

MIL-N-52110F  
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SUPERSEDING  
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## MILITARY SPECIFICATION

### NOZZLES, FUEL AND OIL SERVICING, NONAUTOMATIC SHUTOFF AND NOZZLES, FUEL SERVICING, AUTOMATIC SHUTOFF

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

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#### 1. SCOPE

1.1 Scope. This specification covers automatic shutoff nozzles used for dispensing liquid fuel and nonautomatic shutoff nozzles used for dispensing liquid fuel and oil.

1.2 Classification. The nozzles shall be the following types, sizes, classes, and styles as specified (see 6.2 and 6.8):

Type I - Nozzles, fuel and oil servicing, nonautomatic shutoff (manually operated).

Size 1 - For use with 3/4-inch or 1-inch hose.

Size 2 - For use with 1-1/4-inch or 1-1/2-inch hose.

Size 3 - For use with 2-inch or 1-1/2-inch hose.

Type II - Nozzles, fuel servicing, automatic shutoff.

Size 1 - For use with 3/4-inch or 1-inch hose.

Size 2 - For use with 1-1/4-inch or 1-1/2-inch hose.

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

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Type III - Nozzles, service station pump, self service, automatic shutoff.

Size 1 - For use with 3/4-inch or 1-inch hose.

Size 2 - For use with 1-1/4-inch or 1-1/2-inch hose.

Class A - Spouts for use with leaded gasoline.

Class B - Spouts for use with unleaded gasoline.

Style 1 - Curved spout.

Style 2 - Straight spout.

## 2. APPLICABLE DOCUMENTS

### 2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

## SPECIFICATIONS

### FEDERAL

QQ-P-416	- Plating, Cadmium (Electrodeposited).
RR-W-360	- Wire Fabric, Industrial.
TT-S-735	- Standard Test Fluids, Hydrocarbon.

### MILITARY

MIL-P-775	- Packaging of Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles and Strainers.
MIL-G-3056	- Gasoline, Automotive, Combat.
MIL-G-5572	- Gasoline, Aviation: Grades 80/87, 100/130, 115/145.
MIL-T-5624	- Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-C-7024	- Calibrating Fluid, Aircraft Fuel System Components.
MIL-L-7808	- Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-A-8625	- Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-L-23699	- Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-C-81562	- Coatings, Cadmium, Tin-Cadmium and Zinc (Mechanically Deposited).
MIL-C-81740	- Coatings, Aluminum and Aluminum Alloys (Metallic Compound Decomposition).
MIL-C-81797	- Coating, Inorganically Bonded Aluminum (Electrophoretically Deposited).

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## STANDARDS

## FEDERAL

FED-STD-H28

- Screw-Thread Standards for Federal Services.

## MILITARY

MIL-STD-29

- Springs, Mechanical; Drawing Requirement for.

MIL-STD-105

- Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-130

- Identification Marking of US Military Property.

MIL-STD-870

- Cadmium Plating, Low Embrittlement, Electrodeposition.

MIL-STD-889

- Dissimilar Metals.

MIL-STD-1188

- Commercial Packaging of Supplies and Equipment.

MS25384

- Electrostatic Discharger Jumper, Fuel Nozzle-to-Aircraft.

2.1.2 Other Government publications. The following other Government publication forms a part of this specification to the extent specified herein.

## CODE OF FEDERAL REGULATIONS (CFR)

Title 40, Part 80 - Regulation of Fuel and Fuel Additives.

