MILITARY SPECIFICATION

SNAP HOOKS

GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope.- This specification covers the general requirements for snap hooks. Specific requirements for snap hooks are covered by the applicable specification sheets (see 6.3).

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-B-613	-	Brass, Leaded and Nonleaded; Flat Products (Plate Bar, Sheet, and Strip).
QQ-B-750	-	Bronze, Phosphor; Bar, Plate, Rod, Sheet, Strip, Flat Wire, and Structural and Special Shaped Sections.
QQ-C-390	-	Cooper Alloy Castings (Including Cast Bar).
QQ-I-666	-	Iron Castings, Malleable.
QQ-P-416	-	Plating, Cadmium (Electrodeposited).
QQ-S-698	-	Steel, Sheet and Strip, Low-Carbon.
QQ-S-777	-	Steel, Carbon, Strip, Cold-Rolled, Untempered Spring Quality.
QQ-W-321	-	Wire, Copper Alloy.
QQ-W-423	-	Wire, Steel, Corrosion-Resisting.
QQ-W-428	-	Wire, Steel, High Carbon, Round, Uncoated For Mechanical Springs. (General Purpose)
QQ-W-461	-	Wire, Steel, Carbon, (Round, Bar and Coated).
QQ-W-470	-	Wire, Steel, Carbon, Spring, Music.
QQ-Z-325	-	Zinc Coating, Electrodeposited, Requirements For.
PPP-B-636	-	Boxes, Shipping, Fiberboard (Exterior and Interior).

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MIL-E-480 - Enamel, Baking, Phenol-or-Urea-Formaldehyde.
MIL-F-495 - Finish, Chemical, Black, for Copper Alloys.
MIL-P-16232 - Phosphate Coatings, Heavy, Manganese or Zinc Base (For Ferrous Metals).

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-147 - Palletized and Containerized Unit Loads 40" x 48" Pallet, Skids, Runners, or Pallet-Type Base.

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:

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.)

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.)

American Society for Testing and Materials (ASTM)

E 18 - Rockwell Hardness Test

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

3. REQUIREMENTS

3.1 Specification sheets.- The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets.

3.2 Standard product.- The snap hooks furnished under this specification shall be the manufacturer's current standard product, except for changes necessary to comply with this specification and the applicable specification sheet.

3.3 Materials.-

3.3.1 Brass sheet and strip.- Brass sheet and strip shall conform to alloy No. 268, half hard of QQ-B-613.

3.3.2 Phosphor bronze.- Phosphor bronze shall conform to composition A, spring or extra spring of QQ-B-750.

3.3.3 Copper alloy castings.- Copper alloy castings shall conform to alloy No. A1, A3, B5 or C4 of QQ-C-390 as applicable.

3.3.4 Wire, copper alloy.- Copper alloy wire shall conform to alloy No. 260, half hard or 270 spring temper of QQ-W-321 as applicable.

3.3.5 Malleable iron castings.- Malleable iron castings shall conform to grade I or grade II of QQ-I-666 except that identification marking requirements need not apply.

3.3.6 Carbon steel sheet and strip.- Carbon steel sheet and strip shall conform to commercial quality cold-rolled sheet or cold-rolled strip temper No. 2 or No. 3 or QQ-S-698.

3.3.7 Carbon steel strip, spring quality.- Spring quality carbon steel strip shall conform to steel No. 1050-1095, cold-rolled of QQ-S-777.

3.3.8 Wire, corrosion-resisting.- Corrosion-resisting steel wire shall conform to .0286 inch diameter (22GA), form I, composition 302 of QQ-W-423.

3.3.9 Wire, high carbon for springs.- High carbon steel spring wire shall conform to .0258 inch diameter (23GA) type I or II of QQ-W-428.

3.3.10 Wire, carbon.- Carbon steel wire shall conform to steel numbers 1006-1020 semi killed, finish 1, annealed or annealed in process of QQ-W-461.

