

NOTICE OF INACTIVATION
FOR NEW DESIGN

INCH-POUND

MIL-T-52983G

NOTICE 1

25 September 1998

MILITARY SPECIFICATION

TANKS, FABRIC, COLLAPSIBLE:

3,000, 10,000, 20,000, AND 50,000 GALLON, FUEL

This notice should be filed in front of MIL-T-52983G, dated 11 May 1994.

MIL-T-52983G is inactive for new design and is no longer used, except for replacement purposes.

Custodians:

Army - AT

Navy - YD2

Air Force - 99

Preparing Activity:

Army - AT

(Project 5430-0264)

Review Activities:

Navy - MC

Air Force - 82

DLA - CC

AMSC N/A

FSC 5430

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

INCH-POUND

MIL-T-52983F
16 October 1991
SUPERSEDING
MIL-T-52983E
1 November 1989

MILITARY SPECIFICATION

TANKS, FABRIC, COLLAPSIBLE: 3,000, 10,000,
20,000, AND 50,000 GALLON, FUEL

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

1. SCOPE

1.1 Scope. This specification covers fuel tanks, fabric, collapsible: 3,000, 10,000, 20,000, and 50,000 gallon, complete with fittings, berm liner, accessories, and repair items packed in a box.

1.2 Classification. Tanks are of the following capacities as specified (see 6.2):

3,000 - gallon
10,000 - gallon
20,000 - gallon
50,000 - gallon

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research, Development, and Engineering Center, ATTN: STRBE-TSE, Fort Belvoir, VA 22060-5606 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

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SPECIFICATIONS

FEDERAL

- A-A-55057 - Panels, Wood/Wood Based, Construction and Decorative.
- L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin.
- FF-B-561 - Bolt, Lag.
- FF-B-584 - Bolt, Finned Neck, Key Head, Machine, Ribbed Neck, Square Neck, Tee Head.
- FF-N-836 - Nut, Square, Hexagon, Cap, Slotted, Castellated, Clinch, Knurled and Welding.
- FF-W-92 - Washer, Metal, Flat (Plain).
- RR-C-271 - Chains, and Attachments, Welded and Weldless.
- TT-W-572 - Wood Preservative: Water Repellent.
- VV-F-800 - Fuel Oil, Diesel.
- WW-V-35 - Valve, Ball.
- PPP-B-601 - Boxes, Wood, Cleated-Plywood.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-C-795 - Cushioning Material, Flexible, Cellular, Plastic Film for Packaging Applications.
- PPP-C-843 - Cushioning Material, Cellulosic.
- PPP-C-1797 - Cushioning Material, Packaging, Resilient, Low Density, Unicellular, Polypropylene Foam.
- PPP-T-60 - Tape, Packaging, Waterproof.
- PPP-T-97 - Tape, Pressure-Sensitive Adhesive, Filament Reinforced.

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- MIL-P-116 - Preservation, Methods of.
- MIL-C-5541 - Chemical Conversion Coatings on Aluminum and Aluminum Alloys.
- MIL-T-5624 - Turbine Fuel, Aviation, Grades JP-4 and JP-5.
- MIL-A-8625 - Anodic Coatings, for Aluminum and Aluminum Alloys,
- MIL-S-8660 - Silicone Compound, NATO Code Number S-736.
- MIL-T-22085 - Tape, Pressure Sensitive, Adhesive, Preservation and Sealing.
- MIL-B-26195 - Boxes, Wood-Cleated, Skidded, Load-Bearing Base.
- MIL-F-46162 - Fuel, Diesel, Referee Grade.
- MIL-R-52255 - Repair Kit and Repair Kit Components, for Collapsible Fabric Tanks, Drums, and Boats.
- MIL-F-52618 - Fitting, Pipe Aluminum Alloy (Threaded) 150 Pound, General Specification for.
- MIL-F-52618/1 - Fitting, Pipe, Aluminum Alloy (Threaded) 150 Pound 90 Degree Elbows, Tees, Grosses, 45 Degree Elbows and Couplings (Straight Sizes).
- MIL-F-52618/7 - Fitting, Pipe Aluminum Alloy (Threaded) 150 Pound, Square Head and Square Socket Plugs.
- MIL-B-53081 - Berm Liner Assemblies.

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MIL-T-83133 - Turbine Fuel, Aviation, Kerosene Type, Grade JP-8.

STANDARDS

FEDERAL

FED-STD-191 - Textile Test Methods.
 FED-STD-595 - Color.

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
 MIL-STD-129 - Marking for Shipment and Storage.
 MIL-STD-130 - Identification Marking of US Military Property.
 MIL-STD-731 - Quality of Wood Members for Containers and Pallets.
 MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing, With Appropriate Test Methods.
 MS9021 - Packing, Preformed - AMS 7271, O Ring.
 MS27019 - Coupling Assembly, Quick Disconnect, Cam-Locking Type.
 MS27021 - Coupling Half, Quick Disconnect, Cam-Locking Type, Kale, Hose Shank, Type III.
 MS27023 - Coupling Half, Quick Disconnect, Cam-Locking Type, Kale, Flanged, Type IV.
 MS27024 - Coupling Half, Quick Disconnect, Cam-Locking Type, Female, Internal Pipe Thread, Type V.
 MS27025 - Coupling Half, Quick Disconnect, Cam-Locking Type, Female, Hose Shank, Type VI.
 MS27027 - Coupling Half, Quick Disconnect, Cam-Locking Type, Female, Flanged, Type VIII.
 MS27028 - Coupling Half, Quick Disconnect, Cam-Locking Type, Cap, Dust, Type IX.
 MS27029 - Coupling Half, Quick Disconnect, Cam-Locking Type, Plug, Dust, Type X.
 MS27030 - Gasket, Coupling Half, Quick Disconnect, Cam-Locking Type.
 MS29513 - Packing, Preformed, Hydrocarbon Fuel Resistant, "O" Ring.
 MS49000 - Reducer, Male by Female and Female by Male,, Quick Disconnect, Cam-Locking Type, Type XI
 MS51504 - Elbow, Pipe to Tube, 90 deg., Male Pipe End, 37 deg. Flared.
 MS51532 - Cap, Tube, 37 deg. Flared.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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2.1.2 Government drawing. The following Government drawing forms a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWING

ME

13214EB326 - Welding.

(Copies of the drawings required by contractors in connection with specific acquisition functions should be obtained from the USA Belvoir Research, Development, and Engineering Center, ATTN: STRBE-FSH, Fort Belvoir, VA 22060-5606.)

2.2 Non-Government Publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

H35.1 - Alloy and Temper Designation Systems for Aluminum.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 153 - Zinc-Coating (Hot Dip) on Iron and Steel Hardware.
 B 26 - Aluminum-Alloy Sand Castings.
 B 85 - Aluminum-Alloy Die Castings.
 B 108 - Aluminum-Alloy Permanent Mold Castings.
 B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
 B 633 - Zinc on Iron and Steel, Electrodeposited Coatings, of.
 D 381 - Existent Gum in Fuels by Jet Evaporation.
 D 412 - Rubber Properties in Tension.
 D 413 - Rubber Property - Adhesion to Flexible Substrate.
 D 429 - Rubber Property - Adhesion to Rigid Substrate.
 D 471 - Rubber Property - Effect of Liquids.
 D 750 - Rubber Deterioration in Carbon-Arc or Weathering Apparatus RECM.
 D 751 - Testing Coated Fabrics.
 D 1149 - Rubber Deterioration - Surface Ozone Cracking in a Chamber (Flat Specimen).
 D 2000 - Rubber Products in Automotive Applications.
 D 2565 - Operating Xenon Arc - Type (Water-Cooled) Light. Exposure Apparatus With and Without Water for Exposure of Plastics.
 D 3953 - Strapping, Flat Steel and Seals.
 D 4675 - Selection and Use of Flat Strapping Materials.

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

AMERICAN WOOD PRESERVERS' ASSOCIATION (AWPA)

- C1 - All Timber Products - Preservative Treatment by Pressure Process.
- C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Process.
- C9 - Plywood - Preservative Treatment by Pressure Process.

(Application for copies should be addressed to the American Wood-Preservers' Association, P.O. Box 849, Stevensville, MD 21666.)

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC.

- MSS-SP-72 - Ball Valves with Flanged or Butt-Welded Ends for General Service, Standard Practice for.

(Application for copies should be addressed to the Manufacturers Standardization Society of the Valve and Fittings Industry, Inc., 127 Park Street N.E., Vienna, VA 22180)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- J104 - Square and Hex Nuts.
- J105 - Hex Bolts.
- J488 - Plain Washers.
- J489 - Lock Washers.

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 25096.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, (except for related associated detail specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The collapsible fabric tank shall consist of an elastomeric coated fabric tank with attached handles and fittings, repair items, accessories (optional (see 3.12)), and berm liner (optional (see 3.8)) in a box.

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3.2 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3. The first article shall include each type of repair (of those allowed in 3.15 and in accordance with the repair and rework plan (see 3.15.1)) for validation of each repair. The repairs shall be applied to the first article tank prior to destruction. Disposal of destructively tested tank will be the responsibility of the contractor.

3.2.1 Additional first article samples. Unless otherwise specified (see 6.2), additional first article samples shall be provided to U.S. Army Belvoir Research, Development and Engineering Center, ATTN: STRBE-FSH, Ft. Belvoir, VA 22060-5606, within two weeks after commencement of first article testing. Samples shall include all samples required to run tests in table VI plus one square yard (in 6-in. x 6-in. x 0.07 - 0.10 inch slabs or equivalent) of each compound used, plus 2 square yards of the coated fabric. All samples shall be marked with the applicable contract number.

3.3 Sample selection plan. Prior to initial production, the contractor shall have a sample selection plan. The plan shall be in accordance with MIL-STD-105 and be designed for use in the quality conformance testing of section 4 and shall provide the Government a method of selecting seams, bonded fittings, coated fabric and handle samples for destructive tests. The test specimens of seams, bonded fittings, coated fabrics and handles shall be provided in sufficient quantity for testing as specified herein. The sample selection plan shall be made available, upon request, to the contracting officer or Government representative on site of manufacture.

3.4 Process data. Prior to initial production, the contractor shall make available to the Government representatives, on site of manufacturer, a description of materials, documented work instructions, processing and fabricating procedures which will be used by the contractor to assure that each production tank is a duplicate of the first article tank. Change of materials, components, design, procedures, or sources of supply from those initially selected shall be subject to the approval of the contracting officer.

3.5 Materials. Materials shall be as specified herein and as shown on figures 1 through 18. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification. Tanks shall not be made with materials that fail to meet the requirements of tables I through IV; however, conformance with these requirements shall not be construed as justification for failure to meet other performance requirements of this specification.

3.5.1 Material deterioration prevention and control. The tank shall be fabricated from compatible materials or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable operating and storage environments to which the item may be exposed.

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3.5.1.1 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, and shall make information available upon request to the contracting officer or designated representative.

3.5.1.2 Recovered materials. For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the tanks may be newly fabricated from recovered materials to the maximum extent practicable, provided the tank produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the tanks.

3.5.2 Nylon cloth. The nylon cloth of the coated fabric shall be high-tenacity, heat and light resistant. The nylon cloth shall be free from any imperfection affecting strength, coating adhesion, or coating thickness.

3.5.2.1 Weathering resistance. When tested as specified in 4.5.2.9, the nylon cloth shall have a retained breaking strength that is not less than 45 percent of its initial breaking strength warp and fill pounds (lbs) minimum (min.).

3.5.3 Coating compounds. Every compound used for the formulation of elastomeric coatings, tie gums, diffusion barrier (if used), and any other materials applied to the coated fabric shall conform to table I and shall be suitable for use with hydrocarbon fuels conforming to MIL-T-5624, VV-F-800, and JP-8 conforming to MIL-T-83133. The coating compounds shall be resistant to fungus, weathering, ozone, high humidity, and storage service of up to 160 deg. F.

TABLE I. Characteristics of coating compounds. ¹

Test property	Requirements (All tank sizes)	Test paragraph and ASTM test methods
Original properties		
Tensile strength, initial	1500 psi (min)	D 412
Ultimate elongation	300% (min)	D 412
Properties after fuel immersion in test fluid ² at 160 deg. F for 14 Days		D 471 (14.1, 14.2 & 10.1
Tensile strength retained	80% (min)	
Elongation retention	80% (min)	
Volume swell	25% (max)	

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TABLE I. Characteristics of coating compounds. ^{L1J} - continued.

Test property	Requirements (All tank sizes)	Test paragraph and ASTM test methods
Properties after fuel extraction, dried, and then immersed in distilled water at 160 deg. F for the following durations: ^{L3J}		D 471 (14.1, 14.2 & 10.1) & 4.5.2.22
14 days		
Tensile strength retention	75% (min)	
Elongation retention	80% (min)	
Volume swell	10% (max)	
42 days		
Tensile strength retention	70% (min)	
Elongation retention	75% (min)	
Volume swell	10% (max)	
Resistance to light after 1500 hours accelerated weathering at 10% elongation ^{L4J}		D 750 ^{L6J} or D 2565 ^{L7J}
Tensile strength retention	80% (min)	
Fuel contamination: ^{L5J}	.	
Existent gum, unwashed	20 mg/100mL (max)	4.5.2.11
Heptane washed gum	5 mg/100mL (max)	4.5.2.11
Ozone resistance	No cracks Under 7X lens	D 1149

^{L1J} Properties of coating compounds/slabs shall be identical in composition to the coating compounds used on the coated fabric.

^{L2J} Immersion test fluid shall be diesel fuel conforming to MIL-F-46162.

^{L3J} JP-5/JP-8 ST conforming to MIL-T-5624 shall be used as extraction media.

^{L4J} Applicable to all exterior coating compounds. That is, all coating compounds between the nylon cloth and outside of the tank.

^{L5J} Applicable to all interior coating compounds and seam covering materials. That is, coating compounds between the nylon cloth (including any coatings or seam covering tapes) and the inside of the tank.

^{L6J} Alternate Corex D filters in place.

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- L7] ASTM D 2565, Xenon Light, procedure A, inner and outer borosilicate filters; deionized water (20 +/-3 deg. C); cycle: 690 minutes light exposure, 30 minutes light and gray; black panel temperature 63 +/-3 deg. C; relative humidity (45 +/-5 percent).
- L8] Test method A specimen shall be conditioned for 14 days at a temperature of 104 +/-3.6 deg. F (40 +/-2 deg. C) having a partial pressure of ozone of 50 milipascals.

3.5.4 Coated fabric. The elastomeric coated fabric may include a barrier to restrict diffusion. The coated fabric shall be free from blisters, holidays, or pinholes (see 6.8) and shall show no signs of coating delamination. The coated fabric shall withstand the effects of humidity, fungus, high service temperature (160 deg. F), ozone, and weather elements without damage, deterioration, or failure of meeting performance requirements specified herein. The exterior coating of the coated fabric shall approximate color chip 33446 of FED-STD-595. The elastomeric coated fabric shall conform to the requirements of table II.

3.5.5 Fabric for handles and chafing patches. Coated fabric which meets the requirements of table II and the color requirements of this specification may be used for handles and chafing patches. Different color patches may be used for internal chafing patches only.

TABLE II. Characteristics of coated fabric.

Test property	Requirements tank capacity (gallons)				Test paragraph, test method of FED-STD-191 or ASTM test method
	3,000	10,000	20,000	50,000	
Weight (oz/sq yd).	30 minimum/62 maximum				5041
Diffusion rate ^{L1]} .					
Fl oz/sq ft/24 hr, max.	0.12	0.12	0.12	0.12	4.5.2.12
Tear strength, W & F lb., minimum.	30	30	40	40	5134
Breaking strength, W & F, lb/in, min.	400	400	550	550	5102
Puncture resistance lbs., minimum.	200	200	200	200	4.5.2.14/5120
Weathering resistance 1500 hrs exposure & 5% elongation, warp & fill					5804 ^{L3]} , D 2565 ^{L4]} and 5102
Breaking strength Retention, % min.	80	80	80	80	

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TABLE II. Characteristics of coated fabric. - continued.

Test property	Requirements tank capacity (gallons)				Test paragraph, test method of FED-STD-191 or ASTM test method
	3,000	10,000	20,000	50,000	
Low temperature crease resistance ^{L1J} Appearance.	No cracking, peeling or delamination under 7X lens				4.5.2.15
Diffusion rate Fl oz/sq ft/24 hrs, max.	0.12	0.12	0.12	0.12	4.5.2.12
Fungus resistance. Appearance	No cracking, blistering, or delamination of coating				5762 ^{L5J} & 5102
Breaking str, retained warp fill, %, min.	80	80	80	80	
Blocking	Separate within 5 sec.				4.5.2.16
Coating adhesion initial, lb/in, min.	30	30	30	30	4.5.2.17 & 4.5.2.17.1
After fuel immersion ^{L2J} for 14 days at 160 deg. F					D 471
lb/in, min	20	20	20	20	4.5.2.17 & 4.5.2.17.1
After fuel extraction ^{L1J} dried, and immersion in water at 160 deg. F for 14 days, lb/in, min.					D 471, 4.5.2.17, 4.5.2.17.1, & 4.5.2.22
42 days, lb/in, min.	15	15	15	15	

^{L1J} JP-5/JP-8 ST conforming to MIL-T-5624 will be used for diffusion and extraction.

^{L2J} Immersion test fluid shall be diesel fuel conforming to MIL-F-46162.

^{L3J} Alternate Corex D filters in place. Coated fabric specimens shall have exterior coating (outside of tank) facing the carbon arc.

^{L4J} ASTM D 2565, Xenon Light, procedure A, inner and outer borosilicate filters; deionized water (20 +/-3 deg. C); 690 minutes light exposure, 30 minutes light and gray; black panel temperature 63 +/-3 deg. C; relative humidity (45 +/-5 percent). Coated fabric specimens shall have exterior coating (outside of tank) facing the light.

^{L5J} Except that the specimens shall be prepared in accordance with FED-STD-191, method 5102 and the number of specimens shall be reduced from 40 to 5 warp and 5 fill. Leaching of specimens is unnecessary. The specimens shall be exposed to the soil for eight weeks.

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3.6. Tank construction. The tank shall be fabricated from single ply coated fabric is specified herein. The configuration and dimensions of the tank and the location of the fittings and handles shall be as shown in figures 1 through 4. For both tank interior and exterior, all coated fabric edges (seams, chafing patches, fabric/flanges of fittings) shall be covered to a thickness of not less than 10 mils, with coated fabric or coating compound used to fabricate the tank. Coated fabric panels may be spliced together to make up the length required for a tank panel; however, all splices in adjacent panels shall not coincide.

3.6.1 Seams. All tank seams including end closures, handle patches, and fabric flanges of fittings shall conform to the requirements of table III. Seams between adjacent panels of coated fabric shall be constructed as to prevent wicking through the nylon fabric.

TABLE III. Characteristics of seams.

Test property	Requirements tank capacity (gallons)				Test paragraph, test method of FED-STD-191 or ASTM test method
	3,000	10,000	20,000	50,000	
Breaking strength, initial, lb/in, min.	400	400	550	550	D 751, meth B 4.5.2.18
After immersion in fuel ^{L2} at 160 deg. F for 14 days, lb/in, min.	290	290	400	400	D 751, meth B, 4.5.2.18 & D 471 (15.2)
After fuel extraction ^{L3} dried, and immersion in distilled water at 160 deg. F for					4.5.2.22, 4.5.2.18, D 471 (15.2), D 751 meth B
14 days, lb/in, min.	325	325	450	450	
42 days, lb/in,	290	290	400	400	
Dead load shear resistance under 50 lb/in stress at 180 deg. F for 8 hours	0.125 in slippage (max)				4.5.2.19
Seam peel adhesion initial, lb/in, min.	30	30	30	30	D 413 machine method
After fuel immersion ^{L2} for 14 days at 160 deg. F					D 471 (15.2),
lb/in, min.	20	20	20	20	D 413 machine method

TABLE III. Characteristics of seams - continued.

Test property	Requirements tank capacity (gallons)				Test paragraph, test method of FED-STD-191 or ASTM test method
	3,000	10,000	20,000	50,000	
After fuel extraction dried, and immersion in distilled water at 160 deg. F for following durations:					D 413 machine meth, 4.5.2.18, D 471 (15.2), 4.5.2.22
14 days, lb/in, min.	20	20	20	20	
42 days, lb/in, min.	15	15	15	15	

L1] All specimens must break in the coated fabric. Failure of any specimen in a seam area shall constitute failure of this test.

L2] Immersion test fluid shall be diesel fuel conforming to MIL-F-46162.

L3] JP-5/JP-8 ST conforming to MIL-T-5624 will be used as extraction media.

3.6.2 Handles. The handles shall be 1 to 1-1/2-inch wide U-shaped straps fabricated from nylon webbing or cloth and fastened to a coated fabric patch similar to the tank body material. The two ends of each strap shall be attached to each patch at points 12 inches, 1 inch, apart. The length of the strap between the two points of attachment shall be 16 inches, +/-1 inch. The patch and strap assembly shall be bonded to the bottom of the tank just below the peripheral fold line. Handles shall be located a minimum of 1 inch away from the seams exclusive of end closure seam. The bonds between each handle patch assembly and the tank fabric shall be capable of withstanding perpendicular loads of 1,500 pounds without damage to the tank. They shall be the same color as the tank. The number of handles and the position of each handle shall be as shown in figures 1 through 4, as applicable. Handle assembly color shall approximate tan 686.

3.6.3 Chafing patches. The interior and exterior of the tank, opposite the location of each fitting shall be provided with bonded coated fabric chafing patches as shown in figures 1 through 4. The chafing patches shall be the same coated fabric used to fabricate the tank, or shall be of similar coated fabric. Chafing patch material shall not have deleterious effect on tank material. Chafing patch color shall approximate color number tan 686.

3.6.4 Fittings.

3.6.4.1 Fitting type. The access door fitting and the vent drain flange attachment shall be bonded to the coated fabric flange and shall be as specified herein and shall conform to the requirements of table IV. Fittings shall be compression type and shall be as shown in figures 7 and 12. The oval closure plate shall be as shown in figures 8 and 9.

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TABLE IV. Characteristics of bonded fittings.

Test property	Requirements tank capacity (gallons)				Test paragraph, test method of FED-STD-191 or ASTM test method
	3,000	10,000	20,000	50,000	
Aluminum to coated fabric bond, breaking strength, initial, lb/in, min.	400	400	550	550	4.5.2.20 & 4.5.2.20.1
After immersion in fuel at 160 deg. F for 14 days, lb/in, min.	290	290	400	400	D 471 (15.2) 4.5.2.20 & 4.5.2.20.2
After fuel extraction ^{L2J} dried, and immersion in distilled water at 160 deg. F for 14 days, lb/in, min.	325	325	450	450	D 471 (15.2) 4.5.2.20, 4.5.2.20.2 & 4.5.2.22
42 days, lb/in, min.	290	290	400	400	
Dead load shear resistance under 50 lb/in stress at 180 deg. F for 8 hours	0.125 in slippage (mm)				4.5.2.19 & 4.5.2.20.3
Peel adhesion of aluminum strip to coated fabric initial, lb/in, min.	30	30	30	30	D 429, method B and 4.5.2.21
After fuel immersion for 14 days at 160 deg. F lb/in, min.	20	20	20	20	D 471 (15.2), D 429, method B 4.5.2.21, & 4.5.2.21.1
After fuel extraction ^{L2J} , dried, and immersion in distilled water at 160 deg. F for following durations:					D 471 (15.2). D 429, method B, 4.5.2.21, & 4.5.2.22
14 days, lb/in, min.	20	20	20	20	
42 days, lb/in, min.	15	15	15	15	

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↳ Immersion test fluid shall be diesel fuel conforming to MIL-F-46162.

↳ JP-5/JP-8 ST conforming to MIL-T-5624 will be used as extraction media.

3.6.4.2 Aluminum alloys of tank fittings. Alloy and temper designations of wrought aluminum shall be in accordance with ANSI H35.1. Cast aluminum alloy shall conform to ASTM B 85, UNS A14130, UNS A13600, or UNS A05180 for die castings; ASTM B 108, UNS A03560-T6 for permanent and semipermanent mold castings, or ASTM B 26, UNS A13560-T6 or UNS A07120-T5 for sand castings.

3.6.4.3 Protective coatings. Aluminum alloy tank fittings shall have protective coatings as specified on figures 5 through 12, 15 and 16. Minimum coating thickness for castings shall be 0.0004 inch, and for wrought aluminum alloy fittings, it shall be 0.0007 inch. All aluminum parts exposed to view on the outside of the tank shall have a dyed coating approximately the tank exterior color and shall be non-reflective.

3.7 Tank Performance. The tank and components shall withstand folded storage for 20 years at ambient temperatures from +160 to -30 deg. F without damage or leakage when subsequently filled with fuel. The tank and components shall be suitable for operational use for 5 years at ambient temperatures from +125 to -25 deg. F. The tank shall not be damaged during service life when exposed to fungi growth or relative humidity up to 100 percent such as is encountered in tropical climates. The tank shall be suitable for use in continuous contact with rainwater, ground water, or water associated with fuels stored in the tank. There shall be no evidence of leakage or seepage when the tank is filled for 120 days to its rated capacity of diesel fuel or jet fuel. The tank shall have a 10 percent minimum over-capacity of fuel without rupture or evidence of weakened areas and without leakage or seepage of fuel. The tank shall be capable of withstanding an internal air pressure of 0.50 pound per square inch (psi) without evidence of leakage. The filler assembly elbow shall withstand a hydrostatic pressure of not less than 15 psi without leakage.

3.8 Berm liner. Unless otherwise specified (see 6.2), a coated fabric berm liner shall be furnished with each tank. The berm liner shall conform to the applicable sizes shown in 1.2 of MIL-B-53081 size 1, 2, 3, or 4. When the berm liner is to be used with a tank made from urethane coated fabric, the coating must be compatible with the urethane and will not contain materials which could react with water to form acid by-products which would accelerate the deterioration of urethane by hydrolysis. The exterior coatings of the coated cloth shall approximate the color specified in 3.5.4.

3.9 Maintainability. The tank shall exhibit no degradation in performance after maintenance operations using the repair parts furnished with the tank.