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

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AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASTM A 276 - Stainless and Heat Resisting  
Steel Bars and Shapes.  
ANSI/ASTM A 313 - Chromium Nickel Stainless and Heat  
Resisting Steel Spring Wire.  
ANSI/ASTM A 525 - Steel Sheet, Zinc-Coated (Galvanized)  
by the Hot-Dip Process.  
ANSI/ASTM B 21 - Naval Brass Rod, Bar, and Shapes.  
ANSI/ASTM B 26 - Aluminum-Alloy Sand Castings.  
ANSI/ASTM B 36 - Brass Plate, Sheet, Strip, and  
Rolled Bar.  
ANSI/ASTM B 108 - Aluminum-Alloy Permanent Mold  
Castings.  
ANSI/ASTM B 121 - Lead Brass Plate, Sheet, Strip,  
and Rolled Bar.  
ANSI/ASTM B 124 - Copper and Copper Alloy Forging  
Rod, Bar, and Shapes.  
ANSI/ASTM B 135 - Seamless Brass Tube.  
ANSI/ASTM B 159 - Phosphor Bronze Wire.  
ANSI/ASTM B 210 - Aluminum-Alloy Drawn Seamless  
Tubes (Metric).  
ANSI/ASTM B 271 - Copper-Base Alloy Centrifugal  
Castings.  
ANSI/ASTM B 505 - Copper-Base Alloy Continuous  
Castings.  
ANSI/ASTM B 584 - Copper Alloy Sand Castings for  
General Applications.  
ANSI B46.1 - Surface Texture.

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

UNDERWRITERS' LABORATORIES (UL)

UL 842 - Standard for Safety: Valves for Flammable Fluids.

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, IL 60611; 333 Pfingsten Road, Northbrook, IL 60062; 1283 Walt Whitman Road, Melville, LI, NY 11746; 1655 Scott Boulevard, Santa Clara, CA 95050; or 2602 Tampa East Boulevard, Tampa, FL 33619.)

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

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2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

### 3. REQUIREMENTS

3.1 Description. The nozzles, intended for attachment to fuel hoses, shall consist of a spout, a control device as specified herein, and, when specified (see 6.2), a body to accommodate arctic mitten as shown in figure 1 (see 6.6).

3.2 First article (first produced nozzle). Unless otherwise specified (see 6.2), the contractor shall furnish one or more nozzles for examination and testing within the time frame specified (see 6.2) to prove that his production methods and choice of design detail will produce nozzles that comply with the requirements of this specification. Examination and tests shall be as specified in section 4 and shall be subject to surveillance and approval by the Government (see 6.3).

3.3 Material. Material shall be as specified herein. Materials not specified shall be selected by the contractor, shall be subject to all provisions of this specification, and shall be the quality specified in UL 842 for approved fuel servicing nozzles, resistant to corrosion in all grades of gasoline and jet hydrocarbon fuels (see 6.7). Dissimilar materials, if used, must be in compliance with MIL-STD-889.

3.3.1 Body. The nozzle body shall be cast aluminum alloy conforming to ANSI/ASTM B 26, alloy UNS A03560, temper T6; alloy UNS A07120, temper T5; or alloy UNS A05350, temper F.

3.3.2 Valve springs. The valve springs shall be copper wire conforming to ANSI/ASTM B 159, alloy UNS C51000, or corrosion-resisting steel wire conforming to ANSI/ASTM A 313, alloys UNS S30200, S30400, or S31600.

3.3.3 Valve stem. The valve stem shall be corrosion-resisting steel conforming to ANSI/ASTM A 276, alloys UNS S30200, S30400, or S31600, condition optional, cold finish.

3.3.4 Packing. The valve stem packing shall be a tetrafluoroethylene-polymer-impregnated asbestos or a solid, machined, or preformed tetrafluoroethylene polymer.

3.3.5 Spouts. The spouts shall be style 1, curved, or style 2, straight, as specified herein, and shall be seamless brass tubing conforming to ANSI/ASTM B 135, alloy UNS C33000, or aluminum tube conforming to ANSI/ASTM B 210, alloy UNS A96061, temper T6 or T4.

3.3.6 Bushing, reducing. Unless otherwise specified (see 6.2), the reducing bushing shall be brass bar conforming to ANSI/ASTM B 21, B 36, B 121, or B 124, alloys UNS C26000, C26800, C27200, C33500, C34000, C34200, C35000, C35300, C35600, C37700, C46200, C46400, C48200, C48500, (where appropriate); or brass castings conforming to ANSI/ASTM B 271, B 505, or B 584, alloys UNS C83600, C83800, C84200, C84400, C84800, (where appropriate). Aluminum bushings shall be in accordance with ANSI/ASTM B 26 or ANSI/ASTM B 108, alloy UNS A03560, temper T6.

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3.3.7 Check valve. Unless otherwise specified (see 6.2), a check valve shall not be required. When check valves are required, they shall be compatible with the applicable type, size, class, and style of nozzles and shall be in accordance with the manufacturer's standard check valve.

