Specification 5100-382c
August 1997
Superseding
Specification 5100-382b
June 1982

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

SPECIFICATION FOR

VALVE, CHECK AND BLEEDER

1. SCOPE.

1.1. Scope. The check and bleeder valve described in this specification is designed for use on Forest Service 1-1/2 inch (38.1 mm) fire hose lines in wildland firefighting activities. The check and bleeder valve is designed to retain water in the suction hose when the pump is temporarily turned off, preventing loss of pump prime when used with firefighting centrifugal pumps. The swing check valve is capable of holding a head of water in the hose line when the pump is stopped. The pump can be restarted without the pressure of the head of water in the hose by bleeding through the 1 inch 11-1/2 NPSH bleeder valve. This check and bleeder valve includes a 1-1/2 inch 9 NH internal threaded inlet, a 1-1/2 inch 9 NH external threaded outlet and a 1 inch 11-1/2 NPSH external threaded bleeder outlet.

2. APPLICABLE DOCUMENTS.

2.1. Government Documents. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals (see 6.2).

USDA Forest Service Standard

5100-190 - Threads, Gaskets, Rocker Lugs, Connections and Fittings, Fire Hose

Federal Specifications

QQ-A-225 - Aluminum and Aluminum Alloy Bar, Rod, Wire, or Special Shapes; Rolled, Drawn, or Cold Finished; General Specification for

QQ-A-225/10 - Aluminum Alloy Bar, Rod, and Wire; Rolled, Drawn, or Cold Finished, 6262

QQ-A-367 - Aluminum Alloy Forgings

Beneficial comments, recommendations, additions, deletions and any pertinent data that may be used in improving this document should be addressed to: USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, CA 91773-3198 by using the Specification Comment Sheet at the end of this document or by letter.

Copies of federal specifications are available from General Services Administration, Federal Supply Service Bureau, Specification Section, Suite 200, 470 East L'Enfant Plaza SW, Washington DC 20407.

Copies of USDA Forest Service Specifications and Standards are available from USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, CA 91773-3198.

2.2. Non-Government Publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals.

American National Standards Institute Inc. (ANSI)/American Society For Quality Control (ASQC)

Z 1.4 - Sampling Procedures and Tables for Inspection by Attributes.

Address requests for copies to the American National Standards Institute Inc., 11 West 42nd Street, New York, NY 10036.

American Society for Testing and Materials (ASTM)

B 26 - Aluminum-Alloy Sand Castings

B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

B 241 - Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube

E 380 - Practice for Use of the International System of Units

Address requests for copies to American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

Non-Government standards and other publications normally are 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 conflict between the text of this document and the references cited herein, 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. First Article. Unless otherwise specified, first article inspection shall be performed on a product sample(s), in accordance with 4.4.3.

3.2. Construction. The check and bleeder valve shall be a combination swing check valve and a globe type valve with an internal threaded inlet, an external threaded outlet and an external threaded bleeder outlet. All working parts shall operate freely and smoothly. See Figure 1 for configuration. Figure 1 is provided for information only and is not intended to designate a particular design or manufacturer.

3.2.1. Check Valve Clapper. The valve body shall have a removable check valve clapper. The check valve clapper may be inserted into the body through a cap as shown in Figure 1 or it may be inserted through the outlet end with the external threaded end constructed to retain the clapper inside the body. The clapper valve shall be capable of swinging freely to a minimum 60 degree open position as water passes through the valve from the internal threaded end to the external threaded end.

3.2.2. Threaded Connections. The 1 inch 11-1/2 NPSH globe valve shall be integrally formed into the 1-1/2 inch 9 NH coupling body and be located next to the internal threaded inlet with the 1 inch 11-1/2 NPSH external threaded discharge at 90 degrees from the axis of the coupling body waterway. The 1-1/2 inch 9 NH inlet and outlet shall be axially in alignment. The internal threaded 1-1/2 inch 9 NH inlet shall include a rocker lug swivel connection. The external threaded outlet shall be 1-1/2 inch 9 NH. A gasket shall be installed in the 1-1/2 inch 9 NH inlet.

