INCH-POUND

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SUPERSEDING
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DETAIL SPECIFICATION

BADGE, BADGE CLASP, BAR, AND PENDANT, QUALIFICATION, OCCUPATIONAL, AND IDENTIFICATION, GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers the general requirements of Aviation, identification, occupational, and qualification badges, badge clasps, bars, and pendants used by the Department of Defense and other Government Agencies (see 6.1).

1.2 Classification. The badges, badge clasps, bars, and pendants covered by this specification will be as specified on the applicable military specification sheet (See 2.1 and 6.2).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to The Institute of Heraldry, ATTN: Technical and Production Division, 9325 Gunston Road, Room S-108, Fort Belvoir, VA 22060-5579 or email to usarmy.belvoir.hqda.mil.tioh-webmaster@mail.mil. You may verify the currency of this specification using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A FSC 8455

DEPARTMENT OF DEFENSE STANDARDS
MIL-STD-129 - Military Marking for Shipment and Storage
MIL-STD-1916 - DOD Preferred Methods for Acceptance of Product

DEPARTMENT OF DEFENSE SPECIFICATIONS
MIL-F-495 - Finish, Chemical, Black for Copper Alloys

SPECIFICATION SHEETS
(See Supplement 1 for list of specification sheets.)

(Copies of these documents are available online at https://quicksearch.dla.mil).

2.2.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are of these documents are those cited in the solicitation or contract.

STANDARD CHIP SETS
THE INSTITUTE OF HERALDRY
Standard Hard Enamel Color Chip Set
DoD Standard Metal Finish Chip Set

DRAWINGS
THE INSTITUTE OF HERALDRY
B-13-5 - Attaching Devices, Heraldic, Pin and Catch Type
B-13-12 - Attaching Devices, Heraldic, Prong and Clutch Type

(Copies of standards, drawings and Chip sets are available from The Institute of Heraldry, ATTN: Technical and Production Division, 9325 Gunston Road, Room S-108, Fort Belvoir, VA 22060-5579 or usarmy.belvoir.hqda.mi.tioh-webmaster@mail.mil.)

(Figure 1 and Figure 2 are miniature reproductions of the referenced drawings and are attached for information only.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those cited in the solicitation contract.

ASTM INTERNATIONAL
ASTM B568 - Standard Test Method for Measurement of Coating Thickness by X-Ray Spectrometry
ASTM-B-86-13 - Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings

ASTM D-2240 - Standard Test Method for Rubber Property – Durometer Hardness
ASTM B487 - Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section, Measurement of
(Copies for these documents are available online at https://www.astm.org)

AMERICAN SOCIETY FOR QUALITY CONTROL
ANSI/ASQ Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies for these document are available online at https://acq.org)

SAE INTERNATIONAL
SAE-AMS-STD-595 - Colors Used in Government Procurement

(Copies for these document are available online at https://sae.org)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1: Tools. Is the generic name used to describe the government furnished hub or die.

3.1.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between the requirements of this specification and the specification sheets, the latter shall govern. The design of the insignia shown on the specification sheet is for illustrative purposes only. The design shall be controlled by the government furnished hub (see 3.5).

3.2 First article. When specified (see 6.2) a sample shall be subjected to first article inspection in accordance with 4.4.

3.3 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmental preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements and promotes economically advantageous life cycle costs.

3.4 Materials. Materials shall as specified herein.

3.4.1 Copper base alloy. The copper base alloy shall be roll polished, free from pits, scale (including red oxide), dents, nicks, cracks, scratches, segregation and foreign inclusions that cannot be removed in later processing. When tested as specified in 4.5.1, the chemical composition of the copper content of the copper base alloy shall be as specified in Table I.

TABLE I. Unified Numbering System and Copper content of copper base alloys.

UNS ALLOY NUMBER	ALLOY NAME	COPPER
C210	Gilding Metal	94.0%-96.0%
C220	Bronze	89.0%-91.0%
C230	Red Brass	84.0%-86.0%
C240	Low Brass	78.5%-81.5%
C268	Yellow Brass	64.0%-68.5%
C280	Free Cutting Brass	59.0%-63.0%
C745	Nickel Brass	63.0%-66.5%
C752	Nickel Silver (65-18)	63.0%-66.5% 2/
C770	Nickel Silver (55-18)	53.5%-56.5% 1/

1/ Copper content for the nickel silver pin only may be 53.5% to 56.5% (C770).

2/ When nickel silver is used as a base material, the nickel content shall be not less than 18% (C752).

3.4.2 Gold.

3.4.2.1 Gold alloy. When gold alloy is specified as a material of construction, the alloy shall be of the karat quality specified on the applicable specification sheet

3.4.2.2 Gold for plating. Gold for plating shall be 24 karat.

3.4.3 Silver.

3.4.3.1 Sterling silver. Sterling silver shall be not less than 92.5% pure silver.

3.4.3.1.1 Fine silver. Silver shall be no less than 99% pure silver.

3.4.3.3 Silver alloy. Silver alloy when specified as a material of construction shall be of the fineness specified on the applicable specification sheet.

