

MIL-B-543F

23 March 1971

SUPERSEDING

MIL-B-543E

26 April 1963

MILITARY SPECIFICATION

BUCKLES, TONGUELESS AND WEB STRAP

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

1. SCOPE

1.1 Scope.- This specification covers metal buckles used on tentage and equiptage items.

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

Type I - Buckles, tongueless, 1-Bar

Style 2 -

Class 1	- Brass
Class 3	- Steel
Class 4	- Aluminum
Size	- 5/8 inch
Size	- 3/4 inch
Size	- 1 inch
Size	- 1-1/4 inch
Size	- 1-1/2 inch

Type II - Buckle, tongueless, 2-Bar

Style 1 -

Class 1	- Brass
Class 3	- Steel
Class 4	- Aluminum
Size 1	- 1 inch

Style 2 -

Class 1	- Brass
Size	- 3/4 inch

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Style 3 -

Class - Same as style 1
 Size - 5/8 inch

Style 4 -

Classes - Same as style 1
 Size - 1/2 inch
 Size - 5/8 inch
 Size - 3/4 inch
 Size - 1 inch
 Size - 1-1/2 inch
 Size - 2 inch

Style 5 -

Class - Same as style 1
 Size - 5/8 inch

Type III - Buckle, double bar, with slide

Style 1 -

Class 1 - Brass
 Class 5 - Malleable iron
 Size - 1-1/2 inch

Style 2 -

Classes - Same as style 1
 Size - 3/4 inch

Style 3 -

Class 1 - Brass
 Class 3 - Steel
 Class 4 - Aluminum
 Size - 5/8 inch
 Size - 3/4 inch
 Size - 1 inch
 Size - 1-1/4 inch
 Size - 1-1/2 inch

Type IV - Buckle, single bar, with Láp, cotton webbing

Class 1 - Brass
 Class 3 - Steel
 Class 4 - Aluminum
 Size - 5/8 inch
 Size - 1 inch

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Type V - Buckle, quick release, non-slip, nylon webbing

Class 3	- Steel
Class 4	- Aluminum
Size	- 3/4 inch
Size	- 1 inch

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:

SPECIFICATIONS

FEDERAL

QQ-A-250/1	- Aluminum Alloy 1100 Plate and Sheet
QQ-A-250/11	- Aluminum Alloy 6061, Plate and Sheet
QQ-B-613	- Brass, Leaded and Non-Leaded; Flat Products (Plate, Bar, Sheet and Strip)
QQ-C-390	- Copper Alloy Castings (Including Cast Bar)
QQ-I-666	- Iron Castings, Malleable
QQ-S-698	- Steel, Sheet and Strip, Low Carbon
QQ-Z-325	- Zinc Plating (Electro-Deposited)
TT-E-529	- Enamel, Alkyd, Semigloss
TT-P-666	- Primer Coating, Zinc Yellow (Zinc Chromate), for Aluminum Surfaces
PPP-B-566	- Boxes, Folding, Paperboard
PPP-B-636	- Box, Fiberboard
PPP-B-665	- Boxes; Paperboard, Metal Stayed (Including Stay Material)
PPP-B-676	- Boxes, Set-Up, Paperboard

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MIL-E-480	- Enamel, Baking, Phenol - or Urea-Formaldehyde
MIL-F-495	- Finish, Chemical, Black, For Copper Alloys
MIL-C-5541	- Chemical Films and Chemical Film Materials for Aluminum and Aluminum Alloys
MIL-H-6088	- Heat Treatment of Aluminum Alloys

STANDARDS

MILITARY

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

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DRAWINGS

ARMY NATION LABORATORIES

- 2-4-71 - Buckles, Quick Release, Non-slip, Nylon Webbing.
- 4-1-54 - Buckles, Tongueless and Web Strap; Buckles - 1 Bar, Type I - 2 Bar, Type II.
- 4-1-171 - Buckles, Tongueless and Web Strap; Buckles, Double Bar, With Slide, Type III.
- 4-1-202 - Buckles, Tongueless and Web Strap; Buckles, Single Bar, With Lip, Type IV.

(Miniature copies of Drawings 2-4-71, 4-1-54, 4-1-171 and 4-1-202, identified as figures 1, 2, 3 and 4 respectively, are attached for information purposes only.)