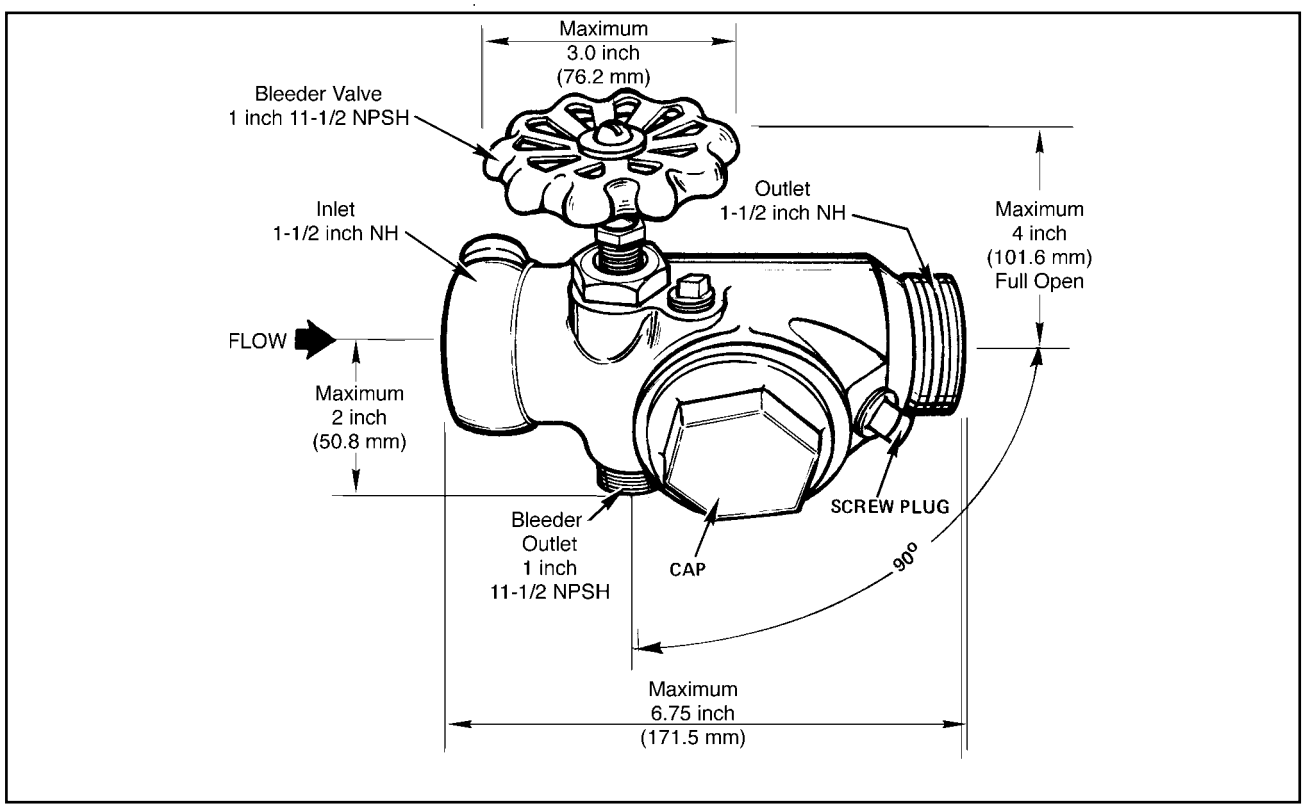

Figure 1. Check and bleeder valve configuration.

3.3. Materials. Where more than one type of material is used in various components, there shall be no incompatibility between materials which may cause corrosion.

3.3.1. Valve Materials. The valve material shall conform to the following:

a. Aluminum Alloy 40E, in accordance with ASTM B 26 cast aluminum alloy, 356 T6 or
b. Extruded aluminum alloy 6061-T6, in accordance with ASTM B 221 and B 241 or
c. Forged aluminum alloy 6061-T6, in accordance with Federal Specifications QQ-A-367 or
d. Aluminum alloy 6262, in accordance with Federal Specifications QQ-A-225 and QQ-A-225/10.

3.3.2. Gasket Material. Gasket material physical properties shall meet the requirements of USDA Forest Service Standard 5100-190.

3.3.3. Recoverable Materials. The contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR), provided all performance requirements of this specification are met.

3.4. Dimensions. Dimensions shall be as shown in Figure 1. Maximum weight of the valve shall be 6 pounds 5 ounces (2.86 kg).

3.4.1. Dimensional Tolerance. Unless otherwise noted, the following tolerances apply: one place (x.x) +/- 0.1 inch (2.5 mm); two places (x.xx) +/- 0.01 inch (0.25 mm) and three places (x.xxx) +/- 0.010 inch (0.254 mm).

3.5. Workmanship. Workmanship shall be equal to the best commercial practices consistent with the highest engineering standards in the industry and shall be free from any defect which may impair serviceability or detract from the product's appearance.

3.5.1. Symmetry. All metal part sections shall be symmetrical and concentric to 0.030 inch (0.762 mm).

3.5.2. Forged or Extruded Components. Forged and extruded sections shall be free from laps, sharp die marks, cracks or other defects.

3.5.3. Cast Components. Cast parts shall be fine-grained, free from blowholes, pinholes, pits, porosity, hard spots, shrinkage, cracks or other defects.

