

MIL-B-2505G  
28 December 1984  
SUPERSEDING  
MIL-B-2505F  
26 September 1975

## MILITARY SPECIFICATION

### BUCKLES, CENTER-BAR WITH TONGUE

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

#### 1. SCOPE

1.1 Scope. This document covers center-bar buckles with tongue.

1.2 Classification. Buckles shall be of the following types, classes and sizes as specified (see 6.2).

Type I	- With roller
Class 1	- Brass (copper alloy) casting
Size	- 5/8-inch
Size	- 1-inch
Class 2	- Malleable iron casting
Size	- 5/8-inch
Size	- 1-inch

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 and Development 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.

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- Class 3 - Steel stamping
  - Size - 1-inch
- Class 4 - Brass stamping
  - Size - 1-inch
- Type II - Without roller
- Class 1 - Brass (copper alloy) casting
  - Size - 5/8-inch
  - Size - 3/4-inch
- Class 2 - Malleable iron casting
  - Size - 5/8-inch
  - Size - 3/4-inch

## 2. APPLICABLE DOCUMENTS

2.1 Government documents. Unless otherwise specified, the following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this document to the extent specified herein.

## SPECIFICATIONS

## FEDERAL

- QQ-W-321 - Wire, Copper Alloy
- QQ-C-390 - Copper Alloy Castings (Including Cast Bar)
- QQ-W-461 - Wire, Steel, Carbon (Round, Bare and Coated)
- QQ-B-613 - Brass, Leaded and Nonleaded: Flat Products (Plate, Bar, Sheet and Strip)
- TT-C-490 - Cleaning Methods and Pretreatment of Ferrous Surfaces For Organic Coatings
- TT-E-529 - Enamel, Alkyd, Semigloss
- PPP-B-566 - Boxes, Folding, Paperboard
- PPP-B-636 - Boxes, Shipping, Fiberboard
- PPP-B-665 - Boxes: Paperboard, Metal Edged and Components
- PPP-B-676 - Boxes, Setup

## MILITARY

- MIL-F-495 - Finish, Chemical, Black, For Copper Alloys

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## STANDARDS

## FEDERAL

FED-STD-595 - Colors

## MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection  
by Attributes

MIL-STD-129 - Marking for Shipment and Storage

## DRAWINGS

U.S. ARMY NATICK RESEARCH AND DEVELOPMENT CENTER

4-1-109 - Buckles, Center-Bar, With Tongue

(Copies of documents required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. Unless otherwise specified, the following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this document to the extent specified herein.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 47	- Malleable Iron Castings
A 322	- Steel Bars, Alloy, Standard Grades
A 366	- Steel, Carbon, Cold-Rolled Sheet
B 281	- Preparation of Copper and Copper Base Alloys for Electroplating
B 633	- Electrodeposited Coating of Zinc on Iron and Steel
D 3951	- Standard Practice for Commercial Packaging

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

(Technical society and technical association documents 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 test of this document and the references cited herein, the text of this document shall take precedence.

## 3. REQUIREMENTS

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3.1 First article. When specified, 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 Copper alloy.

3.2.1.1 Castings, copper alloy. Copper alloy castings shall conform to type I, condition as cast, alloy A3 of QQ-C-390.

3.2.1.2 Brass, sheet or strip. Brass sheet or strip shall conform to copper alloy number 260 or 268, quarter-hard temper of QQ-B-613.

3.2.1.3 Copper alloy wire. Copper alloy wire shall conform to alloy number 260 or 270, quarter-hard temper of QQ-W-321.

3.2.2 Malleable iron castings. Malleable iron casting shall conform to grade 32510 or 35018 of ASTM A 47.

3.2.3 Steel.

3.2.3.1 Steel, sheet and strip. Steel sheet and steel strip shall be cold, rolled, any temper, commercial quality and conform to ASTM A 366.

3.2.3.2 Steel wire. Steel wire shall conform to AISI number 1006 or 1010, finish 1, annealed in process, of QQ-W-461.

3.2.4 Enamel. The enamel shall conform to type II, of TT-E-529. The color shall be semi-gloss black, No. 27038 of FED-STD-595.

3.3 Construction. The construction and forming of the buckles shall conform to the style and requirements as shown on Drawing 4-1-109.

3.3.1 Buckle body.

3.3.1.1 Castings, types I and II. Bodies of type I and II, class 1 buckles shall be fabricated of copper alloy casting specified in 3.2.1.1. Bodies of types I and II, class 2 buckles shall be fabricated of malleable iron casting specified in 3.2.2. The copper alloy and malleable iron castings shall have no porosity, blowholes, blemishes, slag, warps, digs or other casting imperfections. All sharp edges and burrs shall be removed and finished smooth.

3.3.1.2 Stampings, type I. Bodies of type I, class 3 buckles shall be stamped from steel sheet or strip specified in 3.2.3.1. Type I, class 4 buckles shall be stamped from brass sheet or strip specified in 3.2.1.2.