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC.

National Motor Freight Classification

(Application for copies should be addressed to American Trucking Associations, Attn: Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 202 Union Station, 516 W. Jackson Blvd., Chicago, Illinois 60606.)

3. REQUIREMENTS

3.1 Materials.- The materials shall conform to the applicable specification and requirements specified hereinafter.

3.1.1 Copper alloy.-

- * 3.1.1.1 Sheet or strip.- Brass sheet or strip for class 1 buckles shall conform to alloy number 260 or 268, quarterhard of QQ-B-613.

3.1.1.2 Castings.- Brass castings for class 1 buckles shall conform to alloy number A3 of QQ-C-390.

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3.1.2 Steel strip.-- Steel strip for class 3 buckles shall conform to cold rolled, temper Nos. 4 or 5 of QQ-S-698.

3.1.3 Aluminum.--

- * 3.1.3.1 Alloy 1100.-- Aluminum alloy for the type I, II and III, class 4 buckles shall conform to 1100, tempers H12 or H24 of QQ-A-250/1.
- * 3.1.3.2 Alloy 6061.-- Aluminum alloy for the type IV and V, class 4 buckles shall conform to 6061, temper 0 of QQ-A-250/11.

3.1.4 Malleable iron.-- Malleable iron for class 5 buckles shall conform to grade I or II of QQ-I-666, except that the requirements for making the castings are not applicable.

3.2 Construction and dimensions.-- The construction and dimensions of the buckles shall conform to this specification and Drawings 2-4-71, 4-1-54, 4-1-171 and 4-1-202, as applicable.

- * 3.2.1 Type IV and V aluminum buckles.-- After forming, the type IV and V aluminum buckles shall be heat treated to temper T-6 conforming to MIL-B-6088.

3.3 Finish.-- Prior to the application of a finish, all burrs and sharp edges shall be removed.

3.3.1 Class 1 brass buckles.-- Class 1, brass buckles shall be given a black chemical finish in accordance with MIL-F-495.

3.3.2 Class 3 steel and class 5 malleable iron buckles.-- Class 3, steel and class 5, malleable iron buckles shall be given a phosphate treated zinc plate conforming to type III, class 2 of QQ-Z-325, followed by bake enameling. The enamel shall conform to type I or II of MIL-E-480. The color shall be black. The coating shall level out to a uniform dry thickness, without orange peel, wrinkles, drops, streaks or areas of no film.

- * 3.3.3 Class 4 aluminum buckles.-- Class 4, aluminum buckles shall be prepared for painting as follows:

- a. All surfaces shall be given a chemical treatment conforming to class 2 of MIL-C-5541.
- b. The treated surfaces shall be coated with primer conforming to TT-P-666.
- c. The primed surface shall be coated with black enamel conforming to type I or II of MIL-E-480 or class 2 of TT-E-529. The coating shall level out to a uniform dry thickness without orange peel, wrinkles, drops, streaks or areas of no film.

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- 3.4 Marking for identification.- Buckles shall be marked with the manufacturer's identification of such known character as to be identifiable. The marking shall be permanently affixed by stamping or etching on the back of the buckle. The identification marks shall be incorporated in such a manner that the surface opposite those markings shall show no signs of penetration or unevenness or cause distortion in any part of the buckle.
- * 3.5 Workmanship.- The finished buckles shall be free of burrs, rough or sharp edges, mutilations such as metal marks, digs, or gouges, and shall not be bent or malformed. Castings shall be sound; i.e., not porous, warped, cracked or fractured and shall not contain sink marks or blow holes.

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 Inspection.- Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.
- 4.2.1 Material and component inspection.- In accordance with 4.1 above, the supplier is responsible for insuring that components and materials used were manufactured, tested, and inspected in accordance with the specified requirements of referenced subsidiary specifications and standards to the extent specified herein, or, if none, in accordance with this specification.
- * 4.2.2 Process inspection.- Inspection shall be made to see that the following are as specified. Whenever nonconformance is noted, correction shall be made to the items affected and the process.