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3.10 Repair items. The following repair items shall be furnished with each tank:

- a. 3,000, 10,000, 20,000, and 50,000 gallon tanks:

<u>Item</u>	<u>Quantity</u>
Repair kit and repair kit components conforming to MIL-R-52255, type III	1 ea.
O-Ring MS9021-383	3 ea.
O-Ring MS29513-250	1 ea.
Gasket, quick disconnect coupling MS27030-6	2 ea.
Gasket, quick disconnect coupling MS27030-9	2 ea.
Casket, 4-inch flange, figure 14	2 ea.

- b. 3,000 gallon tank (in addition to 3.10a):

<u>Item</u>	<u>Quantity</u>
Gasket, quick disconnect coupling MS27030-8	2 ea.
Gasket, 3-inch flange, nitrile rubber, size 3-inch, for valve	2 ea.
Gasket, adapter flange, figure 18	1 ea.

3.11 Fitting assemblies.

3.11.1 3,000 gallon tank. Each tank shall be furnished with the following fitting assemblies located as shown in figure 1. The filler discharge assembly shall be as shown in figure 5. The vent fitting assembly shall be as shown in figure 11. The vent and drain fitting shall be as shown in figure 12. The flange adapter shall be shown in figure 17. The pressure relief cap of the vent assembly shall open when subjected to an internal pressure of 3 inches of water. The design of all cam-locking type, quick-disconnect couplings shall conform to MS27019. The maximum torque for all fitting bolts shall be either stamped onto the fitting flange plates or stenciled on the tank fabric adjacent to the respective fittings. Keeper chains as required for the fittings shall conform to RR-C-271, type II, class 3, size 0.035-inch, bronze. Keeper chains, when required, shall be attached to adjacent fittings such that the relevant end cap or dust plug may be removed without detaching the keeper chain at either of its ends. All bolts shall be fully torqued.

3.11.2 10,000, 20,000, and 50,000 gallon tanks. Each tank shall be furnished with the following fitting assemblies located as shown in figures 2, 3, and 4. The filler discharge assembly shall be as shown in figure 6. The drain fitting assembly shall be as shown in figure 16. The vent fitting assembly shall be as shown in figure 11. The pressure relief cap of the vent assembly shall be open when subjected to an internal pressure of 3 inches of water. The design of all cam-locking type, quick-disconnect couplings shall conform to MS27019. The maximum torque for all fitting bolts shall be either

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stamped onto the fitting flange plates or stenciled on the tank fabric adjacent to the respective fittings. Keeper chains as required for the fittings shall conform to RR-C-271, type II, class 3, size 0.035 inch, bronze. Keeper chains, when required, shall be attached to adjacent fittings such that the relevant end cap or dust plug may be removed without detaching the keeper chain at either of its ends. All bolts shall be fully torqued.

3.12 Accessories.

3.12.1 3,000 gallon tank. Unless otherwise specified (see 6.2), each tank shall be provided with the following accessories:

<u>Item</u>	<u>Conforming to</u>	<u>Quantity</u>
Hose assembly (Drain)		1 ea.
Construction - tube:	Black, smooth nitrile rubber for 50% aromatics.	
Reinforcement:	Spiraled high tensile tire cords and steel helix wire.	
Length:	8 ft.	
Cover:	Smooth, black, neoprene rubber, oil and ozone resistant.	
Working pressure:	150 psi maximum.	
Internal diameter:	2" I.D. minimum.	
Application:	For tank truck and tank car transfer of gasoline, oil, and other petroleum base products.	
Temp. range:	-40 deg. F to 200 deg. F.	
Hose fittings:	Hose shall have male fitting and size 2-inch NPT threaded and banded shanks on both ends.	
Hose assembly (Filler/Discharge)		1 ea.
Construction - tube:	Black, smooth nitrile rubber for 50% aromatics.	
Reinforcement:	Spiraled high tensile tire cords and steel helix wire.	
Cover:	Smooth, tan, neoprene rubber, oil and ozone resistant.	
Working pressure:	150 psi maximum.	
Internal diameter:	3" I.D. minimum.	
Length:	4 ft.	
Application:	For tank truck and tank car transfer of gasoline, oil, and other petroleum base products.	
Temp. range:	-40 deg. F to 200 deg. F.	

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<u>Item</u>	<u>Conforming to</u>	<u>Quantity</u>
Hose fittings:	The hose shall have one female cam-lock fitting in accordance with MS27025-15 on one end and one male cam-lock fitting in accordance with MS27021-15 on the other end.	
Reducer (4-inch to 3-inch)	MS49000-1	1 ea.
Ball Valve (Drain)	WW-V-35, composition CS, style 1, end connection threaded, class 125, size 2.	1 ea.
Ball Valve (Filler/Discharge)	MSS-SP-72, size 3, carbon steel, flanged. Flanged ends shall permit the ball valve to be attached to MS27023-15 and MS27027-15.	1 ea.
Gasket	3-inch flange, nitrile rubber	2 ea.
Coupling half	MS27023-15	1 ea.
Coupling half	MS27027-15	1 ea.
Dust cap	MS27028-15	1 ea.
Dust plug	MS27029-15	1 ea.
Bolt, hex	SAE J105, 0.375-inch, x 1.50 L	16 ea.
Washer, plain	SAE J488, 0.375-inch	16 ea.
Washer, lock, helical	SAE J489, 0.375-inch	16 ea.
Nut, hex, machine, screw	SAE J104, 0.375-inch	16 ea.
Pipe plug (Drain)	M52618/7PO9XC MIL-F-52618/7, size 2	1 ea.

The 8-foot length hose assembly shall be attached to the 2-inch ball valve. The pipe plug shall be attached to the 2-inch ball valve. The two 3-inch couplings with two gaskets shall be attached to the 3-inch ball valve. The dust caps and dust plug shall be attached to the 3-inch valve assembly, All rubber hoses and gaskets shall be no more than 12 months old on date of acceptance by the Government.

3.12.2 10,000, 20,000, and 50,000 gallon tanks. Unless otherwise specified (see 6.2), each tank shall be provided with the following accessories:

<u>Item</u>	<u>Conforming to</u>	<u>Quantity</u>
Hose assembly (Drain)		1 ea.
Construction - tube:	Black, smooth nitrile rubber for 50% aromatics.	
Reinforcement:	Spiraled high tensile tire cords and steel helix wire.	
Cover:	Smooth, black, neoprene rubber, oil and ozone resistant.	
Working pressure:	150 psi maximum.	

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<u>Item</u>	<u>Conforming to</u>	<u>Quantity</u>
Internal diameter:	2" I.D. minimum	
Length:	8 ft.	
Application:	For tank truck and tank car transfer of gasoline, oil, and other petroleum base products.	
Temp. range:	-40 deg. F to 200 deg. F.	
Hose fittings:	Hose shall have male fittings, size 2-inch NPT threaded and banded shanks on both ends.	
Hose assembly (Filler/Discharge)		2 ea.
Construction - tube	Smooth nitrile rubber for 50% aromatics.	
Reinforcement:	Spiraled high tensile tire cords and steel helix wire.	
Cover:	Smooth, tan, neoprene rubber, oil and ozone resistant.	
Working pressure:	150 psi maximum.	
Internal diameter:	4" I.D. minimum.	
Length:	10 ft.	
Application:	For tank truck and tank car transfer of gasoline, oil, and other petroleum base products.	
Temp. range:	-40 deg. F to 200 deg. F.	
Hose fittings:	The hose shall have one female cam-lock fitting in accordance with MS27025-17 on one end and one male cam-lock fitting in accordance with MS27021-17 on the other.	
Ball valve (Drain)	WW-V-35, composition CS, style I, end connection threaded, class 125, size 2.	1 ea.
Ball valve (Filler/Discharge)	MSS-SP-72, size 4, carbon steel, flanged. Flanged ends shall permit the ball valve to be attached to MS27023-17 and MS27027-17.	1 ea.
Gasket	4-inch flange, nitrile rubber	2 ea.
Coupling half	MS27023-17	1 ea.
Coupling half	MS27027-17	1 ea.
Dust cap	MS27028-17	1 ea.
Dust plug	MS27029-17	1 ea.
Bolt, hex	SAE J105, 0.375-inch, x 1.50 L	16 ea.
Washer, plain	SAE J488, 0.375-inch	16 ea.
Washer, lock, helical	SAE J489, 0.375-inch	16 ea.
Nut, hex, machine screw	SAE J104, 0.375-inch	16 ea.

The 8-foot length hose assembly shall be attached to the 2-inch ball valve.
The pipe plug shall be attached to the 2-inch ball valve. The two 4-inch

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couplings with two gaskets shall be attached to the 4-inch ball valve. The dust caps and dust plug shall be attached to the 4-inch valve assembly. All rubber hoses and gaskets shall be no more than 12 months old on date of acceptance by the Government.

3.13 Identification marking. The tank shall be identified in accordance with MIL-STD-130 by means of an identification label. The label shall be made of coating compound as specified in 3.5.3 or coated fabric as specified in 3.5.4 and shall be bonded to the tank; alternatively the identification marking label may be stencilled onto the body of the tank. Lettering shall be black. The following information shall be molded, either recessed or in relief, using 0.50-inch (minimum) letters, on the tank identification label:

TANK, FABRIC, COLLAPSIBLE:

(Specify) GALLONS, FUEL

NSN: (Specify)

MFR: (Mfr name and location of plant)

SERIAL NO. (Specify)

MFG DATE: (Specify month (3 letters) and year)

WEIGHT EMPTY: (Specify approximate number of pounds)

CONTRACT OR ORDER NO.: (Specify)

LOT: (Specify)

(Part or Identifying Number (PIN) specified as in 6.5)

FIVE YEAR USE LIFE/TWENTY YEAR STORAGE LIFE

3.13.1 Tank caution label. The tank shall have stencilled or bonded near each inlet a caution label that will withstand weathering. If bonded, the label shall be made of coating compound or coated fabric as specified in 3.5.3 or 3.5.4 and the color shall be tan 686. The following warning shall be in black letters of the height indicated: (Letters shall be 0.75 inch, except as noted below.)

CAUTION (two inch-letters)

DO NOT OVERFILL (one-inch letters)

OVERFILLING WILL RESULT IN PERMANENT
DAMAGE AND FAILURE OF THE TANK

MAXIMUM CAPACITY: (specify) GALLONS

MAXIMUM TANK HEIGHT:

(specify) FEET (specify) INCHES

(specify) METERS

NOT RECOMMENDED FOR LONG TERM

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3.13.2 Valve labeling. All manually operated valves shall be provided with double-ended arrows showing direction of valve control operation, labeled at each end to show the functional result (i.e. open, close, etc.)

3.14 Workmanship. Workmanship shall be the highest quality and shall permit no defects adversely affecting the strength or serviceability of the finished tank. The fabric-reinforced flange-type fittings shall contain no gum voids, cracks, or tears that could adversely affect the strength of the assembly. All metal parts shall be clean and free of sand, dirt, scale, and flux. Surfaces shall be smooth with edges rounded or beveled. The inside and outside of the tank shall be clean and free of foreign materials (excluding anti-blocking talc). Any necessary repair or rework shall restore the reworked area to its full strength and shall meet all applicable requirements of this specification. The cemented surfaces of all spliced areas, fitting flanges, and patch-type repairs shall effect a bond that will result in strength of the cemented area not less than the strength of adjacent tank fabric.

3.15 Repair and rework of collapsible fabric tanks. Any repair or rework of any tank shall be accomplished before inspection (quality conformance inspection or inspection of packaging, as applicable) with the exception of air leakage testing. Repair of seams shall be limited such that total repairs do not exceed five percent of total seam length in the tank. Defects subject to repair (other than those on seams) shall be limited to six inches in diameter, six inches in length, and six inches in width as applicable. The six inch criteria shall be the maximum dimension of the affected condition. Repair and rework procedures shall be in accordance with the repair and rework plan, and inspected in accordance with 4.5.

3.15.1 Repair and rework plan. The contractor shall have a repair and rework plan. The plan shall include a specific description of methods and procedures for repairing and reworking an anomaly which might occur during production of the tank. The plan shall include documented work instructions which shall be used by the contractor to ensure that repairs and reworked areas have structural integrity equal to or greater than that of panels and seams, as applicable, that have not been repaired or reworked. No part of the plan shall conflict with or take precedence over the requirements of this specification. The plan shall be made available, upon request, to the contracting officer or Government representative on site of manufacturer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, 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 ensure supplies and services conform to prescribed requirements.

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4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The Inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Process inspection. Inspection shall be accomplished by the contractor to assure compliance with the documented work instructions covering processing and fabricating procedures. Any process or fabricating procedure not in accordance with the contractor's procedure used in manufacture shall be cause to withhold acceptance of tanks determined to have been manufactured using the unapproved process or fabricating procedure.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection comparison (see 4.6).
- d. Inspection of packaging (see 4.7).

4.3 First article inspection. Unless otherwise specified, the first article inspection will be performed by the contractor. Acceptance of the first article tanks shall not exclude the remaining tanks from meeting all the requirements of this specification. In addition to the performance of first article inspections, the Government reserves the right to perform any and all inspections contained in this specification to assure compliance. Failure to meet any requirement of this specification shall constitute failure of first article inspection. When specified (see 6.2), additional first article samples shall be sent to Ft. Belvoir for Government testing.

4.3.1 Examination. The first article tank shall be examined as specified in table V. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The first article tank shall be subjected to tests marked "X" in column 1 of table VI. Failure of any test shall be cause for rejection.

4.4 Quality conformance inspection.

4.4.1 Sampling for destructive test. Selection of samples for destructive tests shall be in accordance with the sample selection plan (see 3.3). The samples used for destructive testing shall remain the property of the

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contractor. Continuous successful completion of 100 tanks (see 4.4.2) may be cause for reducing the frequency of testing, subject to approval of the contracting officer. Any reduction in frequency will cause a corresponding increase in the represented lot size. Rejection of any lot (see 4.4.2) during the reduced selection frequency will require a return to the original frequency.

4.4.2 Destructive tests. Samples selected in accordance with 4.4.1 shall be subjected to the tests marked "X" in column 3 of table VI. Bonded fittings, material, and sell test samples shall be identical to those on a completed production tank. Failure of any test shall be cause for rejection of a represented lot of tanks.

4.4.3 Complete tank. Each complete tank assembly shall be examined as specified in table V and subjected to the test marked "X" in column 2 of table VI. Any nonconformance revealed by the examination or failure of the test shall be cause for rejection of the tank.

4.5 Inspection procedure.

4.5.1 Examination.

TABLE V. Examination schedule.

Number	Examination description	Requirement paragraph
101.	Sample selection plan not available.	3.3
102.	Process data not available.	3.4
103.	Changed process data not approved by the contracting officer.	3.4
104.	Materials not as specified.	3.5
105.	Materials are not resistant to deterioration or treated to be resistant to corrosion and deterioration for the applicable storage and operating environments.	3.5.1
106.	Contractor does not have documentation available for identification of material, material finishes or treatment.	3.5.1.1
107.	Used, rebuilt, or remanufactured components, pieces, or parts incorporated in the tanks.	3.5.1.2
108.	Barrier film loose or evidence of coating delamination.	3.5.4
109.	Blisters, holidays, or pinholes in coated fabric.	3.5.4
110.	Exterior color of tank not as specified.	3.5.4
111.	Dimensions not as specified.	3.6
112.	Edges of coated fabric not covered as specified.	3.6
113.	Splices and seams coincident or seams coincident with tank fittings.	3.6
114.	Panel splices not as specified.	3.6
115.	Handles, chafing patches, or fittings not located as specified.	3.6.2, 3.6.3, 3.6.4,

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TABLE V. Examination schedule - continued.

Number	Examination description	Requirement paragraph
116.	Fittings not as specified.	3.12.1. 3.12.2
117.	Exterior color of hose not as specified.	3.12.2
118.	Finish of fittings not as specified.	3.6.4.3
119.	Berm liner not as specified.	3.8
120.	Repair items missing or not as specified.	3.10
121.	Keeper chains not as specified.	3.11
122.	Maximum torque for bolts not listed on tank.	3.11
123.	Accessories not as specified.	3.12
124.	Identification label not as specified.	3.13
125.	O-rings not lubricated as specified.	Figures 5, 6, 11 and 15
126.	Identification marking missing, incomplete, or illegible.	3.13
127.	Tank caution label missing or not as specified.	3.13.1
128.	Workmanship not as specified.	3.14
129.	Extraneous material inside tank.	3.14
130.	Repair and rework plan not available.	3.15.1
131.	Repair and rework, as applicable, not as specified in the repair and rework plan.	3.10, 3.15.1

4.5.2 Tests.

TABLE VI. Test schedule.

First article	Each complete tank	Destructive test	Test	Test paragraph	Requirement paragraph
1	2	3	4	5	6
			Tank and accessories ^{L1}		
x	x	-	Air-leakage.	4.5.2.2	3.7
x	-	x	Vent fitting assembly.	4.5.2.1	3.11
x	-	-	Hydrostatic.	4.5.2.3	3.7
x	-	-	Low temperature.	4.5.2.4	3.7
x	-	-	High temperature.	4.5.2.5	3.7
x	-	-	Fuel storage.	4.5.2.6	3.7
x	-	-	Overload.	4.5.2.7	3.7
x	-	-	Internal inspection.	4.5.2.7.1	3.7
x	-	x	Handle pull test.	4.5.2.8	3.6.2
x	-	x	Repair/rework ^{L2}	4.5.2.23	3.15

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TABLE VI. Test schedule - continued.

First article	Each complete tank	Destructive test	Test	Test paragraph	Requirement paragraph
1	2	3	4	5	6
x	-	-	Nylon cloth Weathering resistance.	4.5.2.9	3.5.2.1
x	-	x	Coating compounds Tensile strength (orig)	4.5.2.10	3.5.3, table I
x	-	x	Ultimate elongation (orig)	4.5.2.10	3.5.3, table I
			Tensile strength retained after 14 day fuel immersion.	4.5.2.10	3.5.3, table I
x	-	x	Elongation retention after 14 day fuel immersion.	4.5.2.10	3.5.3, table I
x	-	x	Volume swell after 14 day fuel immersion.	4.5.2.10	3.5.3, table I
x	-	x	Properties after fuel extraction, dried, and then immersed in water for: 14 Days o Tensile strength retention o Elongation retention o Volume swell 42 Days o Tensile strength retention o Elongation retention o Volume swell	4.5.2.10	3.5.3, table I
x	-	-	Resistance to light.	4.5.2.10	3.5.3, table I
x	-	-	Existent gum.	4.5.2.11	3.5.3, table I
x	-	-	Heptane washed gum.	4.5.2.11	3.5.3, table I
x	-	-	Resistance to ozone.	4.5.2.10	3.5.3, table I
			Coated fabric		
x	-	x	Diffusion rate.	4.5.2.12	3.5.4, table II
x	-	x	Weight.	4.5.2.13	3.5.4, table II
x	-	x	Tearing strength.	4.5.2.13	3.5.4, table II
x	-	x	Breaking strength.	4.5.2.13	3.5.4, table II
x	-	-	Weathering resistance.	4.5.2.13	3.5.4, table II
x	-	-	Fungus resistance.	4.5.2.13	3.5.4, table II
x	-	x	Puncture resistance.	4.5.2.14	3.5.4, table II

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TABLE VI. Test schedule - continued.

First article	Each complete tank	Destructive test	Test	Test paragraph	Requirement paragraph
1	2	3	4	5	6
x	-	x	Low temperature crease resistance.	4.5.2.15	3.5.4, table II
x	-	x	Blocking.	4.5.2.16	3.5.4, table II
x	-	x	Coating adhesion (initial).	4.5.2.17.1	3.5.4, table II
x	-	x	Coating adhesion after 14 day fuel/water immersion.	4.5.2.17.1	3.5.4, table II
x	-	x	Coating adhesion after fuel extraction, dried, & immersed in water for:	4.5.2.17	3.5.4, table II
x	-	x	14 Days	4.5.2.22	3.5.4, table II
x	-	x	42 Days	4.5.2.22	3.5.4, table II
			Seams		
x	-	x	Breaking strength (initial).	4.5.2.18	3.6.1, table III
x	-	x	Breaking strength after 14 day fuel immersion.	4.5.2.18	3.6.1, table III
x	-	x	Bring strength after fuel extraction and immersed in water for:	4.5.2.22	3.6.1, table III
x	-	x	14 Days		
x	-	x	42 Days		
x	-	x	Dead load shear resistance.	4.5.2.19	3.6.1, table III
x	-	x	Peel adhesion (initial).	4.5.2.18	3.6.1, table III
x	-	x	Peel adhesion after 14 day fuel immersion.	4.5.2.18	3.6.1, table III
x	-	x	After fuel extraction, dried, immersed in water for:	4.5.2.22	3.6.1, table III
x	-	x	14 Days		
x	-	x	42 Days		
			Bonded fittings		
x	-	x	Bond strength (initial)	4.5.2.20	3.6.4.1, table IV
				and 4.5.2.20.1	
			Bond strength after 14 day fuel immersion.	4.5.2.20	3.6.4.1, table IV
				and 4.5.2.20.2	

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TABLE VI. Test schedule - continued.

First article	Each complete tank	Destructive test	Test	Test paragraph	Requirement paragraph
1	2	3	4	5	6
x	-	x	Bond strength after fuel extraction, dried, and immersed in water for:	4.5.2.21	3.6.4.1, table IV
x	-	x	14 Days		
x	-	x	42 Days		
x	-	x	Dead load shear resistance.	4.5.2.20 4.5.2.20.3	3.6.4.1, table IV
x	-	x	Peel adhesion of aluminum strip and (initial).	4.5.2.21 4.5.2.21.1	3.6.4.1, table IV
x	-	x	Peel adhesion after 14 day fuel immersion.	4.5.2.21 4.5.2.21.1	3.6.4.1, table IV
x	-	x	Peel adhesion after fuel extraction, dried, and immersed in water for:	4.5.2.21	3.6.4.1, table IV
x	-	x	14 Days		
x	-	x	42 Days		

↳ The tank assembly shall be tested in the order listed, starting with the air leakage test.

↳ For destructive test, the rework must be done first.

4.5.2.1 Vent assembly. Subject the vent assembly to an internal pressure of 3 inches of water. Inability of the pressure relief cap to open at this pressure shall constitute failure of this test.

4.5.2.2 Air-leakage. Pressurize each tank to a 0.50 psi, +/-5 percent, internal air pressure and allow to stand for 30 minutes. At the end of this period, adjust the internal air pressure to 0.50 psi, +/-5 percent. Then using a soap and water solution examine all the tank fabric, fittings, and external seams for leakage. Any evidence of air leakage shall constitute failure of this test.

4.5.2.3 Hydrostatic. Subject the elbow filler assembly to a hydrostatic pressure of 15 psi for a period of not less than 10 seconds. The test fluid shall be water. Any evidence of leakage of the assembly shall constitute failure of this test.

4.5.2.4 Low temperature. The tank shall be folded or rolled to a size suitable for placing in the chest or shipping container as specified in

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5.3.1.2, then placed in a low temperature environment of -30 ± 2 deg. F, for a period of 24 hours. The environmental temperature shall then be increased to -25 ± 4 deg. F -0 deg. F, for an additional 24 hours. At the end of this period while still at -25 deg. F, the tank shall be slowly unfolded in not less than 15 minutes nor more than 30 minutes. Any flaking, cracking, or separation of the coated fabric or leakage when filled to the rated capacity with water for 6 hours shall constitute failure of this test.

4.5.2.5 High temperature. The tank shall be folded or rolled to a size suitable for placing in the chest or shipping container as specified in 5.3.1.2; then placed in a high temperature environment of 160 ± 5 deg. F, for a period of 24 hours. At the end of this time, while still at 160 ± 5 deg. F, the tank shall be slowly unfolded in not less than 15 minutes nor more than 30 minutes. Any flaking, cracking, delamination, or separation of the coated fabric shall constitute failure of this test.

4.5.2.6 Fuel store. Fill the tank outdoors without any environmental protective covering with its rated capacity of diesel fuel (VV-F-800) or JP-8 as specified (see 6.2) and allow to stand for 60 days, $+2 -0$ days. During the test and at the end of this period, examine the tank for seepage and leakage. Immediately after the tank is emptied, the tank bottom shall be examined for leakage and seepage. Any evidence of leakage or seepage shall constitute failure of this test.

4.5.2.7 Tank overload. In preparation for the overload tests, the tank will be emptied of the fuel for the storage test above and allowed to lie empty outdoors for 5 days, 6 hours without any environmental protective covering. The tank shall then be filled to its rated capacity $+10$ percent, -0 percent, of diesel fuel (VV-F-800) or JP-8 as specified (see 6.2) and allowed to stand for 4 hours in a dry location. The tank shall be located on a non-absorbent berm liner during this interval. Immediately after the tank is emptied, the tank bottom and berm liner shall be examined for leakage. Any evidence of rupture, weakened areas, leakage, or seepage shall constitute failure of this test.

4.5.2.7.1 Internal inspection. The tank shall be inspected internally after the overload test of 4.5.2.7. Any evidence of weakened areas, coating, or barrier delamination shall constitute failure of the overload test.

4.5.2.8 Tank handle Pull resistance. The test sample shall consist of the handle, coated fabric patch, and a minimum of 1 foot of tank body fabric extending in all directions from the handle patch. The body fabric shall be tightly drawn and clamped between two flat oval rings or a base plate and an oval ring so that the handle of the patch is centrally located in the rings. The shape of the oval rings shall be such that all edges of the coated fabric patch are 6 inches, ± 1 inch, from the ring clamp. The rigidity, strength, and construction of the clamp shall be such that the tank body material shall not slip more than 0.50 inch at any point during the test. With the sample held securely, a tension shall be applied through a bar or pipe 1-inch in diameter inserted in the loop of the handle. The tension shall be slowly and smoothly applied in a direction perpendicular to the plane of the handle

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patch until the specified load of 1,500 pounds is reached. The 1,500 pound load shall be maintained for 1 minute. Any damage, permanent distortion, or separation of the handle patch, or tank material shall constitute failure of this test.