3.4 Construction. The nozzles shall meet the performance requirements specified in 3.5, and shall be constructed to withstand the strains, jars, vibrations, and other conditions incidental to shipping, storage, and service usage. Except as otherwise specified herein, the nozzles shall conform to the assembly and design requirements of UL 842.

3.4.1 Weight.

3.4.1.1 Type I. The type I, size 1 nozzle shall weigh not more than 2.50 pounds. The size 2 nozzle shall weigh not more than 5.50 pounds. The size 3 nozzle shall weigh not more than 6.0 pounds. The nozzle weight shall not include the accessories specified herein.

3.4.1.2 Type II. The type II, size 1 nozzle shall weigh not more than 3.25 pounds. The size 2 nozzle shall weigh not more than 6.50 pounds. The nozzle weight shall not include the accessories specified herein.

3.4.1.3 Type III. The type III, size 1 nozzle shall weigh not more than 3.50 pounds. The size 2 nozzle shall weigh not more than 6.50 pounds. The nozzle weight shall not include the accessories specified herein.

3.4.2 Control.

3.4.2.1 Hand control, type I. Hold-open notches, lugs, or lever supports shall not be permitted on the operating-lever guard.

3.4.2.2 Diaphragm control, type II. The type II nozzle shall have a fluorosilicone-coated nylon diaphragm.

3.4.2.2.1 Diaphragm installation. When the diaphragm is covered by an externally mounted cap (e.g., attached by capscrews), the diaphragm shall be visibly exposed around the outside perimeter of the cap and body mating surfaces. Metal or plastic parts coming in contact with the diaphragm shall have no sharp edges or projections which might affect proper seating, and no sharp edges or burrs which might abrade the diaphragm.

3.4.2.3 Type III. Unless otherwise specified (see 6.2), the type III control shall be in accordance with 3.4.2.1 or 3.4.2.2.

3.4.3 Operating-lever guard. When specified (see 6.2), the nozzles shall have a lever and a guard designed to allow for operation using an arctic mitten as shown in figure 1. With the valve in the closed position, the clearances shall be as shown in figure 1. The guard shall protect the lever and valve-operating parts from damage.

3.4.3.1 Guard slot, size 1. The guard of size 1 nozzles shall have a 0.375-inch x 1.50-inch minimum slot. The slot shall be located in proximity to the guard to accommodate the standard locking fixture in fuel service pumps.

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3.4.4 Threads. All pipe and machine screw-threads shall conform to the applicable requirements of FED-STD-H28.

3.4.5 Valve stem. The valve stem surface that shall come in contact with the packing during operation of the nozzle shall have a surface roughness not greater than 16 microinches in accordance with ANSI B46.1.

3.4.5.1 Dual poppets. Dual poppets shall be furnished on size 2 and size 3 nozzles.

3.4.6 Interchangeability. All parts of any single type, size, class, and style nozzle which have the same part number shall be functionally and dimensionally interchangeable. Interchangeable parts are defined as two or more like parts which possess such functional and physical characteristics as to be equivalent in performance and durability and which are capable of being exchanged one for the other without alteration of the parts themselves or of adjoining parts, except for adjustment, and without selection for fit or performance.

3.4.7 Inlet.

3.4.7.1 Size 1. The inlet of the size 1 nozzle shall have internal nominal 1.0-inch American National Standard taper pipe thread (NPT).

3.4.7.2 Size 2. The inlet of the size 2 nozzle shall have internal nominal 1.50-inch NPT.

3.4.7.3 Size 3. The inlet of the size 3 nozzle shall have internal nominal 2.0-inch NPT.

3.4.8 Spout. The spout shall be style 1, nonflexible, curved type, or style 2, straight type, conforming to the contractor's standard configuration and length, provided the end-to-end length of the spout is not less than 7.0 inches as measured along the centerline of the spout. The spout of the size 1 nozzle shall meet the release or breakway requirements of UL 842.

3.4.8.1 Spouts for use with gasoline. Gasoline-dispensing nozzles shall be for use with leaded or unleaded gasoline, as specified (see 1.2), in accordance with CFR, title 40, part 80, as specified herein.

