

MIL-C-23157D
23 July 1979
 SUPERSEDING
 MIL-C-23157C
 15 May 1972

MILITARY SPECIFICATION

CLIPBOARD, PILOT'S, MXU-163/P, AND MARK 2A

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

1. SCOPE

1.1 Scope. This specification covers design requirements and all performance requirements for the procurement of lighted and unlighted pilot clipboards.

1.2 Classification. The clipboards shall be of the following types:

<u>Type</u>	<u>Designation</u>
Lighted	MXU-163/P
Unlighted	MARK 2A

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

L-P-380 Plastic Molding Material, Methacrylate

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Naval Air Engineering Center, Engineering Specifications and Standards Department (Code 93), Lakehurst, NJ 08733 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 8465

SPECIFICATIONS

FEDERAL (Continued)

L-P-535	Plastic Sheet (Sheeting), Plastic Strip, Vinyl Chloride Polymer and Vinyl Chloride Vinyl Acetate Copolymer, Rigid
L-P-1183	Plastic Molding Material, Acrylonitrile-Butadiene-Styrene (ABS), Rigid
V-T-295	Thread, Nylon
JJ-W-155	Webbing, Textile (Cotton, Elastic)
QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
QQ-A-250/8	Aluminum Alloy, 5052, Plate and Sheet
QQ-A-591	Aluminum Alloy Die Castings
QQ-A-596	Aluminum Alloy Permanent and Semi-permanent Mold Castings
QQ-N-290	Nickel Plating (Electrodeposited)
QQ-W-470	Wire, Steel, High Carbon, Spring, Bright, Music
QQ-Z-325	Zinc Coating, Electrodeposited, Requirements for
PPP-S-30	Sacks, Shipping, Paper (Cushioned)
PPP-B-636	Boxes, Shipping, Fiberboard

MILITARY

MIL-R-19	Resistors, Variable, Wire-Wound (Low Operating Temperature), General Specification for
MIL-D-1000	Drawing, Engineering and Associated Lists
MIL-S-5059	Steel, Corrosion Resistant (18-8), Plate, Sheet and Strip

MIL-C-23157D

SPECIFICATIONS

MILITARY (Cont'd)

MIL-T-5422	Testing, Environmental, Airborne Electronic and Associated Equipment
MIL-C-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-W-5664	Webbing, Textile, Elastic, Cotton
MIL-W-6858	Welding, Resistance, Aluminum, Magnesium, Non-hardening Steels or Alloys, Nickel Alloys, Heat-resisting Alloys, and Titanium Alloys, Spot and Seam
MIL-S-7720	Steel, Corrosion Resistant, (18-8) Bars, Wire and Forging Stock (Aircraft Quality)
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-S-16974	Steel Bar, Billets, Blooms and Slabs, Carbon and Alloy (For Reforging or Other Operations Before Heat Treatment)
MIL-B-17757	Box, Shipping, Fiberboard (Modular Size)
MIL-F-21840	Fastener Tapes, Hook and Pile, Synthetic
MIL-R-24243	Rivet, Blind, Nonstructural, Retained Mandrel, General Specification for

STANDARDS

FEDERAL

FED-STD-595	Colors
FED-STD-751	Stitches, Seams and Stitchings

MILITARY

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

MIL-C-23157D

STANDARDS

MILITARY (Cont'd)

MIL-STD-143	Specifications and Standards, Order of Precedence for the Selection of
MIL-STD-454	Standard General Requirements for Electronic Equipment
MIL-STD-889	Dissimilar Metals
MS9105	Pin, Straight, Headless-AMS 5688, Lock
MS16535	Rivet - Tubular, Oval Head
MS20426	Rivet, Solid, Countersunk 100 Deg., Precision Head, Aluminum and Aluminum Alloy
MS20470	Rivet, Solid-universal Head, Aluminum and Aluminum Alloy

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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

CONSOLIDATED FREIGHT CLASSIFICATION COMMITTEE PUBLICATION

Consolidated Freight Classification Rating, Rules and Regulations

(Application for copies should be addressed to the Consolidated Freight Classification Committee, 202 Chicago Union Station, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 First article. The clipboards furnished under this specification shall be products, samples of which have been tested and have passed the first article tests specified herein.

3.2 Selection of government documents. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143 except as provided in 3.2.1 and 3.2.2.

3.2.1 Standard parts. With the exception of 3.2.2, MS and AN standard parts shall be used where they suit the purpose. They shall be identified on the drawings by their part numbers.

3.2.2 Commercial parts. Commercial parts having suitable properties shall be used where, on the date of invitations for bids, there are no suitable standard parts. In any case, commercial parts such as screws, bolts, nuts, cotter pins, having suitable properties, may be used provided:

- a. They can be replaced by the standard parts (MS or AN) without alteration.
- b. The corresponding standard part numbers are referenced in the parts list and, if practicable, on the contractor's drawings.

3.3 Materials. Materials shall conform to applicable specifications and shall be as specified herein. Materials for which there are no applicable specifications, or which are not specifically described herein, shall be of the best quality, of the lightest practicable weight and suitable for the purpose intended.

3.3.1 Critical materials. Non-critical materials shall be used where practicable. Where the use of a critical material is essential to meet specification requirements, the material used shall be the least critical of those which are adequate for the purpose.

3.3.2 Non-magnetic materials. Non-magnetic materials shall be used for all parts of the clipboard except where otherwise specified.

3.3.3 Metals. Metals shall be of the corrosion resistant type, or shall be suitably protected as specified herein to resist corrosion due to fuels, salt spray or atmospheric conditions.