3.4.3.4 Silver for plating. Silver for plating shall be not less than 99.0% pure silver.

3.4.4 Zinc aluminum alloy. The alloy used for die casting shall conform to alloy AG 40a or AC 41a of ASTM-B-86-13.

3.4.5. Nickel for plating. Nickel for plating shall be the nickel plating normally used in commercial practice.

3.4.6 Rhodium Plating. Rhodium for plating shall be the rhodium plating normally used in commercial practice.

3.4.7 Solder.

3.4.7.1 Soft Solder. Soft solder shall be a lead-tin alloy having a melting point of not less than 375 °F (190.55 °C).

3.4.7.2 Hard Solder. Hard solder shall be a silver colored hard solder having a melting point of not less than 1075 °F (579.44 °C).

3.4.8 Enamel. All enamel shall be lead free.

3.4.8.1 Epoxy resin (stoning epoxy). Epoxy resin shall be a stoning epoxy pigmented to produce the required color, opacity or translucence, shade incorporating an ultraviolet inhibitor and have a shore D hardness of 77.

3.4.8.2 Hard enamel. Hard enamel shall be a glass, vitreous type enamel fused with metallic oxides to produce the required color, opacity or translucence, and shade.

3.4.8.3 Soft enamel. Soft enamel shall be a soft baking enamel pigmented to produce the required color and shade.

3.4.9 Lacquer. Lacquer shall be a semi-gloss, clear, synthetic lacquer. The use of a pigmented lacquer shall not be permitted.

3.4.10 Synthetic Cubic Zircon. When a synthetic cubic zircon is required, the cubic zircon shall be as specified in the applicable specification.

3.5 Design. The embossed design of each badge, badge clasp, bar, and pendant shall be an exact duplicate of the design on the Government loaned hub (see 3.8), from which the contractor's working die shall be extracted. The contractor's working die shall be tooled and polished to remove any dents, nicks, scratches, or other imperfections.

3.6 Construction.

3.6.1 Stamping, trimming and piercing. Unless otherwise specified on the applicable specification sheet, the back of all badges, badge clasps, bars, and pendants shall be flat. The stamping shall have a well defined die struck edge trimmed and, when applicable, pierced to the die struck edge. All edges shall be clean, smooth and free from burrs, sharp corners, drag, step, and rough edges. The stamping, piercing, and trimming operations shall not damage or distort the design or alter the shape of the item.

3.6.2 Die casting. When die cast method is applicable, the item shall be free from porosity, blow holes, or other casting defects. Before finishing, all flash lines shall be removed and the edges of the item shall be smooth. Items that are die cast from zinc aluminum specified in 3.4.4 shall be copper plated. When tested as specified in 4.5.2.2, the plating shall be a minimum of 0.0003 inch thick.

3.6.3 Hard soldering and electronic fusion. Unless otherwise specified on the applicable specification sheet, all soldering shall be accomplished using hard solder specified in 3.4.7.2 or by electronic fusion. Joints shall be clean, smooth, strong, and free from burned or reduced areas. There shall be no excess solder and all excess flux shall be removed. When hard solder is used, the soldered parts or prongs shall not separate at the

joint when tested as specified in 4.5.4.1. When fused joints are used, the prong shall not separate at the joint when tested as specified in 4.5.5.

3.6.4 Soft solder. When soft solder is specified, soft solder specified in 3.4.7.2 shall be used. When solder is specified for joining a superimposed device to the badge, complete contact shall be made between the soldered parts. When tested as specified in 4.5.4.2, the soldered device shall not separate from the item.

3.6.5 Forcers. When forcers are permitted to bring up the design, the back of the badge shall have no sharp or rough edges. The impression of the forcer shall be symmetrical with the embossed design of the insignia. Sufficient metal shall be left near any trimmed area to assure clean, smooth trimming without distortion. Unless otherwise specified on the applicable specification sheet, mock forcers shall not be permitted. When mock forcers are permitted, the forcer shall be used only on the areas specified.

3.6.6 Attaching devices. Attaching devices shall be as specified on the applicable specification sheet.

3.6.6.1 Prong (integral). When prongs are die cast as an integral part of the item and tested in accordance with 4.5.2.1, no evidence of breaking or cracking shall occur.

3.6.6.2 Prong and wing-type clutch. Prongs shall be made from nickel silver or brass specified in 3.4.1. Unless otherwise specified on the applicable specification sheet, the prongs as shown on TIOH drawing B-13-12 (Figure 1) shall be 5/16 inch ± 1/64 inch long. The prongs shall be hard soldered or electronically fused in the location specified in the applicable specification sheet. Wing-type clutches as shown on TIOH drawing B-13-12 (Figure 1) shall be made from any type brass. When tested as specified in 4.5.8.1 it shall not be possible to remove the clutch from the prong without first depressing the release mechanism.

3.6.6.3 Prong with flat ball-type clutch. Prongs shall be made from nickel silver or brass specified in 3.4.1. Unless otherwise specified on the applicable specification sheet, the prongs as shown on TIOH drawing B-13-12 (Figure 1) shall be 5/16 inch ± 1/64 inch long. The prongs shall be hard soldered or electronically fused in the location specified in the applicable specification sheet. Flat ball-type clutches as shown on TIOH drawing B-13-12 (Figure 1) shall be made from any type brass. Nickel plated flat ball clutches shall be made from any type brass. Nickel plated flat ball clutches shall be used on lapel buttons having a silver plated finish, and red brass flat ball clutches shall be used on brass or gold plated lapel buttons. When tested as specified in 4.5.8.2 it shall not be possible to remove the clutch by hand without pulling up on the ball.

