

MIL-T-43560A

1 November 1972

SUPERSEDING

MIL-T-43560

18 January 1968

MILITARY SPECIFICATION

TESTERS, SPRING RESILIENCY

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

1. SCOPE

1.1 Scope. This specification covers tension and compression type spring resiliency testers for general and special applications (see 6.1).

* 1.2 Classification. Spring resiliency testers covered by this specification shall be of the following types, classes, styles and capacities as specified (see 6.2).

Type I - Compression and tension (push-pull) testers

Class 1 - Straight-face indicator scale

Style A - Light duty

Style B - Heavy duty

Class 2 - Dial indicator scale

Style A - Light duty

Style B - Heavy duty

Capacities - Capacity range and scale graduation (see table I)

Type II - Tension (pull) testers

2. APPLICABLE DOCUMENTS

2.1 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:

FSC 6635

6092

92% unless

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SPECIFICATIONS

FEDERAL

- PPP-B-566 - Boxes, Folding, Paperboard
- PPP-B-636 - Boxes, Shipping, Fiberboard
- PPP-B-676 - Boxes, Setup

MILITARY

- MIL-P-116 - Preservation, Method of
- MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible

STANDARDS

MILITARY

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

(Copies of specifications, standards, drawings and publications required by suppliers 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:

National Bureau of Standards

Handbook H-28 - Screw Thread Standards for Federal Services

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Officer, Washington, D.C. 20402.)

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, D.C. 20036.)

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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, Illinois 60606.)

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

3. REQUIREMENTS

- * 3.1 First article. When specified (see 6.2), the supplier shall furnish a sample for first article inspection and approval (see 4.2, and 6.3).

3.2 Standard product. The testers delivered under this specification shall be the manufacturer's standard commercial product, except for changes necessary to comply with this specification.

3.3 Materials. Materials not definitely specified shall be of the quality normally used by the manufacturer for his current commercial product.

3.4 Design and construction.

- * 3.4.1 Type I, compression and tension (push-pull) testers. The type I, (push-pull) testers shall consist of a calibrated spring housed and attached to a shaft extending from both ends of the housing containing a straight-face indicator scale or dial indicator scale, as applicable (see 1.2). One end of the shaft, the pull end, shall be used for tension readings and the other end, the push end, shall be used for compression readings. The capacity range and scale graduation of the testers shall be as specified in table I.

TABLE I. Type I, (push-pull) testers

	Capacity range	Maximum scale graduation
Class 1		
Style A	0-30 grams	2 grams
	0-50 grams	2 grams
	0-70 grams	5 grams

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TABLE I. Type I, (push-pull) testers (cont'd)

	Capacity range	Maximum scale graduation
Class 1 (cont'd)		
Style A (cont'd)	0-100 grams	4 grams
	0-2 pounds	1/2 ounce
	0-80 ounces	1 ounce
	0-5 pounds	0.05 pound
	0-8 ounces	1/2 ounce
Style B	0-20 pounds	4 ounces
	0-50 pounds	0.1 pound
	0-80 pounds	1 pound
Class 2		
Style A	0-500 grams	5 grams
	0-32 ounces	0.25 ounce
	0-1 pound	0.01 pound
	0-5 pounds	1 ounce
	0-30 pounds	4 ounces
Style B	0-100 pounds	1 pound
	0-150 pounds	1 pound
	0-200 pounds	2 pounds
	0-250 pounds	2.5 pounds
	0-500 pounds	5 pounds

- * 3.4.1.1 Class 1, straight-face indicator scale. Type I, class 1, style A and B testers shall consist of either a straight flat or tubular housing constructed of steel, brass, aluminum or plastic with a linear scale marked in grams, pounds, or ounces and graduations as applicable in accordance with manufacturer's commercial practice. A memory-type mechanical arrangement to register the maximum reading after initial load has been removed shall be provided with testers of 0-2 pounds minimum capacity to compensate for inaccuracy introduced by frictional forces from the device. Memory-type indicator when applicable and scale readings shall be accurate to within one graduation (see 4.4.1). When specified (see 6.2), the pull rod of style A, 0-5 pounds capacity, 0.05 pound graduation and style B, 0-20 pounds capacity, 4-ounce graduation testers shall have an insulating link or bushing for protection against shock when testing the tension of live electrical contacts. Style A, 0-2 pounds capacity, 1/2-ounce graduation tester shall have a related scale in gram capacities and gram deviations opposite the pound-ounce scale.