3.3.3.1 Dissimilar metals. Dissimilar metals as defined in MIL-STD-889, shall not be used in intimate contact with each other, unless suitably protected against electrolytic corrosion by means of protective coatings.

3.3.3.2 Aluminum alloy parts. Where practicable, aluminum alloy parts shall be covered with an anodic film conforming to MIL-A-8625, Type II, Class 2 (Black). Small holes, threads and case inserts need not be anodized. Aluminum alloys which do not anodize satisfactorily shall be coated with a chemical film in accordance with Class 1A of MIL-C-5541.

3.3.3.3 Iron and steel parts. Iron and steel parts shall be nickel or zinc plated in accordance with QQ-N-290 or QQ-Z-325 except for the steel blade of the pencil sharpener.

MIL-C-23157D

3.3.4 Protective treatment. When materials are used in the construction of the clipboard that are subject to atmospheric or environmental conditions likely to cause corrosion in normal service life, they shall be protected against corrosion in a manner that will in no way prevent compliance with the performance requirements of this specification. When tested as specified in paragraph 4.5.4, the finishes and protective coatings shall show no evidence of cracking or peeling.

3.3.5 Fungus-proof materials. Materials which are nutrients for fungi shall not be used where it is practicable to avoid them. Where used, they shall be treated with a fungicidal agent acceptable to the procuring activity.

3.4 Design and construction. The lighted clipboard shall conform to Figures 1 and 2. The unlighted clipboard shall conform to Figure 2 (less the light assembly and switch) and Figure 3. Clipboards of both types shall be designed to be placed on a pilot's thigh and held in place by a quick release leg strap. Spring clips suitable for holding flight plan cards and other pertinent data shall be provided at the top and bottom of the clipboard. The clipboard shall have a permanently fixed pencil sharpener and provisions for holding a pencil in an accessible place on the right side of the board. A coil spring pencil holder shall be provided at one end of the clipboard as shown on Figures 1 and 3.

3.4.1 Clipboard base. A clipboard base conforming to Figure 2 shall be provided for both the lighted and unlighted clipboard. The base shall be of aluminum sheet 0.032 inch thick conforming to QQ-A-250/8, temper 0. The underside shall be formed with a radius of 3-1/2 inches to fit the pilot's thigh except that a slight protrusion will be permitted to accommodate the configuration of the light switch of the lighted clipboard. The inside dimensions of the base shall be 8-7/8 \pm 1/32 inches long by 4-7/8 \pm 1/32 inches wide by 1-1/8 \pm 1/32 inches deep.

3.4.1.1 Pencil sharpener. A standard plastic commercial pencil sharpener with steel blade shall be secured with rivets or bolts and nuts to the upper right hand corner of the clipboard. The pencil sharpener opening shall be concentric with a hole of the same diameter on the side of the clipborard. An opening shall be formed in the bottom of the base opposite the sharpener for discarding the pencil shavings.

3.4.1.2 Battery holder tube. An aluminum tube which will hold three 1.5-volt AA batteries shall be secured to the upper left hand corner of the lighted clipboard base. The aluminum shall be 0.032 inch thick conforming to QQ-A-250/8. The inside diameter of the tube shall permit easy replacement and retention of batteries without side play. A knurled end cap of the same material with a bayonet type lock (turn clockwise to lock) shall be permanently attached to the clipboard to prevent loss or foreign object damage hazard.

MIL-C-23157D

3.4.1.3 Friction strips. Two 3/4-inch wide polyurethane foam friction strip 1/8 inch thick with adhesive backing Mylar 902 or equal shall run the length of the base as shown in Figure 2.

3.4.1.4 Pilot identification - lighted clipboard. A nameplate with the printed words PILOT IDENTIFICATION shall be attached to the left side of the lighted clipboard as shown in Figure 1. The nameplate shall be 2 inches long, 5/8 inch wide and 0.010 inch thick of white vinyl plastic conforming to L-P-535, Composition A, Type I, Class 2 or Type II, Grade GU, with an adhesive backing.

3.4.1.5 Pilot identification - unlighted clipboard. The unlighted clipboard shall contain a roll of mildew resistance treated paper with PILOTS NAME printed as shown in Figure 3. A roll of clear plastic material shall cover and protect the roll.

3.4.2 Clipboard cover. The cover for the lighted clipboard shall conform to Figure 1. The cover for the unlighted clipboard shall conform to Figure 3. The cover for both clipboards shall be of aluminum sheet 0.032 inch thick conforming to QQ-A-250/8, temper 0. It shall be $9 \pm 1/32$ inches long by $5 \pm 1/32$ inches wide with a minimum of 1/4 inch formed edge. The cover shall be permanently attached to the clipboard base with a minimum of two 1/8-inch blind rivets conforming to MIL-R-24243/1B or 3B uniformly spaced on each end of the clipboard.

3.4.2.1 Upper hinge. An aluminum hinge 0.051 inch thick conforming to QQ-A-250/8, temper 0, shall be attached to the upper end of the cover with no less than 5 spotwelds in accordance with MIL-W-6858, Class B or no less than 3 tubular rivets conforming to MS16535-21.

3.4.2.2 Lower hinge. An aluminum hinge 0.051 inch thick conforming to QQ-A-250/8, temper 0, shall be attached to the lower end of the cover with no less than 3 tubular rivets conforming to MS16535-21 or with not less than five spotwelds in accordance with MIL-W-6858, Class B. All tubular rivets shall have a 1/32 inch minimum peen.