<u>Requirement (when applicable)</u>	<u>Requirement paragraph</u>
Heat treatment	3.2.1
Phosphate zinc plating	3.3.2
Chemical treatment	3.3.3
Priming	3.3.3

4.2.3 End item inspection.- The lot shall be all the buckles of one type, style, class, and size offered for inspection at one time. The sample unit for this inspection shall be one assembled and finished buckle.

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- * 4.2.3.1 Visual examination.-- Examination shall be made of the buckles for defects in table I. The inspection level shall be II and the AQL 4.0 for major defects and 10.0 for total, expressed in terms of defects per hundred units.

TABLE I.- Classification of defects

Examine	Defect	Classification	
		Major	Minor
Finish - Black enamel (classes 3, 4 and 5)	Area of no film or color not as specified.		X
	Deep cuts, scratches or abrasion exposing base metal.	X	
	Discoloration or slight scratches.		X
	Finish not uniform and adherent (i.e.) drop, streaks, orange peel, or wrinkled.		X
Black chemical (class 1)	Dirt, smudge, oil, grease, or other foreign matter on surface.		X
	Deep cuts or scratches.	X	
	Discoloration or slight scratches.		X
	Area of no finish, or color not as specified		X
Construction and workmanship (all classes, as applicable)	Design or type not as specified.		X
	Unsound casting; i.e., porous, warped, cracked, fractured, sink marks, or contains blow holes.	X	
	Stampings distorted, bent malformed.	X	
	Mutilation such as metal mark, dig, or gouges noticeable.		X
	Rough or sharp edges; (i.e., fin, flash, sprue, or gate).	X	
	Body, tongue, clamp, or slide bent or malformed.	X	
	Surface spotted or open-grained, i.e., appearing as pitted, porous, or crystalline.	X	
Assembly	Any component missing or not assembled.	X	
	Tongue, clamp, or slide will not function, or requires excessive force to operate.	X	
	Tongue, clamp, or slide are poorly fitted to buckle body.		X
Identification Marking	Missing, incomplete, illegible, or incorrect.		X

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TABLE I.- Classification of defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Identification Marking (cont'd)	Not stamped or etched on back of buckle as specified.		X
	Indication of penetration, unevenness or distortion; marking on wrong side of buckle.		X

4.2.3.2 Dimensional examination.- Examination shall be made of buckles for compliance with dimensions specified. Any nonconformance shall constitute a defect. The inspection level shall be S-2 and the AQL 4.0, expressed in terms of defects per hundred units.

- * 4.2.3.3 Testing of class 1 buckles.- Testing of completely fabricated class 1 buckles shall be performed in accordance with table II for the characteristics shown therein. The sample unit shall be one completely fabricated buckle. The inspection level shall be S-1 with an AQL of 6.5, expressed in terms of defects per hundred units for each characteristic.

TABLE II.- Testing of the class 1 buckles

Characteristics	Requirement paragraph	Test method	Number determinations per sample unit	Results reported as
Black chemical finish: (class 1 buckle)				
Color and gloss	3.3.1	MIL-F-495	1	pass or fail
Resistance to hot soap solution	3.3.1	MIL-F-495	1	pass or fail
Resistance to accelerated weathering	3.3.1	MIL-F-495	1	pass or fail

- * 4.2.4 Examination of preparation for delivery requirements.- An examination shall be made to determine compliance with the packaging, packing and marking requirements of section 5. Defects shall be scored as specified in table III. The sample unit shall be one shipping container fully prepared for delivery. The lot shall be the number of shipping containers offered for inspection at one time. The inspection level shall be S-2 and the AQL shall be 2.5, expressed in terms of defects per hundred units.

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TABLE III.- Examination of preparation for delivery

<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 or damaged.
Contents (exterior and interior container)	Number per container is more or less than required.

- * 4.2.5 Examination of shipping containers.- When shipping containers are required to be in accordance with PPP-B-636, examination for defects in closure, waterproofing and reinforcing shall be in accordance with that specification.

5. PREPARATION FOR DELIVERY

5.1 Packaging.- Packaging shall be level A or C, as specified (see 6.2).

- * 5.1.1 Level A.- Unless otherwise specified (see 6.2), buckles of one type, style, class and size only, shall be packaged in quantities as specified in table IV in a snug-fitting fiberboard box conforming to style RSC, type CP or SP class domestic, grade 200, variety optional of PPP-B-636. Each box shall be agitated during filling to assure a compact and well-filled box. Closure shall be in accordance with the appendix of the box specification. When packaging quantities other than those specified in table IV, buckles of one type, style, class, and size only shall be packaged in boxes conforming to PPP-B-566, PPP-B-663, PPP-B-676 or PPP-B-636. The weight of the contents of each box shall not exceed the weight limitations of the applicable box specification. Closure shall be in accordance with the appendix of the applicable box specification.

