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 SUPERSEDING  
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## FEDERAL SPECIFICATION

### TRAPS, STEAM

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1. Scope. The specification covers traps for draining water and other condensate, for removing air and other gases from pipelines and equipment, and other applications (see 6.1)

#### 1.2 Classification.

1.2.1 Types and styles. Traps shall be of the following types and styles, as specified (see 6.2):

Type I - Trap, bucket  
     Style A - Open bucket  
     Style B - Inverted bucket  
 Type II - Trap, ball float  
 Type III - Trap, disk  
 Type IV - Trap, orifice or impulse  
 Type V - Trap, thermostatic or thermostatic/thermodynamic  
     Style A - Bellows or membrane  
     Style B - Bimetallic element  
 Type VI - Trap, combination float and thermostatic

1.2.2 Class. Traps shall be of the following classes based on maximum working pressure range and steam temperature range, as specified (see 6.2):

Working pressure range		Steam temperature range
Pounds-force per square inch (psig)		Degrees Fahrenheit (deg F)
Class 1	Vacuum to 15 psig	212 deg to 250 deg F
Class 2	0 to 25 psig	212 deg to 267 deg F
Class 3	0 to 65 psig	212 deg to 312 deg F
Class 4	0 to 125 psig	212 deg to 400 deg F
Class 5	0 to 150 psig	212 deg to 400 deg F
Class 6	0 to 200 psig	212 deg to 400 deg F
Class 7	0 to 250 psig	212 deg to 400 deg F
Class 8	0 to 300 psig	212 deg to 600 deg F
Class 9	0 to 600 psig	212 deg to 750 deg F

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1.3 Size. The size of trap shall be the nominal pipe size (NPS) of the inlet as specified (see 6.2).

## 2. APPLICABLE DOCUMENTS

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

### Federal Standard:

- FED-STD-H28/2 - Screw Thread Standards for Federal Services, Section 2, Unified Thread Form and Thread Series for Bolts, Screws, Nuts, Tapped Holes, and General Application
- FED-STD-123 - Marking for Shipment (Civil Agencies)

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

### Military Specifications:

- MIL-V-3 - Valves, Fittings and Flanges (Except for Systems Indicated Herein) Packaging of 1,
- MIL-S-1222 - Studs, Continuous Thread (Bolt-Studs); Nuts, Plain Hexagon; and Steel Bars, Round-High Temperature Service
- MIL-S-2953 - Strainer, Steam (for Small Branch Steam Lines)
- MIL-I-6868 - Inspection Process, Magnetic Particle
- MIL-R-17131 - Rods, Powders, Welding and Surfacing

### Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage
- MIL-STD-271 - Nondestructive Testing Requirement for Metals
- MIL-STD-453 - Inspection, Radiographic

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

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

American National Standards Institute, INC. (ANSI)

- B16.5 - Pipe Flanges and Flanged Fittings
- B16.11 - Forged Steel Fittings, Socket Welding and Threaded
- B46.1 - Surface texture, Surface Roughness, Waviness and Lay
- PTC 39.1 - Condensate Removal Devices for Steam Systems

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

American Society For Testing And Materials (ASTM)

- A27 - Carbon-Steel Castings for General Application
- A105 - Forgings, Carbon Steel, for Piping Components
- A126 - Clay Iron Casting for Valves, Flanges and Pipe Fittings
- A216 - Carbon-Steel Castings Suitable for Fusion Welding for High Temperature Service
- A217 - Martensitic Stainless Steel and Alloy Steel Castings for Pressure-Containing Parts Suitable for High Temperature Service
- A266 - Forgings, Carbon Steel, for Pressure Vessel Components
- A276 - Stainless and Heat-Resisting Steel Bars and Shapes
- A278 - Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 deg F
- A387 - Pressure Vessel Plates, Alloy Steel, Chromium-Molybdenum
- A389 - Alloy Steel Castings Specifically, Heat-Treated for Pressure-Containing Parts Suitable for High-Temperature Service
- A395 - Ferritic Ductile Iron Pressure-Resisting Castings for Use at Elevated Temperatures
- A479 - Stainless and Heat-Resisting Steel Wire, Bars and Shapes for Use in Boilers and Other Pressure Vessels
- B36 - Brass Plate, Sheet, Strip, and Rolled Bar
- B61 - Steam or Valve Bronze Castings
- B62 - Composition Bronze or Ounce Metal Castings
- B98 - Copper-Silicon Alloy Rod, Bar, and Shapes
- B103 - Phosphor Bronze Plate, Sheet Strip, and Rolled Bar
- B124 - Copper and Copper Alloy Forging Rod, Bar, and Shapes
- B127 - Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip
- B164 - Nickel-Copper Alloy Rod and Bar
- B194 - Copper-Beryllium Alloy Plate, Sheet, Strip, and Rolled Bar
- B584 - Copper Alloy Sand Castings for General Applications