3.4.2.3 Upper clip. An aluminum clip 0.040 inch thick conforming to QQ-A-250/8, temper 0, shall be attached to the upper hinge. The clip shall be 4-13/16 to 5 inches long by 1-1/2 to 2 inches wide for the lighted clipboard. For the unlighted clipboard, the upper clip shall be in accordance with Figures 3, 4, and 5. The leading edge of the upper clip shall be bent down to make an angle of 45 ± 5 degrees with the cover of the clipboard. The leading edge of the clip shall make contact with the cover throughout the entire length of the clip.

MIL-C-23157D

3.4.2.4 Lower clip. An aluminum clip 0.040 inch thick conforming to QQ-A-250/8, temper 0, shall be attached to the lower hinge with no less than 5 spotwelds in accordance with MIL-W-6858, Class B. The clip shall be $5 \pm 1/32$ inches long by $1-3/8 \pm 1/8$ inches wide. The leading edge of the clip shall be bent down to make an angle of 65 ± 5 degrees with the cover of the clipboard. The leading edge of the clip shall make contact with the cover throughout the entire length of the clip.

3.4.2.5 Clip-to-clip distance. The distance between the bearing surfaces of the clips shall be $7-1/4 \pm 1/8$ inches.

3.4.2.6 Springs. Both the upper and lower clips shall be attached to the cover with 2 torsion springs on each clip. The loop of the spring shall extend at least $1/8$ " beyond the bottom of the upper clip and bottom edge of light assembly (so as to prevent the wire loop from sliding off the light assembly during flexing.) The springs shall be made of steel wire conforming to QQ-W-470. These torsion springs shall have sufficient strength to cause the clips to bear on the surface of the clipboard with a force of 1.5 to 2.80 pounds in the manner described in 4.5.2.

3.4.2.7 Pencil tube and pencil. An aluminum tube with 0.032" wall thickness, conforming to QQ-A-250/8, temper 0, and capable of securely holding a standard wooden pencil, shall be formed on the right (side with adjustable leg strap) of the base. The front edge of the tube shall be located $3-3/4$ inches from the upper end of the cover. The tube shall be constructed so that a pencil will not slide loose under rough handling nor be capable of being inadvertently pushed through the bottom of the tube. The pencil tube shall be $4-1/4 \pm 1/32$ inches long. A standard No. 2 wooden pencil with eraser shall be inserted into the tube.

3.4.2.8 Pencil holder. A coil spring pencil holder conforming to Figure 1 shall be provided for the lighted clipboard. The pencil holder for the unlighted clipboard shall conform to Figure 3. The coil shall be of wire 0.040 inch in diameter with a $5/8$ inch outside coil diameter 4 to 5 coils per inch and minimum lengths of $1-1/8$ inches for the lighted clipboard and 2 inches for the unlighted clipboard. In the lighted clipboard, the coil spring shall be positioned high on the light assembly so that the pencil can be inserted in other than the vertical position. The spring shall be made so that it can hold a pencil securely. In addition, the coil spring shall be permanently secured to the light assembly so that it will not turn nor change its position.

MIL-C-23157D

3.4.3 Light assembly. A battery-powered, rotary switch-operated light assembly shall be attached to the upper clip of the lighted clipboard. When lighted, the light assembly shall illuminate the entire area of the clipboard's cover between the upper and lower clip with white light with minimal light diffusion on either side and no upward glare. The light assembly shall be similar to Figure 1, a maximum of 5-1/4 inches long by 1-3/4 inches wide by 7/8 inch thick. It shall be made of acrylic plastic conforming to L-P-380, except that it shall be translucent to minimize glare, and/or aluminum conforming to QQ-A-250/8. The complete light assembly shall be permanently attached to the 0.040 inch thick upper clip with no less than 2 rivets or 2 bolts with nuts.

3.4.3.1 Lamps. Two standard lamps connected in parallel shall provide uniform illumination. The lamps shall be removable for replacement.

3.4.3.2 Switch and rheostat. A rotary action positive click-off switch conforming to MIL-R-19 with a rheostat for varying the light intensity (Clarostat 43S or equivalent) shall be attached to the side of the clipboard base as shown in Figure 2. The switch shall not be damaged when tested in accordance with 4.5.3.

3.4.3.3 Switch knob. The rotary switch knob shall be made of aluminum or molded of dull black plastic conforming to Type VI of L-P-1183 with a brass insert. The knob shall be secured to a flat or notched area on the switch shaft by 2 set screws (positioned 90° apart) so that the knob will not become loose or detached during use. The knob shall be at least 3/4 inch in diameter and shall extend a minimum of 5/8 inch from the side of the clipboard cover.

3.4.3.4 Lighting circuit. The lamps shall light without flashing or flickering and shall maintain a steady intensity at all position of the rheostat when tested as specified in 4.5.3. A nickel plated brass contact held in place by a spring conforming to QQ-W-470 shall be secured to the inner side of the battery holder tube cap or to the lower end of the battery holder tube. The light sockets shall be Leecraft Model 10-08 (single contact candelabra bayonet socket) or equivalent, the bracket to be of cadmium-plated steel, the socket of nickel-plated brass and the center contact of phosphor bronze or beryllium. The wiring of the lighting circuit shall be contained within the envelope of the clipboard cover to avoid exposure to mechanical damage. (Wires passing through holes in metal or other material shall be protected against chaffing.) There shall be no splices in the wiring of the lighting circuit.

3.4.4 Finish. The entire clipboard, including buckle and light assemblies but excepting blind rivets, shall be finished with a lusterless black material Color No. 37038 of FED-STD-595. The finishing material shall withstand the salt spray and humidity tests of 4.5.4.

