance inspection.

4.4.1 Lot. For the purpose of inspection, a lot shall consist of all connections of the same type, class and size offered for delivery at one time.

4.4.2 Sampling. Sampling for examination and tests shall be in accordance with MIL-STD-105.

4.4.3 Examination. Samples selected in accordance with 4.4.2 shall be examined as specified in 4.5.1. AQL shall be 2.5 percent defective for major defects, and 4.0 percent defective for minor defects, Inspection Level II.

4.4.4 Tests. Samples selected in accordance with 4.4.2 shall be tested as specified in 4.5.2. AQL shall be 2.5 percent defective, Inspection Level S-2.

4.5 Inspection procedure.

4.5.1 Examination. The connections shall be examined as specified in 4.4.3 for the applicable characteristics listed in Table I.

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Table I. Examination Schedule

Number	Characteristic	Requirement Paragraph
<u>Major</u>		
101.	Dimensions that affect form, fit, or function.	3.1
102.	Material not as specified.	3.3
103.	Malleable cast iron not as specified.	3.3.1
104.	Cast aluminum not as specified.	3.3.2
105.	Brass bars not as specified.	3.3.3.1
106.	Drop forged brass not as specified.	3.3.3.2
107.	Cast brass not as specified.	3.3.3.3
108.	Rubber gaskets not as specified.	3.4
109.	Threads not as specified.	3.5
110.	Plating not as specified.	3.7, 3.7.1
111.	Type XIII connection not as specified.	3.9
112.	Type XIV, Class A connection not as specified.	3.10.1
113.	Type XIV, B, C, D and E connections not as specified.	3.10.2
114.	Type XV, Class A, reducer hose not as specified.	3.11.1
115.	Type XV, Class B, reducer hose not as specified.	3.11.2
116.	Type XV, Class C, reducer hose not as specified.	3.11.3
117.	Type XV, Class D, reducer hose not as specified.	3.11.4
118.	Type XVI, Class A, adapter, straight, pipe to hose not as specified.	3.12.1
119.	Type XVI, Class B, adapter, straight pipe to hose not as specified.	3.12.2
120.	Type XVI, Class C, adapter, straight pipe to hose not as specified.	3.12.3
121.	Type XVI, Class D, adapter, straight pipe to hose not as specified.	3.12.4
122.	Type XVI, Class E, adapter, straight pipe to hose not as specified.	3.12.5
123.	Type XVI, Class F, adapter, straight pipe to hose not as specified.	3.12.6
124.	Type XVI, Class G, adapter, straight pipe to hose not as specified.	3.12.7
125.	Type XVI, Class H, adapter, straight pipe to hose not as specified.	3.12.8
126.	Type XVII, Class A, coupling hose not as specified.	3.13.1
127.	Type XVII, Class B, coupling hose not as specified.	3.13.2

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Table I. Examination Schedule (Cont'd)

<u>Number</u>	<u>Characteristic</u>	<u>Requirement Paragraph</u>
<u>Major</u>		
128.	Type XVIII, elbow hose not as specified.	3.14
129.	Type XIX, nipple hose not as specified.	3.15
<u>Minor</u>		
201.	Identification marking of the connections not as specified.	3.8
202.	Workmanship not as specified.	3.16

4.5.2 Tests. Connections not approved and listed in the Fire Protection Equipment List of the Underwriters Laboratories, Inc. shall be tested as specified herein in the sequence listed.

4.5.2.1 Operating pressure test. Gated type connections shall be subjected to a pressure of 250 psig and the valve operated. Failure of the valve to operate or any leakage around the valve or valve stem packing shall constitute failure of this test.

4.5.2.2 Hydrostatic-pressure test. Subject the connection to a hydrostatic pressure of 1,000 psig for not less than 1 minute. While under this pressure, examine the connections for leakage and distortion. Any leakage or distortion of the connections shall constitute failure of this test. For the gated or valved type, a leakage rate in excess of 10 drops per minute or any distortion shall constitute failure of this test.

4.6 Inspection of packaging.

4.6.1 Preproduction pack inspection. The preproduction pack shall be examined for the characteristics listed in Table II. Presence of one or more defects shall be cause for rejection.

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4.6.2 Quality conformance inspection of pack.

4.6.2.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.6.2.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.2.3 Examination. Samples selected in accordance with 4.6.2.2 shall be examined for the characteristics listed in Table II. AQL shall be 2.5 percent defective for major defects and 4.0 percent defective for minor defects.