4.5.2.9 Nylon cloth. Nylon cloth properties shall be tested in accordance with FED-STD-191, method 5804 and 5104. Properties shall apply after heat setting. In method 5804 alternate corex D filter shall be removed. Specimens shall be labeled for method 5104 after 100 hours of accelerated weathering. The initial breaking strength warp and fill (lbs. (min.)) shall be determined. The edges of the test specimen shall be coated by dipping or brushing with a nylon solution or other adhesive or sealed by melting with heat sufficiently to preclude yarn slipping while under test (see 6.4). Breaking strength after accelerated weathering less than 45 percent of the initial breaking strength shall constitute failure of this test.

4.5.2.10 Coating compounds. Coating compound properties shall be tested in accordance with test methods shown in table I. Samples for initial values shall be conditioned, prior to testing, in water at room temperature for 24 hours and tested within 3 minutes after taking out of water. Nonconformance to 3.5.3 or table I shall constitute failure of this test.

4.5.2.11 Existent gum. Cut a 5-gram specimen of each tank interior coating compound into approximately 0.0625-inch squares and place in a flask containing 250 ml of JP-5/JP-8 ST conforming to MIL-T-5624 and a flask containing MIL-F-46162 diesel fuel, and allow to stand for 48 hours at 73 +/- 5 deg. F. Decant and filter the contaminated fluid through Whatman 41H filter paper or equal. Determine the existent gum content of the filtrate in accordance with ASTM D 381, procedures 10.1 through 10.4 using the air jet vaporizing medium and an evaporation time of 45 minutes. Using the same samples after completing the unwashed existent gum content test above, determine the heptane washed gum in accordance with ASTM D 381, procedures 10.8 through 10.12. A minimum of three specimens shall be used to report the average gum content. Nonconformance to 3.5.3 and table I shall constitute failure of this test.

4.5.2.12 Diffusion. The test apparatus shall consist of a diffusion cup and ring, using figure 13 as a guide. Other cup designs are acceptable as long as the inside diameter of the cup and ring is maintained at 2 inches 0.016 inch and the cup is 1 inch deep (minimum). Cut a circular test disk of coated fabric to conform to the outside diameter of the cup flange. Punch holes in the disk to correspond to the flange bolt dimensions as needed. The cup shall be filled with approximately 40 mL of JP-8. A suitable solution (see 6.4), shall be used to seal the exposed fabric around the outer edge of the test disk and also for sealing the test disk to the diffusion cup flange. The test disk shall be placed over the cup with the tank "interior" side towards the fuel. The bolts shall be tightened securely. Place the diffusion cup in a suitable rack in a constant temperature of 73.5 +/- 2 deg. F, and a relative humidity of 65 +/- 2 percent. Allow 1 hour for the assembly to reach equilibrium, then weigh the cup to the nearest 0.005 gram and place in the rack face upward. Keep the cup at the above constant temperature and humidity for 24 hours. Then weigh and check for vapor loss. Retorque the

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bolts if necessary. Invert the cup (test disk down) in a rack that permits free access of air to the test disk. Weigh the cup daily. Defective films or leaks caused by faulty assembly are usually found when the cup is weighed on the third day. Continue to weigh the cup daily until the weight loss is constant to within 0.010 gram per day after two 24-hour periods. Then record daily weight loss for a continuous interval of 72 hours. The diffusion rate (D) in fluid ounces per square foot per 24 hours shall be the average of not less than three specimens when calculated from the following expression:

$$D = \frac{144 \text{ (average daily loss in grams)}}{(\text{Sp. Gr.}) (29.573) (3.142) (R^2)}$$

Where Sp. Gr. is the specific gravity of the test medium and R^2 is the inside radius of the test cup.

4.5.2.12.1 Failure criteria. Nonconformance to 3.5.4 and table II shall constitute failure of this test.

4.5.2.13 Coated fabric. Coated fabric properties shall be tested in accordance with test methods shown in table II. Nonconformance to 3.5.4 and table II shall constitute failure of this test.

4.5.2.14 Puncture resistance. FED-STD-191, method 5120 applies except that the ring clamp mechanism shall have an internal diameter of 3.00 inch, and the ball shall be replaced by a piercing instrument shaped like a flared, flat-tip screwdriver, having a width of 0.312 +/-0.010 inch and a thickness of 0.031 +/-0.004 inch at the extreme tip. The piercing tip edges shall be rounded to a 0.010 inch radius. The piercing instrument shall be oriented to intercept the warp and fill threads at an angle of approximately 45 degrees. The average of three test specimens shall be reported. Nonconformance to 3.5.4 and table II shall constitute failure of this test.

4.5.2.15 Low temperature crease resistance. Immerse three coated fabric specimens, each 8 inches square, in JP-8, and condition for 24 hours, 1 hour at 73 +/-5 deg. F. Remove specimens, place on a wire screen, and air dry with forced air movement at 73 +/-5 deg. F, for 24 hours, +/-1 hour. Then fold the specimens in half in each direction so that a folded corner occurs in the center of each specimen. Place each folded specimen under a 4-pound load and condition at -25 +/-2 deg. F for 46 hours. At the end of the conditioning period, unfold the specimens while still at a temperature of -25 deg. F and examine visually. Signs of cracking, peeling, or delamination of any coating material shall constitute failure of this test. If the specimen does not fail, then subject the specimen to the diffusion test specified in 4.5.2.12 except position the specimen in the diffusion cup in such a manner that the center of the previously folded specimen coincides with the center of the cup. Nonconformance to 3.5.4 and table II shall constitute failure of this test.

4.5.2.16 Blocking. Place three coated fabric specimens 6 inches by 1 inch in an oven on a smooth surface in such a manner that the ends are overlapped inch. Place a 4-pound weight directly on the overlapped area. After conditioning at a temperature of 158 +/-2 deg. F, for 4 hours, remove the

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weight and take the specimens from the oven and condition for 1 hour at 73 +/- 5 deg. F and 65 +/- 2 percent humidity. Attach one end of the specimen in a suitable clamping device allowing the free end to hang down. Suspend a 4-ounce weight from the free end of the specimens. Inability of the strips to separate within 5 seconds under the 4-ounce load shall constitute failure of this test.

4.5.2.17 Coating adhesion. Samples of coated fabric shall be bonded face-to-face to provide specimens for determining adhesion between the nylon cloth and exterior coating(s): between the nylon cloth and interior coating(s), between laminations of interior coatings and barrier (if used), and between laminations of exterior coatings. In forming this bond the specimens shall be subjected to no heat or pressure other than that normally encountered in curing the coated fabric, except for minimal pressure necessary to insure contact while the bond is setting.

4.5.2.17.1 Test procedure. The adhesion shall be determined in accordance with ASTM D 413, machine method except that the specimens shall be 2 inches wide. The specimens shall be of sufficient length to conduct adhesion test for both initial values and after fuel or water immersions. The adhesion results obtained on each immersed specimen shall be compared with the initial adhesion of the same specimen to determine percentage of adhesion retained. The reported adhesion and percent retention shall be the average of not less than three specimens. Attempts shall be made to cut the coating back to the nylon cloth and to determine the adhesion value at the coating-to-cloth interface. However, if a specimen separates at a plane other than the bond of the coating to cloth (such as between layers of coating materials or between barrier film and coating) the adhesion value and the plane of failure shall be recorded. Immersed specimens shall be conditioned in the test fluid at 73 +/- 5 deg. F, for 30 to 90 minutes before testing. Testing of immersed specimens shall be completed within 3 minutes after removal from the conditioning fluid. Immersion of specimens shall be in accordance with ASTM D 471. Nonconformance to 3.5.4 and table II shall constitute failure of this test. Any obvious bond failure evident after immersion but before stressing, even if the plane of failure is not sandwiched between the layers of nylon fabric, shall constitute failure of this test.

4.5.2.18 Seam tests.. The bonding together of any two or more pieces of coated fabric (such as lap joints, butt joints, and closures, chafing patches, coated fabric flanges of fittings, repairs, etc.) shall be considered as seams and shall be subjected to all seam tests specified herein, except chafing patches which will only be tested for peel. The average breaking strength of five specimens for each type seam for each test shall be reported for conformance to table III. Breaking strength specimens shall be 2 inches wide (parallel to the seam) and shall extend (perpendicular to the seam) 3 inches beyond both edges of the seam. No part of the test specimens shall be coated or covered during the fuel or water immersion periods. Specimens shall be cooled in the immersion fluids at 73 +/- 5 deg. F, for 30 to 90 minutes before testing. Testing of immersed specimens shall be completed within 3 minutes after removal from the immersion fluids. The average peel adhesion strength of three specimens for each type seam shall be reported for conformance to table III. Peel adhesion specimens shall be of

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sufficient length to determine both the initial and after fuel or water adhesion values on the same specimen. If seam construction involves the use of binding thread, then the peel specimens shall be prepared with threads removed. Chafing patches shall be tested for peel only. Nonconformance to 3.6.1 and table III shall constitute failure of this test. Specimens to be immersed in distilled water shall be extracted and dried in accordance with 4.5.2.22 prior to immersion in the water.

4.5.2.19 Dead load shear resistance. The test specimens shall be 1 inch, 0.020 inch wide, (parallel to the seam) and coated fabric shall extend a minimum of 3 inches (perpendicular to the seam) on each side of the seam. Index mark shall be scribed on each side of the seam to facilitate observation and measurement of slippage. Each specimen shall be subjected to a constant (dead load) tension force of 65 +/-0.50 pound, at 180 +/-5 deg. F. After 8 hours examine each specimen while still under tension for sign of slippage or separation. Three specimens shall be tested for each determination. Slippage, by any specimen, greater than specified in table III shall constitute failure of this test.

4.5.2.20 Strength of bonded fittings. Specimens shall be prepared by cutting through the aluminum flange so that parallel 1-inch wide sections are obtained from the straight portion of the oval fitting and 1-inch wedge shape sections are obtained from the vent (or drain) and the curved portion of the oval fitting. The 1-inch shall be measured as a chord passing through the midpoint between the inside and outside diameters of the flange for the wedge shaped sections.

4.5.2.20.1 Initial bond strength. The coated fabric flanges shall be fastened together in one jaw of the test machine so that the jaw will be at least 1 inch from the nearest part of the aluminum flange. The aluminum flange shall be secured in the other jaw of the test machine and this jaw shall clamp on the aluminum and shall not compress the embedded part of the coated fabric flanges. The jaws shall be separated at a rate of 2 inches per minute at 73 +/-5 deg. F and 65 +/-2 percent humidity. The average of three test specimens shall be recorded as initial bond strength in pounds per inch of width. Nonconformance to 3.6.4.1 and table IV shall constitute failure of this test.

4.5.2.20.2 Bond strength after fluid immersion. Three test specimens shall be immersed for the appropriate durations in each test fluid specified in table IV. No part of the specimens shall be covered or coated during immersion. Specimens from both the oval and vent/drain fittings shall be included in each test fluid. The test specimens shall be cooled in the immersion fluid to 73 +/-5 deg. F, for up to 60 minutes. The specimens shall be removed from the test fluid, one at a time and tested as in 4.5.2.20.1. Each test shall be completed within 3 minutes after removal from the test fluid. The average of three tests for each fluid shall be reported as bond strength after immersion in pounds per inch of width. Nonconformance to 3.6.4.1 and table IV shall constitute failure of this test. Specimens to be immersed in distilled water shall be extracted and dried in accordance with 4.5.2.22 prior to immersion in the water.

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4.5.2.20.3 Dead load shear resistance aluminum to fabric bond. Three specimens shall be clamped as in 4.5.2.19 and subjected to a constant (dead load) tension force of 50 pounds at 180 +/-5 deg. F. At the end of 8 hours, the specimens shall be examined for slippage or separation while under tension. Nonconformance to 3.6.4.1 and table IV shall constitute failure of this test.

4.5.2.21 Peel adhesion of aluminum to coated fabric. Special test specimens shall be fabricated consisting of aluminum strips bonded to lengths of coated fabric. The aluminum strip shall be 12 inches long and shall be of the same alloy as that used in the aluminum fitting flanges. The coated fabric shall be 12 inches long (min.) by 2 inches, 0.050 inch wide, and shall be of the same composition (and of the same state of cure before bonding) as that used in the coated fabric flanges. The coated fabric strip shall be uniformly bonded to the aluminum strip. The bond shall be formed using identical techniques and bonding agents used to bond tank fittings and shall be cured identically (time, pressure, temperature, etc.) to the process used in bonding tank fittings.

4.5.2.21.1 Test Procedures. Specimens shall be tested as per ASTM D 429, method B. Three or more specimens shall be averaged for each fluid immersion test, The same identical specimens shall be used to determine the initial peel strength and the strength after fluid immersion and when computing the percentage of initial adhesion retained. Nonconformance to 3.6.4.1 and table IV shall constitute failure of this test. Specimens to be immersed in distilled water shall be extracted and dried in accordance with 4.5.2.22 prior to immersion in the water.

4.5.2.22 Fuel extraction. Test specimens shall be prepared in accordance with the tests, to be performed in tables I - IV and then submitted to the following extraction procedure:

- a. Immerse the specimens in JP-5/JP-8 ST fuel conforming to MIL-T-5624 for 7 days at 160 +/-2 deg. F.
- b. Remove specimens from fuel and blot with paper towels.
- c. Place specimens in a vacuum oven for drying 16 +/-2 hours at 120 +/-2 deg. F at 20 inches of mercury.
- d. Samples will then be immersed in distilled water as required in table I - IV.

4.5.2.23 Repair/rework. Samples of all repair/rework procedures shall be subjected to the same tests and require the same performance as is required of all aspects of the tank.

4.6 Inspection comparison. The Government may select tanks at any time during the contract production period and subject these tanks to the examinations and tests specified herein. The inspection will be performed by the Government, at a site selected by the Government. Tanks for inspection will be selected at random from those which have been accepted by the government, but will not include first article tanks.

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4.6.1 Inspection failure. Failure of an inspection comparison tank to meet any requirement specified herein during and as a result of the examination and tests specified in 4.6 shall be cause for rejection of the inspection comparison tank and shall be cause for refusal by the Government to continue acceptance of production tanks until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiencies. Correction of such deficiencies shall be accomplished by the contractor at no cost to the Government on tanks previously accepted and produced under the contract. Any deficiencies found as a result of the inspection comparison will be considered prima facie evidence that all tanks accepted prior to the completion of inspection comparison are similarly deficient unless evidence to the contrary is furnished by the contractor and such evidence is acceptable to the contracting officer.

4.7 Inspection of packaging.

4.7.1 First article packaging inspection. The first article pack shall be inspected as follows:

4.7.1.1 Examination. The first article pack shall be examined for the defects listed in 4.7.2.3. The presence of one or more defects shall be cause for rejection.

4.7.1.2 Tests. The first article pack shall be tested as follows:

4.7.1.2.1 Unpacking. The first article pack, for all levels of packing, shall be unpacked in the manner and sequence prescribed by the contractor. The first article pack shall have failed the test should the prescribed manner and sequence be ineffective, or should any of the contents fall free of the package.

4.7.2 Quality conformance inspection of packaging.

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

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

4.7.2.3 Examination. Samples selected in accordance with 4.7.2.2 shall be examined for the following defects. Presence of one or more defects shall be cause for rejection.

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No.	Defect	Level A	Paragraph	
			Level B	Level C
132.	Repair kit not preserved as specified.	5.2.1.1		
133.	Other repair items not preserved as specified.	5.2.1.2		
134.	Preserved repair items not combined together in pre-consolidation box as specified.	5.2.1.3		
135.	Pre-consolidation box not as specified.	5.2.1.3		
136.	Contents of pre-consolidation box not cushioned as specified.	5.2.1.3		
137.	Marking of pre-consolidation box not as specified.	5.2.1.3		
138.	Fittings not preserved as specified.	5.2.2		
139.	Hose assemblies not preserved as specified.	5.2.3.1		
140.	Other accessories not preserved as specified.	5.2.3.2		
141.	Consolidation of all components not as specified.	5.2.4		
142.	Consolidation box not as specified.	5.2.4		
143.	Consolidation box not marked as specified.	5.2.4		
144.	Cushioning of consolidation box contents not as specified.	5.2.4		
145.	Openings into tank not protected as specified.	5.2.5		
146.	Tank not dusted with talc or other anti-sticking compound as specified.	5.2.5		
147.	Permanently attached tank fittings not preserved as specified.	5.2.5		
148.	Tank not folded or rolled into a compact bundle as specified.	5.2.5		
149.	Bundle not secured as specified.	5.2.5		
150.	Berm liner, when required, not preserved as specified.	5.2.6		
151.	Tank of polyester urethane coated fabric not preserved as specified.	5.2.7		
152.	Berm liner of urethane coated fabric not preserved as specified, when required.	5.2.7		
153.	Lumber and plywood not treated with preservative as specified.	5.3.1.1		
154.	Carriage bolts, lag screws, nuts and washers not as specified.	5.3.1.2	5.3.2	
155.	Plywood not as specified.	5.3.1.2.1	5.3.2	
156.	Cleats not as specified.	5.3.1.2.2	5.3.2	
157.	Skids and rubbing strips not as specified.	5.3.1.2.3	5.3.2	

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No.	Defect	Level A	Paragraph	
			Level B	Level C
158.	Fabrication of shipping container panels not as specified.	5.3.1.2.4	5.3.2	
159.	Anti-abrasion provisions not as specified,	5.3.1.2.5	5.3.2	5.3.3
160.	Consolidation containers not positioned and secured as specified.	5.3.1.2.6	5.3.2	5.3.3
161.	Wire-reinforced hose assemblies not positioned and secured as specified.	5.3.1.2.7	5.3.2	5.3.3
162.	Containers with outside length dimension 96 inches or less, not as specified.	5.3.1.2.8	5.3.2	
163.	Strapping not as specified.	5.3.1.2.8.6.9	5.3.2	5.3.3
164.	Containers with outside length greater than 96 inches not as specified.	5.3.1.2.9	5.3.2	
165.	Shipping container for level C packing not as specified.			5.3.3
166.	Contents of shipping container not blocked and braced as specified.	5.4	5.4	5.4
167.	Marking not as specified.	5.5	5.5	5.5

5. PACKAGING

5.1 First article pack. The contractor shall furnish a first article pack for examination and tests within the time frame specified (see 6.2), to prove, prior to starting production packaging, that the applied preservation, packing and marking comply with the requirements of this specification. Examination and test shall be as specified in section 4 and shall be subject to surveillance and approval by the Government. The first article pack may be accomplished utilizing either the first article model or production model. If the first article model is utilized, and the Government requests a comparison between the first article model and production model, any preservation and packing shall be removed by the contractor at no expense to the Government.

5.2 Preservation, level A. Each complete collapsible tank shall be preserved in the following manner:

5.2.1 Repair items.

5.2.1.1 Repair kit. Each component of the repair kit shall be preserved in a bag in accordance with the level A requirements of MIL-R-52255. The bags shall be sealed and marked in accordance with the documents referenced herein.

5.2.1.2 Other repair items. The remaining repair items shall be preserved in accordance with MIL-P-116, method IC-1 or IC-3 and items of like description for each tank shall be preserved together, in the quantities specified, in such a manner as to prevent damage or distortion.

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5.2.1.3 Pre-consolidation. The preserved repair items, including the preserved repair kit components, shall be consolidated together in a close fitting fiberboard box conforming to PPP-B-636, class weather resistant, grade as applicable. Cushioning shall be positioned within the box to prevent free movement and damage to the contents. Box closure shall be in accordance with method IV of the appendix to the box specification. The box shall be legibly marked as follows:

REPAIR ITEMS
FOR
COLLAPSIBLE FUEL TANKS

5.2.2 Fittings. Removable portions of all type fittings shall be separated from the tank. Each separated portion shall be wrapped with cushioning material conforming to PPP-C-795 (with the exception that the Creep test specified in PPP-C-795 may be eliminated), PPP-C-1797 or PPP-C-843, type II, class B, water-resistant. The cushioning material shall be secured in place with tape conforming to MIL-T-22085, type II, PPP-T-60, type III or IV, or PPP-T-97, type IV and the wrapped fittings shall be marked for identification.

5.2.3 Accessories. When provided (see 3.12), the accessories shall be preserved as follows:

5.2.3.1 Hose assemblies. Each hose assembly, assembled as specified and with the cap and plug positioned as specified, shall have the metal portions of all fittings securely wrapped with cushioning material as specified in 5.2.2. Non-wire-reinforced hose assemblies shall be placed straight in the container with a slight curve to fit inside the box, without causing any kinks or permanent damage to the hose.

5.2.3.2 Other accessories. The remaining accessories shall be preserved in accordance with MIL-P-116, method IC-1 or IC-3 and accessories of like description for each tank shall be preserved together in the quantities specified.

5.2.4 Consolidation. The preserved repair items, pre-consolidated as specified in 5.2.1.3, the removed fittings preserved as specified in 5.2.2, and the accessories (except for the required lengths of wire-reinforced hose assemblies), preserved as specified in 5.2.3, shall be consolidated together, as practicable, in one or more snug-fitting boxes conforming to PPP-B-601, domestic type, style A with unnailed top. Cushioning shall be positioned within the box to prevent free movement and damage to the contents. Box closure shall be as specified in PPP-B-601 for the unnailed closure feature. The box shall be legibly marked as follows:

REPAIR ITEMS
QUICK DISCONNECT FITTINGS
ACCESSORIES (when provided)
FOR
COLLAPSIBLE FUEL TANKS

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5.2.5 Tank. All openings into the tank shall be sealed with the respective plugs or caps provided for that purpose. Each tank shall be dusted with a talc or other antisticking compound or treatment to prevent adhesion to itself. Permanently attached fittings shall be protected with cushioning material conforming to and secured in place as specified in 5.2.2. The tank shall be laid flat, completely collapsed and then folded or rolled to form a neat compact bundle. The bundle shall be secured with web ties. The means of securing the bundle shall not subject the tank to the hazards of any sharp metal objects utilized either as a component of a securing device or as a tool for releasing the means.

5.2.6 Berm liner. When provided (see 3.8 and 6.2f), each berm liner shall be dusted, folded or rolled and secured as specified in 5.2.5 for the tank.

5.2.7 Polyester urethane coated fabrics. Tanks, and as applicable, berm liners, which are made of polyester urethane coated fabrics, shall be preserved as specified in 5.2.5 and 5.2.6 respectively. Each rolled up tank shall then be sealed in a water-vaporproof bag in accordance with MIL-P-116, submethod IIc. Each rolled up berm liner, when furnished, shall be sealed in a water-vaporproof bag in the same manner or as the tank, if the berm liner is manufactured of urethane coated fabric.

5.3 Packing. Each complete tank, and berm liner when required, preserved as specified in 5.2, shall be packed in accordance with the requirements for level A, level B, or level C as specified (see 6.2). Tanks and berm liners shall be packed loosely because tight folds reduce tank life.

5.3.1 Level A. When level A packing is specified (see 6.2) the following special consideration shall be afforded this product because of an anticipated extended period of storage under unfavorable environmental conditions.

5.3.1.1 Wood preservation (see 6.9). All lumber and plywood used in the construction of the exterior crates/boxes shall be treated with wood preservative in conformance with composition C or D of TT-W-572. The following additional conditions must be satisfied:

- a. Treatment by composition C shall result in a minimum retention of 0.40 pounds of copper per cubic foot of lumber/plywood as defined in the applicable standards) referenced in C1, C2 and C9 of AWPA (American Wood Preserver Association).
- b. After treatment with either composition, the material shall be dried to a moisture content of 19 percent or less.

5.3.1.2 Exterior containers/shipping containers. Exterior containers/shipping containers shall be snug-fitting boxes in accordance with the following requirements. The exterior containers/shipping containers shall accommodate a field repack of the tank, berm liner, and all other accessories and components originally packed with the tank (see 6.10). Carriage bolts, lag screws/bolts, nuts and washers shall conform to the following:

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CARRIAGE BOLTS	-	FF-B-584, type I, class 1, style A
LAG SCREWS/BOLTS	-	FF-B-561, type I, grade B
NUTS	-	FF-N-836, type I or II, style 1 or 4
WASHERS	-	FF-W-92, type A, grade 1, class A

5.3.1.2.1 Plywood. All plywood shall be in accordance with A-A-55057, group B. The plywood shall be interior type, bonded with exterior (waterproof) glue, grade CD.

5.3.1.2.2 Cleats. All lumber for the cleats shall comply with the quality requirements of MIL-STD-731 for class 2 - Structural (members with moderate stress), except that wane is not acceptable. The cleat sizes shall be nominal 1 inch x 4 inches and nominal 2 inches x 4 inches with minimum dimensions for each as shown therein.

5.3.1.2.3 Skids, and as Applicable, rubbing strips. All lumber for the skids., and as applicable the rubbing strips, shall comply with the quality requirements of MIL-STD-731 for class 2 - Structural (members with moderate stress), except the wane is not acceptable. Skids shall be nominal 4 inches x 4 inches; the rubbing strips, when required, shall be nominal 4 inches x 4 inches or nominal 4 inches x 5 inches with minimum dimensions for each as shown therein. Group I wood species shall not be used for the skid.

5.3.1.2.4 Fabrication. Each panel of the shipping container shall be double sheathed with plywood. The inside plywood shall, as specified, be either 0.25 inches thick or 0.375 inches thick and the outside plywood sheathing shall be 0.50 inches thick. The outside sheathing shall be attached to the applicable cleats with the fasteners driven through the C side of the plywood and clinched on the exposed side of the cleat. The inside sheathing shall then be attached to the panel with the fasteners driven through the wood parts in the sequence of the C side of the 0.25/0.375 inch plywood, to cleat, to 0.50 inch plywood. The sizes of the fasteners, the positioning of the fasteners and the clinching of the fasteners shall be as specified in PPP-B-601; however, care shall be exercised so that the positioning of such fasteners does not interfere with the lag screws/ bolts and carriage bolts required to assemble the top sides, ends and bottom panels together. Clinching of the fasteners shall not be permitted on any inside surface of the container panels.

5.3.1.2.4.1 Side panels. The side panels shall utilize nominal 1-inch-x-4-inch lumber for the cleats (see 5.3.1.2.2).

5.3.1.2.4.2 Top, end, and bottom panels. The top, end, and bottom panels shall utilize nominal 2-inch-x-4-inch lumber for the cleats (see 5.3.1.2.2).