MIL-C-23157D

3.4.5 Leg straps. Two straps shall be prepared from 1-1/2-inch elastic webbing, MIL-W-5664, Class 2, with the face side black and the underside white. The elastic webbing used in the leg straps shall be treated for mildew resistance in accordance with the requirements of JJ-W-155. One strap shall be adjustable in length. The other strap shall be non-adjustable. The straps shall be as shown in Figures 1, 2 and 3. The ends of leg straps shall be dipped in cellulose acetate or turned under and stitched to prevent fraying.

3.4.5.1 Adjustable leg strap. The adjustable length of the leg strap shall be permanently attached to the right side of the clipboard base. The finished strap shall be adjustable from 8 \pm 1 inches to 13 \pm 1 inches as measured from the end of the strap within the slot of the clipboard base to the other end of the strap, including the buckle but not the tongue. One end of the strap shall be permanently attached to the middle bar of a slide adapter (North and Judd Catalog No. 2300-1-1/2 or equivalent) and overlapped 1-1/2 inches before securing with a boxstitch. The other end of the strap shall be passed through the slot in the clipboard base, then threaded through the two slots in the slide adapter before permanently attaching to the male portion of the buckle with a 1-1/2 inch overlap of the strap, and securing with a boxstitch.

3.4.5.2 Non-adjustable leg strap. The non-adjustable length of the leg strap shall be permanently attached to the left side of the clipboard base. The finished strap shall be 4-1/2 \pm 1/2 inches in length as measured from the end of the strap within the slot of the clipboard base to the other end of the strap, including the female end of the buckle. One end of the strap shall be permanently attached to the female portion of the buckle, overlapped 1-1/2 inches and secured with a boxstitch. The other end of the strap shall be passed through the slot in the clipboard base, overlapped 1-1/2 inches and secured with a boxstitch.

3.4.5.3 Hook fastener tape. A 1-1/2 inch square piece of hook fastener tape shall be positioned on the outside of the adjustable leg strap 1/2 inch from the male buckle pin and secured with a boxstitch.

3.4.5.4 Pile fastener tape. A 1-1/2 inch by 5-1/2 inch piece of pile fastener tape shall be positioned on the outside of the non-adjustable leg strap 1-3/4 inch from the female buckle pin and secured with a boxstitch. The loose portion of the pile tape shall provide a protective cover over the release button on the female portion of the buckle and shall extend the entire length of the hook fastener tape in the use position.

3.4.5.5 Fastener tape. The hook and pile fastener tape shall conform to MIL-F-21840, Type I, Class 1, Color black.

MIL-C-23157D

3.4.5.6 Stitching. All stitching shall be accomplished with nylon thread conforming to V-T-295, Size E, Type I or II, stitch type 301 conforming to FED-STD-751, 7 to 11 stitches per inch. Boxstitches shall be either 1 inch square or 1-1/4 by 3/4 inch.

3.4.5.7 Buckle. The leg strap buckle shall be of the quick release type and shall be as shown in Figures 1, 2, 6, 7 and 8. The buckle shall withstand a 100-pound load for at least 10 seconds without breaking or coming unfastened by application of uniformly increasing tension as described in 4.5.1.

3.4.6 Weight. The clipboard shall be so designed that when completely assembled the weight shall not exceed 1 pound 8 ounces, exclusive of batteries and pencil when tested as specified in Table I.

3.5 Performance. The clipboard shall perform satisfactorily when subjected to the tests specified in Section 4 of this specification.

3.6 Identification of product. The clipboards shall be identified by the following information stamped permanently and legibly on the face of the lower clip in letters 1/8 inch high.

Lighted Clipboard

U.S. PROPERTY
 TYPE MXU-163/P
 CLIPBOARD, PILOT'S
 CONTRACT NO. _____
 MFR'S PART NO. _____
 (MFR'S NAME _____)

Unlighted Clipboard

U.S. PROPERTY
 TYPE MARK 2A
 CLIPBOARD, PILOT'S
 CONTRACT NO. _____
 MFR'S PART NO. _____
 (MFR'S NAME _____)

3.7 Instruction diagram. The lighted clipboard shall have a battery loading schematic diagram silk screened in white epoxy resin on the top side of the cover, or a printed mildew resistance treated paper label with pressure sensitive adhesive shall be applied as shown in Figure 1.

3.8 Interchangeability. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. Changes in manufacturer's part number shall be governed by the drawing number requirements of MIL-D-1000.

3.9 Workmanship. Workmanship shall be in accordance with Requirement 9 of MIL-STD-454.

3.10 No data are required by this specification, or by applicable documents referenced in Section 2, unless specified in the contract or order. (See 6.2.)

MIL-C-23157D

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, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification when such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection of the clipboards shall be classified as follows:

- a. First article inspection: First article inspection consists of examination and tests performed after award of contract on sample clipboards to determine that the clipboard meets the requirements of this specification. The sample shall be representative in design, performance and configuration of the clipboards which will be produced on the manufacturer's production line.
- b. Quality conformance inspection: Quality conformance inspection consists of examination and tests performed on clipboards manufactured and submitted for acceptance under contract.

4.3 First article inspection. The first article inspection of the clipboards shall consist of all the examinations and tests of this specification performed in the order listed herein.

4.3.1 First article inspection sample. First article inspection samples shall consist of three clipboards manufactured in accordance with this specification. The samples shall be forwarded at the contractor's expense for first article inspection and shall have been previously subjected only to the individual inspection. The samples shall be forwarded to the procuring activity.

