

MILITARY SPECIFICATION

STRETCHING AND SEALING MACHINE, STRAPPING, HAND

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

1. SCOPE

1.1 Scope. This specification covers hand operated, magazine fed, stretching and sealing machines for tensioning, sealing, and cutting of flat steel strapping.

1.2 Classification. The stretching and sealing machines shall be of the following sizes as specified (see 6.2):

- Size A - 3/8 inch (10 mm) strapping.
- Size B - 1/2 inch (13 mm) strapping.
- Size C - 5/8 inch (16 mm) strapping.
- Size D - 3/4 inch (19 mm) strapping.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

- QQ-S-781 - Strapping, Steel and Seals.
- PPP-B-601 - Boxes, Wood, Cleated-Plywood.

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

- PPP-B-621 - Box, Wood, Nailed and Lock Corner.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple-Wall.
- PPP-C-843 - Cushioning, Material, Cellulosic.
- PPP-P-291 - Paperboard, Wrapping and Cushioning.

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- MIL-P-116 - Preservation-Packaging, Methods of.
- MIL-B-121 - Barrier-Material, Greaseproofed, Waterproofed, Flexible.
- MIL-L-10547 - Liners, Case and Sheet, Overwrap, Water Vaporproofed or Waterproof, Flexible.

STANDARDS

FEDERAL

- FED-STD-101 - Preservation, Packaging, and Packing Materials: Test Procedures.

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.

(Copies of 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 otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Traffic Department, 1616 P Street, N.W., Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

E 18 - Rockwell Hardness and Rockwell
Superficial Hardness of Metallic Materials

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

3. REQUIREMENTS

3.1 Standard product. The stretching and sealing machines covered by this specification shall be the manufacturer's standard commercial product, except for any design modifications and additional requirements specified herein.

3.2 Materials. Materials not definitely specified shall be of the quality normally used in the manufacture of stretching and sealing machines provided the completed item complies with all the provisions of this specification (see 6.6).

3.3 Design. The stretching and sealing machines shall take up and tension steel strapping of the sizes indicated in table I, cut off excess strapping, and make a seal joint. The machine shall be provided with a magazine as specified in 3.3.3, shearing blades, gripping dogs or feed wheel for taking up and tensioning, a set of jaws for clinching and notching seals, and two operating handles. When specified (see 6.2), the stretching and sealing machines shall have attachment means for overhead suspension.

TABLE I. Steel strapping sizes

Size machine	Width		Thickness	
	inch	(mm)	inch	(mm)
A	3/8	(10)	0.010 to 0.023	(.254 to .584)
B	1/2	(13)	0.010 to 0.023	(.254 to .584)
C	5/8	(16)	0.010 to 0.023	(.254 to .584)
D	3/4	(19)	0.015 to 0.025	(.381 to .635)

3.3.1 Handles. One of the two operating handles of the machine shall take up and tension steel strapping with a minimum mechanical advantage of 15 to 1 when tested as specified in 4.3.2. The second handle shall release one metal seal at a time from the magazine, shear excess strapping, and make a seal joint.

3.3.2 Hardness. Gripping dogs or feed wheel, shearing blades, and sealing jaws of the machine shall be heat treated to a minimum hardness of 44 Rockwell C when tested as specified in 4.3.1. Other parts subject to rubbing and wear shall be heat treated or case hardened in accordance with commercial practice.

3.3.3 Magazine. The magazine shall store, retain, automatically feed metal seals, and shall have a capacity of not less than 40 and not more than 100 seals.

3.4 Performance. The machine shall operate as follows when tested as specified in 4.3.3:

(a) The machine shall be threaded with steel strapping specified in 3.3, without binding or interference.

(b) The machine shall smoothly tape up, tension, and hold the strapping without slipping.

(c) The machine shall make a square and clean shear cut of the excess strapping, free of slivers or creasing.

(d) The machine shall feed one metal seal at a time from the magazine without jamming.

(e) The machine shall clinch and notch a seal joint free of abnormal slivers or fractures in the seal metal.

3.4.1 Seal joint strength. The seal joint made by the machine shall have a slippage point or a breaking strength not less than 75 percent of the required breaking strength for the applicable size strapping, as specified in QQ-S-781, when tested as specified in 4.3.4.