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

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

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 General design. The design and construction of traps shall be fully compensated and suitable for operation over the entire pressure temperature range for the class and the capacity. For types I through VI, the design shall be either such that the valve seat (replaceable type), linkage, screens, gaskets, and other components shall be capable of being removed from and replaced in service without major interference with pipe connections or requiring special tools, skills, adjustments, or be nonrepairable permanently sealed units. Unless otherwise specified (see 6.2), type I through VI traps may fail either in the open or closed position at the manufacturers option. Cross sections of the various types of traps are shown in figure 1. Unless otherwise specified (see 6.2), all traps, except type V class 1 through 5, shall be furnished with female threaded inlet and outlet connections of the same size.

#### 3.1.1 Type I traps.

3.1.1.1 Style A. Type I, style A traps shall consist of a body, cover, an upright bucket mechanism, and a replaceable head and seat. The bucket mechanism shall be capable of discharging condensate and retaining steam over the entire specified pressure designated for the class. Inlet and outlet connections shall be in the horizontal or vertical plane, as specified (see 6.2).

3.1.1.2 Style B. Type I, style B traps shall either be repairable units consisting of a body, a cover, an inverted bucket mechanism, and a replaceable head and seat or be non-repairable permanently sealed units. The bucket mechanism shall be capable of discharging condensate and retaining steam over the entire specified pressure designated for the class. Traps shall be fitted with a weep hole capable of removing air during start-up. When specified (see 6.2), traps shall be fitted with auxiliary air vents. Inlet and outlet connections shall be in the horizontal or vertical plane, as specified (see 6.2).

3.1.1.3 Strainer, type I traps. When specified (see 6.2), type I traps shall be furnished with an integral strainer. The strainer shall be in accordance with the requirements of MIL-S-2953.

3.1.2 Type II traps. Type II traps shall either consist of a body, cover, replaceable head and seat, and an integral ball float mechanism capable of modulating the discharge of condensate over the specified pressure class or be a non-repairable permanently sealed unit. When specified (see 6.2), the traps shall be fitted with drain plugs. To assure a liquid seal, the design of type II traps shall be such that the liquid level is always over the valve orifice or seat. Traps shall also be provided with female threaded opening to accept an equalizing line.

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3.1.3 Type III traps. Type III traps shall consist of a body, cover, and hardened seat, and disk capable of removing condensate from a steam system ranging from 10 pounds per square inch (psi) through 600 psi. The trap shall be capable of closing tight when subjected to steam.

3.1.3.1 Strainer, type III traps. When specified (see 6.2), type III traps shall be furnished with an integral strainer. The strainer shall be in accordance with MIL-S-2953.

3.1.4 Type IV traps. Type IV traps shall consist of a body, cover, replaceable head and seat, and a minimum of two orifices in series capable of removing condensate and air from a steam system ranging from 10 psi through the pressure class specified. The traps shall be so designed that the maximum steam loss shall not be greater than 20 pounds (lb) of steam per hour.

3.1.5 Type V traps. Type V traps, style A and B, shall either be repairable units consisting of a body, cover, and a replaceable or renewable head and seat. The head shall be attached to a bellows, diaphragm, or bimetallic element capable of closing the valve to steam and opening to condensate and air throughout the pressure class. The diaphragm or bellows shall be sealed to prevent the entrance of steam or water into the interior of these components and shall be filled with a volatile fluid that expands and contracts the element which, in turn, closes the valve to steam and opens it to air and condensate. Bellows and diaphragm types shall be limited to applications of 300 psi and 425 deg F maximum. Unless otherwise specified (see 6.2), the inlet and outlet connections for classes 1 through 5 traps shall be of the same size and have a male union tail-piece on the inlet connection and female threaded on the outlet connection.