3.6.6.4 Pin and catch type. Pin and catch type attaching devices shall conform to TIOH drawing B-13-5 (Figure 2) and be fabricated from nickel silver specified in 3.4.1 when the joint is not punch formed.. The joint and catch shall be soldered or electronically fused to the back of the item. The rotor of the catch shall remain well seated, have a close sliding fit, and the joint shall remain firmly closed. The pin shall extend not less than 1/32 inch beyond the rotor of the catch and not more than 1/32 beyond the catch. When tested as specified in 4.5.8.3, the pin, joint, and catch shall show no indication of looseness, and the rotor of the safety catch shall remain well seated and have a close sliding fit.

3.6.6.5 Jump rings and suspension links. Unless otherwise specified on the applicable specification sheet, jump rings and suspension links shall be fabricated from 0.040 inch + 0.005inch - 0.003 inch diameter wire of the same material as the badge, badge clasp, bar, or pendant. The jump rings shall be oval, 0.220 inch + 0.020 inch - 0 in length by 0.180 inch + 0.020inch - 0 in width. The ends of the rings and links may be straight or bias cut but shall be aligned and together.

3.6.6.6 Lugs. Unless otherwise specified on the applicable specification sheet, all lugs shall have an outside diameter of 0.125 inch ± 0.005 inch. The distance on centers shall be as specified on the applicable specification sheet. Unless otherwise specified, all lugs shall be an integral part of the item. At the option of the manufacturer, the lug may be cut into the working die or may be formed from salvage during the trimming operation.

3.6.6.7 Rivets. Rivets shall be made from any type brass, and unless otherwise specified on the applicable specification sheet, shall be solid. The rivets may be hard soldered to the back of the device or may be an integral part of the device. Rivets shall be securely peened or swaged to ensure a tight and close fit between component parts.

3.6.6.8 Dimensions. All dimensions shall be as indicated. When referenced dimensions are given, these dimensions are furnished as information for bidding purposes only. The actual dimensions shall be controlled by the Government loaned hub. The reference diameter and thickness of the pendant do not include the lug unless otherwise specified.

3.7 Finish. Unless otherwise specified, the front and edges (surfaces visible from the front) shall be finished as specified on the applicable specification sheet and shall match the TIOH standard enamel color or metal finish chips as required (see 2.1.2). Where plating or oxidizing is specified, the entire item (front, back and edges), except attaching devices, shall be plated or oxidized. Unless otherwise specified, the backs of all oxidized items shall be clean and uniformly oxidized. Unless otherwise specified, all unplated brass and silver plated items shall be completely coated with lacquer specified in 3.4.9. Unless otherwise specified, jump rings and suspension links shall have the same finish as the badge, badge clasp, bar, or pendant to which it is attached.

3.7.1 Plating. All plating shall be by electroplating methods. The plating shall be non-porous and continuous over the entire plated surface. There shall be no cut-through, shaded, peeled, or blistered plating. Plating shall be smooth, fine grained, adherent, and free from pits, nodules, porosity, indications of burning, excessive edge build up, and other detrimental defects. Unless otherwise specified, the plating of attaching devices is not required.

3.7.1.1 24 karat gold plating. The gold plating shall be accomplished using gold specified in 3.4.2.1. Prior to plating, all surfaces shall be cleaned of all matter that may affect the gold plating. The use of nickel as an undercoating with 24 karat gold shall not be permitted. When tested as specified in 4.5.3, no visible chemical reaction such as evolution of gases shall appear.

3.7.1.2 22 karat gold plating. The gold plating shall be accomplished using gold specified in 3.4.2.2. Prior to plating, all surfaces shall be cleaned of all matter that may affect the gold plating. The use of nickel as an undercoating shall be permitted. When tested as specified in 4.5.3, no visible chemical reaction such as evolution of gases shall appear.

3.7.1.3 Nickel plating. Nickel for plating shall be accomplished using nickel specified in 3.4.4. The nickel plating shall be not less than 0.0003 inch thick. Testing shall be standard commercial. In case of a dispute, testing shall be in accordance with ASTM-B-487.

3.7.1.4 Nickel under plating. When nickel under plating is specified, the under plating shall be not less than 0.00025 inch thick. Testing shall be standard commercial. In case of a dispute, testing shall be in accordance with ASTM B568.

3.7.1.5 Silver plating. Silver plating shall be accomplished by electroplating methods using the silver specified in 3.4.5. Brass items shall be nickel under plated a minimum of 0.00025 inch thick. The silver plating shall be a minimum of 0.0003 inch thick and shall be smooth, fine grained, adherent, free from visible blisters, pits, porosity, indications of excessive build up or other defects. Nickel under plating thickness shall be tested in accordance with standard commercial practice. Items made of silver filled material shall be tested on the reverse side for compliance with the silver plating thickness requirements and items made from brass shall be silver thickness tested on the obverse side. In case of a dispute, testing shall be conducted in accordance with ASTM B568.

3.7.1.6 Rhodium Plating. When rhodium plating is specified, rhodium specified in 3.4.6 shall be used. When tested as specified in 4.5.3, no chemical reaction shall occur. When rhodium plating is required over brass, an undercoating of nickel shall be required.

3.7.2 Enameling. Unless otherwise specified on the applicable specification sheet, all enameling shall be accomplished using epoxy specified in 3.4.6.1 or hard enamel specified in 3.4.6.2. Epoxy or enamel shall be applied so as to be uniform in color, free from bubbles, foreign inclusions, cracking, crazing, or other defects which might affect appearance. There shall be no over-running of epoxy or enamel.