3.4.8.1.1 Class A, leaded-gasoline spout. The terminal end of the nozzle spout for use with leaded gasoline shall have an outside diameter of not less than 0.930 inches and a wall thickness of not less than 0.065 inches.

3.4.8.1.2 Class B, unleaded-gasoline spout. The terminal end of the nozzle spout for use with unleaded gasoline shall have an outside diameter of not more than 0.840 inches and a wall thickness of not less than 0.065 inches. The delivery end of the spout shall include a straight section not less than 2.50 inches in length. The retaining spring shall terminate 3.0 inches from the terminal end of the spout.



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3.4.9 Wire, spiral, antislip. The type II, size 1 nozzle shall be equipped with a cadmium-plated spring steel wire, spirally wound around the spout and secured to the nozzle. The size and length of the spiral wound wire shall be in accordance with the wire supplied on the manufacturer's standard nozzle spout. The cadmium plating shall be in accordance with QQ-P-416, class 1 or 2, type I. In addition the spring steel wire can be coated according to MIL-STD-870, class 1, type 1, or aluminum coated as per MIL-C-81740, class 1, type II, or equivalent, or coated as per MIL-C-81562, class 1, type 1; or a metallic ceramic coating (0.001 inch thickness) as per MIL-C-81797. The selection of any treatment shall be in conformance with MIL-STD-889.

#### 3.4.10 Accessories.

3.4.10.1 Bushing, reducing. The size 1 nozzle shall be furnished with an external nominal 1.0-inch x 0.75-inch NPT reducing bushing. The size 2 nozzle shall be furnished with an external nominal 1.50-inch x 1.250-inch NPT reducing bushing. The size 3 nozzle shall be furnished with an external nominal 2.0-inch x 1.50-inch NPT reducing bushing.

3.4.10.2 Dust cap, chain, and spring. Unless otherwise specified (see 6.2), an aluminum dust cap shall be attached to the nozzle by a chain and a spring. The cap, chain, and spring assembly shall withstand the pull test specified herein.

3.4.10.2.1 Chain. The chain shall be size No. 8 sash chain and shall be coated steel (permissible coatings are listed in paragraph 3.4.9), galvanized steel as per ANSI/ASTM A 525 to a G90-coating designation, brass, or aluminum, and shall be attached to the nozzle by an S-hook. The chain shall have a working tensile strength of not less than 70 pounds. Dissimilar materials, metals or coatings used must be in conformance with MIL-STD-889.

3.4.10.2.2 Spring. The chain shall be tensioned by a 3-pound per inch, plus or minus 1-pound per inch, compression spring of phosphor bronze or stainless steel used as an extension spring to produce a yokelike drawbar action in accordance with MIL-STD-29. The chain shall not break and the spring shall not be extended beyond its original length when the load is removed, but shall allow the cap to be snapped in place or removed from inlet and spout tip.

3.4.10.3 Cable, grounding. When specified (see 6.2), each nozzle shall be equipped with a fuel nozzle-to-aircraft cable jumper conforming to MS25384-1. Unless otherwise specified (see 6.2), the cable shall be 6.50 feet long.

3.4.10.4 Strainer. The spout tube of the size 2 and size 3 nozzles shall be equipped with a wire-cloth strainer. The wire cloth shall be 100 x 100 mesh (open area 30.3 percent), made from 0.0045-inch diameter round wire in accordance with RR-W-360, type VI, class 1, from one of the compositions shown below:

- a. Corrosion-resistant steel, 300 series, plain commercial finish.
- b. Brass low-zinc content (80 percent copper and 20 percent zinc).
- c. Copper-zinc alloy; commercial bronze (90 percent copper and 10 percent zinc).



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The strainer and spout shall be capable of being inserted in, or removed from, the nozzle assembly by hand without the use of any tool. The nozzle spout and strainer shall be securely mounted to the nozzle to prevent any movement of the strainer or spout when assembled. The strainer-spout assembly shall meet the leak test performance specified herein.

### 3.5 Performance characteristics.

3.5.1 Hydrostatic strength, types I and II. All parts of the nozzle which are subjected to normal operation pressure shall be capable of withstanding, without rupture or deformation, a hydrostatic pressure of not less than 250 pounds per square inch (psi) when tested as specified herein.