4.3.1.1 First article inspection sample identification. The first article samples shall be plainly identified by durable tags, securely attached, and marked with the following information:

Sample for First Article Inspection
Clipboard, Pilot's (MXU-163/P or MARK 2A,
as applicable)
Submitted by (Manufacturer's name, date) for
First Article Inspection in accordance with

MIL-C-23157D under contract or order
number
Manufacturer's Part Number

4.4 Sampling for inspection. Sampling for inspection shall be performed in accordance with provisions set forth in MIL-STD-105, except where otherwise indicated. For purposes of sampling, an inspection lot for examinations and tests shall consist of all clipboards of the same type submitted for inspection and delivery at one time.

4.4.1 Inspection of materials and components. In accordance with 4.1 above, the supplier is responsible for assuring that materials and components used were manufactured, tested and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified, or, if none, in accordance with this specification. In the event of conflict, this specification shall govern.

TABLE I - Instructions for Intermediate Testing - Buckle

<u>Assembly 1/ Characteristic</u>	<u>Requirement</u>	<u>Test Method</u>	<u>Rqm't applic to</u>	<u>No Det Per S/U</u>	<u>Results Reported as</u>
Buckle strength	3.4.5.7	4.5.1	Sample Unit	1	Pass or Fail

1/ For this testing, the buckle assembly is the buckle with leg straps attached but without the clipboard.

4.4.1.2 Intermediate examination. The buckle socket subassembly, after the button clasp is assembled and riveted to the clasp hook in accordance with Figure 7, and after both clips are riveted to the clipboard base in accordance with 3.4.2.3 and 3.4.2.4 shall be examined for proper peening. A lot shall consist of all subassemblies offered for inspection at one time. The sample unit shall be one buckle socket subassembly with button clasp attached to the clasp hook and one clipboard cover with clips riveted as specified in 3.4.2.3 and 3.4.2.4. The inspection level shall be S-1 and there shall be no defective or inadequate rivet peening.

4.4.2 Inspection of the end item.

4.4.2.1 Examination of the end item. Examination of the end item shall be made in accordance with the classification of defects, inspection levels and acceptable quality levels (AQLs) set forth below. The lot size, for the purpose of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of clipboards, for examination in 4.4.2.1.1, 4.4.2.1.2 and in units of shipping containers in 4.4.2.1.3.

4.4.2.1.1 Examination of the end item for defects in material, construction, appearance and workmanship. The sample unit for this examination shall be one pilot's clipboard.

Examine	Defect	Major	Minor
Material	Any component or material not as specified.	X	
	Any component or accessory missing or malformed.	X	
	Magnetic material used	X	
Construction, appearance and workmanship	Any part of assembled clipboard broken, cracked, bent or otherwise damaged, affecting serviceability	X	
	Gap between leading edge of clip and cover more than 3/32"	X	
	Gap between leading edge of clip and cover 3/32" or less		X
Construction	Any part of assembled clipboard marred in a manner which affects appearance.		X
	Any detail of design and construction not as specified.	X	
	Spring clip, rotary switch, bulb holder assembly, leg strap buckle, or other functioning accessory inoperable.	X	
	Any component or accessory requiring free operation which does not function without force.		X
	Any attachment insecure or loose.	X	
	Weld, rivet, stud or other fastening device missing, loose, cracked, or badly formed; not concentric with holes; protruding above surface of adjoining surface of clipboard.	X	

MIL-C-23157D

Examine	Defect	Major	Minor
Construction (cont'd)	Tube to hold pencil does not retain pencil securely.		X
	Finish of aluminum and steel parts not as specified.	X	
	Finish not uniform and complete over entire area of coating or plating.	X	
	Any burr or sharp edge which may cause injury to personnel.	X	
	Cut, hole, fray, tear or other defect in leg strap or fastener tape.	X	
	Stitching not as specified, not uniform, not secure.		X
	Not clean, metal chip or other foreign matter embedded in surface.		X
	Finish not thoroughly dry as evidenced by tackiness.	X	
	Pencil sharpener not aligned with hole in base, i.e., pencil cannot be inserted into sharpener.	X	
	Coil spring pencil holder not secured, i.e., spring turns.		X
Miscellaneous	Pencil missing		X
	Name plate, pilot identification or clear plastic roll not as specified, missing.		X
	Identification marking omitted, incomplete, incorrect or illegible.		X
	Battery loading instruction diagram not as specified; missing, incomplete, incorrect or illegible.	X	

4.4.2.1.2 Examination of the end item for dimensional defects. The sample unit for this examination shall be one pilot's clipboard. Any dimension, measurement, or radius not within tolerances specified shall be scored as a defect.

4.4.2.1.3 Examination of packaging. An examination shall be made to determine compliance with the preservation, packaging, packing and marking requirements of the specification and contract as applicable. The sample unit shall be one shipping container fully packed and selected just prior to the sealing operation. Shipping containers fully prepared for delivery shall be examined for closure defects.

<u>Examine</u>	<u>Defect</u>
Material	Any preservative, cushioning, packaging or packing component or material not as specified. Any component or material missing or malformed.
Count	Less than the specified or indicated quantity of pilot's clipboards per shipping container.
Workmanship	Inadequate application of components, such as insufficient or incomplete preservative treatment as applicable; insufficient cushioning; incomplete or insecure sealing of unit package, barrier material, container flaps, steel strapping or tape bonding, as applicable; protruding nails not thoroughly clinched; bulge or distortion of shipping container; not compactly packed resulting in movement or shifting of contents in handling or shipment. Broken, bruised, dented or otherwise damaged shipping container in a manner which may result in loss or damage to contents.
Marking (unit package and shipping container)	Omitted, incomplete, incorrect, illegible, of improper size, location sequence or method of application.
Weight	Gross weight in excess of maximum weight specified.