3.3.11 Wire, carbon, spring, music.- Spring steel wire shall conform to QQ-W-470.

3.3.12 Finish material.- Snap hooks shall be finished as specified in 3.3.12.1 thru 3.3.12.5, as applicable.

3.3.12.1 Black chemical finish.- Black chemical finish shall conform to MIL-F-495 (see 4.2.3.3).

3.3.12.2 Zinc coating.- Phosphate treated zinc coating shall conform to type III, class 2 of QQ-Z-325.

3.3.12.3 Enamel.- Enamel shall conform to type I or II of MIL-E-480, black in color.

3.3.12.4 Cadmium plate.- Cadmium plate shall be in accordance with type II, class 3 of QQ-P-416.

3.3.12.5 Phosphate coating.- Phosphate coating, when specified (see 6.2) shall be in accordance with type Z, class 2 of MIL-P-16232.

3.3.13 Rivets.- Rivets for snap hooks shall be commercial brass or steel of the quality normally used for this purpose.

3.4 Construction.- Construction of the snap hooks shall conform to the design, shape and dimensions shown on the applicable specification sheet and as specified herein. The spring, flat or coil, shall be capable of being depressed by hand operation. Flat spring steel closures shall be heat treated to Rockwell superficial 15N 83-85.5 when tested as specified in 4.3.1.

3.4.1 Assembly.- Springs shall have all corners removed after forming and prior to assembly. The snap hook closures shall withstand continuous operating of depression to maximum open position and releasing to full closed position for 2400 cycles without damage to closure or weakening of related spring that prevents proper closing or mating of parts (see 4.3.2). Flat spring closures shall be firmly attached to the body in such a manner that the closure shall not extend beyond either side of the hooked end of the body when a force of 5 pounds is applied to either side edge of the spring when tested as specified in 4.3.3.

3.4.2 Riveting.- Rivets shall be driven with head flush against mating members and securely set without looseness, and shall be of sufficient length to provide a minimum 1/16 inch clinch. The rivets shall secure the spring to the body without looseness.

3.5 Finish.- All burrs and rough or sharp edges shall be removed from the body and closure prior to the application of the finish. All components shall be finished prior to assembly. All plating, coatings and chemical finish shall be in accordance with applicable specification sheet.

3.6 Marking for identification.- The snap hook shall be permanently marked with the name of the manufacturer's trademark or name of such known character as to make the source of manufacture easily determined.

3.7 Workmanship.- The finished snap hooks shall be free of all burrs and sharp edges. Castings shall be free from cracks, porosity, blow holes, warp or other casting imperfection. The swivel eye or sliding bolt snap hooks shall not be malformed and shall function without abnormal force required for operation. There shall be no exposure of bare metal or area of corrosion. The enamel, or metallic coated finishes shall level out to a uniform dry film, free from orange peel, wrinkles, drips streaks, peeling, flaking or areas of no film. The finish shall also be free of oil, grease or embedded foreign matter.

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 Component and material inspection.- In accordance with 4.1 above, 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 this specification or applicable purchase document.

4.2.2 Intermediate inspection.-

4.2.2.1 Process examination.- Examination shall be made to determine that the following operations are as specified. Whenever nonconformance is noted, correction shall be made to the item affected and the process.

Requirement	Paragraph
Zinc plating	3.3.12.2
Cadmium plating	3.3.12.4
Phosphate coating	3.3.12.5

4.2.2.2 Intermediate testing.- Hardness of heat treated flat spring steel closures shall be tested for compliance with 3.4 in accordance with the test in 4.3.1, prior to assembly to the snap hook. The inspection level shall be S-2 and the acceptable quality level (AQL) shall be 4.0, expressed in terms of defects per hundred units. The lot shall be all spring steel closures, heat treated as a batch, and offered for testing at one time.

4.2.3 End item inspection.- The lot shall consist of all snap hooks of the same classification submitted for inspection at one time. The sample unit for this inspection shall be one completely fabricated and finished snap hook.

