

MIL-D-1427C  
9 September 1988  
SUPERSEDING  
MIL-D-1427B  
4 December 1968

## MILITARY SPECIFICATION

### DAMPER, FLUE, 4-INCH

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

#### 1. SCOPE

1.1 Scope. This document covers one type and size of 4-inch flue damper (see 6.1).

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

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

## SPECIFICATIONS

### FEDERAL

QQ-S-698 - Steel, Sheet and Strip, Low Carbon  
QQ-W-461 - Wire, Steel Carbon (Round, Bare, and Coated)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4520

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

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PPP-B-601 - Boxes, Wood, Cleated-Plywood  
PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

MIL-P-116 - Preservation, Methods Of  
MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof  
or Waterproof, Flexible

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection  
by Attributes  
MIL-STD-129 - Marking for Shipment and Storage  
MS 24585 - Spring Helical, Compression for Loads Below  
20 Pounds

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

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DRAWING

U.S. ARMY NATICK RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

5-4-356 - Damper, Flue, 4-Inch

(Copies of drawings, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

\* 2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issues of the nongovernment documents which are current on the date of the solicitation.

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## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 48 - Gray Iron Castings

D 3951 - Standard Practice for Commercial Packaging

E 18 - Methods for Testing for Rockwell Hardness and  
Rockwell Superficial Hardness of Metallic Materials

(Copies should be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which 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 specification and the references cited herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.3, 6.2, and 6.3).

3.2 Materials (see 6.4).

- \* 3.2.1 Cast iron. Cast iron used for the damper body shall conform to ASTM A 48.
- 3.2.2 Steel, wire, carbon. The carbon steel wire used for the spindle and handle shall be annealed, finish No. 1, steel numbers 1010-1020 of QQ-W-461 and in the diameter indicated on Drawing 5-4-356. Commercial tolerances are applicable to all wire diameters.
- \* 3.2.3 Spring steel. The spring steel wire used for the handle coil and spring in the diameters indicated on Drawing 5-4-356 shall be of a commercial grade conforming to MS 24585.
- 3.2.4 Steel sheet. Steel sheet used in fabricating the spring retainer cups shall be cold rolled, drawing quality of QQ-S-698.
- \* 3.3 Construction. The construction of the item covered by this document shall conform to the requirements of this document and Drawing 5-4-356. The body and spindle shall be fabricated in such a manner as to permit dismantling and reassembling of the spindle and body.

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- \* 3.3.1 Welding. The handle and the spindle shall be welded as specified on Drawing 5-4-356 to form a rigid in line unit.
- \* 3.3.2 Handle coil and spring hardness. The handle coil and spring shall have a through hardness of Rockwell "C" 30 to 36, when tested as specified in 4.5.1.
- \* 3.3.3 Spindle. The spindle shall have a sharpness capable of piercing holes in flue pipe up to 0.025-inch thick with no bending of the spindle and without the use of other tools, when tested as specified in 4.5.2.
- \* 3.4 Marking. The damper shall be marked with the size "4-inch" and the manufacturer's name, trade name, or trademark readily identifiable with said manufacturer, stamped, etched or embossed on the body in characters of no less than 3/16-inch in height.

3.5 Workmanship. The finished flue damper shall conform to the quality of product established by this document and the occurrence of defects shall not exceed the applicable acceptable quality levels.

\* 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 this document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirement in the document shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance 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 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for assuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to assure compliance with all dimensional requirements.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article is required (see 6.2), it shall be examined for the defects specified in 4.4.3 and 4.4.4 and tested as specified in 4.5.1 and 4.5.2. The presence of any defect or failure of any test shall be cause for rejection of the first article.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document.

- \* 4.4.2 In-process inspection. Prior to assembly, the handle coil and spring hardness and the spindle sharpness shall be examined in accordance with 4.4.2.1 and 4.4.2.2. Whenever nonconformance is noted, correction shall be made to the items affected and the process. Items which cannot be corrected shall be removed from production.

- \* 4.4.2.1 In-process visual examination of handle coil and spring hardness. A sample handle coil and spring shall be examined for hardness as specified in 4.5.1. Any failure of the test shall be classified as a defect. The lot size shall be expressed in units of handle coils or springs, as applicable, hardened in the same heat treatment lot. The sample unit shall be one coil or spring, as applicable. The inspection level shall be S-2 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5.

- \* 4.4.2.2 In-process visual examination of spindle sharpness. The spindles shall be examined for sharpness as specified in 4.5.2. Any failure of the test shall be classified as a defect. The lot size shall be expressed in units of spindles. The sample unit shall be one spindle. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

4.4.3 End item visual examination. The end item shall be examined for the defects listed in table I. The lot size shall be expressed in units of completely fabricated flue dampers. The sample unit shall be one flue damper. The inspection level shall be II and the AQL, expressed in terms of defects per hundred units, shall be 2.5 for major defects and 6.5 for total (major and minor combined) defects.