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- * 3.4.1.2 Class 2, dial indicator scale. Type I, class 2, style A and B testers shall have a dial indicator scale mounted on a steel, brass, aluminum, or plastic housing, in accordance with manufacturer's commercial practice. The style B housing shall have two removable handles and shall be designed to be either hand held or mounted in a test stand or bracket. A memory-type reading indicator for registering maximum readings and means to return indicator to zero reading shall be provided with class 2 testers. The dial scale of the testers shall have either one or two rows of graduations in accordance with the manufacturer's commercial practice. When two rows of graduations are furnished, one row shall be for tension readings and the other shall be for compression readings and each row of graduations shall be a different color. Class 2 testers using the memory-type indicator, shall be accurate to within 1/2 of one percent of full scale capacity (see 4.4.1). The testers shall be furnished with the following stainless steel attachments for the shaft:

- (1) Flat head
- (2) Notched head
- (3) Cone head
- (4) Chisel head
- (5) Hook
- (6) Extension rod, 6-inch length

The shaft ends and attachments shall be threaded for mounting. Class 2, style A tester and attachments shall have 10-32 threads, and style B tester and attachments shall have 5/16-18 threads. The threads shall conform to coarse threads of Handbook H-28.

- * 3.4.2 Type II, tension (pull) tester. The type II tension tester shall be capable of tension testing and shall have a shaft extension on one end only. The testers shall have a capacity of 0-40 ounces with 1-ounce maximum scale graduations. The tester shall have a dial indicator scale and shall be furnished with attachments for testing spring tension of generator brushes and engine distributor points.
- * 3.4.3 Case. A wood or metal case in accordance with the manufacturer's commercial practice shall be furnished for containing type I, class 2 and type II testers and attachments.
- * 3.5 Performance. The testers and components shall be capable of continuous duty without damage or loss of accuracy when tested (see 4.4.2).
- * 3.6 Marking. The testers shall be legibly marked with the manufacturer's identification in accordance with manufacturer's current commercial practice.

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3.7 Finish. The tester shall be finished in accordance with manufacturer's commercial practice.

- * 3.8 Workmanship. The tester shall be free from sharp edges, burrs, and slivers. Finished surfaces shall be free from areas of no finish, streaks, scratches, or embedded foreign matter. Scale numerals and graduations shall be printed clearly, distinctly, and uniformly.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 First article inspection. When a first article is required it shall be examined in accordance with the defects in table II, specified dimensions, and tested as specified in 4.4.1 and 4.4.2. The presence of any visual defects, any dimensions not as specified, or failure to pass any test shall be cause for rejection of the first article.

4.3 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated herein-after.

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

4.3.2 End item inspection. A lot shall consist of all testers of the same type, class, style, and capacity offered for inspection at one time. The sample unit shall be one completely fabricated tester.

- * 4.3.3 Visual examination. The complete tester shall be examined for defects classified in table II. The inspection level shall be II with an acceptable quality level (AQL) of 2.5 for major defects and 6.5 for total defects, expressed in terms of defects per hundred units.

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TABLE II. Classification of defects

Examine	Defect	Classification	
		Major	Minor
Finish	Not in accordance with manufacturer's commercial practice		X
Design	Design characteristics not in accordance with the specified requirements	X	
Type I, class 1	Memory-type indicator missing	X	
Type I, class 2	Two removable handles missing (style B)	X	
	Memory-type indicator or means for returning indicator to zero reading missing	X	
	Color for each row of graduations when two rows are used, not different	X	
	Attachments missing or not as specified	X	
	Threads on attachments and shaft missing or not size specified	X	
Type II	Attachments missing or not as specified	X	
Scale graduations	Capacity and graduations not as specified	X	
Workmanship	Not free of burrs, slivers or sharp edges		X
	Scale numerals and graduations not clear, distinct or uniform	X	
	Finished surface not free of areas of no finish, streaks, scratches or embedded foreign matter		X
Marking for identification	Missing, or not legible		X
Carrying case	Not wood or metal	X	

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4.3.4 End item testing. Testers shall be tested in accordance with 4.4.1 and 4.4.2. The inspection level shall be S-3 with an AQL of 4.0, expressed in terms of defects per hundred units.

4.3.5 Examination of preparation for delivery. An examination shall be made to determine that packaging, packing, preservation and marking as required by section 5 of this specification are complied with. Defects shall be scored as indicated in table III. The sample unit shall be one shipping container fully prepared for delivery, except that the container need not be sealed. The lot size shall be the number of containers in the inspection lot. The inspection level shall be S-2 with an AQL of 4.0 expressed in terms of defects per hundred units.

TABLE III. Examination of preparation for delivery

<u>Examination</u>	<u>Defect</u>
Markings, exterior and interior	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Preservation	Preservative improperly applied or missing.
Materials	Component missing, or damaged.
Weight	Weight of contents per container is more than required.