3.1.5.1 Strainer type traps. When specified (see 6.2), type V traps shall be furnished with an integral strainer. The strainer shall be in accordance with MIL-S-2953.

3.1.6 Type VI traps. Type VI traps shall consist of a body, cover, replaceable seat, and either a ball float valve mechanism capable of modulating the condensate discharge or a bucket float valve mechanism capable of discharging condensate throughout the pressure class specified. A separate diaphragm, bellows, or bimetallic mechanism shall be incorporated in the design to vent air throughout the pressure class specified. The valve shall shut tight to steam and open to condensate and air. The design shall be such that the condensate valve and seat are water-sealed at all times. The trap shall contain a drain plug at the lowest point to remove condensate when required.

3.2 First article. When specified, the contractor shall furnish a complete unit for first article inspection and approval (see 4.2.1 and 6.2).

3.3 Materials. Unless otherwise specified (see 6.2), the minimum requirements for the materials used in the construction of traps shall be as shown in table I and 3.3.1. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum

TABLE I Materials for traps.

Body and cover or bonnet		Valves and seats orifices		Buckets, ball floats and linkages	Thermosensitive elements	Bolts, studs and nuts for body and cover
Classes 1 - 7	Classes 8 - 9	Classes 1 - 7	Classes 8 - 9	Classes 1 - 9	Classes 1 - 9	Classes 1 - 9
Casting, Gray Iron ASTM A278 Class 30, ASTM A126 Class A, B & C	Forging, Carbon Steel ASTM A266 Class B	Steel, Corrosion Resisting ASTM A479 Class 410 Heat Treated	Steel, Cor- rosion Resisting ASTM A479 Class 410 Heat Treated	Brass 1/ ASTM B36	Nickel-Copper Alloy ASTM B127	Steel, MIL-S-1222
Carbon Steel Castings ASTM A126 Class WCB	ASTM A105	Steel, Chrome Moly ASTM 387	Steel Cobalt Chrome	Copper-Sili- con Alloy ASTM B98	Corrosion Resisting Bi-metal	Studs, type I Symbol B-7
Casting Nodu- lar Iron ASTM A395	Casting Carbon Steel ASTM A127 Class B	Nickel Copper Alloy, ASTM B127 Rockwell B84-98	Facing MIL-R-17131	Nickel-Cop- per Alloy ASTM B127 ASTM B164	Bronze, Phosphor ASTM B103	Nuts, type II Symbol II or Symbol 4
Casting Carbon Steel, ASTM A27	ASTM A126 Class WCB	Steel, Chrome (valve) type 440 Heat treated Rockwell C62 ASTM A276	Steel, Chrome Moly SAL 4130 ASTM A387	Steel, Corrosion resisting ASTM A479 ASTM A276	Steel, Corrosion Resisting ASTM A479	
Casting, Brass ASTM B61 ASTM B62 ASTM B584	Casting Chrome Moly Steel ASTM A389	Steel, Corrosion Resisting Insert Type 302, 303 & 304 (Seat)	Steel, Chrome (Valve) Type 440, Heat Treated		Copper Beryllium Alloy, ASTM B194	
Forging Brass ASTM B124	Bar stock Steel Type 410 or 420	Casting Brass 1/ ASTM B62	Rockwell C62 ASTM A276			
Bar Stock Chrome Steel Type 410 or 420 Heat Treated ASTM A276	Heat Treated Type 303 ASTM A276	Chrome Steel Type 410 or 420 ASTM A276	Steel, Cor- rosion, Resisting Insert with #6 stellite (Seat) ASTM A479			

extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.3.1 Composition of strainer screens. When specified (see 6.2), strainer screens shall be made either from brass conforming to ASTM B36, nickel copper alloys conforming to ASTM B127, or corrosion resisting steel (CRES), type 304 conforming to ASTM A479.

3.3.2 Gaskets. Unless otherwise specified (see 6.2), gaskets for cover and flanges shall be the manufacturer's standard commercial product.