3.7.2.1 Colors. Enamel or epoxy colors shall match the shades of the Institute of Heraldry hard enamel color chips specified on the applicable specification sheet (see 2.1.2).

3.7.2.2 Epoxy Resin. Epoxy resin specified in 3.4.8.2 shall be applied so as to be uniform in color, free from bubbles, foreign inclusion, or other defects which affect appearance. The epoxy shall be stoned level with the dikes and polished to produce a glass like finish. No design elements shall be removed during the stoning process. When tested as specified in 4.5.7.1, the epoxy shall have a shore D hardness of not less than 85.

3.7.2.3 Hard enameling. Hard enamel specified in 3.4.8.1 shall be charged, fired, and stoned level with the dikes. No design elements shall be removed during the stoning process. There shall be no noticeable burn spots as a result of the firing. The hard enamel shall then be polished to produce a glass like finish. The finish shall be adherent and free from bubbles, pits, foreign inclusions, cracking, crazing, burned edges, or darkened enamel.

3.7.2.4 Soft enamel. Soft enamel shall be as specified in 3.4.8.4. When tested as specified in 4.5.7.3, no color shall be transferred to the cotton, and the enameled surface shall remain unaffected except for a slight loss of luster.

3.7.2.5 Baking enamel. When the item is to be subdued, the face and edges shall be coated with enamel specified in 3.4.8.3. Prior to enameling, the entire insignia shall be

given a black chemical finish conforming to MIL-F-495. When tested as specified in 4.5.7.2, the baking enamel shall not flake or chip.

3.7.3 Cutting down. When necessary to remove nicks, scratches, pin holes, or other blemishes, the item shall be cut down by means of grease or oil buffing. The insignia shall not be cut down to the extent that any details of the design are obliterated or reduced.

3.7.4 Lacquering. The front, back, and edges of all brass, gilding metal, silver, or silver plated items shall be coated with clear lacquer specified in 3.4.9. Gold plated and Rhodium plated parts that have a matte finish or matte finish with polished highlights will be lacquered. The lacquer film shall be continuous, level, adherent, and free from lint, dust, and other foreign matter. When tested as specified in 4.5.6, the tissue paper shall not adhere to the clear lacquered surface.

3.7.5 Pebbling. Pebbling, when applicable, shall be finely and evenly grained in the areas annotated on the applicable specification sheet.

3.8 Government loaned property. Hubs will be loaned by the Government and shall be used to make the contractor's working dies necessary for one contract or order (see 6.4).

3.9 Marking for identification. The contractor shall stamp his identifying mark and the letters "GI" (GI for government procurement only) legibly and inconspicuously on the back of each item. When practical, the items will be stamped in the forced areas.

3.10 Marking for cleaning. Marking for cleaning of gold plated items shall be as follows: "To clean, rub gently with a soft, dry cloth. Do not clean with a chemically treated cloth or abrasive".

3.11 Workmanship. The finished item shall be clean, well made, and shall conform to the acceptable quality levels established by this specification.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified, all inspection shall be performed in accordance with the test conditions specified in 4.4 and 4.5.

4.3 First article inspection. Inspection and testing of the first article (see 3.2) shall be made of a completely finished item for all provisions of this specification applicable to the end product examination and tests.

4.4 Conformance inspection. Inspection shall be in accordance with the provisions set forth herein, except where otherwise indicated (see 6.3). Sampling for inspection shall be performed in accordance with ANSI/ASQC Z1.4.

4.4.1 Testing of components. Inspection shall be performed on components and materials listed in Table II for the test characteristics shown therein. Material listed in Table II may be accepted on a contractor's certificate of compliance for requirements specified in applicable paragraphs of this specification. The government reserves the right to test samples of the gold and silver (without additional charge) to verify the contractor's certification.

TABLE II. **Testing of components.**

COMPONENT	CHARACTERISTIC	RQM'T ¶	TEST METHOD	RESULTS REPORTED AS
Copper base alloy	material identification	3.4.1	4.6.1	nearest 0.1%
Zinc aluminum alloy	material identification	3.4.3	standard commercial	pass/fail
Rhodium plating	material identification	3.4.6	standard commercial	pass/fail
Enamel (hard)	material identification	3.4.8.1	standard commercial	pass/fail
Enamel (soft)	material identification	3.4.8.4	standard commercial	pass/fail
Enamel (baking)	material identification	3.4.8.3 & 3.7.2.4	4.5.7.2	pass/fail
Epoxy resin	material identification	3.4.8.2	standard commercial	pass/fail
Gold for plating	material identification & karat	3.4.2.3	standard commercial	nearest 0.1%
Lacquer	material identification	3.4.9	standard commercial	pass/fail
Nickel for plating	material identification	3.4.4	standard commercial	nearest 0.1%
Nickel for plating	not used as undercoating	3.7.1.1	standard commercial	pass/fail
Nickel silver for prong, pin, and catch	material identification	3.6.6.2, 3.6.6.3, & 3.6.6.4	standard commercial	pass/fail
Silver for plating	chemical composition	3.4.5	standard commercial	nearest 0.1%
Solder, hard	material identification	3.4.7.1	standard commercial	pass/fail
Solder, soft	material identification	3.4.7.2	standard commercial	pass/fail

4.4.2 In-process inspection. Inspection shall be made at any point or during any phase of the manufacturing process to determine whether operation or assemblies listed in 3.6 and 3.7 are accomplished as specified. The Government reserves the right to exclude from consideration for acceptance any material for which in-process inspection has indicated nonconformance

4.4.2 End item inspection.

4.4.2.1 Visual examination of insignia. Visual examination shall be made using Table III. Examination shall be made at a distance of approximately 16 to 22 inches with illumination equal to average daylight and arranged so as to avoid as much reflected light as possible. Defects designated by and asterisk (T) shall be classified as major when seriously affecting appearance or serviceability and minor when affecting appearance or serviceability but not seriously. The product unit for the examinations shall be one completely fabricated badge, badge clasp, bar, or pendant. Any dimension which is not within the specified tolerance shall be classified as a defect.