3.5 Marking for identification. The machines shall be marked in a permanent and legible manner with the manufacturer's name or trademark.

3.6 Finish. The stretching and sealing machines shall be finished in accordance with the manufacturer's commercial practice.

3.7 Workmanship. Machine parts shall be clean and free of sharp edges, burrs, pits, and splinters, and shall not be bent or cracked. Welds shall be adherent and free of flux. Rivets shall have heads fully formed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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.

4.2 Quality conformance inspection. Except as otherwise specified herein, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.2.1 Component and material inspection. Components and materials shall be inspected in accordance with 4.1 and all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase document.

4.2.2 In-process inspection.

4.2.2.1 Hardness test of steel. A complete set of gripping dogs or feed wheel, sealing jaws, and shearing blades shall be tested for hardness in accordance with 4.3.1. Any nonconformance shall be cause for rejection of the item and lot in process.

4.2.3 End item inspection. A lot shall consist of all the machines of one size offered for inspection at one time. The sample unit shall be one complete machine.

4.2.3.1 Visual examination. The end item shall be examined for the defects in table II. The inspection level shall be level II with an acceptable quality level (AQL) of 4.0, expressed in terms of defects per hundred units.

TABLE II. Classification of visual defects

<u>Examine</u>	<u>Defect</u>
Finish	Not in accordance with manufacturer's commercial practice
Construction and workmanship	Sharp edges, burrs, pits, or splinters Component part missing or loose Bent or cracked Weld not adherent or flux not removed Rivet head not fully formed
Marking	Missing, incorrect, or illegible

4.2.3.2 End item testing. Sample units shall be tested in accordance with 4.3.1, 4.3.3 and 4.3.4. The inspection level shall be S-2 with an AQL of 2.5, expressed in terms of defects per hundred units.

4.2.4 Inspection of packaging. An inspection will be made to determine that preservation, packing, and marking, as required by section 5 are complied with. Defects will be scored as specified in table III. The sample unit shall be one shipping container fully prepared for delivery except it need not be closed. The lot shall be the number of containers offered for inspection at one time. The inspection level shall be S-2 with an AQL of 4.0, expressed in terms of defects per hundred units.

TABLE III. Inspection of packaging

<u>Examine</u>	<u>Defect</u>
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application
Preservation	Preservation improperly applied or missing
Materials	Component missing, damaged, or otherwise defective
Weight	Net weight exceeds requirements

4.2.4.1 Inspection of interior boxes. When interior boxes are required to comply with PPP-B-636, examination for defects in the closure shall be in accordance with the appendix of PPP-B-636.

4.2.4.2 Inspection of shipping containers. When shipping containers are required to comply with PPP-B-601, PPP-B-621 or PPP-B-636, examination for defects in the closure, waterproofing (when applicable) and reinforcing shall be in accordance with the appendix of the applicable container specification.

4.3 Test methods.

4.3.1 Hardness test. The gripping dogs, or feed wheel sealing jaw components, and shearing blades of the stretching and sealing machine shall be tested for hardness in accordance with ASTM E 18 to determine compliance with 3.3.2. A minimum of two determinations per component shall be made to determine compliance. Any gripping dog, feed wheel, shearing blade or sealing jaw with a hardness less than 44 Rockwell C shall be rejected. Any parts subject to rubbing and wear, which are not hardened or heat treated in accordance with commercial practice, shall constitute failure of this test.

4.3.2 Mechanical advantage test. The ratio of the travel distance between the handle and moveable gripping dogs or feed wheel during a complete tensioning stroke of the machine shall be measured to determine compliance with 3.3.1. Any ratio less than 15 to 1 shall constitute failure of this test.

4.3.3 Performance test. The stretching and sealing machine shall be threaded and operated to take up, tension, cut off, and make a seal joint with applicable steel strapping, on a horizontal and vertical surface to determine compliance with 3.4. Any nonconformance with the requirements of 3.4 shall constitute failure of this test.