3.4 End connections. Unless otherwise specified (see 6.2), trap connections shall be NPS, and ends shall be supplied as specified in 3.1, 3.1.1.1, 3.1.1.2, and 3.1.5.

3.4.1 Threaded connections. All threaded connections shall conform to FED-STD-H28/2.

3.4.2 Union connection. Traps with union connections shall be furnished complete with nuts and tailpieces.

3.4.3 Flange connections. Flanges shall be in accordance with ANSI B16.5.

3.4.4 Socket-welding connection. Welded connection shall be in accordance with ANSI B16.11.

3.5 Valve seat facing. The seating surface of traps having removable seats shall be made of corrosion- and erosion-resistant materials, and have a minimum hardness of 250 Brinell for classes 1 through 6, and 500 Brinell for classes 7 through 9.

3.6 Interchangeability. All traps of the same type, style, class, size, and manufacture furnished under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.7 Air cock. When specified (see 6.2), traps shall be fitted with an air cock for testing and venting of air from the trap.

3.8 Antifouling. Traps shall be designed to prevent fouling by accumulated sediment, scale, and nonvolatile, insoluble foreign matter such as oil and grease. When specified (see 6.2), traps shall be provided with drain plugs or cocks to facilitate flushing.

3.9 Identification marking. The manufacturer's name, trademark, or designating symbol, the direction of flow and the pipe size, as applicable, shall be legibly cast, stamped, or suitably affixed to the body or cover. The maximum working pressure for traps shall be stamped on the trap body. Replacement components shall be similarly marked or tagged.

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### 3.10 Performance requirements for traps.

3.10.1 Capacity of traps. The capacity of traps shall be as specified (see 6.2 and 6.7). Traps shall be tested in accordance with 4.5.2, capacity of traps shall be equal to, or greater than, the specified capacity. The capacity shall be expressed in lb of condensate discharged continuously per hour under specified conditions of pressure differential, the inlet pressure minus the discharge pressure, and at the discharge temperature depression listed in table II.

TABLE II. Condensate temperature depressions.

Type trap	Maximum temperature depression [1] deg. F
Type I	5
Type II	5
Type III	5
Type IV	30
Type V	20
Type VI	5

[1] For purposes of this specification, temperature depression is defined as the deg F below saturated steam temperature corresponding to the inlet pressure specified.

3.10.2 Operation of trap. Traps shall be tested as specified in 4.5.3, the traps shall be capable of discharging condensate and closing to steam throughout the pressure class specified.

3.10.3 Steam loss. Traps shall be tested as specified in 4.5.4, steam loss of traps shall not exceed 2 lb per hour except for type IV traps, which shall not exceed 20 lb per hour.

3.10.4 Hydrostatic pressure requirement. Traps shall meet the hydrostatic pressure requirements specified in 4.5.1, without being damaged.

3.11 Exterior finish. Brass, bronze, or stainless steel bodies and covers or bonnet, shall be furnished in natural finish or shall be electroplated when specified (see 6.2 and 6.5). Unless otherwise specified (see 6.2), iron and steel exteriors shall be treated and painted in accordance with the manufacturer's best standard practice.

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3.12 Workmanship. The quality of workmanship shall be such as to produce traps that are in accordance with the requirements of this specification and insure proper functioning of all parts of the unit.

3.12.1 Castings. All castings shall be sound and free from cracks, fins, burrs, clustered surface porosity, and other defects that affect serviceability. When specified, the soundness of the casting shall be verified by radiographic and magnetic particle examination (see 4.5.5).

3.12.2 Welds. Welds shall be continuous, sound, smooth, and free from closely spaced in line surface porosity, cracks, incomplete fusion, or deformation of material.



3.12.3 Machined work. Machined surfaces shall conform to good commercial practice to insure proper functioning, interchangeability, and long life. The surface roughness of flange gasket seats shall be not more than 125 microinches in accordance with ANSI B46.1.

#### 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. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

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

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on the unit when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.4, and the tests of 4.5. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.4, the tests of 4.5.1 and 4.5.3, and the packaging inspection of 4.6. This inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. All traps of the same type, style, class, and size offered for delivery at one time shall be considered a lot for the purpose of inspection. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for a complete reinspection. Resubmitted lots shall be reinspected using tightened inspection. If the rejected lot was screened, reinspection shall be limited to the defect causing rejection. If the lot was reprocessed, reinspection shall be performed for all defects. Rejected lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.3.1 Sampling for examination. Examination shall be based on inspection level II and an Acceptable Quality Level (AQL) of 2.5 percent defective.