- * TABLE IV.- Quantity of buckles per package and shipping container

<u>Buckles</u>	<u>Quantity per package</u>	<u>Quantity per shipping container</u>
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Type I

Style 2 - class 1 or 3

Size 5/8 inch	1,600	9,600
3/4 or 1 inch	1,500	9,000
1-1/4 inch	1,000	6,000
1-1/2 inch	500	3,000

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TABLE IV.—Quantity of buckles per package and shipping container (cont'd)

Buckles	Quantity per package	Quantity per shipping container
Type I		
Style 2 - class 4		
Size 5/8 inch	4,000	24,000
3/4 or 1 inch	3,500	21,000
1-1/4 inch	2,300	13,800
1-1/2 inch	1,400	8,400
Type II		
Style 1 - class 1 or 3		
Size 1 inch	1,000	6,000
Style 1 - class 4		
Size 1 inch	2,400	14,400
Type II		
Style 2, class 1		
Size 3/4 inch	1,800	10,800
Type II		
Style 3 - class 1 or 3		
Size 5/8 inch	3,000	18,000
Style 3 - class 4		
Size 5/8 inch	7,500	45,000
Type II		
Style 4 - class 1 or 3		
Size 1/2 inch	4,000	24,000
5/8 inch	2,800	16,800
3/4 inch	2,000	12,000
1 inch	900	5,400
1-1/2 or 2 inch	500	3,000

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TABLE IV.- Quantity of buckles per package and shipping container (cont'd)

Buckles	Quantity per package	Quantity per shipping container
Style 4 - class 4		
Size 1/2 inch	10,250	61,500
5/8 inch	7 600	45,600
3/4 inch	5,000	30,000
1 inch	2,500	15,000
1-1/2 inch	1,400	8,400
2 inch	1,000	6,000
Style 5 - class 1 or 3		
Size 5/8 inch	1,800	10,800
Style 5 - class 4		
Size 5/8 inch	4,000	24,000
Type III		
Style 1 - class 1		
Size 1-1/2 inch	150	900
Class 5		
Size 1-1/2 inch	200	1,200
Type III		
Style 2, class 1		
Size 3/4 inch	350	2,100
Class 5		
Size 3/4 inch	500	3,000
Type III		
Style 3, class 1 or 3		
Size 5/8 inch	500	3,000
3/4 inch	400	2,400
1 inch	300	1,800
1-1/4 inch or 1-1/2 inch	200	1,200

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TABLE IV.- Quantity of buckles per package and shipping container (cont'd)

<u>Buckles</u>	<u>Quantity per package</u>	<u>Quantity per shipping container</u>
Style 3 - class 4		
Size 5/8 inch	1,700	10,200
3/4 inch	1,200	7,200
1 inch	1,000	6,000
1-1/4 inch or 1-1/2 inch	600	3,600
Type IV		
All classes		
Size 5/8 and 1 inch	450	2,700
Type V		
All classes		
Size 3/4 inch	1,600	9,600
1 inch	800	4,800

5.1.2 Level C.- Buckles shall be packaged to afford adequate protection against damage during shipment from the supply source to the first receiving activity. The supplier may use his standard practice when it meets this requirement.

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

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

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

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- * 5.2.3 Level C.- Buckles, 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 in accordance with Uniform Freight 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 buckles covered by this specification are for use on items of equipment having strap-buckle-type fasteners.

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

- (a) Title, number, and date of this specification.
- (b) Type, style, class, and size of buckle to be furnished (see 1.2).
- (c) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- (d) Whether quantity per package and pack is other than specified (see 5.1.1, 5.2.1, and 5.2.2).