3.6. Threads, Waterways, Gaskets, Gasket Recesses, and Rocker Lugs. All threads, waterways, gaskets, gasket recesses and rocker lugs shall be in accordance with USDA Forest Service Standard 5100-190.

3.7. Marking. Markings shall be in accordance with USDA Forest Service Standard 5100-190. In addition, the check valve and bleeder shall be marked with a working pressure of "600 WP."

3.8. Surface Treatment. Aluminum alloy surfaces, to include threaded surfaces, shall be hardcoated in accordance with USDA Forest Service Standard 5100-190.

3.9. Surface Finish. The finish for all surfaces, to include threaded surfaces, shall be in accordance with USDA Forest Service Standard 5100-190.

3.10. Performance.

3.10.1 Proof Pressure. When tested in accordance with 4.6.2, the valve shall withstand 1200 psi (8274 kPa) hydrostatic pressure with no leaks from the threaded connections, permanent deformation, mechanical damage or structural failure.

3.11. Metric Products. Metric dimensions are provided for information only, inch-pound units shall be the required units of measure for this specification. Thread series designation are indicated as 1 inch 11-1/2 NPSH and 1-1/2 inch 9 NH. Since these are thread series designations, not an indication of a specific dimension, the metric equivalent is not given. Products manufactured to metric dimensions shall be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of ASTM E 380, and all other requirements of this specification are met.

4. INSPECTION, SAMPLING AND TEST PROCEDURES.

4.1. General Inspection and Tests. Unless otherwise specified in the contract or purchase order, the contractor is responsible for performance of all inspection requirements prior to submission for Government acceptance inspection and tests. The contractor may utilize their own facilities or any commercial laboratory acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government.

4.1.1. Inspection and Test Site. The Government shall conduct lot acceptance inspection and tests to determine compliance with the specification. If lot acceptance and tests are conducted at locations other than the manufacturing facilities, the contracting officer shall specify location and arrangements. In the case of on-site inspections at the contractor's facility, the contractor shall furnish the inspector all reasonable facilities for their work. During any inspection, the inspector may take from the lot one or more samples and submit them to an independent test laboratory approved by the Government or to a Government test facility for inspection and tests.

4.1.2. Testing With Referenced Documents. The contractor is responsible for insuring that components and materials used were manufactured, examined and tested in accordance with referenced specifications and standards. The Government reserves the right to perform any of the inspections or tests set forth in this section where such action is deemed necessary to assure supplies and services conform to prescribed requirements.

4.2. Responsibility for Compliance. All items shall meet all requirements of sections 3 and 4. 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 this 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 accept defective material.

4.3. Sampling for Inspection. When inspection is performed, sampling shall be in accordance with ANSI/ASQC Z 1.4.

4.3.1. Lot. All check and bleeder valves of one size presented together in one delivery shall be considered a lot for the purpose of inspection. A sample unit shall be one check and bleeder valve.

4.3.2. Sampling for Visual and Dimensional Examination. Sampling for visual and dimensional examination shall be S-2, with an Acceptable Quality Level (AQL) of 1.5 percent defective.

4.3.3. Sampling for Lot Acceptance Tests. Sampling for lot acceptance testing shall be S-2, with an AQL of 1.5 percent defective.

4.4. Inspection and Tests.

4.4.1. Visual and Dimensional Examination. When selected in accordance with 4.3.2, each sample valve shall be visually and dimensionally examined to determine conformance with this specification. Visual or dimensional defects shall be classified as major or minor. A defect not listed in Table 1 shall be classified as a minor defect. If the number of defects in any sample exceeds the indicated AQL, the lot shall be rejected.

Table 1. Major and Minor Defects

Defect	Classification	
	Major	Minor
1. Valve assembly not complete.	X	
2. Inlet and outlet not axially in alignment.	X	
3. Material not as required.	X	
4. Dimensions and weight not as required	X	
5. Thread dimensions not within specified tolerances and failure to pass gage tests	X	
6. Cracks, porosity or other structural defects.	X	
7. Workmanship not as required.	X	
8. Threads not smooth and not free of imperfections.		X
9. Illegible or improper marking.		X

4.4.2. Lot Acceptance Tests. Each of the samples selected in accordance with 4.3.3 shall be tested in accordance with 4.6 to determine conformance with requirements of this specification.

4.4.3. First Article Inspection. Unless otherwise specified (see 6.2), the first article sample(s) indicated in 3.1 shall be inspected as specified in 4.4.1 and 4.6. All inspection and testing of the first article sample(s) shall stop upon a single failure and the sample(s) rejected. The contractor shall be informed as to the nature of the falure, but the Government shall not be obligated to continue testing a defective item, once it is known to be defective or when it is considered in the best interest of the Government.

4.4.4. Quality Conformance Inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with ANSI/ASQC Z 1.4. The inspection level and AQL shall be as specified in 4.3.3.