4.4.2.1.4 Inspection levels and acceptable quality levels (AQLs) for examinations. The inspection levels for the purpose of determining the sample size and the acceptable quality levels (AQLs) expressed in defects per 100 units shall be as follows:

MIL-C-23157D

<u>Examination Paragraph</u>	<u>Inspection Level</u>	<u>AQL</u>	
		<u>Major</u>	<u>Total</u>
4.4.2.1.1	II	1.0	4.0
4.4.2.1.2	S-2		4.0
4.4.2.1.3	S-2		4.0

4.5 Lot acceptance testing. Lot acceptance testing of the end item shall be conducted for the properties indicated in Table II (except where otherwise specified, the sample unit shall be one clipboard). The sample size shall be S-1 except the maximum sample size shall be three (see note 4 of table II) There shall be no evidence of failure to meet unit requirements. The lot size shall be expressed in clipboards.

4.5.1 Buckle strength. A 6-inch length of the 1-1/2-inch wide leg strap webbing shall be threaded through the buckle pin and doubled over equally. The buckle shall be engaged. One end of the coupled strap shall be clamped in the fixed jaw of a suitable tensile testing machine (Scott Tester Model J-1 or similar), and the other end clamped in the moveable jaw. The moveable jaw shall travel at a rate not to exceed 12 inches per minute until a pull of 100 pounds is reached at which point a tension of 100 pounds shall be maintained for 10 seconds.

TABLE II. Instructions for end item testing.

Characteristic	Spec. ref.		Rqmts appl to		Number determinations per sample unit	Results reported as	
	Rqmt	Test method	Sample unit	Lot average		Pass or fail 1/	Numerically to nearest 2/
Clip tension							
upper	3.4.2.6	4.5.2	X	-	Avg of 5	-	0.1 pound
lower	3.4.2.6	4.5.2	X	-	Avg of 5	-	0.1 pound
Switch life	3.4.3.2	4.5.3	X	-	1	X	-
Humidity test 4/	3.3.4	4.5.4	X	-	-	X	-
Salt spray test 4/	3.3.4	4.5.4	X	-	-	X	-

MIL-C-23157D

TABLE II. Instructions for end item testing. (cont'd)

Characteristic	Spec. ref.		Rqmts appl to		Number determinations per sample unit	Results reported as	
	Rqmt	Test method	Sample unit	Lot average		Pass or fail 1/	Numerically to nearest 2/
Light test	3.4.3	4.5.3	X	-	1	X	-
Weight	3.4.6	Std Com'l	X	-	1	-	ounce

1/ If failure is indicated, report description of failure.

2/ Test reports shall include all values on which results are based.

3/ Certificate of compliance acceptable in lieu of test at discretion of procuring activity.

4/ Test to be performed only on the first lot in each contract and after the supplier has changed his coating material or the source of this material. For this situation the sample unit shall be three clipboards instead of one and the sample size shall be S-1 except the maximum sample size shall be three.

4.5.2 Upper and lower clip tension. The clipboard shall be firmly secured in the vertical position with the bearing surfaces of the clips horizontal. Each clip shall be operated so as to create an opening not exceeding 1/2" and released ten times before testing. A fixture and spacer made in accordance with the requirements of Figures 9 and 10, respectively, shall be placed under each clip being tested, as shown. The fixture shall be placed under the center of each clip. A force gage shall be held perpendicular to the fixture and the anvil of the gage applied at the fixture's open end. The force required to open the clips and release the spacer shall be a minimum of 1.5 lbs. and a maximum of 2.80 lbs. Failure to respond as indicated shall be scored a defect.

4.5.3 Switch light and life test. The switch shall be tested as specified in 4.6.12.2 and 4.6.13 of MIL-R-19. Initially and at the completion of 15,000 cycles the light assembly shall operate as specified in 3.4.3. When batteries are inserted and the rotary switch is turned on, both lamp bulbs shall light and the light shall become brighter as the rotary switch is turned clockwise before and after the switch life cycles.

4.5.4 Salt spray and humidity tests. One complete clipboard shall be subjected to the salt spray test as specified in 4.5 of MIL-T-5422. Another complete unit shall be subjected to the humidity test as

MIL-C-23157D

specified in 4.4 of MIL-T-5422. Both units shall be examined for deterioration of the protective coating applied to the aluminum surfaces. Any cracking or peeling of the protective coating shall be scored as a defect. These environmental tests are not to be regarded as a test of any other characteristic of the clipboard.

5. PACKAGING

5.1 Preservation - packaging. Preservation - packaging shall be Level A or C as specified.

5.1.1 Level A. Each clipboard, with the leg strap wrapped around and secured, shall be enclosed within a shipping sack measuring approximately 8-1/2 inches by 14-1/2 inches and conforming to PPP-S-30. The sack shall be stapled or taped closed to prevent accidental opening.

5.1.2 Level C. The clipboards shall be preserved and packaged in accordance with the manufacturer's commercial practice to provide adequate protection during shipment to the first receiving activity.

5.2 Packing. Packing shall be Level A, B, or C as specified.

5.2.1 Level A. Clipboards packaged as specified in 5.1 shall be packed in a fiberboard box conforming to Grade V2S, Style RSC of PPP-B-636. The gross weight of boxes conforming to PPP-B-636 shall not exceed 65 pounds. Closure and strapping shall be in accordance with the appendix of the container specification.

5.2.2 Level B. Twelve clipboards, packaged as specified, shall be packed in a fiberboard shipping container conforming to class domestic, type CF or SF, grade 275, size 2A of MIL-B-17757. The box liner shall conform to type CF, class domestic, grade 275 of PPP-B-636. Level A packages shall be placed on edge within the container, two in length, six in width, and one in depth. Each pair of clipboards shall be alternated end to end. Each container shall be closed in accordance with the requirements of the appendix of the box specification.