TABLE III. **Defects.**

EXAMINE	DEFECT	CLASSIFICATION		
		MAJOR	(*)	MINOR
Metal color and finish	Poor match to the TIOH Standard Metal Finish Chip	X		
	Not highlighted to the same extent as the TIOH Metal Finish Chip.....		*	
	Not required finish		*	
	Discoloration, such as spot, stain, or speck		*	
	Not clean			*
	The oxidized finish, when required, has not been sufficiently relieved, or has been excessively relieved		*	
	Surface contains pits, scale, nick, scratch, crack, machine mark, pin hole, segregation, rupture, foreign matter, or other blemish		*	
	Discoloration, spot, stain, or speck affecting appearance		*	
	Buff drag, blushed, or cloudy finish.....		*	
	Background or recessed areas not finished as specified, e.g., are not pebbled when required	X		
	Pebbling, when required, is not finely and evenly grained		*	
Hard enamel and epoxy	Not enameled (when required)	X		
	Incorrect color or shade	X		
	Cracked, chipped, or crazed		*	
	Not stoned smooth, i.e., is coarse, uneven, or has drag marks		*	
	Not level with dikes, i.e., contains high or low spots		*	
	Bubbles, blisters, holes, lumps, or foreign inclusions		*	
	Laps, overruns or skips		*	
	Blemished, i.e., spot, stain, spatter, burned area, lack of gloss		*	

TABLE III. **Defects** - Continued

EXAMINE	DEFECT	CLASSIFICATION		
		MAJOR	(*)	MINOR
Soft enamel	Not enameled or area of no enamel ……	X		
	Area of thin enamel …….			X
	Not adherent, i.e., blistered, flaking, or peeling …….		*	
	Foreign matter imbedded …….		*	
	Discoloration …….		*	
	Coating not continuous and level, i.e., runs, drips, or drops …….		*	
Design	Construction or design details obscured, altered, or not conforming to Government hub ……..	X		
	Not dapped (when required) …….	X		
	Any significant detail not clear, altered, reduced, distorted, or missing …….	X		
	Any warp, twist or distortion, irregular surface contour or outline ……..		*	
	Any detail struck over resulting in a double impression …….	X		
	Any area not pierced (when required) ……	X		
	Lugs not of specified design and type ……	X		
Plating	Not plated (when required) ……..	X		
	Not type specified …….	X		
	Plating not smooth, continuous, or adherent ……..	X		
	Foreign matter imbedded …….		*	
Workmanship and construction	Surface or edge not clean, not smooth or free from burrs, roughness, drag, step, or tool marks …….		*	
	Metal marks on exposed surface (such as nick, dent, dig, gouge, or scratch) ……		*	
	Die-struck edge, rim, or outline is not defined when applicable …….	X		
	Not trimmed to the die-struck edge, when applicable …….		*	
	Pierced edge not clean and smooth, i.e., any burr, drag, cutter, or file mark ……		*	
	Design or shape is damaged, distorted, or altered by piercing operation ……..	X		
	Forcer used when not specified or insignia forced in other than specified location ….		*	

TABLE III. **Defects** – Continued.

EXAMINE	DEFECT	CLASSIFICATION		
		MAJOR	(*)	MINOR
	Metal torn or broken out by use of forcer ..		*	
	Any component (including jump rings and suspension bar balls) missing, bent, twisted, broken, or malformed .....…..		*	
	Solder does not completely unite parts, i.e., any perceptible opening between component parts .....……		*	
	Any area burned or reduced in soldering ...		*	
	Soldered joint not clean or smooth; excess solder or excess flux not removed ……..			X
	Riveted design not closely fitted to the badge ……		*	
Attaching device	Attaching device not specified type, size, or material ……	X		
	Any component missing ……	X		
	Defective, i.e., any part damaged or malformed affecting use ……		*	
	Not positioned as specified, or components are off center by 1/8 inch or more ……..		*	
	Pin protrudes less than 1/32 inch beyond the safety catch …….	X		
	Pin protrudes more than 1/32 inch beyond the safety catch ……..			X
	Clutch does not engage prong, or is loose fit ……	X		
	Prong is loose …….	X		
	Attaching device (other than pin and safety catch) is defective, i.e., does not operate as intended ……..		*	
	Hinged joint does not operate as required (too tight or too loose) ……		*	
Identification	Missing, incorrect, illegible, misspelled, not accomplished as specified, or not placed as required ……..		*	
Lacquer	Not lacquered when required .....……..	X		
	Areas of no lacquer .....……..		*	
	Foreign matter embedded in finish, i.e., lint, dust, etc. ……..		*	
	Hazy, rainbow effect, cloudy, or powdering		*	

TABLE III. **Defects** – Continued.