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4.3.2 Sampling for tests. Tests shall be based on inspection level S-3 and an AQL of 2.5 percent defective.

4.4 Examination. Each trap selected shall be examined for defects listed in table III. Each attribute within each classification of multiple defects shall constitute a defect.

TABLE III. Classification of defects.

Classification	Defects	Requirement paragraph
Critical		
Major:		
101	Type, style, or class of trap not as specified	1.2
102	General design not as required	3.1
103	Design incomplete, parts missing, or improperly assembled	3.1.1 thru
104	Materials defective or not as specified	3.3 thru
105	Connections not threaded or constructed as required	3.4 thru 3.4.4
106	Traps and parts not interchangeable	3.6
107	Air cock missing, when required	3.7
108	Drain plug or cock missing, when required	3.8
109	Identification marking missing, incomplete, or not as required	3.9
110	Finish not as specified	3.11
111	Workmanship not as required	3.12 thru
112	Instructions missing or incomplete	3.13
Minor:	None defined	

4.5 Tests. Each trap selected shall be tested as specified. Failure of a trap to pass any of the test specified shall be cause for rejection.

4.5.1 Hydrostatic pressure test. Traps shall withstand a hydrostatic pressure of 150 percent of the maximum working pressure of the class for a duration of 5 minutes, tested at ambient temperature with potable water (may contain a corrosion inhibitor). Components that may be damaged shall be removed for the test.

4.5.2 Capacity. Traps selected shall be tested in accordance with ANSI/ASME PTC 39.1 to determine if the capacity requirement specified has been met (see 3.10.1 and 6.2). Failure to meet the capacity requirement shall be cause for rejection.

4.5.3 Operation test. The trap selected shall be tested to determine if the operation requirement of 3.10.2 has been met. The trap shall operate automatically and regularly at both maximum pressure and at 10 percent of the

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maximum pressure. Tests shall be conducted with a minimum condensate load of 100 lb per hour and at the maximum working pressure specified. The trap shall not blow steam and the temperature of the trap shall not be more than 30 deg F below the corresponding saturated steam temperature. The above test shall be conducted for a minimum time period of 5 minutes. Repeat test at 10 percent of the maximum working pressure. Failure to meet these requirements during either test shall be cause for rejection.

4.5.4 Steam loss test. Traps selected shall be subjected to dry steam at the highest pressure designated for the class specified. Traps shall be tested in accordance with ANSI/ASME PTC 39.1, traps with steam leakages greater than those specified in 3.10.3 shall be rejected.

4.5.5 Radiographic and magnetic particle examination. When specified (see 6.2), bodies, bonnets, and other parts necessary for pressure tightness of classes 8 and 9 shall be examined in accordance with the requirements of MIL-I-6868, MIL-STD-271, or MIL-STD-453.

4.6 Inspection of preparation for delivery. The preservation, packaging, packing, and marking of the traps shall be inspected to determine conformance with the quality assurance requirements of MIL-V-3.

## 5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, and packing. Preservation, packaging and packing shall be in accordance with the requirements of MIL-V-3 with the level of preservation and the level of packing as specified (see 6.2).

### 5.2 Marking.

5.2.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.2.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

## 6. NOTES

6.1 Intended use. When used in steam lines and steam heated equipment, traps are intended to release condensate and air or gas and hold back live steam. Applications for the various types of traps covered by this specification include:

- a. Draining water from steam lines and steam heated equipment.
- b. Draining water from compressed air systems due to condensation in intercooler and line.
- c. Venting air from steam lines and steam heated equipment resulting from using fresh water in boiler and the vacuum formed when steam is off.
- d. Draining liquids of various specific gravities and viscosities from lines of gases.

6.1.1 Trap limitations. When traps are selected, the following limitations on the various types of traps should be considered:

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## a. Type I, bucket trap.