5.2.3 Level C. Clipboards packaged as specified in 5.1 shall be packed in a manner to insure carrier acceptance and safe delivery at destinations. Containers shall be in accordance with Consolidated Freight Classification Ratings, Rules and Regulations or regulations of other carriers applicable to the mode of transportation.

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 the requirements of MIL-STD-129. The use of labels for identification marking on exterior shipping containers is not permitted.

MIL-C-23157D

6. NOTES AND CONCLUDING MATERIAL

6.1 Intendd use. The clipboard covered by this specification is intended to provide a pilot with a place to keep his flight plan and enroute charts, and also to provide him with a surface for making notations while in flight.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. The quantity and type of the clipboards desired (see 1.2).
- c. Levels of packaging (see 5.1) and packing (see 5.2) desired.
- d. The procuring activity to which first article inspection samples shall be forwarded (see 4.3.1).
- e. Items of data required (see 6.3).

6.3 Data. For the information of Contractors and Contracting Officers, any of the data specified in (a) applicable documents listed in Section 2 of this specification, or (b) referenced lower tier documents, need not be prepared for the Government and shall not be furnished to the Government unless specified in the contract or order. The data to be furnished shall be listed on DD Form 1423 (Contractor Data Requirements List) which shall be attached to and made a part of the contract or order. For Navy contracts, NavWeps Form 4200/15 (Drawings, Lists, and Specifications Required) shall be attached where applicable.

6.4 First article test provisions. The manufacture of clipboards on contract shall not commence until the samples submitted are pronounced satisfactory by the procuring activity. When a contractor is in continuous production of the clipboard from contract to contract, the submission of further first article samples on the subsequent contracts may be waived at the discretion of the procuring activity. Approval of first article samples or the waiving of first article tests does not reduce the requirements for acceptance testing.

6.4.1 It shall be understood that the clipboards supplied under contract or order shall be identical to the corresponding first article sample in design, construction, quality, material, workmanship and method of manufacture. Deviation from the standards of the first article sample shall be made only by the procuring activity.

MIL-C-23157D

6.5 Precedence of documents. When the requirements of the contract, this specification, or applicable subsidiary specifications are in conflict, the following precedence shall apply.

- a. Contract. The contract shall have precedence over any specification.
- b. This specification. This specification shall have precedence over all applicable subsidiary specifications. Any deviation from this specification, or from subsidiary specifications where applicable, shall be specifically approved in writing by the procuring activity.
- c. Referenced specifications. Any referenced specification shall have precedence over all applicable subsidiary specifications referenced therein. All referenced specifications shall apply to the extent specified.

6.6 Items to be furnished. The clipboard is to be furnished without batteries. One number 2 standard pencil and two standard lamps shall be furnished with each lighted clipboard.

Custodians:

Navy - AS
Air Force - 99

Preparing Activity:

Navy - AS
(Project No. 8465-0714)

Review activities:

Navy - AS
Air Force - 45

User activities:

Navy - AS

Review/user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on information in the current DODISS.