3.5.2 Leakage, types I and II. There shall be no evidence of leakage past the valve seat, through the body, or through any of the joints or seals of the nozzle when tested as specified herein.

3.5.3 Mechanical strength, types I and II. The nozzle shall withstand, without evidence of a malfunction or leakage, the mechanical strength test specified herein.

### 3.5.4 Automatic shutoff, type II and III.

3.5.4.1 Nozzles. When tested as specified in 4.5.2.4, size 1 and size 2 nozzles shall shut off automatically and instantaneously.

3.5.5 Service station, type III. The type III nozzles shall be in accordance with UL 842.

3.5.6 Nozzle capacity. The nozzles shall have capacities of not less than the flows specified in table I and shall be tested as specified herein.

TABLE I. Capacity (gasoline).

Size	Nozzle inlet pressure (max) (inches Hg)	Capacity (gpm)
1	10.2	24
2	10.2	60
3	10.2	136

3.6 Marking for identification. Each nozzle shall be permanently and legibly marked with the manufacturer's identification in accordance with MIL-STD-130.

### 3.7 Anodizing finish.

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3.7.1 Type I and type II nozzles. All aluminum and aluminum alloy components of the type I and type II nozzles shall be anodized in accordance with MIL-A-8625, type II class 2. The anodic coating of visible components shall be dyed olive drab, lusterless.

3.7.2 Type III nozzle. Unless otherwise specified (see 6.2), the type III nozzle shall not be anodized.

3.8 Fuel resistance. The nozzle shall be resistant to, and suitable for use with, fuels and fluids conforming to MIL-C-3056, MIL-G-5572, MIL-T-5624, MIL-C-7024, MIL-L-7808, MIL-L-23699, and TT-S-735.

3.9 Workmanship. Each nozzle shall be internally and externally clean of deleterious ingredients and shall be free of sharp edges, burrs, cracks, chips, and gouges. All parts, components, and assemblies of the nozzles which include castings and forgings shall be clean of harmful extraneous material such as sand, dirt, sprues, scale, and flux.

#### 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 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 assure supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. The contractor is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications and standards. The contractor shall submit to the contracting officer evidence of compliance with UL 842 requirements as applicable to 3.3, 3.4, and 3.4.8.

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

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

4.3 First produced nozzle inspection (when a first produced nozzle is required) (see 3.2).

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

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

4.4 Quality conformance inspection.

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

4.4.2 Examination. Samples selected in accordance with 4.4.1 shall be examined as specified in 4.5.1. AQL shall be 2.5 percent defective for major defects and 6.5 percent defective for minor defects.

4.4.3 Tests. Samples selected in accordance with 4.4.1 shall be tested in accordance with, and shall conform to the requirements of, UL 842. Type I and type II samples shall in addition be tested as specified in 4.5.2.2.1, 4.5.2.2.2, 4.5.2.4, and 4.5.2.6. AQL shall be 2.5 percent defective.

4.5 Inspection procedure.

4.5.1 Examination. The nozzle shall be examined as specified herein for the following defects:

Major

101. Materials not as specified.
102. Parts missing or not as specified.
103. Construction not as specified.
104. Weight not as specified.
105. Controls not as specified.
106. Dimensions not as specified.
107. Threads not as specified.
108. Interchangeability of like parts not as specified.
109. Any accessory missing or not as specified.
110. Functioning component inoperative or not functioning as specified.
111. Workmanship not as specified.

Minor

201. Identification marking missing, incomplete, or illegible.
202. Finish not as specified.

4.5.2 Tests

4.5.2.1 Test conditions. Unless otherwise specified herein, tests shall be performed in any ambient temperature between plus 60° F and plus 90° F.

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4.5.2.2 Hydrostatic strength. With the valve seat in the closed position, the nozzle shall be subjected to an internal hydrostatic pressure employing Stoddard's solvent solution for first article nozzles and water for production nozzles, at the same ambient temperature. The pressure shall be raised slowly to not less than 250 psi and then held at the pressure for not less than one minute. Nonconformance to 3.5.1 shall constitute failure of this test.