- (1) Trap will not operate where a continuous water seal cannot be maintained.
- (2) Must be protected from freezing.
- (3) Air handling capacity not as great as type VI traps.

## b. Type II, ball float trap.

- (1) Must be protected from freezing.
- (2) Operation of some models may be affected by water hammer.

## c. Type III, disk trap.

- (1) Not suitable for pressures below 10 psi.
- (2) Not recommended for back pressures greater than 50 percent of inlet pressure.

## d. Type IV, impulse or orifice trap.

- (1) Not recommended for systems having back pressure greater than 50 percent of the inlet pressure.
- (2) Not recommended where subcooling condensate 30 deg F below the saturated steam pressure is not permitted.
- (3) Should not be used where efficiency is a factor.

## e. Type V, thermostatic trap.

- (1) Limited to applications in which condensate can be held back and subcooled before being discharged.
- (2) Operation of some models may be affected by water hammer.
- (3) Diaphragm and bellows types are limited to applications of 300 psi and 425 deg F maximum.

## f. Type VI, combination trap.

- (1) Cannot be used on superheated steam systems.
- (2) Must be protected from freezing.
- (3) Operation of some models may be affected by water hammer.

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6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

- a. Title, number, and date of this specification.
- b. Type, style, and class required (see 1.2.1 and 1.2.2).
- c. If traps required to fail at other than the manufacturers option (see 3.1).
- d. Size and plane of inlet, outlet, and other connections required (see 1.3, 3.1.1.1 and 3.1.1.2).
- e. If end connections are different (see 3.1, 3.1.5 and 3.4).
- f. When auxiliary air vents are required (see 3.1.1.2).

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- g. If integral strainer is required on type I, type III and type V traps (see 3.1.1.3, 3.1.3.1 and 3.1.5.1).
- h. If first article is not required (see 3.2) and 3.1.3.1).
- i. Material and composition of trap (see 3.3).
- j. Material and composition of strainer screens (see 3.3.1).
- k. If special gaskets are required (see 3.3.2).
- l. If an air cock is required (see 3.7).
- m. When drain plugs or cocks are required (see 3.1.2 and 3.8).
- n. Capacity of trap required (see 3.10.1 and 4.5.2).
- o. If special exterior finish of treatment or paint is required (see 3.11).
- p. If radiographic and magnetic powder examination is required (see 4.5.5).
- q. Level of preservation, packaging, and level of packing required (see 5.1).

6.3 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL) and invokes the provisions of paragraph 7-104.9(n) of the Defense Acquisition Regulations (DAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data shall be delivered in accordance with the contract requirements.

6.4 First article. When a first article is required, the item will be tested and should be a first production item or it may be a standard production item from the contractors current inventory as specified in 4.2.1. The first article should consist of one unit. The contractor should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of first article.

6.5 Finish. When used on cooking equipment and steam sterilizers, traps other than those with stainless steel bodies should have a nickel-plate finish.

6.6 Permanently sealed units. Permanently sealed units are traps which are stainless steel and have a factory sealed body. These units are non-repairable traps which are disposable.

6.7 Safety factor. When traps are ordered, consideration should be given to a safety factor with respect to capacity. Safety factors are a function of the type of system the trap is being used on. Generally this is specified by the engineer. Recommended safety factors for the various types of traps are as follows:

		Safety factor
Type	I	2 to 4
Type	II	1.5 to 2.5
Type	III	1.2 to 2
Type	IV	1.2 to 2
Type	V	2 to 4
Type	VI	1.5 to 2.5

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6.8 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

MILITARY INTERESTS:

Custodians

Army - ME  
Navy - YD  
Air Force - 99

User Activities

Army - CE  
Navy - MC

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS

HHS - FEC

PREPARING ACTIVITY:

Navy - YD

DoD Project 4730-0550

NOTICE  
OF VALIDATION

WW-T-696E  
NOTICE 1  
05 July 1989

FEDERAL SPECIFICATION

TRAPS, STEAM AND AIR

WW-T-696E, dated 21 May 1984, has been reviewed and determined to be valid for use in acquisition.

Custodians:

Army - ME  
Navy - YD  
Air Force - 99

PREPARING ACTIVITY:

Navy - YD

Review Activity:

DLA - CS

User Activities:

Army - CE  
Navy - MC

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