EXAMINE	DEFECT	CLASSIFICATION		
		MAJOR	(*)	MINOR
	Not smooth, continuous or adherent, i.e., flaking, blistering, peeling, rippling or has run, sag, or drops ……..		*	
	Not set to touch, i.e., tacky when pressure is applied to coating ....……..	X		

4.4.2.2 End item testing. Testing of the completely fabricated item shall be performed in accordance with Table IV for the characteristics shown therein. The sample unit shall be one completely fabricated badge, badge clasp, bar, or pendant. The sample unit for the test for hard soldered or fused joints shall be one finished item. All items shall be tested and one defect shall be scored regardless of how many prongs on that item failed. Individual tests are detailed in 4.5.

TABLE IV. **Testing of end item.**

CHARACTERISTIC	RQM'T ¶	TEST METHOD	RESULTS REPORTED AS
Test for copper content	3.4.1	4.5.1	pass/fail
Tests for plating			
Nickel plating	3.4.4	standard commercial	pass/fail
Nickel underplating not permitted with 24 karat gold plating	3.7.1.1	standard commercial	pass/fail
Nickel underplating with 22 karat gold plating	3.7.1.2	standard commercial	pass/fail
Silver plating thickness	3.7.1.5	standard commercial	pass/fail
Copper plating	3.6.2	standard commercial	pass/fail
Acid test:			
24 karat gold plating	3.7.1.1	4.5.3	pass/fail
22 karat gold plating	3.7.1.2	4.5.3	pass/fail
Rhodium plating	3.7.1.6	4.5.3	pass/fail
Test for lacquer:	3.7.4	4.5.6	pass/fail
Tests for joints:			
Soldered joints			
Hard soldered	3.6.3	4.5.4.1	pass/fail

Soft soldered	3.6.4	4.5.4.2	pass/fail
	TABLE IV	**Testing of end item - cont.**	
Electronically fused joints	3.6.3	4.5.5	pass/fail
Tests for attaching devices:			
Integral prong	3.6.6.1	4.5.2.1	pass/fail
Prong with wing-type clutch	3.6.6.2	4.5.8.1	pass/fail
Prong with flat ball clutch	3.6.6.3	4.5.8.2	pass/fail
Pin and catch	3.6.6.4	4.5.8.3	pass/fail
Tests for enamels:			
Epoxy resin	3.7.2.3	4.5.7.1	pass/fail
Baking enamel	3.7.2.5	4.5.7.2	pass/fail
Soft enamel	3.7.2.4	4.5.7.3	pass/fail

4.5 End item tests.

4.5.1 Copper content test for copper base alloy. Copper content shall be determined by standard commercial testing. Results shall be evaluated to determine compliance with the requirements specified in 3.4.1.

4.5.2 Test of Die Casting.

4.5.2.1 Test for integral prongs. Items to be tested shall be placed in a jig which allows no movement of the item and positions prongs at a 30 degree angle above the horizontal. A vertical 10 pound load shall be applied to the top third of each prong. The prongs shall be examined to determine compliance with 3.6.6.1.

4.5.2.2 Direct micro thickness test for copper plating. Copper plating thickness shall be determined by standard commercial testing. Results shall be evaluated to determine compliance with 3.6.2.

4.5.3 Acid test for gold and rhodium plating. If the test item has been lacquered, the lacquer shall be completely removed prior to testing with an organic solvent. The test acid shall be applied as follows: Place a drop of acid of not less than 1/16 inch in diameter on three (3) different spots on the plated surface allowing the drops to remain for not less than one (1) minute during which time the surface of the item shall be inspected to determine compliance with the requirements in 3.7.1.1, 3.7.1.2, or 3.7.1.6. No visible chemical reactions shall occur. Acid drops shall be placed on flat surfaces on the obverse face when possible. A minimum of two spots must withstand the acid test. The test acid shall be applied at room temperature (60° to 80° Fahrenheit/15.6° to 26.7° Celsius) and shall consist of a solution containing 50% by volume of chemically pure nitric acid (specific gravity 1.42) and an equal volume of distilled water.

4.5.4 Test for soldered joints.

4.5.4.1 Hard solder. Hard soldered items shall be placed in an oven maintained at 1075° Fahrenheit ± 5° Fahrenheit (561.7° Celsius ± 2.78° Celsius) for 15 minutes. While at this temperature the item shall be lifted by the attaching device and shall be inspected to determine compliance with the requirements specified in 3.6.3.

4.5.4.2 Soft solder. Soft soldered items shall be placed in an oven maintained at 365° Fahrenheit ± 5° Fahrenheit (184.98° Celsius ± 2.78° Celsius) for 15 minutes. While at this temperature the item shall be lifted by the superimposed design and shall be inspected to determine compliance with the requirements specified in 3.6.4.

4.5.5 Test for electronically fused joints. Item to be tested shall be anchored on a horizontal surface. Each prong shall be grasped at least 1/3 its length above the fused joint and bent through an angle of 90 degrees (45 degrees to each side of the vertical) until the prong breaks. The fused joint shall then be examined to determine compliance with 3.6.3. A bending tool in the form of a 45 degree template may be used for this test provided the prong is gripped at least 1/3 its length above the fused joint.

4.5.6 Test for lacquer. At room temperature (60° to 80° Fahrenheit/15.6° to 26.7° Celsius), press a piece of tissue paper against the lacquered surface for 15 seconds, using any pressure capable of being exerted between thumb and two fingers, after which the pressure shall be released and the item inspected to determine compliance with 3.7.4.