6.3 The margins of this specification have been marked with an asterisk (*) to indicate where changes (additions, modifications, corrections and 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 suppliers are cautioned to evaluate the requirements of the document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - GL
Navy - YD
Air Force - 82

Preparing activity:

Army - GL
Project No. 5340-0767

Review activities:

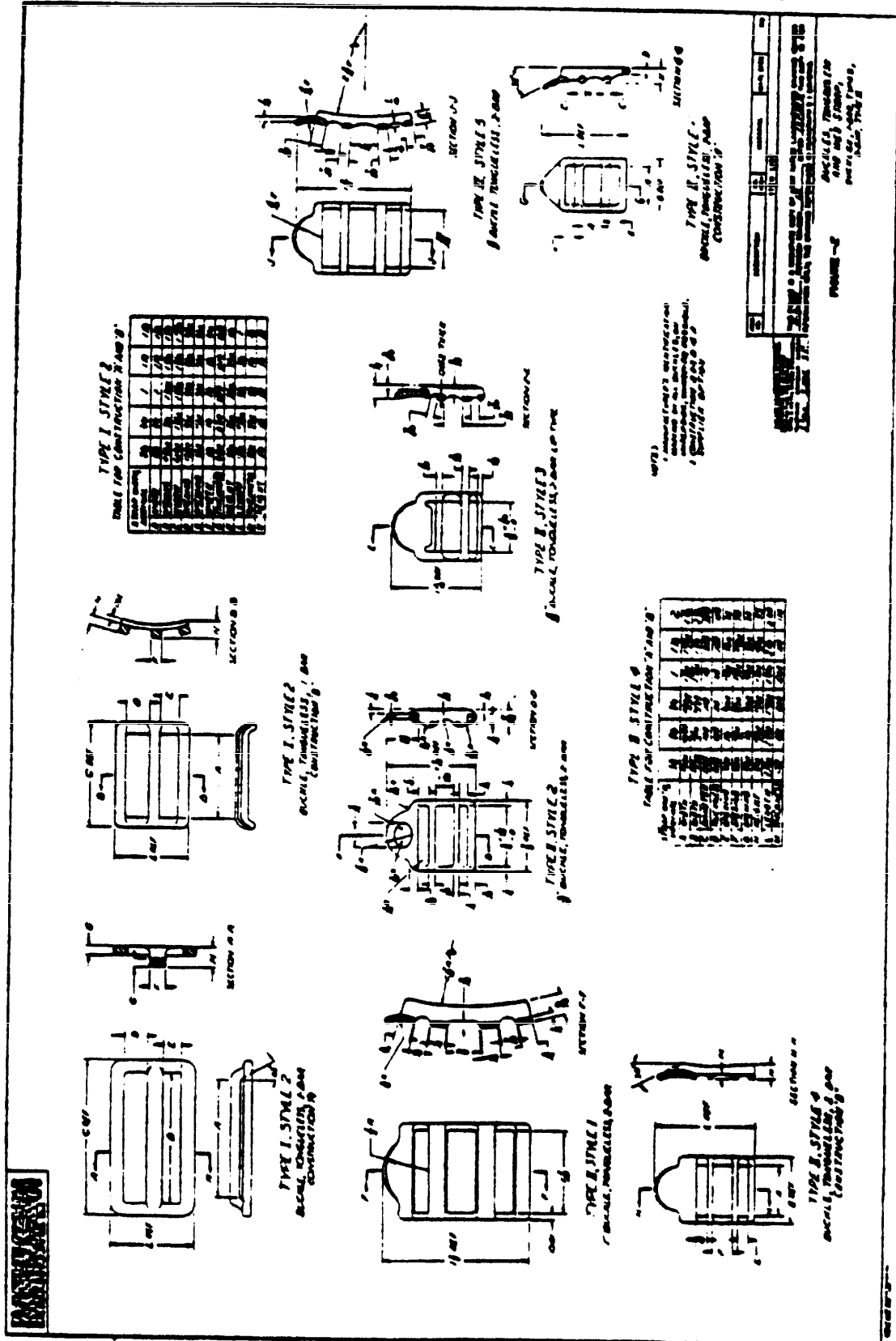
Army - WC
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User activities:

Army - MD, AV, ME
Navy - MC, SA

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NOTE This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification 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.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

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b. ADDRESS (Street, City, State, ZIP Code)

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

d. DATE OF SUBMISSION (YYMMDD)

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