4.5. Certificate of Conformance. A Certificate of Conformance shall meet the requirements of USDA Forest Service Standard 5100-190. Where certificates of conformance are required, the Government reserves the right to verify test any such items to determine the validity of certification. These certificates shall be based on the testing of component materials and may be performed by the component material supplier. The contractor shall provide certificates of conformance for all materials used in 3.3.1, 3.3.2 and 3.8 (see 4.5.2, 4.5.3 and 4.5.4).

4.5.1. Certificates of Conformance in Lieu of Testing. Unless otherwise specified, certificates of conformance may be acceptable in lieu of testing end items.

4.5.2. Check and Bleeder Valve Material. As required by 3.3.1, check and bleeder valve material shall meet the indicated material physical property requirement listed, when tested to defined test method.

4.5.3. Gasket Material. As required by 3.3.2, gasket material physical properties shall meet the requirements of USDA Forest Service Standard 5100-190.

4.5.4. Surface Treatment. As required by 3.8, aluminum alloy surfaces, to include threaded surfaces, shall be hardcoated in accordance with USDA Forest Service Standard 5100-190.

4.6. Performance Testing. Samples shall be subjected to the following test to determine if the samples meet the requirements of this specification.

4.6.1. Fluid Medium. All testing requiring the use of a fluid medium shall be performed using municipally supplied potable water; this shall include, but is not limited to pressure testing. If the contractor does not have access to a municipal water supply, the testing shall be performed using any clear fresh water normally available for firefighting. First article testing performed by the Government shall be conducted using municipally supplied potable water.

4.6.2. Proof Pressure Test. As required by 3.10.1, the check and bleeder valve shall be tested for proof pressure by attaching the 1-1/2 inch 9 NH inlet to a water pressure source. The check and bleeder valve shall be charged. This is achieved by capping the 1-1/2 inch 9 NH outlet and closing the bleeder valve, after removing all air and filling with water. A hydrostatic pressure of 1200 psig (8274 kPag) shall be applied. The rate for applying hydrostatic pressure for the following tests shall not be less than 300 psig (2069 kPag) per minute and not more than 600 psig (4137 kPag) per minute, i.e., at a uniform rate over a two to four minute time interval. Hold for three minutes. There shall be no leaks from the threaded connections, permanent deformation, mechanical damage or structural failure.

5. PACKAGING, PACKING AND MARKING

5.1. Packaging, Packing and Marking. The packaging, packing and marking shall be as specified in the contract or order.

6. NOTES.

6.1. Intended Use. This check and bleeder valve is designed for use on Forest Service 1-1/2 inch 9 NH fire hose lines in wildland firefighting activities. The check and bleeder valve is designed to retain water in the suction hose when the pump is temporarily turned off, preventing loss of pump prime when used with firefighting centrifugal pumps. The swing check valve is capable of holding a head of water in the hose line when the pump is stopped. The pump can be restarted without the pressure of the head of water in the hose by bleeding through the 1 inch 11-1/2 NPSH bleeder valve.

6.2. Acquisition Requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. If a first article sampling and inspection is not required (see 3.1, 4.4.3, and 6.3).
c. If certificates of conformance are acceptable in lieu of lot by lot testing (see 4.4.2 and 4.5).
d. Packaging, packing and marking (see 5.1).
e. Date of the invitation for bids or request for proposals (see 2.1).

6.3. First Article. When a first article sample(s) is required, it shall be inspected and approved in accordance with the First Article clauses set forth in the solicitation. Specific instructions shall be included regarding arrangements for selection, inspection, and approval of the first article sample(s).

6.4. Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

6.5. Preparing Activity. USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, CA 91773-3198.

United States Department of Agriculture, Forest Service
Standardization Document Improvement Proposal

Instructions: This form is provided to solicit beneficial comments which may improve this document and enhance its use. Contractors, government activities, manufacturers, vendors, or other prospective users of this document are invited to submit comments to the USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, California 91773-3198. Attach any pertinent data which may be used in improving this document. If there is additional documentation, attach it to the form and place both in an envelope addressed to the preparing activity. A response will be provided when a name and address are included.

Note: This form shall not be used to submit request for waivers, deviation, or for clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

Standard Number and Title: **Specification 5100-382c, Valve, Check and Bleeder**

Name of Organization and Address:

_____ Vendor _____ User _____ Manufacturer

1. _____Has any part of this document created problems or required interpretation in procurement use?

   _____Is any part of this document too rigid, restrictive, loose or ambiguous? Please explain below.

Give paragraph number and wording:

Recommended change(s):

Reason for recommended change(s):

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Submitted by: (Print or type name and address—Optional)	Telephone number: (Optional)
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USDA Forest Service
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