4.2.3.1 Visual examination.- Examination shall be made of the finished snap hooks for defects in table I. The inspection level shall be II with an acceptable quality level (AOL) of 2.5 for major defects and 6.5 for total defects, expressed in terms of defects per hundred units.

TABLE I.- Classification of defects

Examine	Defect	Classification Major	Minor
Finish	Not finished as specified.	X	
	Color not as specified.	X	
	Area of no film.		X
	Finish not free of wrinkles, orange peel, drops, or streaks, peeling, flaking, tacky or wet.		X
Construction and workmanship	Rough or sharp edges or burrs.	X	
	Body, swivel eye, bolt malformed.	X	
	Moving parts, i.e., swivel eye or bolt, will not function or requires abnormal force to operate.	X	
	Spring will not retain bolt in fully closed position.	X	
	Rivet head not flush against body.		X
	End of rivet not securely set and peened.		X
	Loose rivet.	X	
	Retainer or spring loose.	X	
	Spring not in contact with hook end of snap (when applicable).	X	
	Unsound casting, i.e., porous, warped, cracked, fractured, or contains blow holes or sink marks.	X	

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

Examine	Defects	Classification Major	Minor
Construction and workmanship (cont'd)	Fin, flash, sprue or gate.		X
	Malformed or damaged.	X	
	Fractured or cracked (applicable to components not cast).	X	
	Scratch, dig, abrasion exposing bare metal, area of corrosion.		X
Identification marking	Missing, illegible, or incorrect.		X

4.2.3.2 Dimensional examination.- Examination shall be made of the snap nooks for defects in dimensions. Any dimension not within specified requirements shall be classified as a defect. The inspection level shall be S-2 with an AQL of 4.0, expressed in terms of defects per hundred units.

4.2.3.3 End item testing.- Testing of the snap hooks shall be performed in accordance with table II for the characteristics shown therein. The sample unit shall be one completely fabricated snap hook. The inspection level shall be S-2 with an AQL of 4.0, expressed in terms of defects per hundred units.

TABLE II.- End item testing

Characteristics	Requirement paragraph	Test method	Number of determinations per sample unit	Results reported as
Deflection	3.4.1	4.3.2	1	Pass or fail
Side movement	3.4.1	4.3.3	1	Pass or fail
Strength test	/4	/4	1	Pass or fail
	/7	/7	1	Pass or fail
	/8	/8	1	Pass or fail
	/10	/10	1	Pass or fail
Black chemical finish:				
Color and gloss	3.3.12.1	MIL-F-495	1	Pass or fail

TABLE II.- End item testing (cont'd)

Characteristics	Requirement paragraph	Test method	Number of determinations per sample unit	Results reported as
Black chemical finish: (cont'd)				
Resistance to hot soap resolution	3.3.12.1	MIL-F-495	1	Pass or fail
Resistance to accelerated weathering	3.3.12.1	MIL-F-495	1	Pass or fail

4.2.4 Examination of preparation for delivery.- An examination shall be made to determine that the packaging, packing, and marking as required by section 5 of this specification are complied with. Defects shall be as specified in table III. The sample unit shall be one shipping container fully prepared for delivery except that it need not be sealed. The lot shall be all containers offered for delivery at one time. The inspection level shall be S-2 with an AQL of 2.5 defects, expressed in terms of defects per hundred units.

TABLE III.- Examination of preparation for delivery

Examine	Defect
Marking (exterior and interior container)	Omitted; incorrect; illegible; of improper size, location, sequence or method of application.
Material	Component nonconforming, missing, damaged, or otherwise defective.
Workmanship	Inadequate application of components such as incomplete closure of container flaps, inadequate strapping or tape banding, stapling, bulging or distortion of containers.
Contents (exterior, interior container)	Number per container is more or less than required. (See 5.4.1.)