5.3.1.2.5 Anti-abrasion provisions. To prevent abrasion, all interior surfaces of the shipping container that will contact the tank, and as applicable the berm liner, including any applicable outer surface of the consolidation containers), shall be lined with a layer of scrap tank fabric, cushioning material conforming to PPP-C-1797, or polyolefin film conforming to L-P-378, type 1, class 1, with a minimum thickness of 6 mils. The

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material shall be applied in such a manner that it does not interfere with the removal of the container top, sides and ends as a joined one-piece assembly or as individual panels. The means of attaching the material shall not create a hazard within the container that could possibly damage the contents. As an alternative, each tank, and berm liner, when required, preserved as required in 5.2.5 through 5.2.7, shall be individually loosely wrapped with the anti-abrasion material. The manner of wrapping shall provide a minimum of one layer of material around the tank, and berm liner when required, to prevent direct contact with other components and the inside surfaces of the shipping container.

5.3.1.2.6 Filled consolidation containers. The filled consolidation containers shall be positioned within the shipping container in a manner to prevent movement. The positioning method shall utilize the shipping container bottom only; it shall not be dependent upon the application of devices of the sides, top, or ends of the container.

5.3.1.2.7 Wire-reinforced hose assemblies. The wire-reinforced hose assemblies, preserved as specified in 5.2.3.1, shall be positioned and secured within the shipping container in such a manner to assure that the top, sides, and ends of a shipping container may be removed from the container bottom while the hoses remain secured in place without damage to the tank, and as applicable, the berm liner and water-vaporproof bag specified in 5.2.7.

5.3.1.2.8 Containers with an outside length dimension of 96 inches or less. Containers with an outside length dimension of 96 inches or less shall be a snug-fitting box conforming to PPP-B-601, overseas type, style A, type 3 load, except that each panel shall be double sheathed with the cleats sandwiched between two sheets of plywood (see 5.3.1.2.4). The inside plywood shall be 0.25 inches thick and the outside plywood shall be 0.50 inches thick. Other exceptions are as follows:

5.3.1.2.8.1 Side panels. The positioning of the edge cleats, and intermediate cleats when required, shall be as specified for the sides in PPP-B-601. The size of the side panel shall be such that its length (the longest dimension) is the same as the outside length of the box. The width of the side panels shall be such that it is the same as the inside depth of the box plus the thickness of the double sheathed bottom panel (see figure 19).

5.3.1.2.8.2 Top panel. The positioning of the edge cleats, and intermediate cleats when required, shall be as specified for the top in PPP-B-601. The size of the top panel shall be as specified therein for style A. that is, the length and width of the top shall be the same as the outside length and outside width of the box (see figures 19 and 20).

5.3.1.2.8.3 End panels. The positioning of the edge cleats, and intermediate cleats when required, shall be as specified for the ends in PPP-B-601. The size of the end panel shall be the same as specified therein for style A; that is, the length and width shall be the same as the inside width and inside depth of the box (see figure 19).

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5.3.1.2.8.4 Bottom panel. The positioning of the edge cleats, and intermediate cleats when required, shall be as specified for the bottom in PPP-B-601 except that the thru edge cleats shall run parallel with the box length and such cleats shall be the same length as the outside length of the box. The size of the bottom panel shall be as specified therein for style A except that the width of the bottom panel shall be the same as the inside width of the box (see figure 22).

5.3.1.2.8.5 Skids. Skids (see 5.3.1.2.3), shall be applied to the bottom panel of each box, running parallel with and extending the full outside width of the box. A bevel 45 degrees (5 degrees) shall be applied to the bottom third portion of the skid ends. The skids shall be set back from the end of the box a distance of not less than 3 inches or more than 1/6 of the box length. Each box shall be provided with a minimum of 2 skids with additional skids being provided when the distance between the inside edges of the skids exceed 48 inches. The positioning of the additional skids shall divide the area between the end skids into units of equal space. Additional intermediate cleats shall be incorporated into the bottom panel at time of fabrication to assist in the attachment of the skids and to offer full support to the skids. Each skid shall be fastened to the bottom panel with 0.375 inch diameter carriage bolts that are 5.25 inches long (+0.00 inches, -0.25 inches). The bottom panel shall be positioned so that it is set back from the ends of the skids a distance that is equal to the thickness of the box side panels. The holes for the carriage bolts shall be the exact diameter of the bolt. Each hole shall be counterbored on the underside of the skid so that 3 full thread (+3 minus 0) extend beyond the washer and nut when the nut has been properly tightened. The nut shall be tightened so that the bolt head is drawn W the plywood and cleat to prevent the bolt head from becoming a snagging hazard on the inside of the box; however, no portion shall extend beyond the bottom of the skid when tightened. After tightening the nuts, the threads of the bolt extending beyond the nut shall be painted with a suitable metal primer or similar material. The bolts shall be centered at 6.50 inches (0.25 inches) from each end of the skid with additional bolts positioned in a staggered pattern, as practicable, so that the distance between their centerlines shall be no more than 16 inches (+/- 0.25 inches) and not less than 8 inches (+/- 0.25 inches), (see figure 22). Each skid shall be slotted/notched sufficiently to provide clearance for strapping. Figures 19, 20, and 22 give details of skid application.

5.3.1.2.8.6 Assembly. The box panels shall be joined together with lag screws/bolts and flat washers. Entry holes and lead holes shall be provided in each box panel for proper assembly as follows:

5.3.1.2.8.6.1 Entry holes. Entry holes, the same size as the lag screws, shall be provided through each applicable flat panel surface. The holes shall be set back from the edges of that flat surface to provide the edge distance necessary for the lag screws to be centered on the nominal 1 inch, or as applicable, the nominal 2-inch, cleat thickness of the joining panel. The entry holes for the 0.25-inch diameter lag screw for joining a panel to a nominal 1-inch thick cleat shall be centered at 0.875 inches from the edge of the flat panel. The entry holes for the 0.375 inch diameter lag screw for

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joining a panel to a nominal 2-inch thick cleat shall be centered at 1.25 inches from the edge of the flat surface (see figures 19, 20, 21, and 22).

5.3.1.2.8.6.2 Lead holes. Lead holes for the threaded portion of the lag screw shall be provided in each applicable panel edge. The holes shall be drilled only to the depth necessary to accommodate the penetration of the threaded portion of the lag screw. The lead holes for the 0.25 inch diameter lag screw shall be 0.1875 inches in diameter. The lead holes for the 0.375 inch diameter lag screws shall be 0.25 inches in diameter. The lead holes shall provide the same edge distance as specified in 5.3.1.2.8.6.1 for the entry holes.

5.3.1.2.8.6.3 Lag screw application. The lag screws shall be turned in their holes the full length of the screw. They shall not be driven in by hammer or by any other similar means. If for any reason the thread in the wood is stripped when the lag screws are placed, the lag screw shall be removed and placed in a new hole near the old position. Flat washers shall be used under the head of each screw.

5.3.1.2.8.6.4 Fastening bottom assembly to end panels. The bottom assembly shall be fastened to each end panel with a minimum of 4 lag screws 0.375 inches in diameter by 5 inches in length. The positioning of each screw shall be as shown in figure 19.

5.3.1.2.8.6.5 Fastening side panels to end panels. The side panels shall be fastened to the end panels with 0.375 inch diameter lag screws that are 4 inches long. The screws shall be positioned as shown in figure 20.

5.3.1.2.8.6.6 Fastening of side panels to bottom assembly. The side panels shall be fastened to the bottom assembly with 0.375 inch diameter lag screws that are 4 inches long. The screws shall be positioned as shown in figure 20.

5.3.1.2.8.6.7 Fastening top panel to side panels. The top panel shall be fastened to the side panels with 0.25 inch diameter lag screws that are 5 inches long. The screws shall be positioned as shown in figure 21.

5.3.1.2.8.6.8 Fastening top panel to end panels. The top panel shall be fastened to the end panels with 0.375 inch diameter lag screws that are 5 inches long. The screws shall be positioned as shown in figure 21.

5.3.1.2.8.6.9 Strapping. Strapping of the assembled box shall be in accordance with ASTM D 3953, type 1 or 2, zinc-coated, size as applicable and ASTM D 4675.

5.3.1.2.9 Container with an outside dimension greater than 96 inches. Containers with an outside length dimension greater than 96 inches shall be a snug-fitting box conforming to MIL-B-26195, type II, style A, class 1 with full plywood panels for the base, except that each panel of the box shall be double sheathed with the cleats sandwiched between two sheets of plywood (see 5.3.1.2.4). The outside plywood shall be 0.50 inches in thickness. The

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inside plywood shall be 0.25 inches thick for the sides and ends, and shall be 0.375 inch thick for the top and bottom. Other exceptions are as follows:

5.3.1.2.9.1 Side panels. The positioning of the edge cleats and intermediate cleats shall be as specified for the sides in MIL-B-26195; that is, the length of the thru edge cleats shall be the same as the outside length of the box. The outside plywood sheathing shall extend above the upper thru edge cleat a distance equal to the thickness of the cleats and inside plywood sheathing of the top panel (see figure 23 for end view of box and figure 27 for assembly method).

5.3.1.2.9.2 Top panel. Thru edge cleats and thru intermediate cleats shall run parallel with the width of the box. The size of the outside plywood shall be the same as the outside length dimension and the outside width dimension of the box. The inside plywood shall have the same length as the outside length of the box but shall have a width that is one inch less than the outside box width. The length of the thru edge cleats and thru intermediate cleats shall be the same as the width of the inside plywood and shall be so positioned to be flush with the edges of the inside plywood. Filler edge cleats shall run parallel with the box length and shall be positioned flush with the side edges of the inside plywood (see figures 23, 24, 27, and 29).

5.3.1.2.9.3 End panels. The positioning of the cleats shall be as specified in MIL-B-26195.

5.3.1.2.9.4 Base. The base shall consist of a deck assembly to which the skids and rubbing strips shall be attached. The deck shall be double sheathed with 0.375 inch thick plywood as the upper (inner) side and 0.50 inch thick plywood as the outside. The headers and load-bearing members shall be nominal 2-inch-by-4-inch lumber and shall be utilized as thru edge cleats and thru intermediate cleats positioned to run parallel with the box width dimension. The filler edge cleats shall run parallel with the box length, shall be positioned between the thru cleats flush with the edge of the plywood and shall be nominal 2-inch-by-4-inch lumber. However, filler cleats shall not be required to those spaces where the distance between thru cleats is 4 inches or less. The deck assembly shall be attached to the skids with either of two lengths of carriage bolts. The shorter length shall attach the deck assembly to the skid only. The longer length shall attach the deck assembly to the skids and rubbing strips with a minimum of 2 fasteners extending through the two longer rubbing strips. The short, 16 inch long, center rubbing strip shall be attached to the deck assembly with a total of two of the longer carriage bolts. When an intermediate skid is required, additional filler cleats shall be positioned above that skid between the thru edge cleats and the thru intermediate cleats. Carriage bolts shall be utilized to attach the intermediate skid and rubbing strips to the deck assembly in the manner specified for the outer skids. The length of the deck assembly shall be the same as the inside width of the box. Figures 23, 26, 28 and 29 give details of the base.

5.3.1.2.9.4.1 Skids. A minimum of two skids of nominal 4-inch x 4-inch lumber shall be attached to the underside of the deck assembly in direct

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contact with the 0.50 inch thick plywood sheathing. An intermediate skid of the same size and species of lumber, shall be required on all boxes with an outside width in excess of 36 inches. The skids shall be positioned as specified in MIL-B-26195. The 45-degree bevel shall not be cut into the ends of the skid. The bottom, inside corner of each outside skid shall be chamfered full length at a 60 degree angle (+/-5 degrees) to eliminate a potential snag when attempting to lift from the end with a forklift-truck (see figure 23 and 29). Intermediate skids shall not be chamfered.

5.3.1.2.9.4.2 Rubbing strips. Rubbing strips shall be nominal 4-inch by 5-inch for the outside skids and, when required, a nominal 4-inch by 4-inch for the intermediate skid. The rubbing strips shall be beveled full depth at an angle of 45 degrees (+/-5 degrees) at sling and forklift-truck openings. The rubbing strips shall be positioned on each skid to provide two, 12-inch wide openings for fork-lift-truck access. Such openings shall be spaced 28 inches apart, center to center, and shall be positioned to straddle the center of balance of the loaded box. The sling openings at the ends of each skid shall be 8 inches in length. Each nominal 4-inch by 5-inch rubbing strip shall be attached to the base in a manner to provide a ledge for supporting the full thickness of the box side panel (see figures 23 and 27).

5.3.1.2.9.4.3 Base fabrication. The skids and rubbing strips shall be attached to the deck assembly as specified in 5.3.1.2.9.4.1 and 5.3.1.2.9.4.2, and as shown in figures 26, 27, 28 and 29. The thru edge cleats and the thru intermediate cleats of the deck assembly shall be positioned as shown in figure 29. Such cleats shall be utilized as headers and lead-bearing-floor boards, shall serve as the means for locating the carriage bolts and shall be positioned as shown in figure 29. The carriage bolts shall be 0.375 inches in diameter and the exposed threads after tightening shall be painted as specified in 5.3.1.2.8.5. Flat washers shall be required under the nut for each carriage bolt. The holes for the carriage bolts shall be the exact diameter of the bolt. Each hole shall be counterbored on the under side of the rubbing strips and, as applicable, the skids so that 3 full threads (+3, -0) extend beyond the washer and nut when properly tightened. The nut shall be tightened to satisfy the requirements of 5.3.1.2.8.5.

5.3.1.2.9.5 Assembly. The box panels and base shall be joined together with lag screws. A flat washer shall be required under the head of each screw.

5.3.1.2.9.5.1 Entry holes. Entry holes, the same size as the lag screw, shall be provided through each applicable flat panel surface. The holes shall be set back from the edges of that flat surface to provide the edge distance necessary for the lag screws to be centered on the nominal cleat thickness of the joining panel (see figure 23, 24, and 25).

5.3.1.2.9.5.2 Lead holes. Lead holes, 0.25 inches in diameter, shall be provided for the threaded portion of each lag screw. The holes shall be drilled only to the depth necessary to accommodate the penetration of the threaded portion of the lag screw. The holes shall be positioned as shown in figures 23, 24, and 25.

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5.3.1.2.9.5.3 Lag screw application. Lag screw application shall be as specified in 5.3.1.2.8.6.3.

5.3.1.2.9.5.4 Fastening end panels to base. The end panels shall be fastened to the base with 0.375-inch diameter lag screws that are 5 inches long. The positioning and quantity of the screws shall be as shown in figure 23.

5.3.1.2.9.5.5 Fastening of side panels to base and end panels. The side panels shall be fastened to the base and end panels with 0.375-inch diameter lag screws that are 4 inches long. The positioning and quantity of the screws shall be as shown in figure 24.

5.3.1.2.9.5.6 Fastening of side panels to top panel. The side panels shall be fastened to the top panel with 0.375-inch diameter lag screws that are 3 inches in length. The positioning and quantity of the screws shall be as shown in figure 24.

5.3.1.2.9.5.7 Fastening of top panel to end panels. The top panel shall be fastened to the end panels with 0.375-inch diameter lag screws that are 5 inches long. The positioning and quantity of the screws shall be as shown in figure 25.

5.3.1.2.9.5.8 Strapping. Corner straps shall be applied to the assembled box in accordance with ASTM D 3953, type 1 or 2, zinc-coated, size as applicable and ASTM D 4.6.7.5.

5.3.2 Level B. Each complete tank, and berm liner when required, preserved as specified in 5.2, shall be packed for level B in the same manner as specified for level A in 5.3.1 except that the lumber and plywood preservation requirements of 5.3.1.1 shall be omitted, and the strapping shall be zinc-coated.

5.3.3 Level C. Each complete tank, and berm liner when required, preserved as specified in 5.2, shall be packed in a close-fitting box conforming to, as applicable to the weight of the contents, PPP-B-601, domestic type for type 3 load, or MIL-B-26195, type 1, style C with plywood panels, class 1 with full panel deck and rubbing strips. The box shall accommodate a field repack of the tank, berm liner, and all other accessories and components originally packed with the tank (see 6.10). The contents shall be protected against abrasion as specified in 5.3.1.2.5, the filled consolidation containers shall be positioned as specified in 5.3.1.2.6 and the wire-reinforced hose assemblies shall be positioned and secured as specified in 5.3.1.2.7. Box closure shall be as specified in the applicable box specification or the appendix thereto except that strapping shall be in accordance with ASTM D 3953, type 1 or 2, shall not be zinc-coated, size as applicable and ASTM D 4675.

5.4 Anchoring of tank. The anchoring of the rolled up tank to the bottom/base of the box shall not be required; however, all contents of the

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box shall be blocked and braced within the box in a manner to prevent longitudinal movement if tested in accordance with the rail-impact of MIL-STD-1186.

5.5 Marking. In addition to the special markings specified in 5.5.1 and any special or identification markings required by the contract or purchase/delivery order (see 6.2), each container shall be marked in accordance with MIL-STD-129, including all appendices, and as applicable to overseas shipments. Special care must be exercised to assure the following:

- a. That interior and exterior packing lists are applied as specified.
- b. That marking surfaces are prepared as specified.
- c. That all markings are overcoated with water-proof coating as specified.
- d. That when the tanks are to be included as part of a set, assembly, or module, each container is marked as specified.

5.5.1 Additional special markings. Additional special markings shall be applied to the outside of the box as follows:

5.5.1.1 Marking for unpacking. Additional special markings shall be applied to the outside of the box to show the "FLOW DIRECTION" of the deployed tank relative to the folded and rolled up tank as it is positioned within the box. Additionally, markings shall be applied to the outside of the box listing in sequence, the operations required to properly remove the top, sides and ends from the base as individual components, or as a one piece assembly. Alternatively, such unpacking instruction may be as preprinted matter to be included with the packing list in the exterior packing list envelope. When the unpacking instructions are placed in the envelope, a suitable area immediately adjacent to the envelope shall be marked with the words "UNPACKING INSTRUCTIONS INSIDE PACKING LIST ENVELOPE", with an arrow pointing to that envelope. Any code utilized in the instructions to identify critical locations on the box, shall be marked on the outside of the box at that location with the corresponding code.

Special Note: The design of the box with an outside length of 96 inches or less for level A and level B is such that the proper manner for removing the end panels from the base or bottom is by removing the lag screw from the underside of the box (see 1 in figure 19).

5.5.1.2 Marking for handling of treated wood. Each box constructed of treated lumber and plywood, shall, as applicable, be marked on an exterior surface in a prominent position with instructions advising involved personnel of any precautions to be exercised in the handling of the treated lumber. Such instructions shall include recommended limitations in the use and disposal of the treated lumber and shall be in the format developed by the treated wood industry's Consumer Awareness Program (CAP) as approved by the Environmental Protection Agency (EPA).

5.5.1.2.1 Methods of marking. The instructions required in 5.5.1.2 shall be applied to the shipping container in the manner specified in MIL-STD-129 for stenciling or labeling.

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5.5.1.2.1.1 Alternative method. As an alternate, such instructions may be as preprinted matter to be included with the packing list in the exterior packing list envelope. When the instructions are placed in the envelope, a suitable area immediately adjacent to the envelope shall be marked with the words "INSTRUCTIONS FOR HANDLING TREATED WOOD INSIDE PACKING LIST ENVELOPE", with an arrow pointing to that envelope.

6. NOTES

(This section contains information of a generator explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The collapsible tank is intended for use as a fuel storage container for diesel and jet fuels when quick storage facilities are needed, where permanent fuel storage facilities are not available, or when the storage of fuel is needed only on a temporary basis. It is intended that the collapsible tank provide a 20-year shelf life and five-year use life.

6.2 Acquisition requirements. Acquisition documents shall specify the following:

- a. Title, number, and date of the specification.
- b. Capacity of tank required (see 1.2).
- c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- d. When a first article is not required for inspection and approval and when additional first article samples are not required (see 3.2 and 3.2.1).
- e. Time frame for submission of first article pack (see 5.1).
- f. When berm liner is not required (see 3.8).
- g. When accessories are not required (see 3.12).
- h. When the first article inspection will not be performed by the contractor (see 4.3).
- i. Type of fuel to be utilized for fuel storage and overload tests when contractor's first article is specified (see 4.5.2.6 and 4.5.2.7).
- j. Level of packing required (see 5.3).
- k. Any special marking (see 5.5).
- l. Part or identifying number (PIN) (see 6.5).

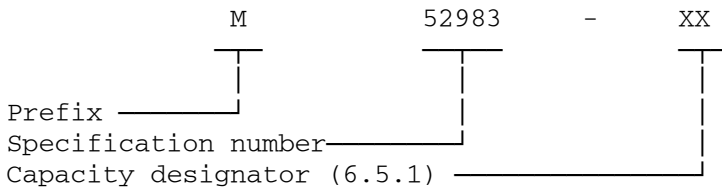
6.3 First article. When a first article inspection is required, the item should be an initial production item. The first article should consist of two units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of the first article test results and disposition of the first articles. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

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6.3.1 First article pack. Any changes or deviations of production packs from the approved first article pack will be subject to the approval of the contracting officer. Approval of the first article pack will not relieve the contractor of his obligation to preserve, pack and mark the tanks in accordance with this specification.

6.4 Nylon solution. The nylon material Elvamide 8061, manufacturer's code 18873, was found to meet the performance requirements and is suggested for use as a guide only. The Government assumes no responsibility for material or solution thereof.

6.5 Part or identifying number (FIN). The PIN corresponds to the type, class, and condition of the tank covered by this specification and defines the requirements of the options presented under this specification. The PIN is a definitive part number which is formed by combining the military specification symbol (M52983 for MIL-T-52983) with a dash after it; and a capacity designator symbol as follows:



Example: M52983-03 means 3000 gallon fuel tank.

6.5.1 Capacity designator. The capacity designator is a two position field used to designate the required tank capacity (see table VII).

TABLE VII. Capacity designator.

Capacity Designator	Capacity
03	3,000 gallon
10	10,000 gallon
20	20,000 gallon
50	50,000 gallon

6.6 Provisioning. The contracting officer should include requirements for repair parts and instructions regarding shipment of tanks.

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6.7 Subject term (key word) listing.

Tanks, collapsible
Tanks, collapsible, fuel
Tanks, fabric, collapsible, fuel

6.8 Definitions.

6.8.1 Blister. A blister is a void or hole, which causes protrusion on surface when hot, may not show on surface when cold, and may be covered or open.

6.8.2 Holiday. A holiday in coated fabrics, shall be defined as a place not covered by coating compound.

6.8.3 Pinhole. A pinhole shall be defined as a minute circular void or solvent blow hole.

6.8.4 Rework. Rework shall be defined as an operation performed during a production operation due to an inadequacy or error during that operation.

6.8.5 Repair. Repair shall be defined as a corrective operation which is required because of an omission of a step or incorrect performance of a step or process during a previously completed manufacturing operation.

6.9 Wood preservatives (see 5.3.1.1). The intent of the wood preservative applications specified in 5.3.1.1 is to prolong the serviceability of the wooden shipping containers. Compositions C and D of TT-W-572 can offer reliable protection for periods up to thirty years against decay and wood destroying organisms provided such treated containers are not stored in direct contact with the ground.

6.10 Field repack. The tank container is intended to accommodate a field repack. Manufacturers must consider that the tank can not be folded as tightly after field use as it can be at the manufacturing facility.