4.5.2.2.1 Leakage with valve closed, outlet open. With the valve in the closed position, the outlet open, and the nozzle immersed in water, the nozzle poppet shall be subjected to not less than 2 psi air pressure applied at the nozzle inlet. The air pressure shall then be increased to not less than 30 psi and the nozzle examined for body and poppet leakage. Nonconformance to 3.5.2 shall constitute failure of this test.

4.5.2.2.2 Leakage with valve open, outlet closed. With the valve in the open position, the outlet closed, and the nozzle immersed in water, not less than 5 psi air pressure shall be applied throughout the nozzle. Nonconformance to 3.5.2 shall constitute failure of this test.

4.5.2.3 Mechanical strength. The size 1 nozzle shall be tested for mechanical strength in accordance with UL 842. The size 2 and size 3 nozzles shall undergo the same mechanical strength test as the size 1 nozzle, except that size 2 and size 3 nozzles shall be attached to not less than 10 feet of 1.250-inch gasoline hose. Nonconformance to 3.5.3 shall constitute failure of this test.

4.5.2.4 Automatic shutoff.

4.5.2.4.1 Type II and III, size 1 nozzles. The type II, and III, size 1 nozzles shall be tested at an ambient temperature of 145° F, plus or minus 5° F, by discharging Stoddard's solvent solution at the same ambient temperature. The solution shall pass through the nozzle into a container at not less than 18 gallons per minute (gpm) at a pressure of not more than 25 psi. Repeat the procedure by passing the solution through the nozzle into a container at not more than 8 gpm at a pressure of not more than 5 psi. Repeat both of the above procedures at an ambient temperature of minus 65° F, plus or minus 5° F. During the above tests, the nozzle shall be examined for shutoff as specified in 4.5.2.4.3 or 4.5.2.4.4, as applicable, twice in each of the clip or notch hold-open positions. Inability of the nozzle to shut off automatically and instantaneously under any of the above test conditions shall constitute failure of this test.

4.5.2.4.2 Type II and III, size 2 nozzles. The type II and III, size 2 nozzles shall be tested at an ambient temperature of 145° F, plus or minus 5° F, by discharging Stoddard's solvent solution at the same ambient temperature. The solution shall pass through the nozzle into a container at not less than 50 gpm at a pressure of not more than 25 psi. Repeat the procedure by passing the solution through the nozzle into a container at not more than 15 gpm at a pressure of not more than 5 psi. Repeat both of the above procedures at an ambient temperature of minus 65° F, plus or minus 5° F. During the above tests, the nozzle shall be examined for shutoff as specified in 4.5.2.4.3 or 4.5.2.4.4, as applicable, twice in each of the clip or notch hold-open positions. Inability of the nozzle to shut off automatically and instantaneously under any of the above test conditions shall constitute failure of this test.

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4.5.2.4.3 Vacuum-principle shutoff. When tested as specified in 4.5.2.4, type II and III nozzles that shut off as a result of a vacuum created in the diaphragm chamber should automatically and instantaneously shut off when the fuel level in the container covers the vent opening of the spout.

4.5.2.4.4 Pressure-principle shutoff. When tested as specified in 4.5.2.4, type II and III nozzles that shut off as a result of fuel rising in a pressure tube, causing entrapped air to bear on the diaphragm, should automatically and instantaneously shut off when the fuel level in the container rises to a point not to exceed 2.0 inches above the vent opening of the spout.

4.5.2.5. Flow capacity, type I. The capacity of type I nozzles shall be determined under pressure when measured at a distance of not less than 10 pipe diameters upstream of the nozzle inlet. Not less than 1000 gallons shall be discharged through the nozzle when determining the flow in gallons per minute. Tapwater may be used as a test fluid and corrections made for the difference in viscosity and specific gravity. Leakage of the nozzle shall constitute failure of this test.

4.5.2.6 Cap, chain, and spring test. The dust cap, chain and spring assembly shall be subjected to a pull test of not less than 70 pounds. Nonconformance to 3.4.10.2 shall constitute failure of this test.

4.6 Inspection of packaging. The preservation, packing, and marking shall be examined to determine compliance with the requirements specified in the documents referenced in section 5 of this specification.