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 made in accordance with the appendix of that specification.

4.2.6 Examination of palletization.- An examination shall be made to determine that palletization is in compliance with section 5 of this specification. Defects shall be scored as specified in table IV. The sample unit for this examination shall be one palletized unit load ready for shipment. The lot shall be the number of palletized unit loads submitted for inspection at one time. The inspection level shall be S-1 with an AQL of 6.5 expressed in terms of defects per hundred units.

TABLE IV.- Examination of palletization

Examination	Defect
Finish dimension	Length, width, or height exceeds specified maximum requirement.
Palletization	Not as specified. Palletized pattern not as specified. Interlocking of loads not as specified. Load not bonded with required straps as specified.
Weight	Exceeds maximum load limit.
Marking	Omitted, incorrect, illegible, of improper size, location, sequence or method of application.

4.3 Tests.-

4.3.1 Hardness test.- The Rockwell hardness test of the spring shall be tested in accordance with ASTM E-18. Any nonconformance with the hardness requirement of 3.4 shall be classified as a defect.

4.3.2 Deflection test.- The flat springs of completely assembled applicable snap hooks shall be depressed to touch the straight shank of the body (completely opened) and released 2400 times continuing at the rate of 120 times per minute. The coil springs, when applicable, shall be fully depressed and released by operating the draw bolt 2400 times continuously at the rate of 120 times per minute. Any indication of fracture or deflection from the fully closed position shall be classified as a defect.

4.3.3 Side movement test.- A force of 5 pounds shall be applied to either side of the flat spring and then examined to determine compliance with 3.4.1. Any extension beyond either side of the hooked end or looseness shall be classified as a defect.

5. PREPARATION FOR DELIVERY

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

5.1.1 Level A.- Snap hooks shall be packaged in a snug-fitting fiberboard box conforming to type CF (variety SW) or SF, class domestic, grade 200, style RSC of PPP-B-636. The weight of contents of each box shall not exceed 20 pounds. The box shall be agitated from time to time to assure a well-filled box. Closure shall be in accordance with method II of the appendix of PPP-B-636.

5.1.2 Level C.- Snap hooks 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.- Snap hooks, packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to grade V2s, style FTC of PPP-B-636. The weight of contents of each shipping container shall not exceed 120 pounds. Closure and reinforcing shall be in accordance with the appendix of PPP-B-636.

5.2.2 Level B.- Snap hooks, packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to type CF, variety DW, grade 350, style RSC of PPP-B-636. The weight of contents of each shipping container shall not exceed 120 pounds. Closure and reinforcing shall be in accordance with the class weather-resistant requirements of the appendix of PPP-B-636.

5.2.2.1 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 thereto.

5.2.3 Level C.- Snap hooks, 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 comply with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 Palletization.- When specified (see 6.2), snap hooks packed as specified shall be palletized in accordance with Load Type I of MIL-STD-147. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L. 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 pallet 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 order, interior packages, shipping containers and palletized unit loads shall be marked, in accordance with MIL-STD-129.

5.4.1 Additional marking.- The quantity of snap hooks contained therein shall be marked on each interior box and shipping container.

6. NOTES

6.1 Intended use.- The snap hooks covered by this specification are intended for use on tentage, equipage, and various leather items.

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

(a) Title, number and date of this specification.
(b) Basic No. and slash No. of snap hooks required (see specification sheet).
(c) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
(d) When weather-resistant fiberboard shipping containers are required for level B packing (see 5.2.2.1).
(e) When palletization is required (see 5.3).