6.11 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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Custodians:

Army - ME
Navy - YD
Air Force - 99

Preparing activity:

Army - ME

Project 5430-0207

Review activities:

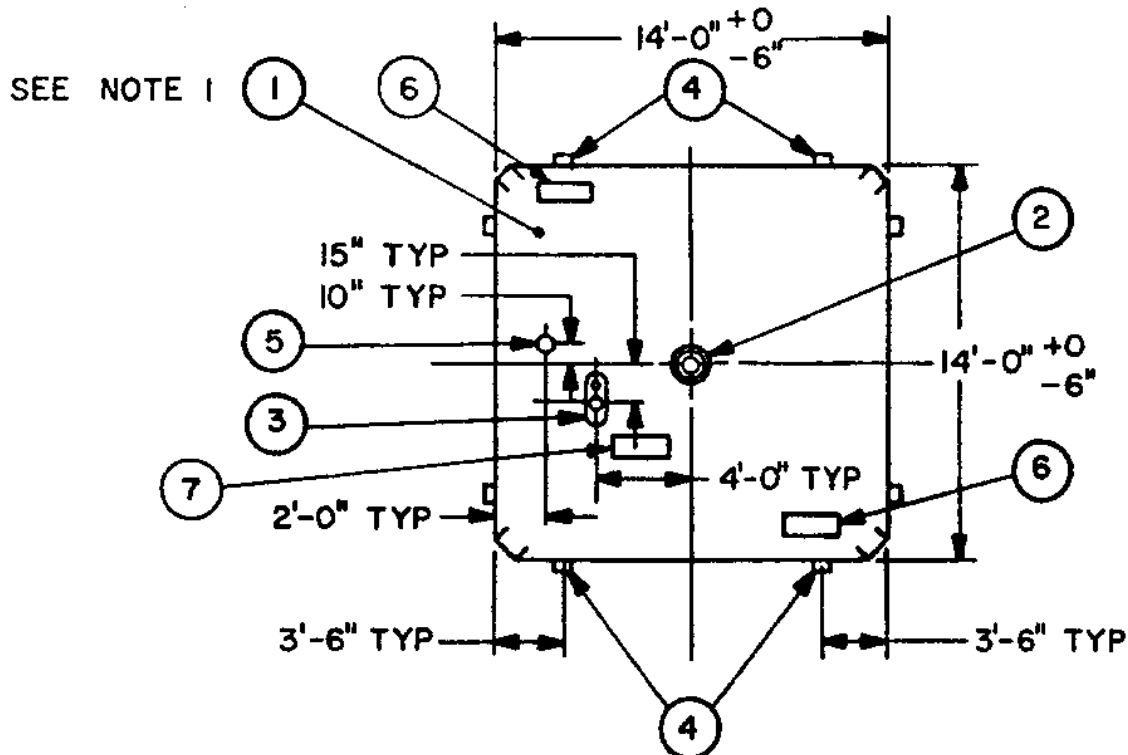
Air Force - 82
Navy - MC
DLA - CS

User activities:

Air Force - 82

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TOP VIEW

NOTES:

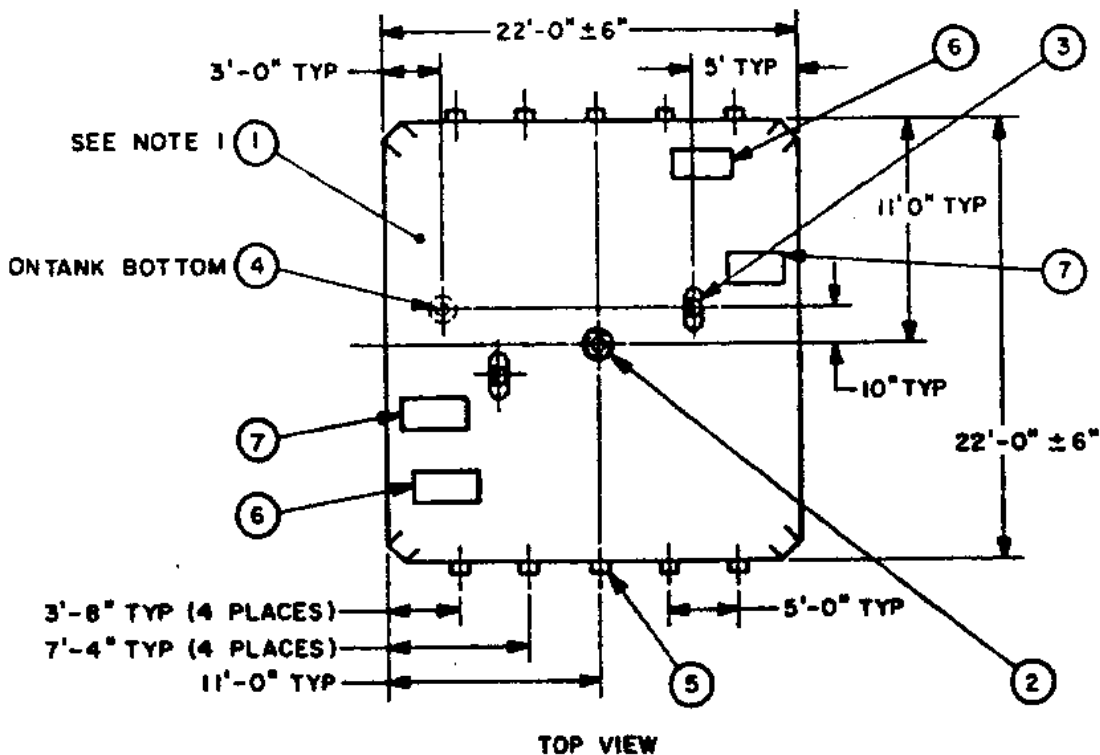
1. TANK IN EMPTY CONFIGURATION.
2. APPROXIMATE DIMENSIONS OF FILLED TANK:
12'-6" X 12'-6" X 4'-0" HIGH.
3. SHAPE OF TANK CORNERS OPTIONAL.
4. FOLLOWING SIZE CHAFING PATCHES SHALL BE BONDED INSIDE AND OUTSIDE THE TANK.
OPPOSITE ITEM 2 -18±4 IN.
DIA OR SQ.
OPPOSITE ITEM 3 -36±4 IN.
DIA OR SQ.
OPPOSITE ITEM 5 -18±4 IN.
DIA OR SQ.
5. ALL TOLERANCES ±1 FOOT UNLESS OTHERWISE NOTED.
6. GENERAL LOCATION OF LABELS IS SHOWN. EXACT ORIENTATION IS AT MANUFACTURER'S DISCRETION.

ITEM	QTY	DESCRIPTION
1	1	TANK, FABRIC, COLLAPSIBLE, 3,000 GAL.
2	1	VENT PIPE ASSEMBLY M/PRESSURE RELIEF CAP.
3	1	TANK FILLER/DISCHARGE ASSEMBLY.
4	8	TANK HANDLES.
5	1	DRAIN FITTING.
6	2	ID LABELS
7	1	CAUTION LABEL.

FIGURE 1. Tank fabric, collapsible, 3,000 gal., fuel

X-2339H

MIL-T-52983F



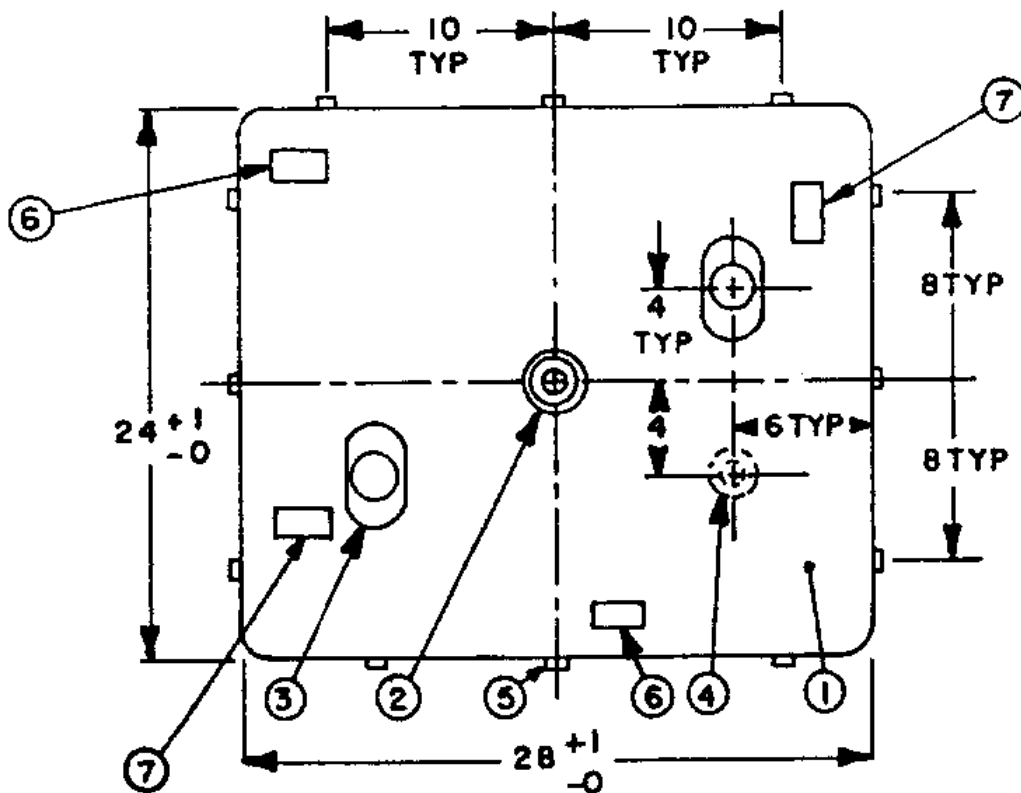
NOTES:

NOTES:	ITEM	QTY	DESCRIPTION
1. TANK IN EMPTY CONFIGURATION.	1	1	TANK, FABRIC, COLLAPSIBLE 10,000 GAL. FUEL
2. APPROXIMATE DIMENSIONS OF FILLED TANK: 20'-6" X 20'-6" X 4'-0" HIGH.	2	1	VENT PIPE ASSEMBLY W/ PRESSURE RELIEF CAP
3. SHAPE OF TANK CORNERS OPTIONAL.	3	2	TANK FILLER/DISCHARGE ASSEMBLY, OVAL
4. FOLLOWING SIZE CHAFING PATCHES SHALL BE BONDED INSIDE AND OUTSIDE THE TANK:	4	1	DRAIN FITTING ASSEMBLY
OPPOSITE ITEM 2 -18±4 IN. DIA OR SQ.	5	10	TANK HANDLES
OPPOSITE ITEM 3 -36±4 IN. DIA OR SQ.	6	2	ID LABELS
OPPOSITE ITEM 4 -18±4 IN. DIA OR SQ.	7	2	CAUTION LABEL
5. ALL TOLERANCES ±1 FOOT UNLESS OTHERWISE NOTED.			
6. GENERAL LOCATION OF LABELS IS SHOWN. EXACT ORIENTATION IS AT MANUFACTURER'S DISCRETION.			

**FIGURE 2. Tank, fabric, collapsible, 10,000
gallon, fuel.**

X-1114L

MIL-T-52983F



REQUIRED DIMENSIONS OF EMPTY TANK

NOTES:

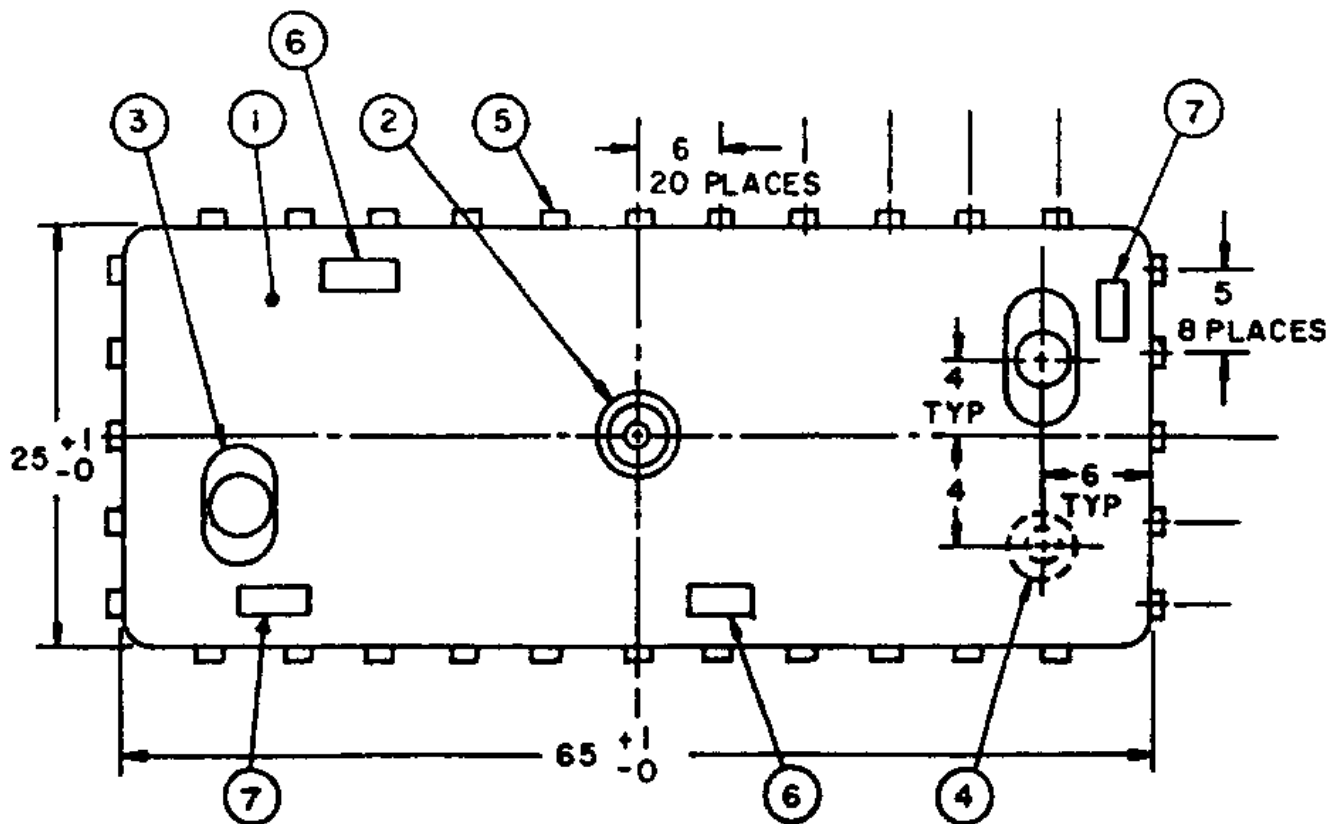
1. ALL DIMENSIONS IN FEET.
2. ALL TOLERANCES ± 1 FOOT UNLESS OTHERWISE NOTED.
3. SHAPE OF CORNERS OPTIONAL.
4. THE FOLLOWING SIZE CHAFING PATCHES SHALL BE BONDED INSIDE AND OUTSIDE THE TANK OPPOSITE EACH FITTING:
2 VENT - 18 ± 4 IN. DIA. OR SQUARE
3 FILL-DISCH - 36 ± 4 IN. DIA OR SQUARE.
4 DRAIN - 18 ± 4 IN. DIA OR SQUARE
5. GENERAL LOCATION OF LABELS IS SHOWN. EXACT ORIENTATION IS AT MANUFACTURER'S DISCRETION.

ITEM	QTY	DESCRIPTION
1	1	TANK 20,000 GAL.
2	1	VENT ASSEMBLY.
3	2	FILLER-DISCHARGE ASSEMBLY.
4	1	DRAIN ASSEMBLY.
5	12	HANDLE
6	2	I.D. LABELS.
7	2	CAUTION LABELS

FIGURE 3. Tank, fabric collapsible, 20,000 gal., fuel.

X-3617D

MIL-T-52983F



REQUIRED DIMENSIONS OF EMPTY TANK

NOTES:

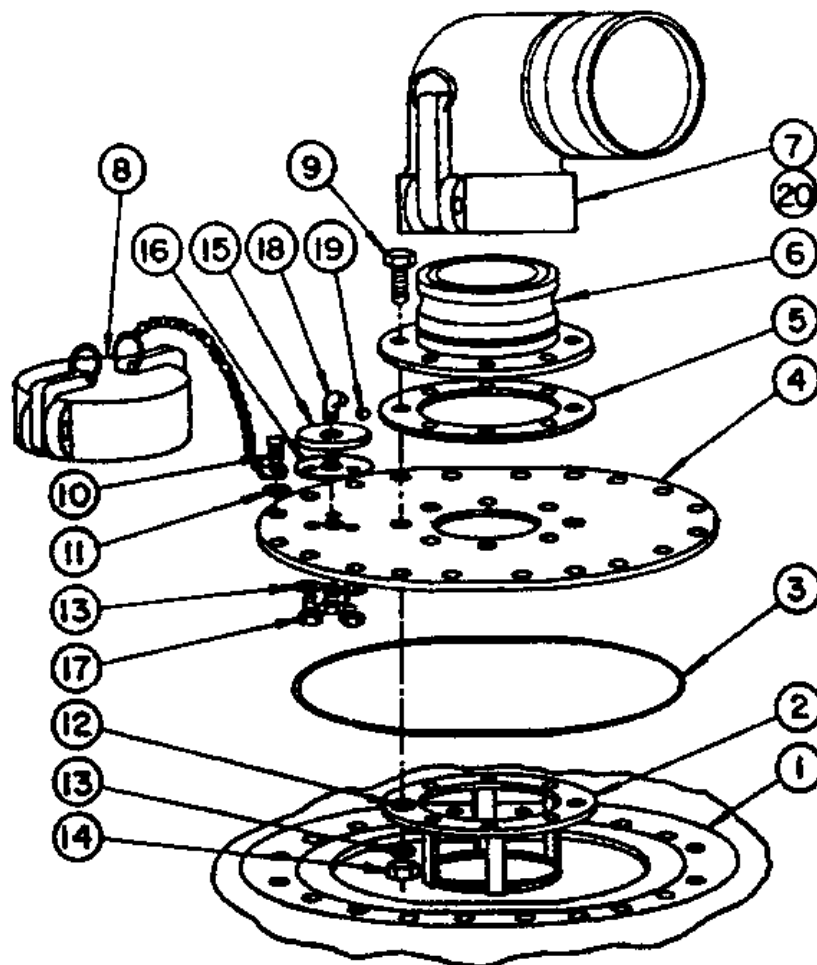
1. ALL DIMENSIONS IN FEET.
2. ALL TOLERANCES ± 1 FOOT UNLESS OTHERWISE NOTED.
3. SHAPE OF CORNERS OPTIONAL.
4. THE FOLLOWING SIZE CHAFING PATCHES SHALL BE BONDED INSIDE AND OUTSIDE THE TANK OPPOSITE EACH FITTING:
 2 VENT - 18 ± 4 IN. DIA OR SQUARE
 3 FILL-DISCH - 36 ± 4 IN. DIA OR SQUARE
 4 DRAIN - 18 ± 4 IN. DIA OR SQUARE
5. GENERAL LOCATION OF LABELS IS SHOWN. EXACT ORIENTATION IS AT MANUFACTURER'S DISCRETION.

ITEM	QTY	DESCRIPTION
1	1	TANK 50,000 GAL.
2	1	VENT ASSEMBLY
3	2	FILLER-DISCHARGE ASSEMBLY.
4	1	DRAIN ASSEMBLY.
5	32	HANDLE
6	2	I.D. LABELS
7	2	CAUTION LABELS

FIGURE 4. Tank, fabric collapsible, 50,000 gal., fuel.

X-245IF

MIL-T-52983F



SEE FIGURE 5b FOR PARTS LIST

NOTES:

1. LUBRICATE O-RING WITH SILICONE COMPOUND PER MIL-S-8660 BEFORE ASSEMBLING HARDWARE.
2. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
3. UNLESS OTHERWISE SPECIFIED, ANODIZED ALUMINUM SHALL BE IN ACCORDANCE WITH MIL-A-8625, TYPE II.
4. ZINC COATING SHALL BE IN ACCORDANCE WITH ASTM A153, CLASS D.

FIGURE 5a. Filler/discharge assembly, 3,000 gal tank.

X-2340G

MIL-T-52983F

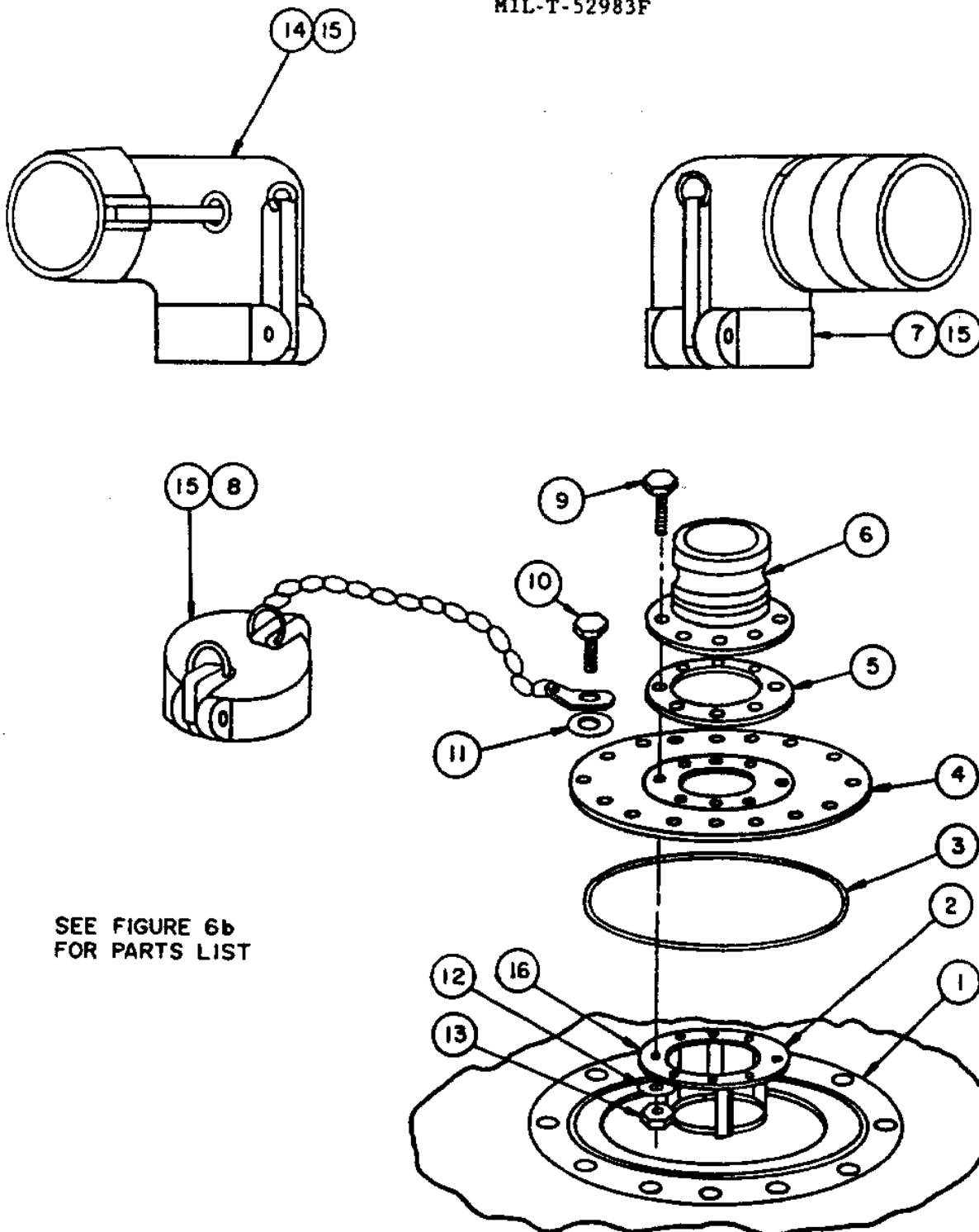
FIND NO.	PART NO. OR IDENT NO.	QTY	DESCRIPTION	SPECIFICATION	MATERIAL
1	FIGURE 7	1	ACCESS DOOR FITTING		
2	FIGURE 10	1	SUCTION STUB 4 IN.		AL ALLOY, ANODIZED
3	MS9021-383	1	4" RING GASKET		SYN RUBBER
4	FIGURE 8	1	OVAL CLOSURE PLATE		AL ALLOY, ANODIZED
5	FIGURE 14	1	GASKET		RUBBER
6	MS27023-17	1	COUPLING HALF, FLANGED, 4.00 SIZE		AL ALLOY, ANODIZED
7	81718/633 K-4	1	ELBOW, FEMALE TO MALE 4 IN. 90 DEGREE	OPM OR EQUAL	AL ALLOY, ANODIZED
8	MS27028-17	1	DUST CAP, 4 IN. W/ GASKET AND SECURITY CHAIN		AL ALLOY, ANODIZED
9		8	BOLT, HEX HD, GR 8 .375-16 UNC-2A X 1.50 L	SAE J105	STL, ZINC COATED .003 THK
10		20	BOLT, HEX HD, GR 8, .250-20 UNC-2A X 1.00 L	SAE J105	STL, ZINC COATED .003 THK
11		20	WASHER, PLAIN .281 ID	SAE J488	STL, ZINC COATED .003 THK
12		8	THREAD SEAL, .375 SIZE	PARKER #7500 .375 OR EQ	
13		11	WASHER, LOCK, HELICAL .375 SIZE	SAE J489	STL, ZINC COATED .003 THK
14		8	NUT, HEX, MACHINE SCREW, GR8, .375-16 UNC-2B	SAE J104	STL, ZINC COATED .003 THK
15	FIGURE 17	1	FLANGE, ADAPTER		
16	FIGURE 18	1	GASKET		RUBBER
17		3	BOLT, HEX HD, GR 8, .375-24 UNF-2A X .75 L	SAE J105	STL, ZINC COATED .003 THK
18	MS51504-B8Z	1	ELBOW, 3/8 IN. PIPE TO 1/2 IN. OD TUBE		
19	MS51532-B8Z	1	CAP, TUBE		
20	MS27030-9	1	GASKET-COUPLING HALF, 4 IN. SIZE		

FIGURE 5b. Filler/discharge assembly, 3,000 gal tank
parts list.

X-4962

MIL-T-52983F

MIL-T-52983F



SEE FIGURE 6b
FOR PARTS LIST

FIGURE 6a. Filler/discharge assembly, 10,000, 20,000 and 50,000 gal tanks.

X-3322G

MIL-T-52983F

FIND NO.	PART NO. IDENTIFICATION NO.	QTY FILLER FITTING ASSY	QTY DISCHARGE FITTING ASSY	DESCRIPTION	SPECIFICATION	MATERIAL
1	FIGURE 7	1	1	ACCESS DOOR FITTING COMP, TYPE		
2	FIGURE 10	1	1	SUCTION STUB 4 INCH		AL ALY, ANODIZED
3	MS 9021-383	1	1	"O" RING GASKET		SYN RUBBER
4	FIGURE 9	1	1	OVAL CLOSURE PLATE COMP, FITTING		AL ALY, ANODIZED
5	FIGURE 14	1	1	GASKET		RUBBER
6	MS 27023-17	1	1	COUPLING HALF, FLANGED 4 IN. SIZE		AL ALY, ANODIZED
7	81718/633 K-4	-	1	ELBOW FEMALE TO MALE 4 IN. X 90° SIZE	OPW OR EQUAL	AL ALY, ANODIZED
8	MS 27028-17	1	1	DUST CAP 4 IN W/ GASKET AND SECURITY CHAIN		AL ALY CAP, ANODIZED
9		8	8	BOLT HEX HD, GR 8, .375-16 UNC 2A X 1.50 L	SAE J105	STL, ZINC COATED, .003 THK
10		20	20	BOLT, HEX HD, GR 8, .250-20 UNC-2A X 1.00 L	SAE J105	STL, ZINC COATED, .003 THK
11		20	20	WASHER, PLAIN .281 ID	SAE J488	STL, ZINC COATED, .003 THK
12		8	8	WASHER, LOCK HELICAL .375 SIZE	SAE J485	STL, ZINC COATED, .003 THK
13		8	8	NUT, HEX MACH SCREW, GR 8, .375-16 UNC-2B	SAE J104	STL, ZINC COATED, .003 THK
14	81718/633 KB-4	1	-	ELBOW, FEMALE TO FEMALE 4 IN. X 90° SIZE	OPW OR EQUAL	AL ALY, ANODIZED
15	MS 27030-9	3	2	GASKET-COUPLING HALF, 4 IN. SIZE		RUBBER
16		8	8	THREAD SEAL, .375 SIZE	PARKER #7500 .375 OR EQ.	