4.5.7 Test for enamels.

4.5.7.1 Test for shore hardness of epoxy resin. Shore hardness shall be determined in accordance with ASTM-D-2240. Results shall be evaluated to determine compliance with the requirements of 3.4.8.2.

4.5.7.2 Test for baking enamel. Draw a knife edge across the face side of the specimen making four parallel scores 1/16 inch apart. Repeat this process drawing the knife edge this time perpendicular to the previously scored lines, making small blocks in the finish. The finish shall then be examined to determine compliance with 3.7.2.5.

4.5.7.3 Acetone test for soft enamel. The enameled surface shall be wiped five times with a piece of cotton saturated with acetone. The cotton and enamel shall then be examined to determine compliance with 3.7.2.4

4.5.8 Test for attaching device.

4.5.8.1 Test for prong and wing-type clutch. The clutches shall be removed and replaced ten times from the prong using the clutch release mechanism. An attempt shall then be made to remove the clutch by hand without first depressing the release mechanism. An inspection shall be made at this time of the clutch and prong to determine compliance with the requirements specified in 3.6.6.2.

4.5.8.2 Test for prong and flat ball clutch. The clutches shall be removed and replaced from the prong by manually pulling up on the ball of the clutch ten times. An attempt shall then be made to remove the clutch by hand without first grasping the ball. An inspection shall be made at this time of the prong with flat ball clutch to determine compliance with the requirements specified in 3.6.6.3.

4.5.8.3 Test for pins, joints, and safety catches. Safety catches and pins shall be opened and closed ten times, after which they shall be inspected to determine compliance with the requirements specified in 3.6.6.4.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Aviation, identification, occupational, qualification badges, badge clasp, bars and pendants covered by this specification are intended to be worn by personnel of Department of Defense and other Government Agencies to indicate the wearer has qualified in the specialty designated by the badge or is a member of a special group having special duties, responsibilities, and/or authority.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. The title, number, and date of the applicable specification sheet (see 1.2 and 2.1).
c. When a first article is required (see 3.2).
d. Packaging requirements (see 5.1).
e. When special marking is required (see 3.9 & 3.10).

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item should be a preproduction sample, a first production sample or a standard production item from the contractor's current inventory as specified in 4.4. The first article should consist of one completed item. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or tests, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Government-loaned property. The contracting officer should arrange to loan the property listed in 3.8.

6.5 Subject term (key word) listing.

Acetone
Enamel, baking
Enamel, hard
Epoxy
Gold
Lacquering
Lead
Nickel
Nickel silver
Nitric acid
Plating
Prong, integral
Rhodium
Silver
Soldering
Zinc aluminum