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TABLE I. End item visual defects

Examine	Defect	Classification	
		<u>Major</u>	<u>Minor</u>
Design and construction	Not design specified	101	
	Components not properly assembled	102	
	Component missing	103	
	Handle and spindle not welded to form a rigid in line unit	104	
	Handle not in line with spindle		201
	Body and spindle cannot be dismantled and reassembled	105	
Workmanship	Bent components	106	
	Not free of slivers and sharp edges		202
Welding	Missing, incomplete, burned holes, fractured or otherwise not fused, not smooth, not free from flash, burn-through, undercut pits, holes and fissures	107	
	Not free of flux deposits		203
Marking identification	Missing, incomplete, not legible not specified size or not stamped, etched or embossed		204

4.4.4 End item dimensional examination. The end item shall be examined for compliance with the dimensions specified in Drawing 5-4-356. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of flue dampers. The sample unit shall be one flue damper. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

4.4.5 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

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<u>Examine</u>	<u>Defect</u>
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application
Materials	Any component missing, damaged, or not as specified
Workmanship	Inadequate application of components, such as incomplete sealing or closure of flap, improper taping, loose strapping, or inadequate stapling Bulged or distorted container
Content	Number per container is more or less than required

4.5 Methods of inspection.

- \* 4.5.1 Hardness test. The hardness of the handle coil and spring shall be tested in accordance with ASTM E 18 to determine compliance with the hardness requirements of 3.3.2. The hardness shall be based on the average of 3 readings. Any nonconformance shall constitute failure of this test.

4.5.2 Sharpness test. A representative piece of sheet steel used for fabricating flue pipes, and not more than 0.025-inch thick, shall be secured in a vise. With the spindle held securely in the palm of a person's hand and with the point of the spindle facing the sheet steel, quickly strike the steel sheet a sharp blow to determine compliance with 3.3.3. Any nonconformance shall constitute failure of this test.

## 5. PACKAGING

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

- \* 5.1.1 Level A. Each damper shall be cleaned in accordance with process C-1 of MIL-P-116 and thoroughly dried. Each damper shall then be coated with type P-1 preservative in accordance with MIL-P-116. Each coated damper shall be completely wrapped with kraft paper having a minimum basis weight of 35 pounds conforming to A-A-203.
- \* 5.1.2 Commercial. Dampers shall be preserved in accordance with ASTM D 3951.

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

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- \* 5.2.1 Level A packing. Fifty dampers, preserved as specified in 5.1, shall be packed in a snug-fitting cleated plywood shipping container conforming to overseas type, style A or J, type 3 load of PPP-B-601. Each shipping container shall be provided with a type I or II, grade C case liner conforming to MIL-L-10547. Each shipping container shall be closed and strapped in accordance with PPP-B-601.

5.2.2 Level B packing. Fifty dampers, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC-L, type CF, variety SW or type SF, class domestic, grade 275 of PPP-B-636. Each fiberboard shipping container shall be fitted with a taped, one-piece, double-faced, corrugated fiberboard liner having a minimum bursting strength of 275 psi, conforming to PPP-B-636. The dampers shall be packed flat, one on another, nested and alternated within the container in such a manner as to prevent the points of the dampers from puncturing the side walls of the shipping container. Closure shall be in accordance with method II of the appendix of PPP-B-636.

5.2.2.1 Weather-resistant shipping container. When specified (see 6.2), the shipping container shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with the appendix of PPP-B-636.

- \* 5.2.3 Commercial packing. Dampers, preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.
- \* 5.3 Marking. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

## 6. NOTES

6.1 Intended use. The 4-inch damper flue is intended to be used with Heater, Space, Radiant Type, Portable, 45,000 BTU/HR conforming to MIL-H-13514.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. When a first article is required (see 3.1, 4.3, and 6.3).
- c. Selection of applicable level of preservation and packing (see 5.1 and 5.2).
- d. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).



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6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of the first article.

\* 6.4 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this document (see 3.2).

\* 6.5 Subject term (key word) listing.

Damper  
Flue  
Heater

6.6 Changes from previous issue. The margins of this document are marked with an asterisk (\*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only, and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content, as written, irrespective of the marginal notations and relationship to the last previous issue.

## Custodians:

Army - GL  
Air Force - 99

## Preparing activity:

Army - GL

Project No. 4520-0325

## Review activities:

Army - ME, MD  
Air Force - 84  
DLA - CS

## User Activity:

Navy - MC