NOTES:

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
2. LUBRICATE "O" RING WITH SILICONE COMPOUND PER MIL-S-8660 BEFORE ASSEMBLING HARDWARE.
3. UNLESS OTHERWISE SPECIFIED, ANODIZED ALUMINUM SHALL BE IN ACCORDANCE WITH MIL-A-8625, TYPE II.
4. ZINC COATING SHALL BE IN ACCORDANCE WITH ASTM A153, CLASS D.
5. Connect dust cap keeper chain to integral attachment point.

FIGURE 6b. Filler/discharge assembly, 10,000, 20,000 and 50,000 gal tanks parts list.

X-4963A

MIL-T-52983F

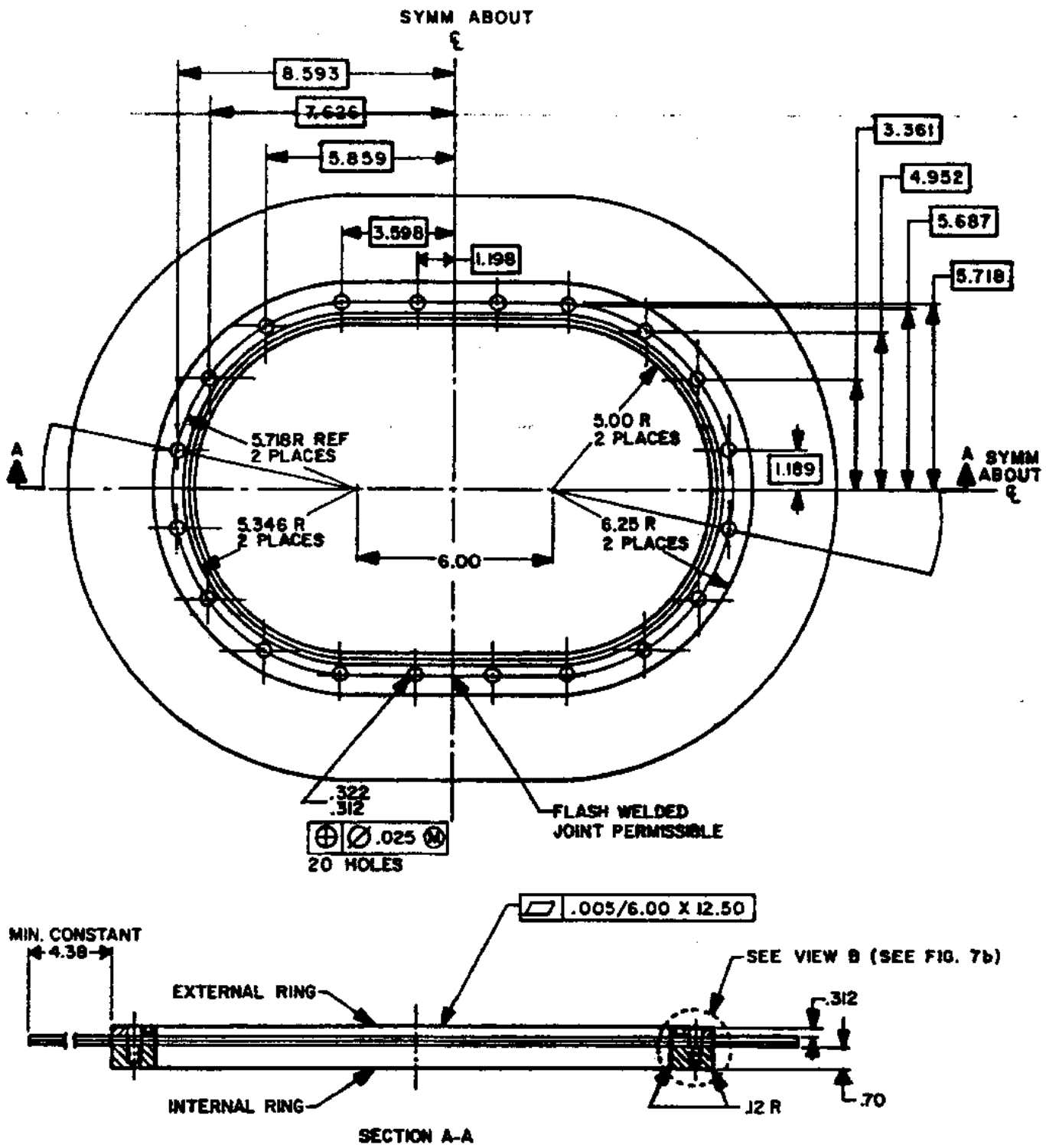
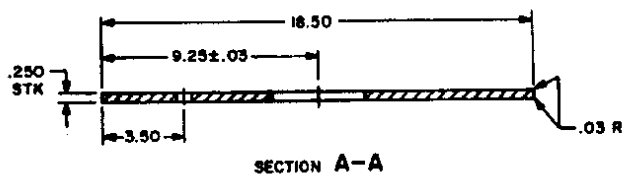
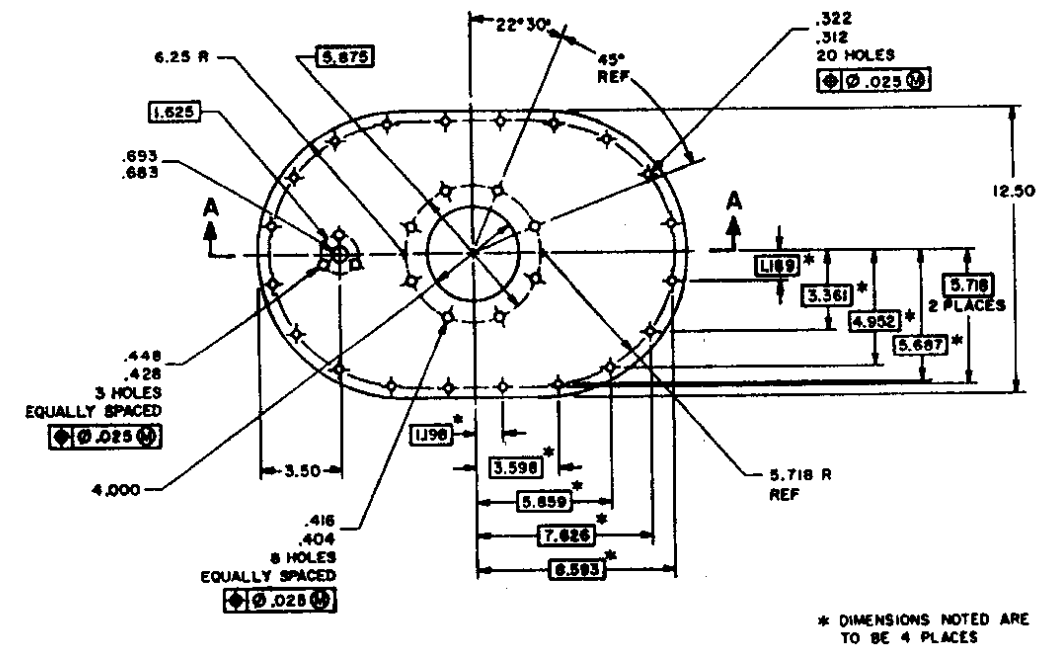


FIGURE 7a. Access door fitting-compression type.

X-3323J

MIL-T-52983F



NOTES:

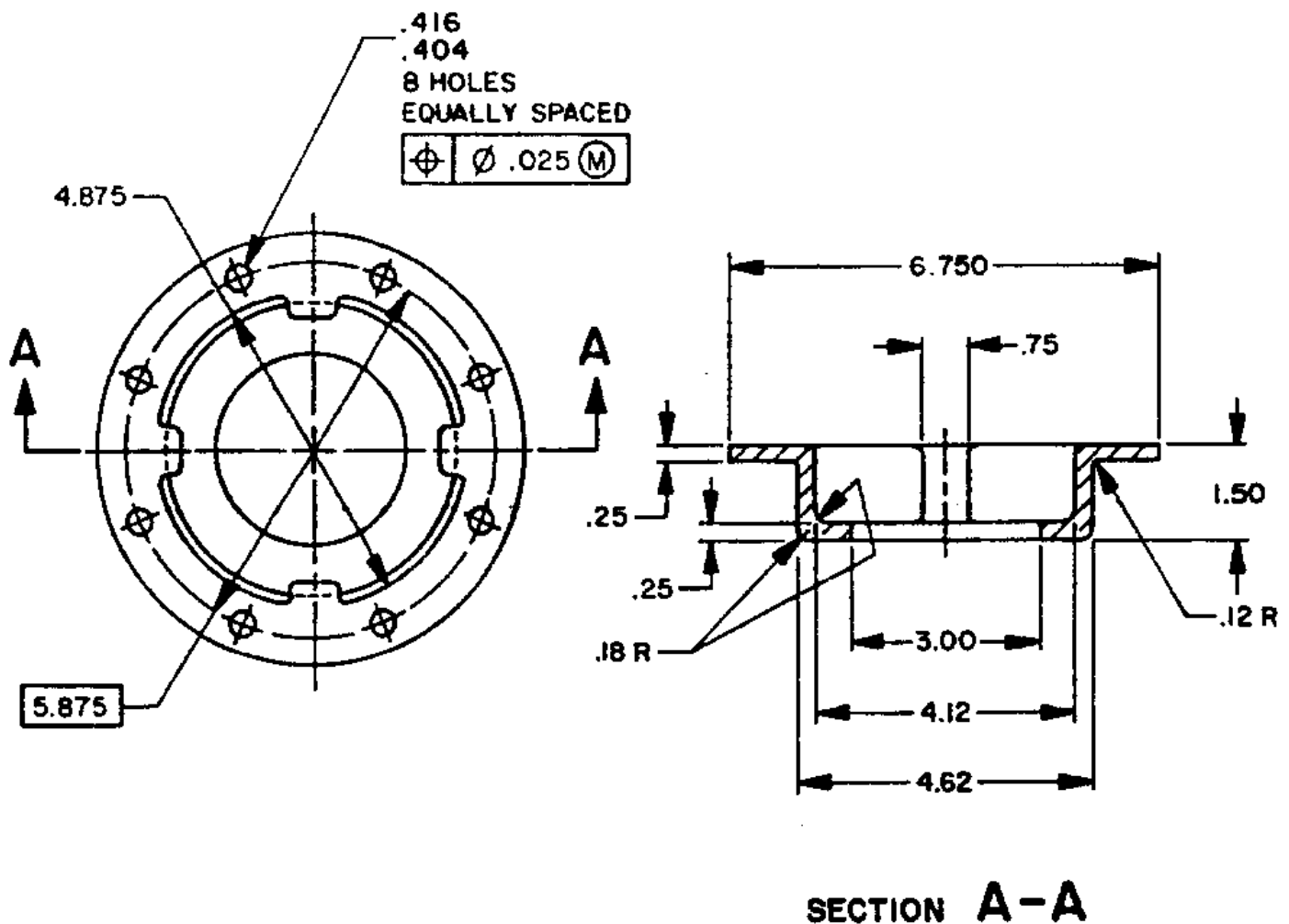
1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES: XX ± .06
XXX ± .015
ANGLES ± 2°0'
2. MATERIAL: AL ALLOY.
3. ANODIZE AND DYE IN ACCORDANCE WITH MIL-A-8625, TYPE II OR CHEMICAL CONVERSION COATED IN ACCORDANCE WITH MIL-C-5541, CLASS 1A. COLOR SHALL APPROXIMATE COLOR OF TANK FABRIC.

FIGURE 8. Oval closure plate-compression fitting, 3,000 gal tank.

X-36 3D

Tank.]

MIL-T-52983F



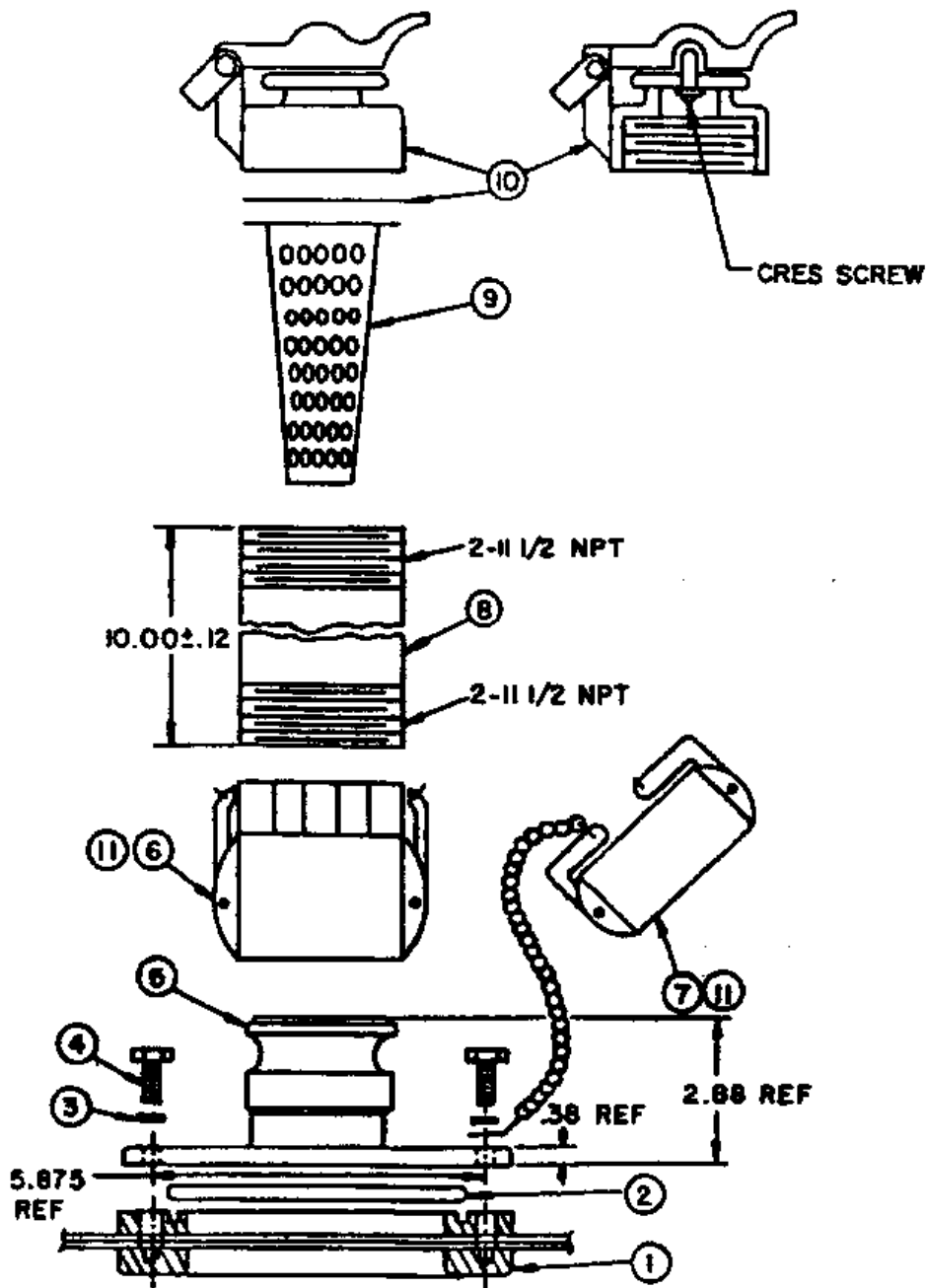
NOTES:

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
2. TOLERANCES: .XX = $\pm .03$
.XXX = $\pm .015$
DRAFT ANGLES = 3° MAX
3. MATERIAL: ALUMINUM ALLOY, ANODIZED IN ACCORDANCE WITH MIL-A-8625, TYPE II OR CHEMICAL CONVERSION COATED IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.

FIGURE 10. Suction stub, 3,000, 10,000, 20,000 and 50,000 gal. tanks.

X-3324D

MIL-T-52983F



SEE FIGURE 11b FOR PARTS LIST

FIGURE 11a. Vent fitting assembly.

X-3325 K

NOTES:

1. LUBRICATE O-RING WITH SILICONE COMPOUND PER MIL-S-8660 BEFORE ASSEMBLY.
2. UNLESS OTHERWISE SPECIFIED, ANODIZED ALUMINUM SHALL BE IN ACCORDANCE WITH MIL-A-8625, TYPE II.
3. ZINC COATING SHALL BE IN ACCORDANCE WITH ASTM A153, CLASS D.
4. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
5. CONNECT DUST CAP KEEPER CHAIN TO INTEGRAL ATTACHMENT POINT.

FIND NO.	PART NO. OR IDENT NO.	QTY	DESCRIPTION	SPECIFICATION	
1.	FIGURE 12	1	VENT AND DRAIN FITTING-COMPRESSION TYPE		
2.	MS29513-250	1	"O" RING GASKET		SYN RUBBER
3.		8	WASHER, PLAIN, .281 ID	SAE J488	STL,
4.		8	BOLT, HEX HD, GR 8 .250-20 UNC-2A X 1.0 L	SAE J105	ZINC COATED, .003 THK
5.	MS27023-21	1	COUPLING HALF, QUICK DISCONNECT CAMLOCKING TYPE, MALE FLANGED		AL ALLOY, ANODIZED
6.	MS27024-11	1	COUPLING HALF, QUICK DISCONNECT CAMLOCKING TYPE, FEMALE, THREADED		AL ALLOY, ANODIZED
7.	MS27028-11	1	DUST CAP, 2" WITH 12 INCH LG SECURITY CHAIN STYLE B		AL ALLOY, ANODIZED
8.		1	PIPE, 2 INCH NOM, SCHEDULE 40		AL ALLOY, ANODIZED
9.		1	FLAME ARRESTOR		AL ALLOY ANODIZED
10.		1	RELIEF CAP WITH GASKET	PROTECTO SEAL # EX1333-2" OR EQUAL	AL ALLOY, ANODIZED
11.	MS27030-6	2	GASKET-COUPLING HALF, 2" SIZE		RUBBER

FIGURE 1 lb. Vent fitting assembly parts list.

X-4965A

MIL-T-52983F

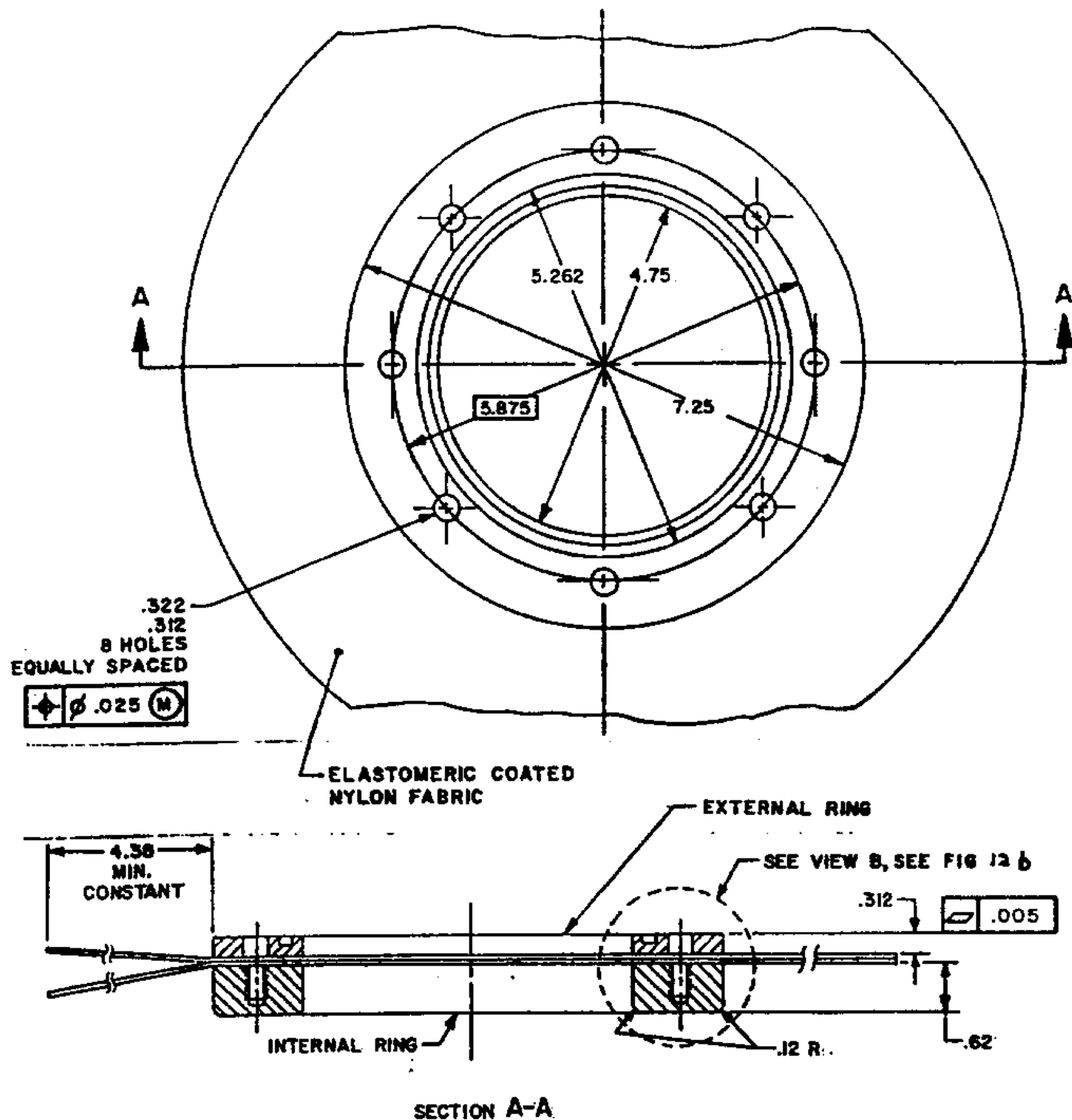
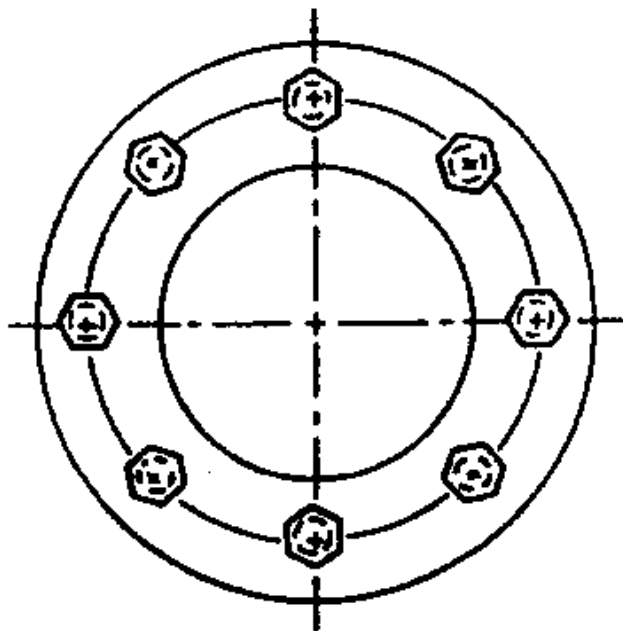
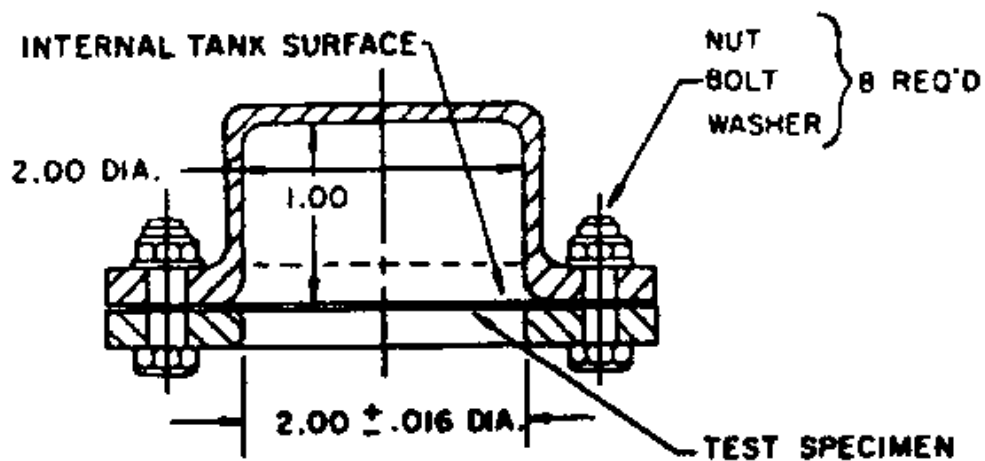


FIGURE 12 a. Vent and drain fitting-compression type.

X-3326I

MIL-T-52983F



NOTES:

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

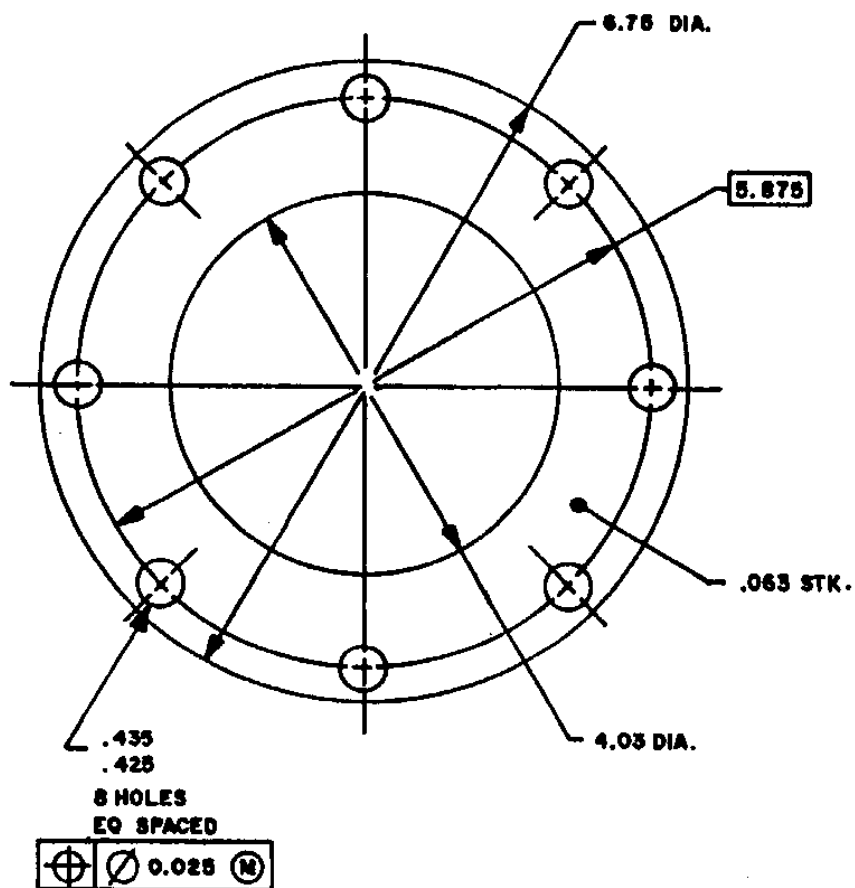
TOLERANCES: .XX ± .06

2. MATERIAL SHALL BE ALUMINUM ALLOY.

FIGURE 13. Diffusion cup assembly.