3.3.2 Tongues, buckles, type I and II. Tongues for type I, classes 1 and 4 and type II, class 1 buckles shall be fabricated from copper alloy wire

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specified in 3.2.1.3. Tongues for type I, classes 2 and 3 and type II, class 2 buckles shall be fabricated from steel wire specified in 3.2.3.2. After assembling and finishing, the tongue shall be capable of free pivot movement on center bar without binding. The tip end of tongue shall be positioned in close contact with the body or roller, as applicable, and shall not protrude beyond the body or roller. The tongue shall be securely attached at the groove of the center bar and shall be free from lateral movement of more than 1/8 inch total and slipping out of the center bar groove.

3.3.3 Rollers, buckles, type I. Rollers for type I, classes 1 and 4 buckles shall be fabricated from brass sheet or strip specified in 3.2.1.2. Rollers for classes 2 and 3 buckles shall be fabricated from steel sheet or strip specified in 3.2.3.1. After assembly to body and finishing, the roller shall be capable of rotating freely without binding on body bar. The roller shall be evenly formed around the body bar. The joint of the roller shall be butted evenly along it's entire length.

3.4 Finish. Prior to finish application, buckles shall be free from corrosion, rust, dirt, discoloration, scratches and tool marks. Type I, class 1 and 4, and type II class 1 loops shall be cleaned as specified in ASTM B 281 and ASTM A 322. Type I, class 2 and 3, and type II, class 2 buckles shall be cleaned in accordance with method I, II, or V of TT-C-490.

3.4.1 Black chemical, type I and type II buckle. The type I, classes 1 and 4 and the type II, class 1 buckles after fabrication and assembly, shall be given a black chemical finish, .00005-.0002 inch thick, conforming to MIL-F-495. The color shall be semi-gloss black, No. 27038, conforming to FED-STD-595.

3.4.2 Black enamel, type I and type II buckle. The type I, classes 2 and 3 and type II, class 2 buckles shall be given a phosphate treated zinc plate conforming to type IV, class SC3 of ASTM B 633, followed by baked enameling. The enamel shall be as specified in 3.2.4. The enamel shall dry to a smooth and uniform film, free from runs, wrinkles, orange peel or areas of no film.

3.5 Marking for identification. The buckles shall be permanently and legibly marked with the manufacturer's name or trademark of such characters as to be identifiable with the manufacturer. The marking shall be made on the back surface of the buckle body in such a manner that the front surface shall show no signs of penetration, unevenness, or cause distortion on any part of the buckle. All markings shall be made prior to assembly and finishing.

3.6 Workmanship. The buckles shall be free from burrs, slivers, sharp edges, dents, tool marks, deformations or fractures.

#### 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

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

4.2 Classification of inspection. 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), the buckle shall be examined for defects specified in table I, and 4.4.4. The presence of any defect 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. Inspection shall be conducted to see that type I, class 2 and 3 and type II, class 2 buckles are given a phosphate treated zinc coating as specified in 3.4.2. Whenever a nonconformance is noted, correction shall be made to the affected items and the process.

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 buckles. The sample unit shall be one buckle. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 10.0 for total (major and minor combined) defects.

TABLE I. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Finish (general)	Not finished or finish not as specified	X	
	Not color specified	X	
	Evidence of corrosion		X
Black chemical finish	Color not as specified	X	
	Finish not clean and uniform		X

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TABLE I. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Black chemical finish (cont'd)	Area of no film or color not as specified	X	
	Separation of color, or finish rough (i.e. lint, dust, dirt or other foreign matter embedded in finish)		X
	Finish not continuous, smooth and adherent (i.e. orange peel, wrinkles, drops, streaks)		X
Construction and workmanship	Component missing, i.e., tongue or roller	X	
	Not fabricated as specified, i.e., tongue attached in reverse position	X	
	Component is not specified type, class, or size	X	
	Any component not fabricated of applicable referenced material	X	
	Casting has evidence of crack, porosity, blow hole, warp, dig, or gouge	X	
	Tongue not capable of free pivot movement on center bar, i.e., binds		X
	Tip end of tongue not positioned in close contact with the body or roller		X
	Tip end of tongue protrudes beyond the body or roller		X
	Tongue not securely attached at the groove of the center bar		X
	Lateral movement of tongue is more than 1/8 inch total		X
	Tongue slips out of center bar groove		X
	Roller not capable of rotating freely, i.e., binds on body bar		X
	Roller unevenly formed around the body bar		X
	The joint of the roller is not butted evenly		X
	Buckle has burrs, slivers, sharp edges, dents, tool marks, deformations, or fractures		X

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TABLE I. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Identification marking	Missing, incomplete, illegible, or incorrect		X
	Not on back surface of buckle body		X
	Indication of penetration or unevenness on front surface of buckle		X
	Distortion on any part of the buckle		X

4.4.4 End item dimensional examination. The end item shall be examined for conformance to the dimensions specified on the drawing. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of buckles. The sample unit shall be one buckle. 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 inspection. An examination shall be made to determine that preservation, packing and marking comply with section 5 requirements. Defects shall be scored in accordance with II. The sample unit shall be one shipping container fully packaged. The lot size shall be the number of containers in the inspection lot. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

TABLE II. Packaging defects

Examination	Defect
Marking (exterior and interior container)	Missing; incorrect; incomplete; illegible; of improper size, location, sequence, or method or application.
Material	Component missing or damaged.
Workmanship	Inadequate application of components such as: incomplete closure of container flaps or inadequate strapping, tape bonding, stapling, or cushioning. Bulged or distorted container.
Contents	Less than specified or indicated number of buckles per unit pack. Number per shipping container is more or less than required.