## 5. PACKAGING

5.1 Preservation. Preservation shall be level A or commercial, as specified (see 6.2).

5.1.1 Level A. The nozzles shall be preserved in accordance with MIL-P-775, level A.

5.1.2 Commercial. The nozzles shall be preserved in accordance with MIL-STD-1188.

5.2 Packing. Packing shall be level A, level B, or commercial, as specified (see 6.2).

5.2.1 Level A or level B. The nozzles, preserved as specified in 5.1, shall be packed in accordance with MIL-P-775 for the level specified.

5.2.2 Commercial. The nozzles, preserved as specified in 5.1, shall be packed in accordance with MIL-STD-1188.

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5.3 Marking.

5.3.1 Military packaging. Marking shall be as specified in MIL-P-775.

5.3.2 Commercial packaging. Marking shall be in accordance with MIL-STD-1188.

## 6. NOTES

6.1 Intended use. The nozzles covered by this specification are intended for use with power-operated dispensing devices for open-system transfer of aviation, motor and jet fuels from storage tanks, tank trucks, service station pumps, or other bulk containers to 5-gallon cans, 55-gallon drums, aircraft, motor vehicles, and motor vehicle tanks.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Nozzle type, size, class, and style required (see 1.2 and 6.8).
- c. When nozzle body is required to accommodate arctic mitten (see 3.1).
- d. When submission of first produced nozzle(s) is not required (see 3.2).
- e. Time frame for submission of first produced nozzle(s) when required and number of units required (see 3.2).
- f. When reducing bushings are required to be other than brass bar, brass casting, or aluminum (see 3.3.6).
- g. When check valves are required (see 3.3.7).
- h. When type III is required to be other than hand or diaphragm controlled (see 3.4.2.3).
- i. When guard designed to allow for arctic mitten is required (see 3.4.3).
- j. When dust cap is not required to be attached (see 3.4.10.2).
- k. When grounding cable is required and length if other than as specified (see 3.4.10.3).
- l. When type III nozzle is not required to be anodized (see 3.7.2).
- m. Degree of preservation and degree of packing required (see 5.1 and 5.2).

6.3 First produced nozzle. Any changes or deviations of production nozzles from the approved first produced nozzle during production will be subject to the approval of the contracting officer. Approval of the first produced nozzle will not relieve the contractor of his obligation to furnish nozzles conforming to this specification.

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6.4 Data requirements. The contracting officer should include requirements for such data as technical publications, instructional materials, illustrated parts lists, and contractor's maintenance and operation manual to be furnished with each nozzle.

6.5 Provisioning. The contracting officer should include provisioning requirements for repair parts and maintenance tools as necessary (including any special tools), and instructions regarding shipment of nozzles.

6.6 Information figure. Figure 1 illustrates a type of nozzle the configuration of which has been found acceptable; however, the figure is included for illustration only and is not intended to preclude the furnishing of another nozzle which conforms to this specification.