X-3329B

MIL-T-52983F



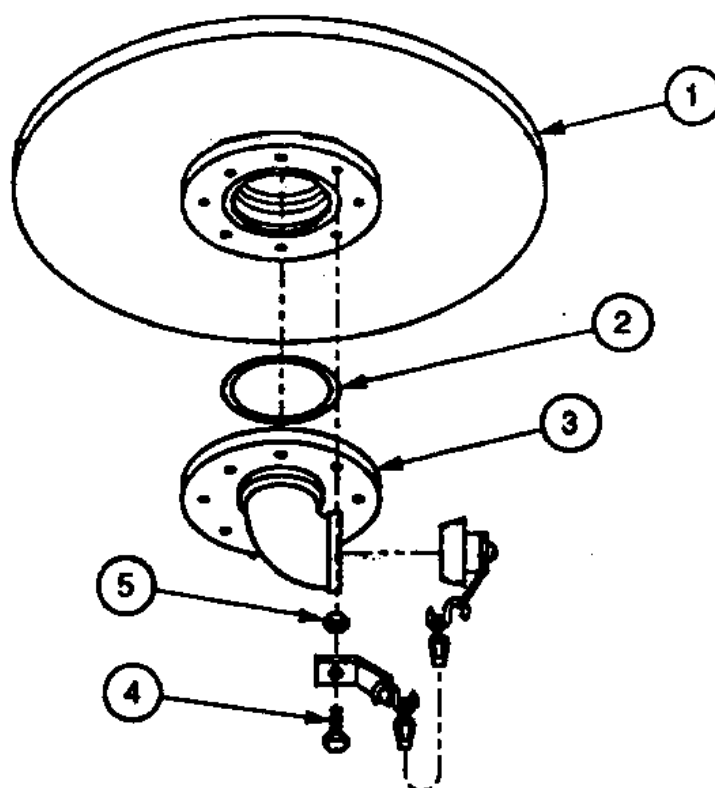
NOTES:

1. MATERIAL: RUBBER, ASTM D2000 M4AG6IOAI3EO4
2. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: .XX±.03

FIGURE 14. Gasket, for 4-inch tank truck round flange, 3,000, 10,000, 20,000, 50,000 and 210,000 gal. fuel tanks.

X-3330C

MIL-T-52983F



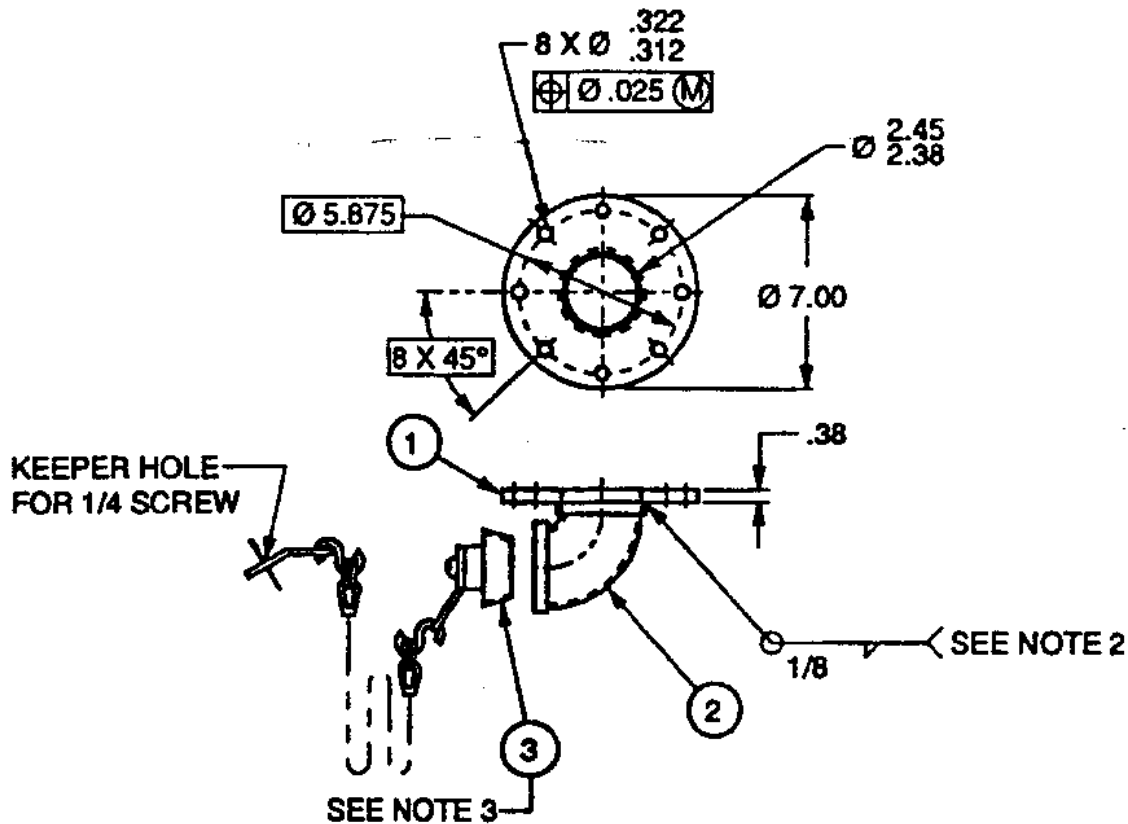
NOTES:

1. LUBRICATE "O" RING WITH WATER OR PETROLEUM JELLY BEFORE ASSEMBLING HARDWARE.

FIND NO.	PART OR IDENTIFYING NO.	QTY	DESCRIPTION	SPECIFICATION	MATERIAL
1	FIGURE 12	1	VENT AND DRAIN FITTING COMPRESSION TYPE		
2	MS29513-250	1	"O" RING GASKET		SYN RUBBER
3	FIGURE 16	1	DRAIN FITTING		
4		8	BOLT, HEXAGON, HEAD 1/4-20 UNC, 1.00 INCH LONG	SAE J105	STL ZINC COATED .003 IN. THK.
5		8	WASHER, PLAIN, 1/4 INCH ID	SAE J488	STL ZINC COATED .003 IN. THK.

FIGURE 15. Drain fitting assembly, tanks.

X-5022



NOTES:

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE:
TWO PLACE $\pm .03$
2. WELDING SHALL BE IN ACCORDANCE WITH 13214E8326, TYPE III, CLASS I.
3. PLUG, FIND NO. 4, SHALL BE FURNISHED WITH KEEPER CHAIN 6 INCHES LONG.
4. ALUMINUM ALLOY PART SHALL BE ANODIZED IN ACCORDANCE WITH MIL-A-8625, TYPE I, CLASS I.

FIND NO.	PART OR IDENTIFYING NO.	QTY	DESCRIPTION	SPECIFICATION	MATERIAL
1	6061-T651	1	PLATE	ASTM B209	AL ALY
2	M52618 / 1A09XC	1	90° ELBOW, SIZE 2	MIL-F-52618/1	AL ALY
3	M52618 / 7P09XC	1	PLUG, SIZE 2	MIL-F-52618/7	AL ALY

FIGURE 16. Drain fitting, 3,000, 10,000, 20,000 and 50,000 gallon fuel.

X-5023

MIL-T-52983F

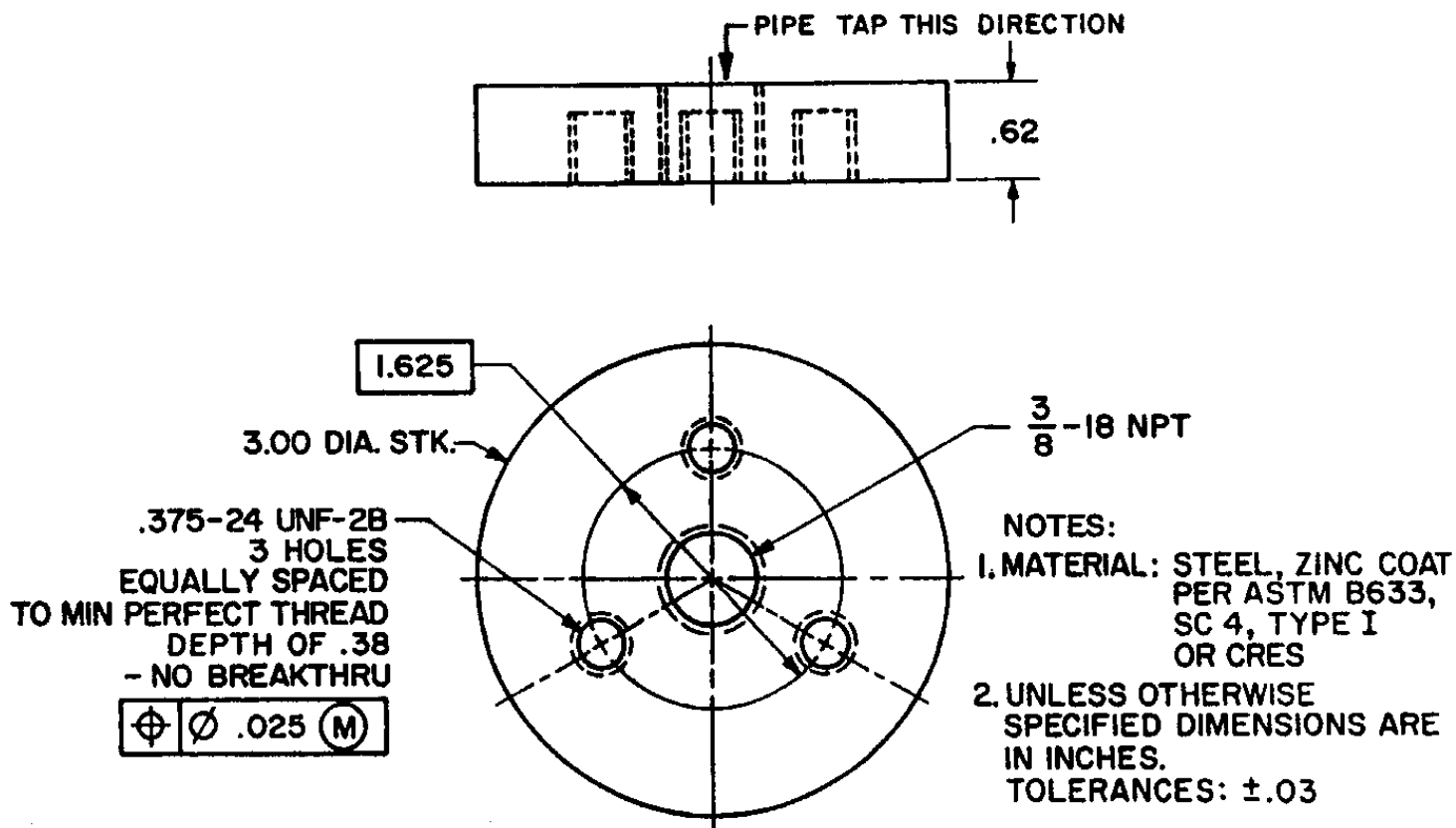


FIGURE 17. Flange adapter, 3,000 gal fuel tank.

X-2349C

MIL-T-52983F

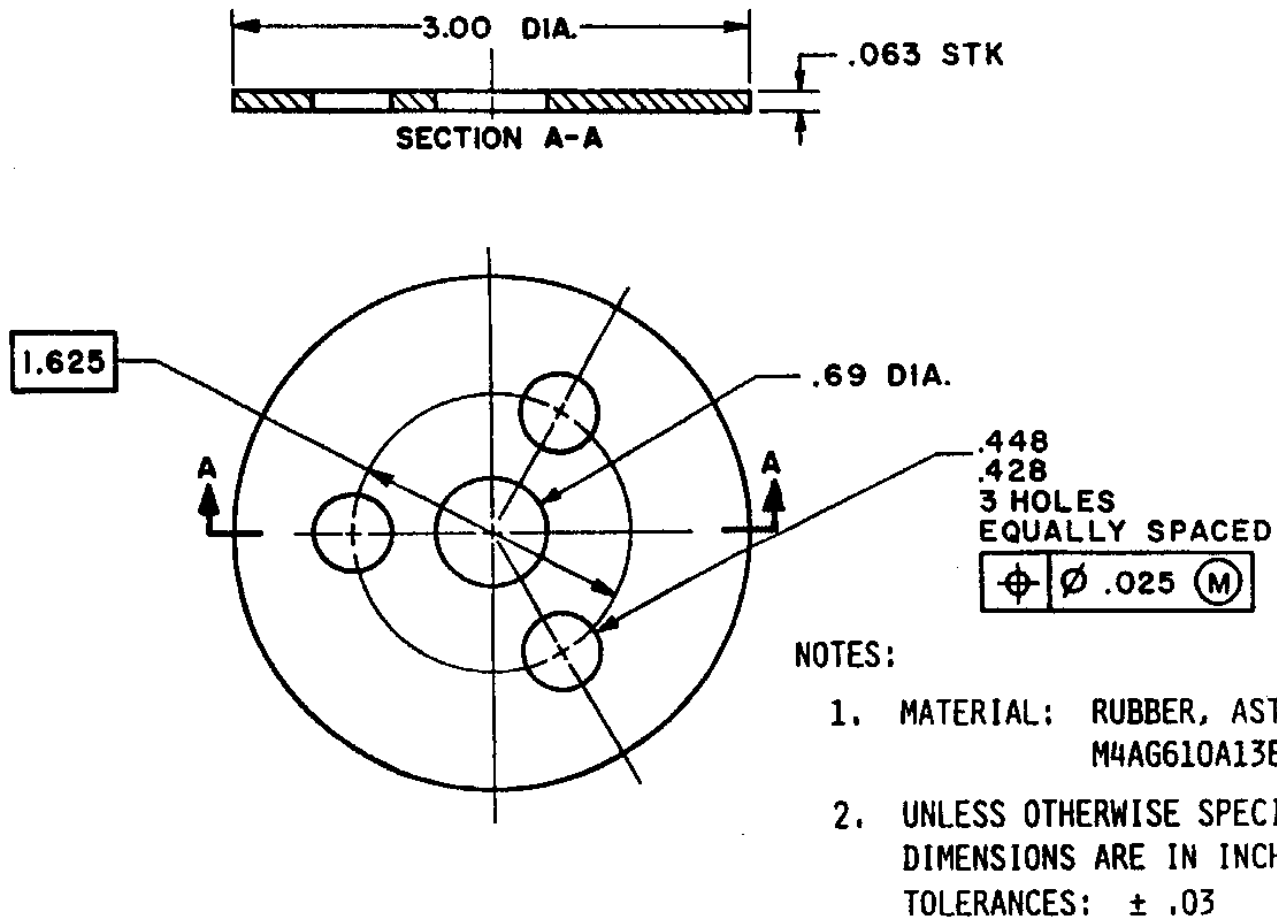
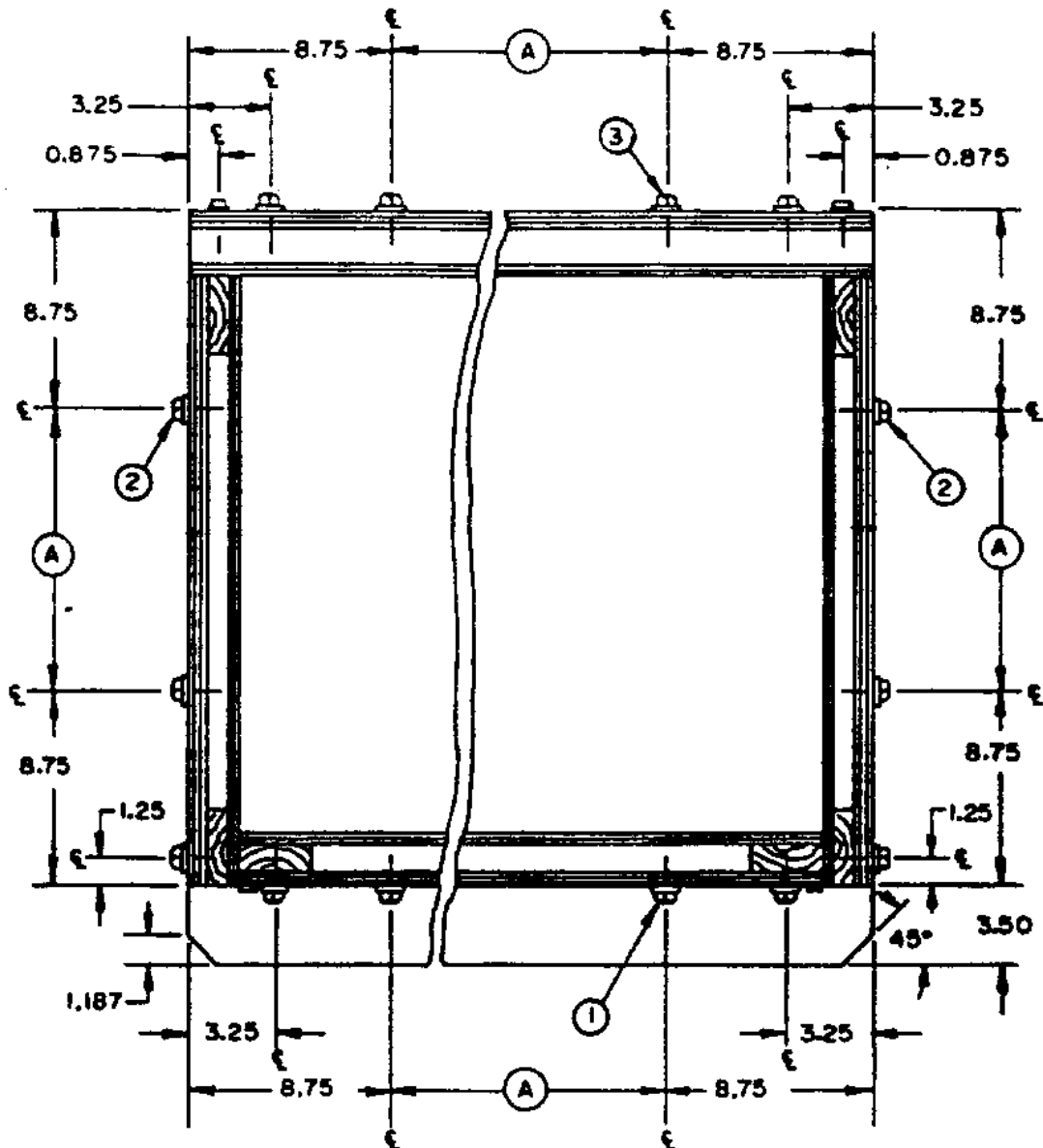


FIGURE 18. Gasket, 3,000 gal fuel tank.

X-2343E

MIL-T-52983F

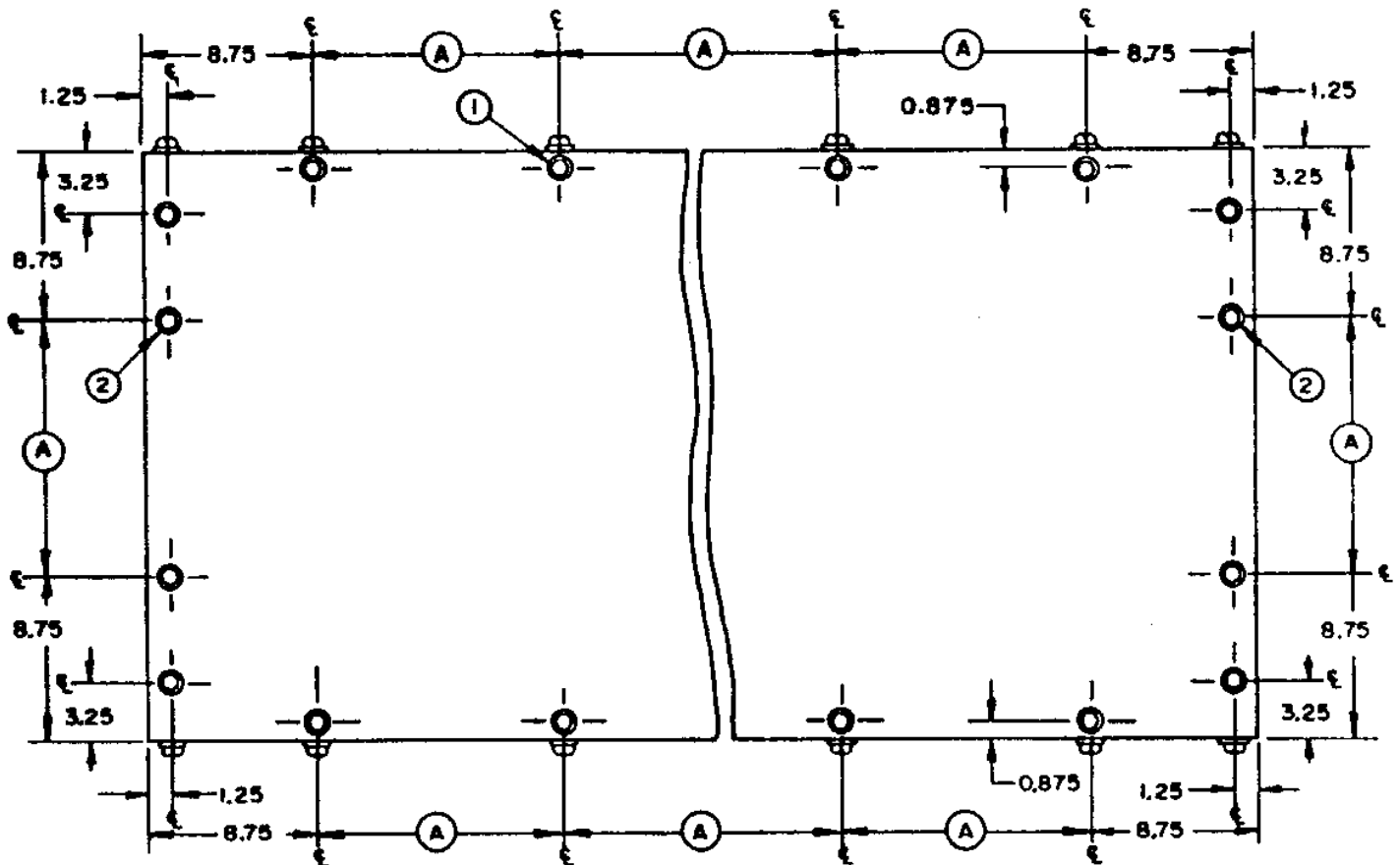
**NOTES:**

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① BOTTOM ASSEMBLY TO END PANEL.
 - ② SIDE PANEL TO END PANEL.
 - ③ TOP PANEL TO END PANEL.

FIGURE 19. End View of Box

X-4707A

MIL-T-52983F



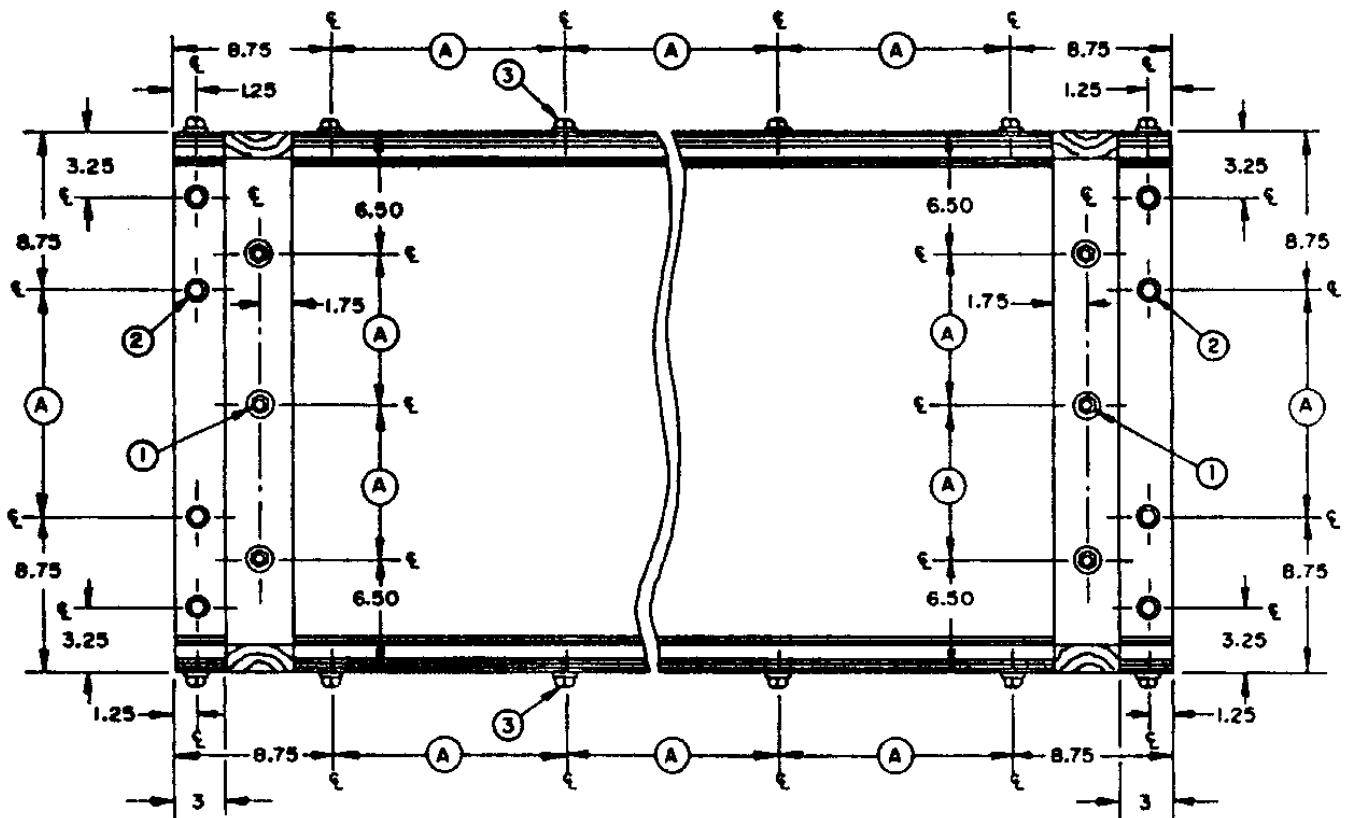
NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① TOP PANEL TO SIDE PANEL.
 - ② TOP PANEL TO END PANEL.