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4.4.6 Palletization examination. An examination shall be made to determine that the palletization complies with the section 5 requirements. Defects shall be scored in accordance with table III. The sample unit shall be one palletized unit load fully packaged. The lot size shall be the number of palletized unit loads in the inspection lot. The inspection level shall be S-1 and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

TABLE III. Palletization defects

Examine	Defect
Finished dimensions	Length, width, or height exceed specified maximum requirements.
Palletization	Pallet pattern not as specified. Interlocking of loads not as specified. Load not bonded with required straps as specified.
Weight	Exceeds maximum load limits.
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.

## 5. PACKAGING

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

5.1.1 Level A. Unless otherwise specified (see 6.2), buckles of one type and style only shall be unit packed in the quantities specified in table IV, in a snug-fitting fiberboard box conforming to style RSC, type CF, variety SW, or type SF, class domestic, grade 200 of PPP-B-636. Each box shall be agitated from time to time to arouse a compact and well filled box. When quantities are other than those specified in table IV, buckles of one type and style only shall be unit packed in boxes conforming to PPP-B-566, PPP-B-636 or PPP-B-676. The weight of the contents shall not exceed the weight limitations of the applicable box specification. Each box shall be closed in accordance with the appendix of the applicable box specification.

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TABLE IV. Quantity of buckles per unit pack and shipping container

Type and style	Quantity per fiberboard box	Quantity per shipping container
Type I - brass with roller		
class 1, size 5/8-inch	1000	6000
class 1, size 1-inch	400	2400
class 3, size 1-inch	800	4800
Type I - malleable iron with roller		
class 2, size 5/8-inch	1000	6000
class 2, size 1-inch	400	2400
Type I - steel with roller		
class 3, size 1-inch	800	4800
Type II - brass without roller		
class 1, size 5/8-inch	1400	8400
class 1, size 3/4-inch	1000	6000
Type II - malleable iron without roller		
class 2, size 5/8-inch	1400	8400
class 2, size 3/4-inch	1000	6000

5.1.2 Commercial. The buckles 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).

5.2.1 Level A packing. Unless otherwise specified (see 6.2), buckles of one type and style only, preserved as specified in 5.1, shall be packed in the quantities as specified in table IV, in a snug-fitting shipping container conforming to style FTC, grade V2s of PPP-B-636, except that the weight limitations shall be waived. Each shipping container shall be closed and reinforced with strapping or tape banding in accordance with the appendix of PPP-B-636.

5.2.2 Level B packing. Unless otherwise specified (see 6.2), buckles of one type and style only, preserved as specified in 5.1, shall be packed in the quantities as specified in table IV, in a snug-fitting fiberboard shipping container conforming to style FTC, type CF, variety DW, class domestic, grade 350 of PPP-B-636. Each shipping container shall be closed and reinforced as specified in 5.2.1.

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

5.2.3 Commercial packing. Buckles, preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

5.3 Palletization. When specified (see 6.2), buckles packed as specified in 5.2, shall be palletized on a 4-way entry pallet in accordance with load type 1a of MIL-STD-147. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L or film bonding means O or P. Pallet patterns shall be in accordance with the appendix of MIL-STD-147. Interlocking of loads shall be effected by reversing the pattern of each course. If the container is of a size which does not conform to any of the patterns specified in MIL-STD-147, the pallet pattern used shall first be approved by the contracting officer.

5.4 Marking. In addition to any special marking required by the contract or purchase order, unit packs, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

## 6. NOTES

6.1 Intended use. The buckles are intended for use on miscellaneous leather and canvas equipage items.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Type and style required (see 1.2).
- c. When a first article is required (see 3.1).
- d. Selection of applicable levels of preservation and packing (see 5.1 and 5.2).
- e. Whether quantity per unit pack and shipping container is other than specified (see 5.1.1, 5.2.1 and 5.2.2).
- f. Whether weather-resistant grade fiberboard shipping containers are required for level B shipment (see 5.2.2.1).
- g. When palletization is required (see 5.3).

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 consisting of one complete buckle. The contracting officer should include specific instructions in all acquisition documents regarding arrangements for 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 the document (see 3.2).

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6.5 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.

Custodians:

Army - GL  
Air Force - 99

Review activities:

Army - ME  
Air Force - 82  
DLA - IS

User activities:

Army - AR  
Navy - MC

Preparing activity:

Army - GL

Project No. 5340-1557

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-B-2505G		2. DOCUMENT TITLE BUCKLES, CENTER-BAR WITH TONGUE	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify): _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	