4.3.5.1 Examination of shipping containers. When shipping containers are required to be in accordance with PPP-B-636, examination for defect in closure and strapping shall be in accordance with appendix of the specification.

4.4 Tests.

- * 4.4.1 Accuracy test. The tester shall be tested using the memory-type indicator when applicable, by checking the reading obtained with a standardized tension and compression measuring device, at the following tester loads; 1/8, 1/4, 1/2, 3/4 and full capacity. When testing the type I (push-pull) tester, the tester shall be first tested for tension accuracy and then for compression accuracy. The accuracy readings shall be within the tolerances specified in 3.4.1.1 and 3.4.1.2, as applicable.

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- * 4.4.2 Continuous duty test. The tester shall be subjected to 200 load cycles from 0 to the maximum scale readings. The rate of cycling shall be not more than 20 nor less than 15 cycles in one minute. The type I (push-pull) tester shall be subjected to 100 cycles of tension and 100 cycles of compression and the pull tester subjected to 200 cycles of tension. The cycling shall be started at 1/8 capacity load and continued at 1/4, 1/2, 3/4 and full capacity load and repeated until specified number of cycles have been completed. At the conclusion of this test, the tester shall be inspected for damage and retested for accuracy in accordance with 4.4.1 to determine compliance with 3.5.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Preservation. All exposed, uncoated ferrous metal surfaces of each tester and accessories shall be cleaned process C-1, thoroughly dried, and coated with type P-9 preservative in accordance with MIL-P-116. Preserved surfaces shall be covered, wrapped, or bagged with greaseproof barrier material conforming to type I or II, grade A of MIL-B-121. Barrier material shall be secured with tape, cord, or twine, or heat-sealed when heat sealable barrier material is used.

5.1.1.2 Packaging. Each tester, together with accessories when supplied, shall be placed in the carrying case provided and the case closed. Each carrying case shall then be placed in a snug-fitting folding or setup paperboard or fiberboard box conforming to PPP-B-566, PPP-B-676, or PPP-B-636, respectively, style, type class, variety, and grade optional. Each box shall be closed in accordance with the appendix of the applicable box specification.

5.1.2 Level C. Testers shall be preserved and packaged to afford adequate protection against corrosion, deterioration and damage during shipment from the supply source to the first receiving activity. The supplier may use his standard practice when it meets these requirements.

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

5.2.1 Level A. Testers of one type, class, style, and capacity only, preserved and packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, V2s of PPP-B-636. The weight of contents of each shipping container shall not exceed 65 pounds.

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5.2.2 Level B. Testers of one type, class, style, and capacity only, preserved and packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF, variety SW, or type SF, class domestic of PPP-B-636. Closure shall be in accordance with method II of the appendix of PPP-B-636. The weight of contents of each shipping container shall not exceed 65 pounds.

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

5.2.3 Level C. Testers, preserved and packaged 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. Containers shall be Uniform Classification Rules or National Motor Freight Classification Rules, as applicable.

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

6. NOTES

6.1 Intended use. The testers covered by this specification are used for testing the tension and compression strength of springs and spring loaded devices.

* 6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Type, class, style, capacity range and scale graduation tester required (see 1.2).
- (c) When first article is required (see 3.1, 4.2, and 6.3).
- (d) When insulating link or bushing is required for type I, class 1, style A, 0-5 pounds capacity, 0.05-pound graduation and style B, 0-20 pounds capacity, 4-ounce graduation testers (see 3.4.1.1).
- (e) Selection of the applicable levels of preservation and packaging, and packing (see 5.1 and 5.2).
- (f) When weather-resistant V3c or V3s fiberboard shipping containers are required for level B packing (see 5.2.2.1).

* 6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of ASPR 7-104.55. The first article should be a preproduction sample. The first article should consist of one unit. The contracting officer should include specific instructions in all procurement instruments regarding arrangements for inspection and approval of the first article.

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- * 6.4 Type II, class 1, testers were deleted from this revision.

6.5 The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This is 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 irrespective of the marginal notations and relationship to the last previous issue.

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SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p>INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
SPECIFICATION		
Testers, Spring Resiliency		MIL-T-43560A
ORGANIZATION		
CITY AND STATE		CONTRACT NUMBER
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
<p>1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</p> <p>A. GIVE PARAGRAPH NUMBER AND WORDING.</p>		
<p>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p>		
<p>2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID</p>		
<p>3. IS THE SPECIFICATION RESTRICTIVE?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?)</p>		
<p>4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)</p>		
SUBMITTED BY (Printed or typed name and activity - Optional)		DATE