4.3.4 Joint test. For each size of machine, test joints shall be made on pairs of the thinnest and pairs of the thickest strapping of the appropriate width to determine compliance with 3.4.1. Each joint shall be tested in accordance with the procedure specified in Method 2044 of FED-STD-101. Any nonconformance with the requirements of 3.4 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. All exposed uncoated ferrous metal surfaces of each machine shall be cleaned process C-1, thoroughly dried, coated with type P-2 preservative conforming to MIL-P-116, and then wrapped in greaseproof barrier material conforming to type I, grade A, class 1 of MIL-B-121. Each machine shall then be unit packed in a snug-fitting fiberboard box conforming to style RSC, type CF, class domestic, variety optional, or type SF, class domestic of PPP-B-636. When specified (see 6.2), boxes shall be W6c and waterproofed in accordance with the appendix of PPP-B-636 for slotted boxes. The machine shall be immobilized within the box by means of corrugated fiberboard inserts of material as specified for the box or cushioning material conforming to PPP-P-291 or PPP-C-843, type, class, and style, optional. Closure shall be in accordance with the appendix of the box specification.

5.1.2 Level C. Machines shall be preserved to afford adequate protection against corrosion, deterioration, and damage during shipment from the supply source to the first receiving activity. The package and the quantity per package shall be the same as that normally used by the contractor for retail distribution.

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

5.2.1 Level A packing. Machines of one size only, preserved as specified in 5.1, shall be packed in a snug-fitting shipping container conforming to either type RSC, V2s of PPP-B-636, class 2, style 2 or 4 of PPP-B-621 or overseas type, style A, B, I, or J of PPP-B-601. Each fiberboard container shall be closed, waterproofed, and reinforced with strapping or tape banding in accordance with the appendix of PPP-B-636. Each wood and cleated plywood container except those containing W6c packages shall be provided with a case liner conforming to grade B or C, type I or II of MIL-L-10547. All containers shall be closed and strapped in accordance with the appendix of the applicable specification. The weight of contents of fiberboard boxes shall not exceed 70 pounds (32 kg) and the weight and size limitations of PPP-B-601 and PPP-B-621 shall not be exceeded.

5.2.2 Level B packing. Machines of one size only, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF or SF, class domestic, variety optional, of PPP-B-636, or class 1, style E of PPP-B-640. When specified (see 6.2), shipping containers conforming to style RSC, V3c, V3s or V4s of PPP-B-636 shall be used. Closure shall be in accordance with the appendix of the applicable container specification. The weight and size of the shipping container shall be governed by the weight and size limitations of the applicable container specification.

5.2.3 Level C packing. Machines, preserved as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. The quantity per shipping container shall be the same as that normally used by the contractor for retail distribution. Containers shall comply with Uniform Freight Classification or National Motor Freight Classification, as applicable.

5.3 Marking. In addition to any special marking required by the contract, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The manually operated stretching and sealing machine is intended for applying the applicable size steel strapping used for packaging boxes, cartons, crates, bundles, and skids. Sizes A and B are generally used on flat boxes, cartons, and small bundles. Sizes C and D are generally used on skids and crates.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Size machine to be furnished (see 1.2).
- (c) When attachment means for overhead suspension is required (see 3.3).
- (d) Selection of the applicable degree of preservation, and packing (see 5.1 and 5.2).
- (e) Whether W6c boxes are required (see 5.1.1).
- (f) Whether weather-resistant class fiberboard shipping containers are required for level B shipment (see 5.2.2).

6.2.1 Contract data requirements. Any requirements for instruction and maintenance sheets for items covered by this specification should be included in DD Form 1423 Contract Data Requirements List and cited in the contract or order.

6.3 Seals. The seals should be magazine type seals, furnished in clips, and should fit the magazine.

6.4 Environmental. Environmental pollution prevention measures are contained in the material specifications referred herein. Refer to material specification or preparing activity for recommended disposability methods.

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

MIL-S-43361B

6.6 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of the specification.

Custodians:

Army - GL
Navy - SA
Air Force - 99

Preparing activity:

Army - GL
Project No. 3540-0124

Review activities:

Army - SM, MI
Navy - MC

User activities:

Army - WC, ME
Navy - SH

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DOCUMENT IDENTIFIER (Number) AND TITLE

ML-S-43361B - Stretching and Sealing Machine, Strapping, Hand

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

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