6.3 Supersession data.- This specification with Military Specification Sheets MIL-S-43770/1 through MIL-S-43770/14, listed below, supersede the following Military Specifications and Standards:

Military Specification Sheets (new)	Superseded Document, Specification Type, Style or Class, and MS Dash No.
MIL-S-43770/1	MIL-S-2578D, Type I
/1-CWBC1	MS 51828 - 1B
/1-CWBC2	MS 51828 - 2B
/1-CWBC3	MS 51828 - 3B

Military Specification Sheets (new)	Superseded Document, Specification Type, Style or Class, and MS Dash No.
MIL-S-43770/1-CWBC4	MS 51828 - 4B
/1-SWZE1	MS 51828 - 1S
/1-SWZE2	MS 51828 - 2S
/1-SWZE3	MS 51828 - 3S
/1-SWZE4	MS 51828 - 4S
/1-SWZE5	MIL-S-11699C
MIL-S-43770/2-CWBC1	MS 70111-1
/2-CWBC2	MS 70111-3
MIL-S-43770/3	MIL-S-2578D, Type II, Style 1
/3-CCBC2	MS 51828 - 5B
/3-MIZE1	MS 51828 - 1M & 1M1
/3-MIZE2	MS 51828 - 2M & 2M1
/3-MIZE3	MS 51828 - 3M & 3M1
/3-MIZE4	MS 51828 - 4M & 4M1
/3-MIPE1	MS 51828 - 1M2
/3-MIPE2	MS 51828 - 2M2
/3-MIPE3	MS 51828 - 3M2
/3-MIPE4	MS 51828 - 4M2
MIL-S-43770/4-MIZE1	MIL-S-43384A, Type II
MIL-S-43770/5-	MIL-S-2578D, Type III
/5-CCBC2	MS 51828 - 6B
/5-MIZE1	MS 51828 - 6M & 6M1

Military Specification Sheets (new)	Superseded Document, Specification Type, Style or Class, and MS Dash No.
MIL-S-43770/5-MIZE2	MS 51828 - 7M & 7M1
/5-MIP1	MS 51828 - 6M2
/5-MIP2	MS 51828 - 7M2
MIL-S-43770/6-CCBC1	MIL-S-2032C, Class 1
/6-MIZE1	MIL-S-2032C, Class 2
MIL-S-43770/7-MIZ1	MIL-S-43403A, Type I
MIL-S-43770/8-MIZ1	MIL-S-43403A, Type II
MIL-S-43770/9-MIZ1	MIL-S-43353A
MIL-S-43770/10-CCBC1	MIL-S-43384, Type I
MIL-S-43770/11	MIL-S-2578, Type IV
/11-MIZE1	MS 51828 - 8M
/11-MIZE2	MS 51828 - 9M
/11-MIZE3	MS 51828 - 10M
/11-MIZE4	MS 51828 - 11M
/11-MIPE1	MS 51828 - 8M1 & 8M2
/11-MIPE2	MS 51828 - 9M1 & 9M2
/11-MIPE3	MS 51828 - 10M1 & 10M2
/11-MIPE4	MS 51828 - 11M1 & 11M2
MIL-S-43770/12	MIL-S-2578, Type V
/12-MIZE1	MS 51828 - 12M
/12-MIZE2	MS 51828 - 13M
/12-MIPE1	MS 51828 - 12M1 & 12M2
/12-MIPE2	MS 51828 - 13M1 & 13M2

Military Specification Sheets (new)	Superseded Document, Specification Type, Style or Class, and MS Dash No.
MIL-S-43770/13	MIL-S-2578, Type II, Style 2
/13-MIZE1	MS 51828 - 5M
/13-MIPE1	MS 51828 - 5M1 & 5M2
MIL-S-43770/14-MIZ1	NEW
MIL-S-43770/14-MIZ1	NEW

Custodians:

Army - GL
Navy - YD
Air Force - 82

Preparing activity:

Army - GL

Project No. 5340-0929

Review activities:

Army - AV, WC
Navy - MC

User activities:

Army - AT, ME, MI
Navy - AS, CG, SH

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

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.

SPECIFICATION

Snap Hooks - General Specification For MIL-S-43770

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

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)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 60 1426

REPLACES EDITION OF 1 OCT 54 WHICH MAY BE USED.