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

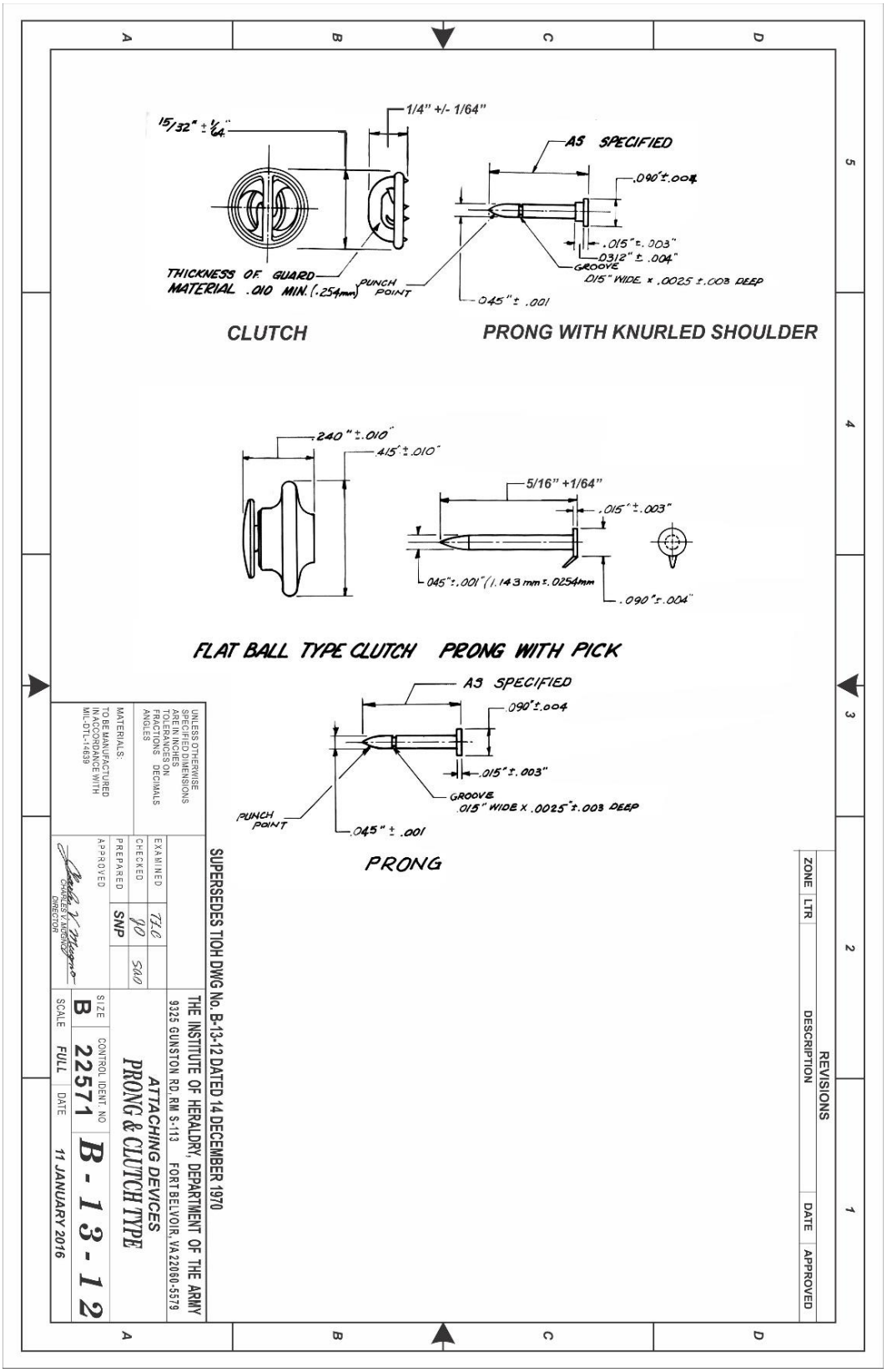

FIGURE 1. **Attaching devices heraldic, prong and clutch type.**

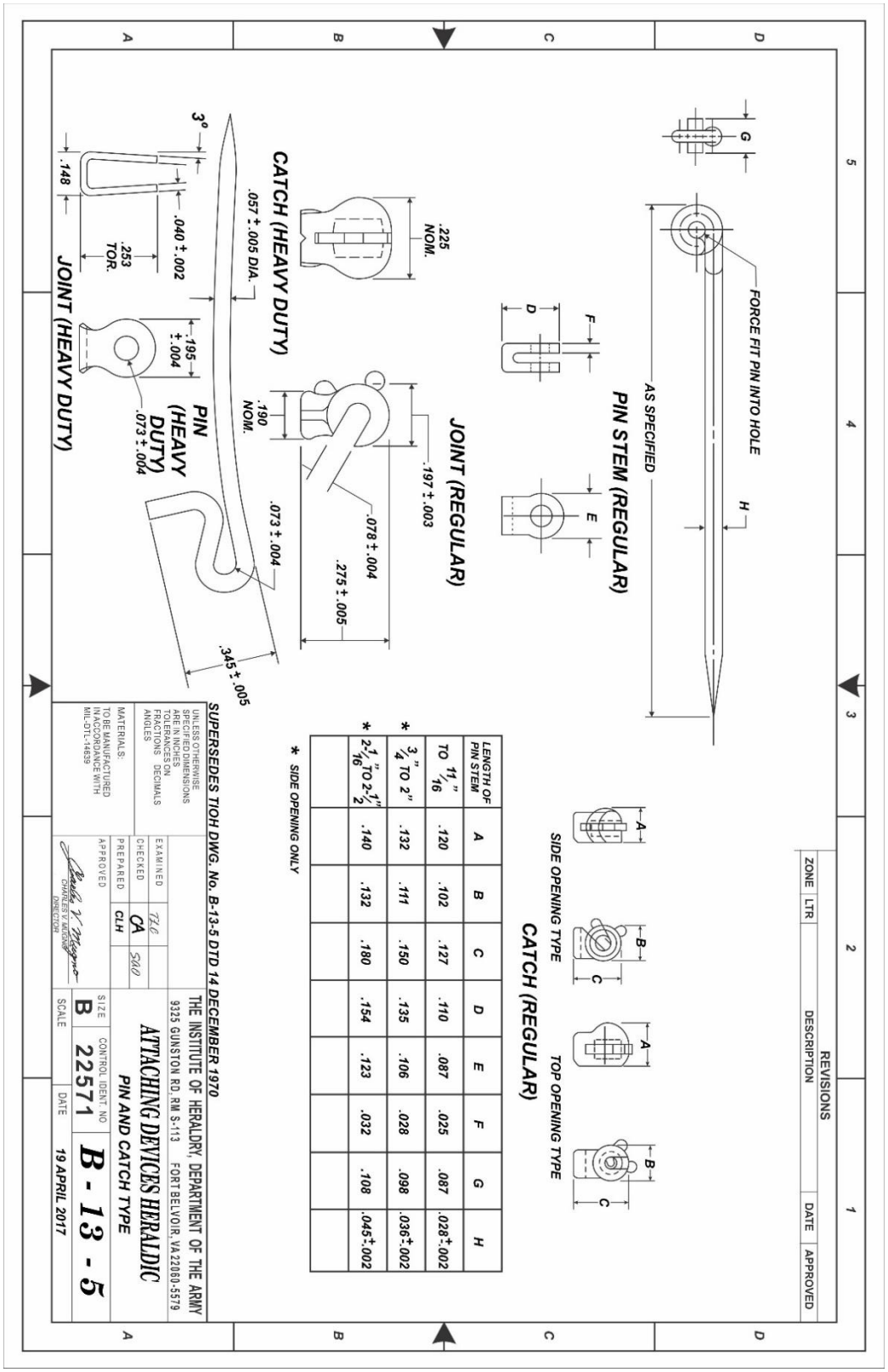

FIGURE 2. **Attaching devices heraldic, pin & catch type**

Custodians:
Army - IH
Navy - NU
Air Force - 11

Review activities:
Navy - MC
Coast Guard - CG1
DLA - CT

Preparing activity:
Army - IH

(Project No. 8455-2020-172)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.