Table II. Examination Schedule

<u>Number</u>	<u>Characteristic</u>	<u>Requirement Paragraph</u>
<u>Major</u>		
130.	Preservation not Level A or Commercial as specified.	5.1
131.	Connections not preserved for Level A as specified.	5.1.1
132.	Connections not preserved for Commercial as specified.	5.1.2
133.	Packing not Level A, Level B, or Commercial as specified.	5.2
134.	Connections not packed for Level A as specified.	5.2.1
135.	Connections not packed for Level B as specified.	5.2.2
136.	Connections not packed for Commercial as specified.	5.2.3
<u>Minor</u>		
203.	Marking for military level of protection not in accordance with MIL-STD-105.	5.3.1
204.	Marking for commercial packaging not as specified.	5.3.2

5. PACKAGING

5.1 Preservation. Preservation shall be Level A or Commercial as specified (see 6.2).

5.1.1 Level A. The connections shall be preserved in accordance with the Level A preservation and packaging requirements of MIL-P-775.

5.1.2 Commercial. The connections shall be preserved in accordance with the Level C preservation and packaging requirements of MIL-P-775.

5.2 Packing. Packing shall be Level A or B or Commercial.

5.2.1 Level A. The connection preserved as specified in 5.1 shall be packed in accordance with the Level A packing requirements of MIL-P-775.

5.2.2 Level B. The connections preserved as specified in 5.1 shall be packed in accordance with the Level B packing requirements of MIL-P-775.

5.2.3 Commercial. The connections preserved as specified in 5.1 shall be packed in accordance with the Level C packing requirements of MIL-P-775.

5.3 Marking.

5.3.1 Military. Marking for military levels of protection shall be in accordance with the requirements specified in MIL-P-775.

5.3.2 Commercial. Marking for commercial packing shall reflect as a minimum. The item name, National Stock Number, quantity, contract number, and appropriate address marking on the shipping container. The marking shall be applied with a waterproof material, shall be legible, and shall provide a definite contrast.

6. NOTES

6.1 Intended use. The connections are intended for use in connecting hose and pipe used in firefighting and water supply equipment.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Types, classes, and sizes required (see 1.2).
- (c) Whether aluminum, brass, or malleable iron connections are required (see 3.1).

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- (d) Time frame required for submission of the preproduction model, and number of models required (see 3.2).
- (e) When the UL List shall be considered as meeting the material requirements (see 3.3).
- (f) Plating not required (see 3.7.1).
- (g) When ends shall be equipped with long handles (see 3.11.1 and 3.11.4).
- (h) Whether Type XVI, Class A adapter shall be other than as specified (see 3.12.1).
- (i) When the Type XVI, Class A adapters shall be rigid one-piece construction without swivel (see 3.12.1).
- (j) Whether Type XVI, Class E adapters shall have threads other than as specified (see 3.12.5).
- (k) When Type XVI, Class E adapters shall be provided with a metal chain and threaded cap (see 3.12.5).
- (l) When Type XVI, Class E adapters shall be a rigid one-piece construction without swivel (see 3.12.5).
- (m) Degree of preservation and packing required (see 5.1).

6.3 Preproduction model. Any changes or deviations of production connections from the approved preproduction model during production will be subject to the approval of the contracting officer. Approval of the preproduction model will not relieve the contractor of his obligation to furnish connections conforming to this specification.

6.4 Figures and drawing illustrations. The figures and drawing illustrations show types of connections which have been found acceptable; however, they are included for illustration only and are not intended to preclude the furnishing of other connections which conform to this specification.

6.5 Discontinued items.

Type XIV, Class C, 5 inch external (NH) by 2-1/2 by 2-1/2 by 2-1/2 inch internal (NH) outlets.

Type XIV Class D 3-1/2 inch internal swivel (NH) by 2-1/2 by 2-1/2 by 2-1/2 inch external (NH)

Type XIV Class E 3-1/2 inch external (NH) by 2-1/2 by 2-1/2 internal swivel (NH)

Type XIV Class E 8 inch external (NH) by 5 by 5 inch internal swivel (NH)

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Type XV Class A 3 inch (NH) by 2-1/2 inch (NH)
 Type XV Class A 4-1/2 inch (NH) by 4 inch (NH)
 Type XV Class C 3-1/2 inch (NH) by 2-1/2 inch (NH)
 Type XV Class C 4-1/2 inch (NH) by 3-1/2 inch (NH)
 Type XVI Class G 3 inch by 3 inch
 Type XVI Class H 3 inch by 3 inch
 Type XVII Class B 2-1/2 inch by 2-1/2 inch
 Type XVII Class C 1-1/2 inch (NH) by 1-1/2 inch (NH)

6.6 Added item.

Type XV Class A 4-1/2 inch swivel (NH) by 6 inch swivel (NH)
 Type XV Class D 6 inch internal (NH) by 4-1/2 inch external (NH)
 Type XVI Class G 3 inch by 2-1/2 inch
 Type XVI Class H 3-inch by 2-1/2 inch
 Type XVII Class A 6-inch (NH) by 6 inch (NH)

6.7 Classification change. Type XVII Class B connections have been discontinued. Type XVII Class C connections have been reclassified as Type XVII Class B.