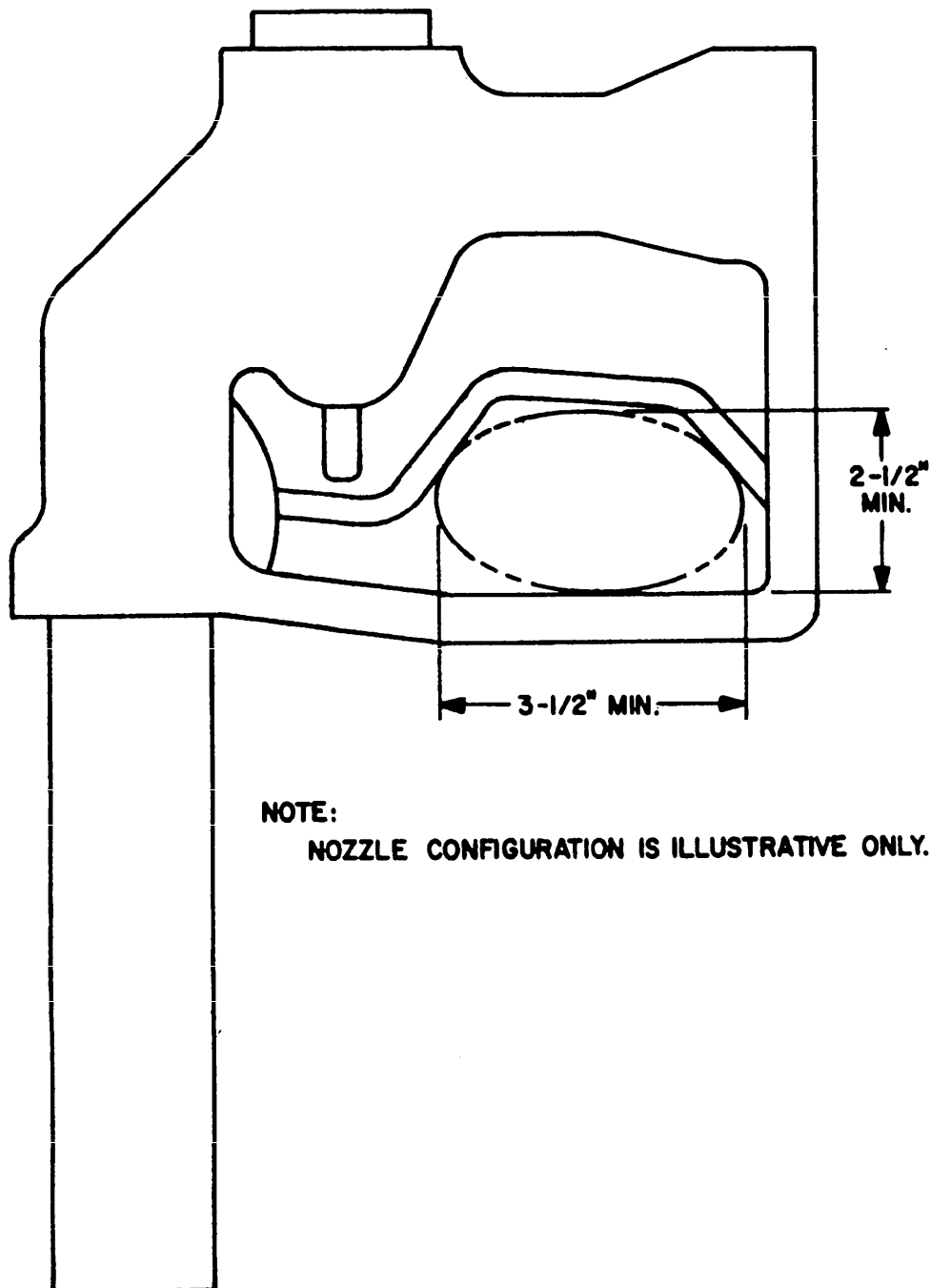
6.7 Recycled material. It is encouraged that recycled material be used, when practical, as long as it meets the requirements of this specification (see 3.3).

6.8 Classification changes. Changes in classification of the nozzles are as follows:

<u>Old designation</u>	<u>Current designation</u>
None	Type III - Nozzles, service station pump, self service.
Size 1 - For use with 3/4-inch or 1-inch hose.	Size 1 - For use with 3/4-inch or 1-inch hose.
Size 2 - For use with 1-1/4-inch or 1-1/2-inch hose.	Size 2 - For use with 1-1/4-inch or 1-1/2-inch hose.
Class 1 - Spouts for use with leaded gasoline.	Class A - Spouts for use with leaded gasoline.
Class 2 - Spouts for use with unleaded gasoline.	Class B - Spouts for use with unleaded gasoline.
None	Style 1 - Curved spout.
None	Style 2 - Straight spout.
Custodians: Army - ME Navy - YD	Preparing activity: Army - ME
Review activities: Army - AV DLA - CS	Project 4930-0297
User activities: Army - CE Navy - CG, MC	



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NOTE:

NOZZLE CONFIGURATION IS ILLUSTRATIVE ONLY.

**FIGURE 1. Illustration showing minimum clearances necessary to accommodate operator using an arctic mitten.**

**X-2027A**

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**DOCUMENT IDENTIFIER (Number) AND TITLE** MIL-N-52110F Nozzles, Fuel and Oil Servicing, Nonautomatic Shutoff and Nozzles, Fuel Servicing, Automatic Shutoff  
**NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER**

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