FIGURE 21. Top View of Box

X-4709A

MIL-T-52983F

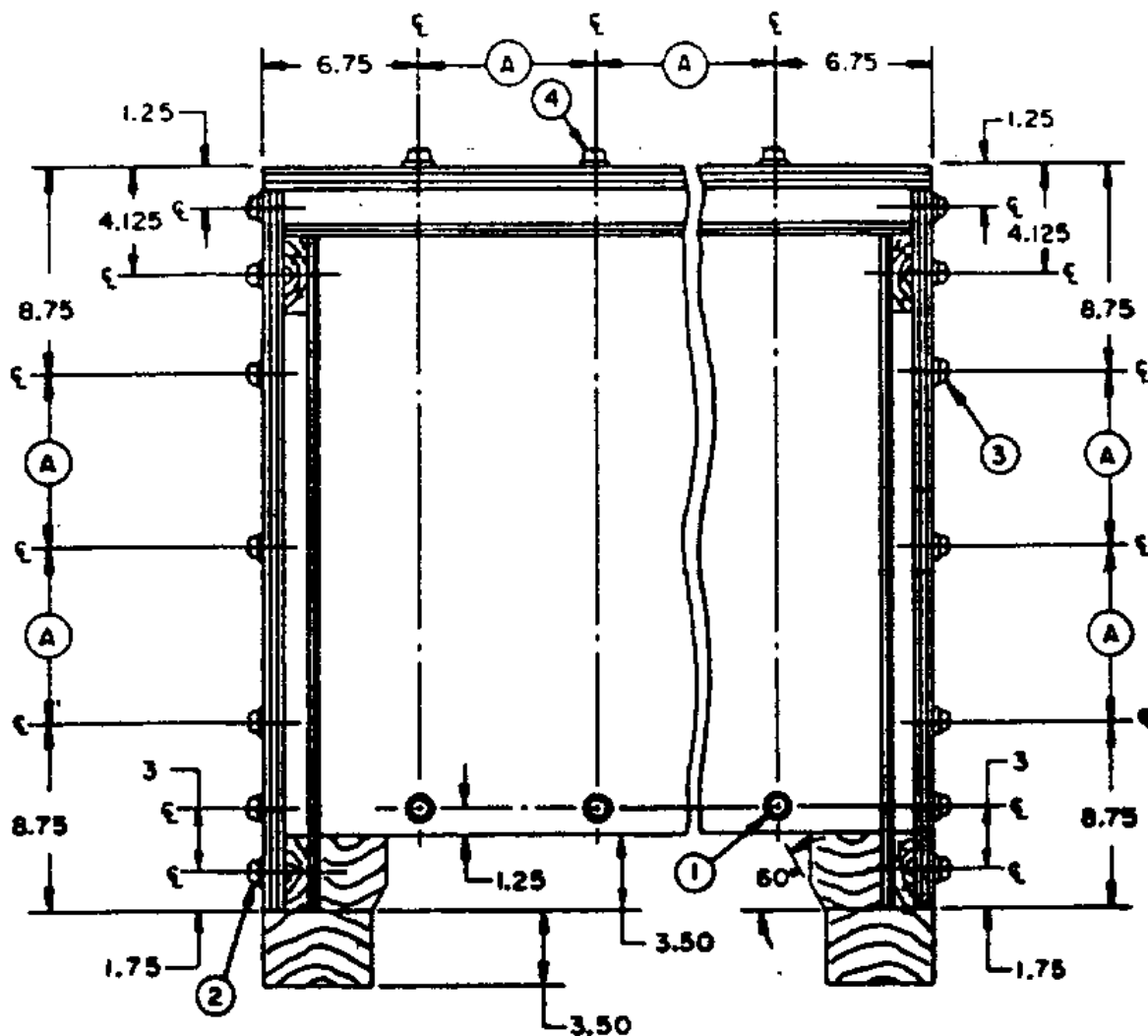
**NOTES:**

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS OR CARRIAGE BOLTS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① SKID TO BOTTOM PANEL.
 - ② BOTTOM PANEL TO END PANEL.
 - ③ SIDE PANEL TO BOTTOM PANEL.

FIGURE 22. Bottom View of Box

X-4710A

MIL-T-52983F

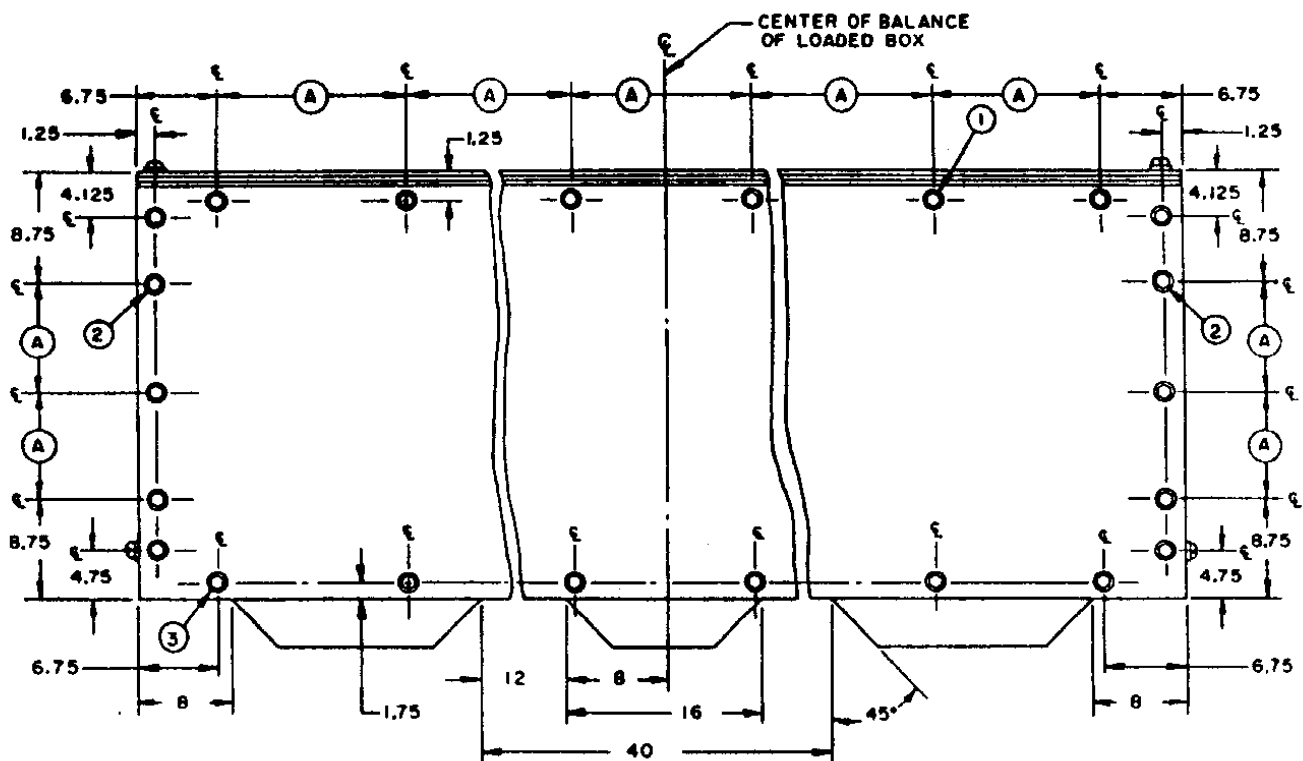
**NOTES:**

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① END PANEL TO BASE.
 - ② SIDE PANEL TO BASE.
 - ③ SIDE PANEL TO END PANEL.
 - ④ TOP PANEL TO END PANEL.

FIGURE 23. End View of Box With Outside Length Greater Than 96 Inches.

X-4711

MIL-T-52983F



NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:

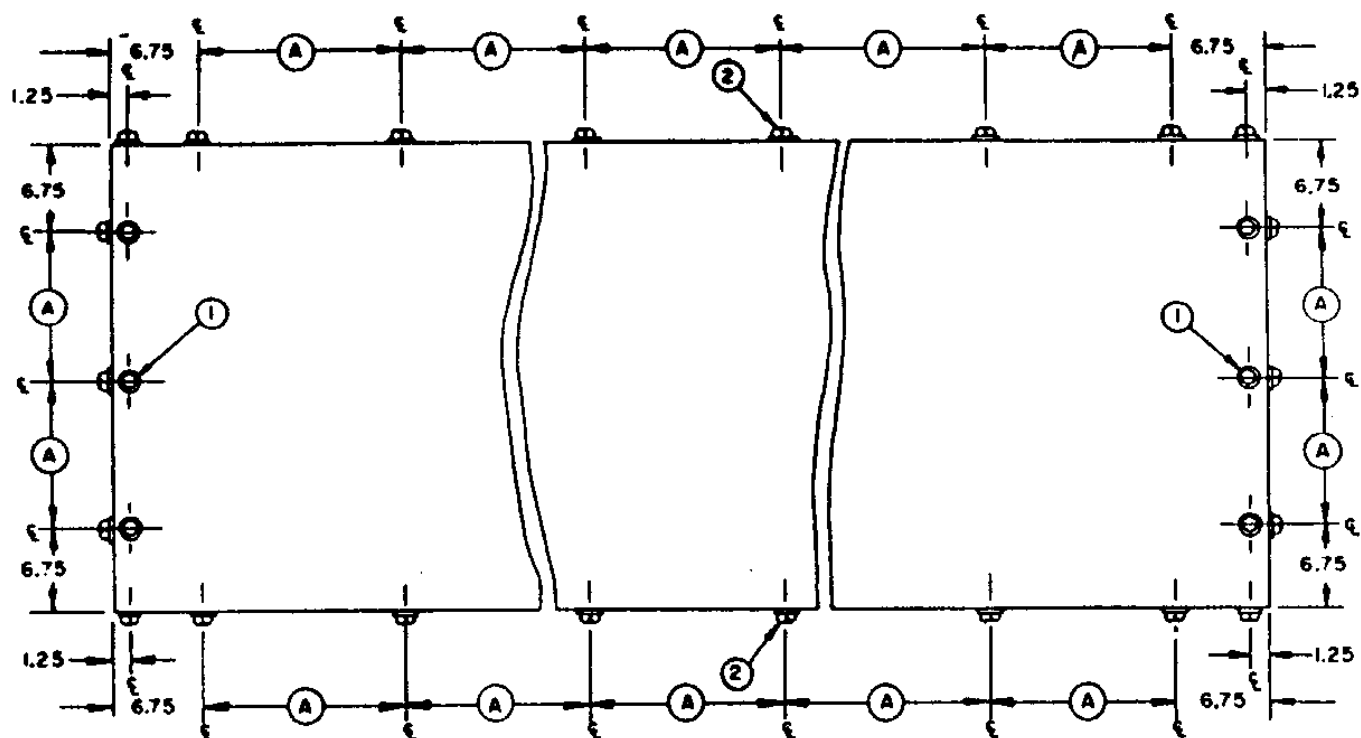
- ① SIDE PANEL TO TOP PANEL.
- ② SIDE PANEL TO END PANEL.
- ③ SIDE PANEL TO BASE.

FIGURE 24. Side View of Box With Outside Length Dimension Greater Than 96 Inches.

X-4 2

Than 96 Inches.]

MIL-T-52983F



NOTES:

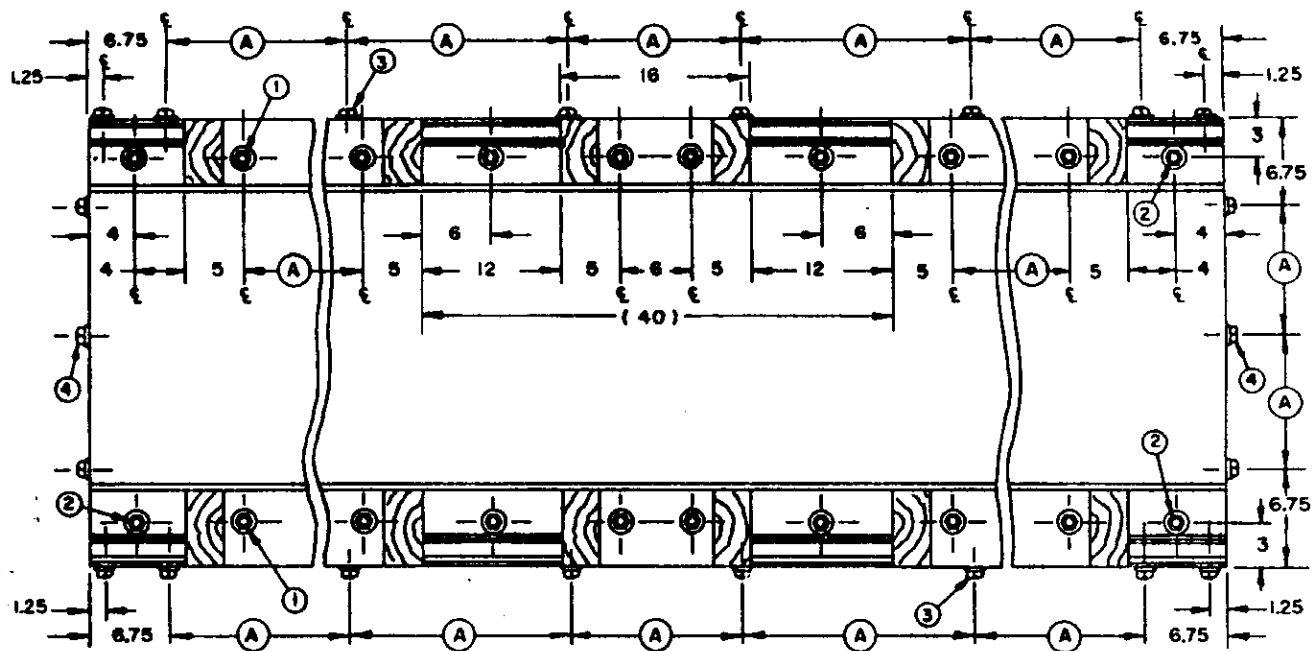
1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① TOP PANEL TO END PANEL.
 - ② SIDE PANEL TO TOP PANEL.

FIGURE 25. Top View of Box With Outside Length Dimension Greater Than 96 Inches.

X-4713

Than 96 Inches.]

MIL-T-52983F



NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSIONS (A) BETWEEN INTERMEDIATE LAG SCREWS AND CARRIAGE BOLTS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.
3. FIGURE SHOWS FASTENING OF:
 - ① RUBBING STRIPS AND SKIDS TO BASE.
 - ② HEADER TO BASE.
 - ③ SIDE PANEL TO BASE.
 - ④ END PANEL TO BASE.

FIGURE 25. Bottom View of Box 1' Outside Length Dimension Greater Than 96 Inches.

X-4714

Greater Than 96 Inches.]

MIL-T-52983F

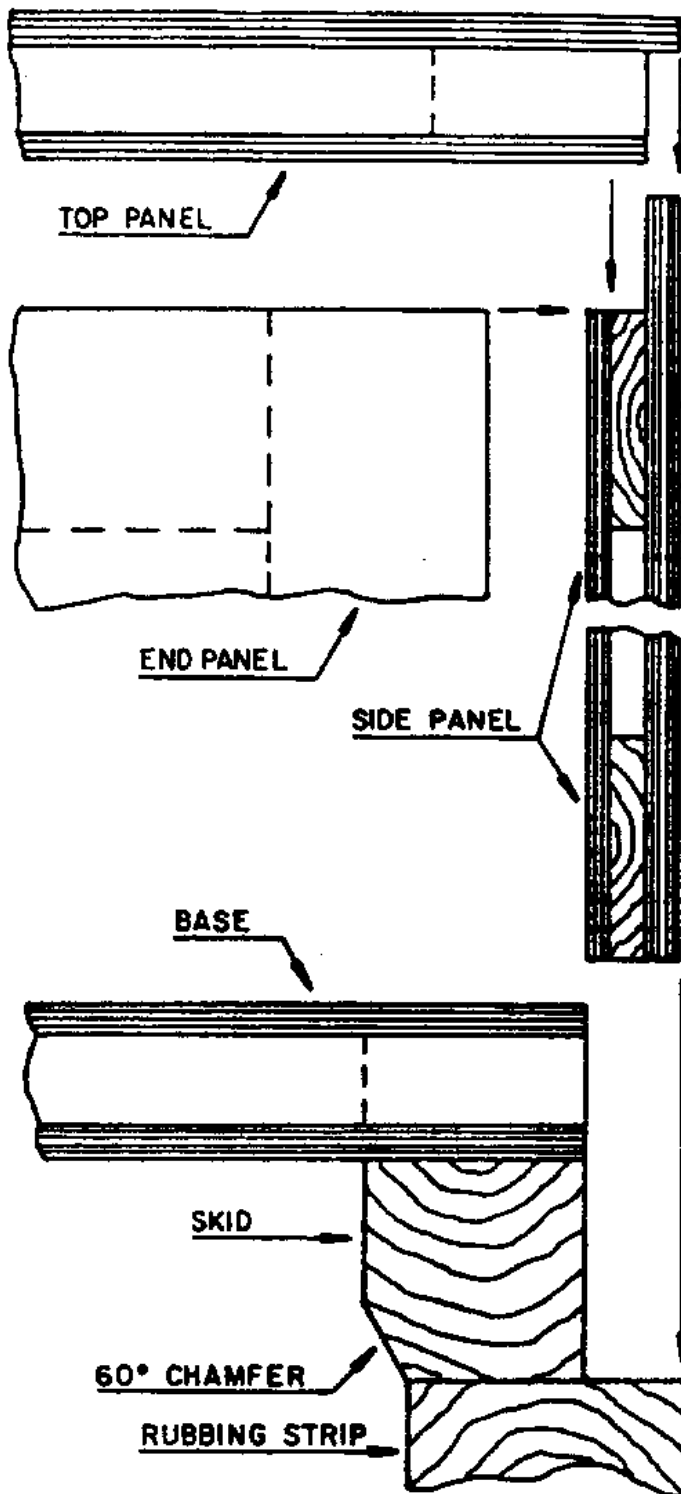
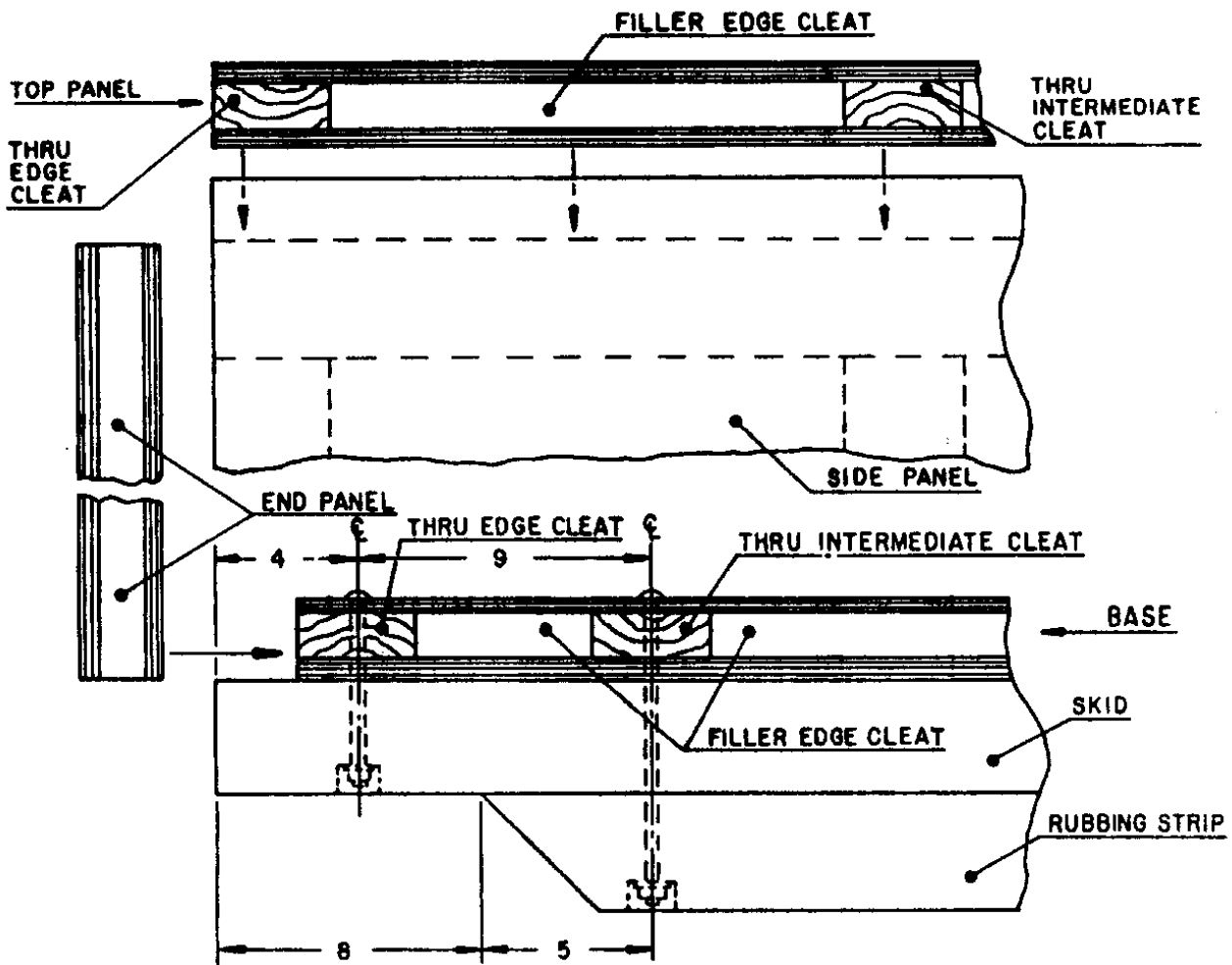


FIGURE 2. Assembly Method (End View)
for Box Over 96 Inches in Length.

X-4715

MIL-T-52983F



NOTE:

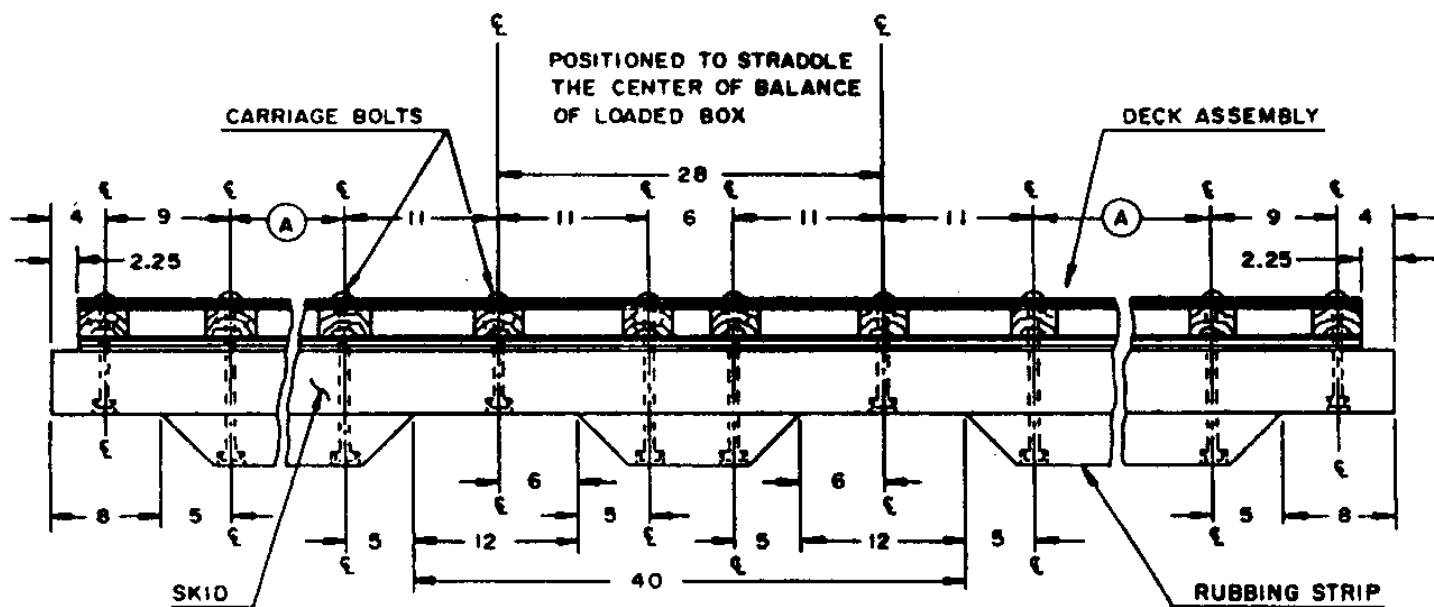
1. ALL DIMENSIONS ARE IN INCHES.

**FIGURE 18. Assembly Method (Side View)
for Box Over 96 Inches in Length.**

X-47.5

Length.]

MIL-T-52983F



NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DIMENSION (A) BETWEEN THRU INTERMEDIATE CLEATS AND INTERMEDIATE CARRIAGE BOLTS SHALL BE NOT LESS THAN 8 INCHES OR MORE THAN 16 INCHES.

**FIGURE 29. Fabrication Method for Base (Side View)
for Box Over 96 Inches in Length.**

X-4717

96 Inches In Length.]