6.8 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of the specification (see 3.3).

Custodians:
 Army - ME
 Navy - YD
 Air Force - 99

Preparing activity:
 Army - ME

Review activity:
 DLA - CS

Project 4210-0320

User activities:
 Navy - CG, MC, SH



Figure 1. Type XIII

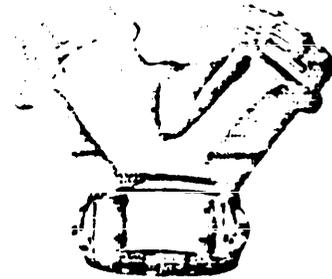


Figure 2. Type XIV, Class A

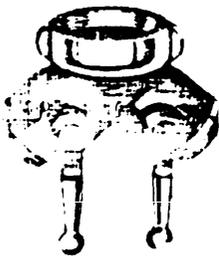


Figure 3. Type XIV, Class B

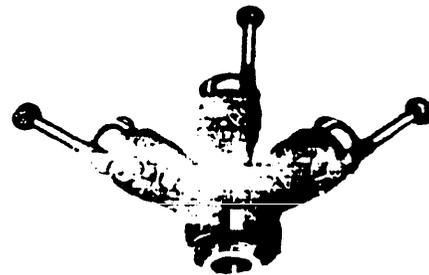


Figure 4. Type XIV, Class C

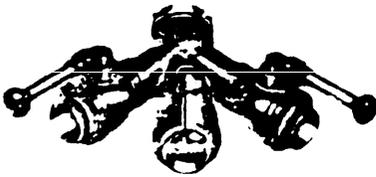


Figure 5. Type XIV, Class D

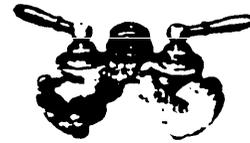


Figure 6. Type XIV, Class E

X-2166

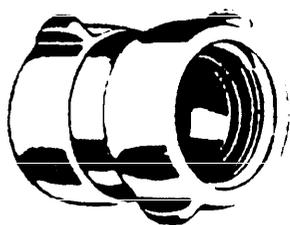


Figure 7. Type XV, Class A

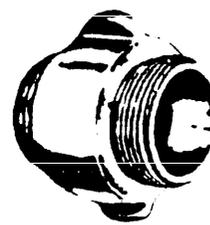


Figure 8. Type XV, Class B



Figure 9. Type XV, Class C
Type XV, Class D
One-Piece Construction

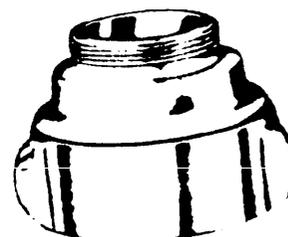


Figure 10. Type XV, Class D, Swivel
Type XVI, Class A

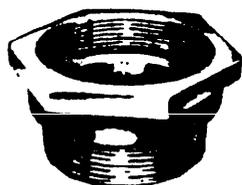


Figure 11. Type XVI, Class B

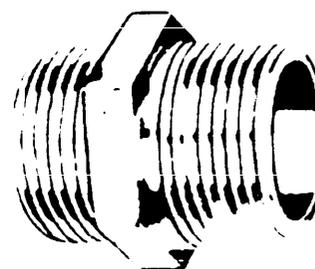


Figure 12. Type XVI, Class C



Figure 13. Type XVI, Class D



Figure 14. Type XVI, Class E



Figure 15. Type XVI, Class F



Figure 16. Type XVI, Class G
Type XVI, Class H
One-Piece Construction

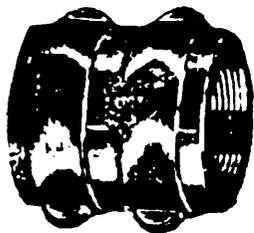


Figure 17. Type XVII, Class A



Figure 18. Type XVII, Class B



Figure 19. Type XVIII

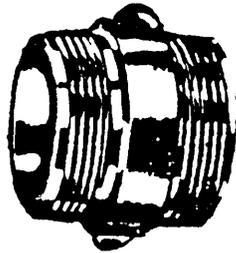


Figure 20. Type XIX

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