MIL-C-23157D

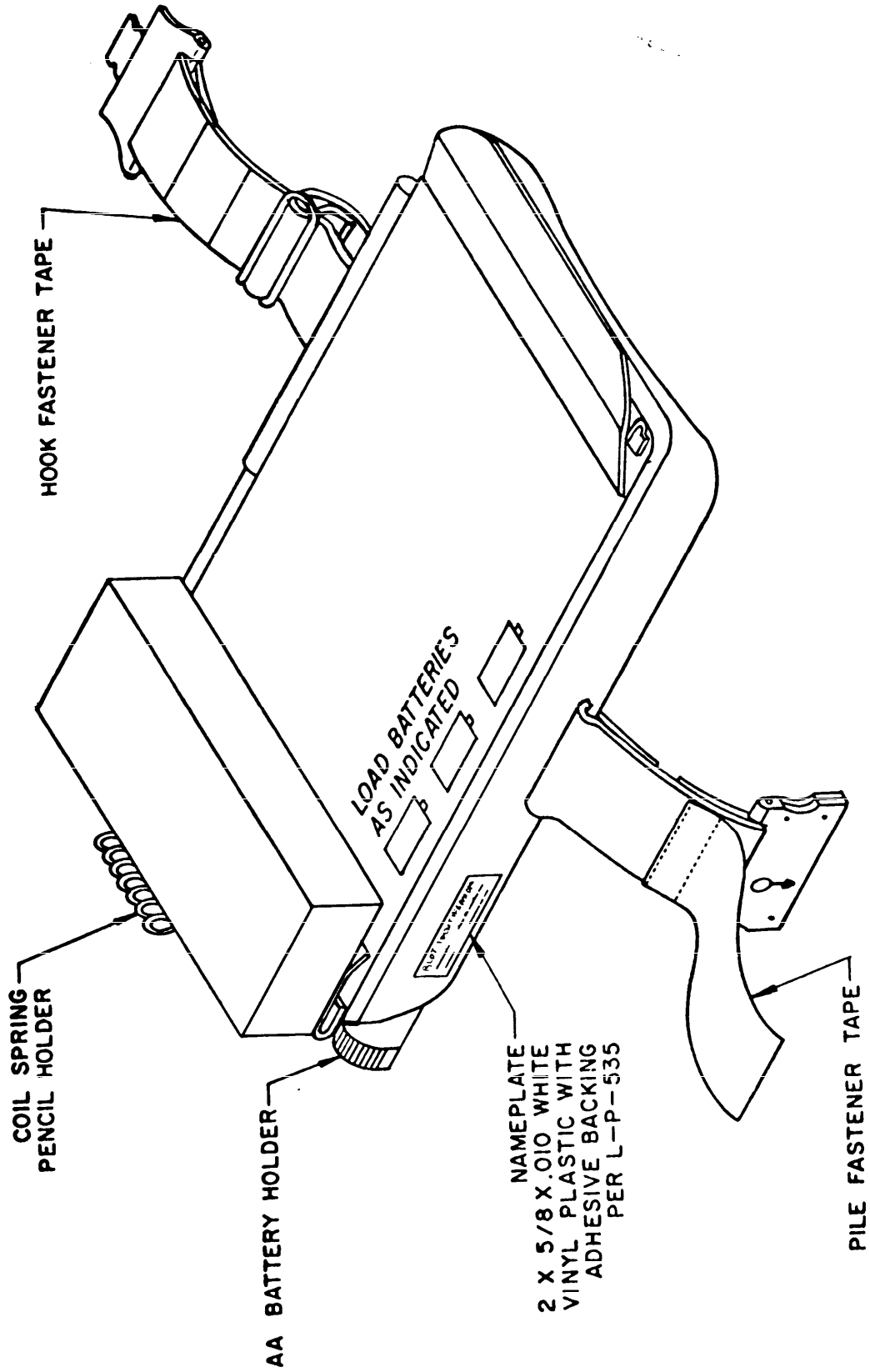


Figure 1. Pilot's clipboard (MXU-163/P) upper side.

MIL-C-23157D

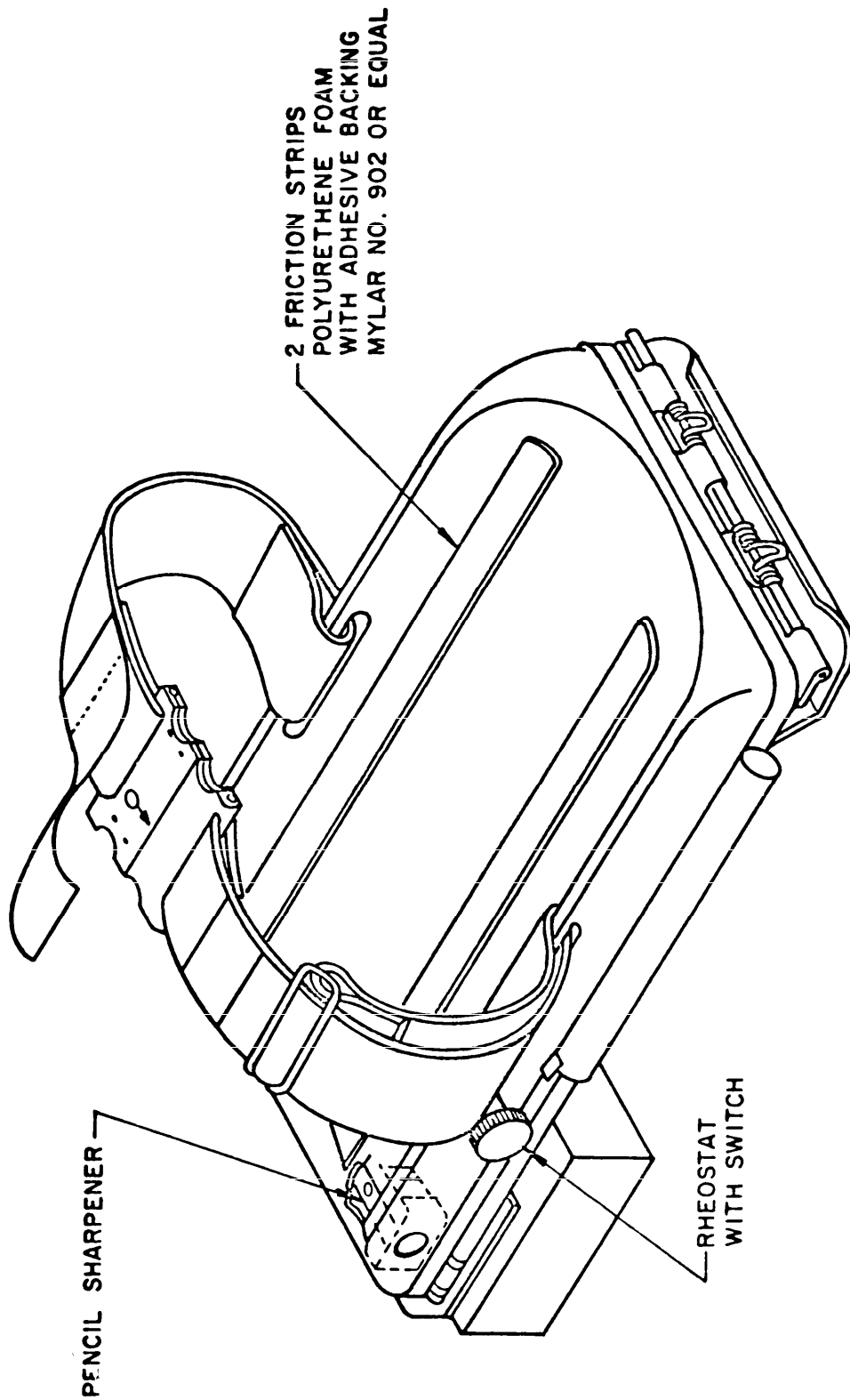


Figure 2. Pilot's clipboard (MXU-163/P and MARK 2A) under side.

MIL-C-23157D

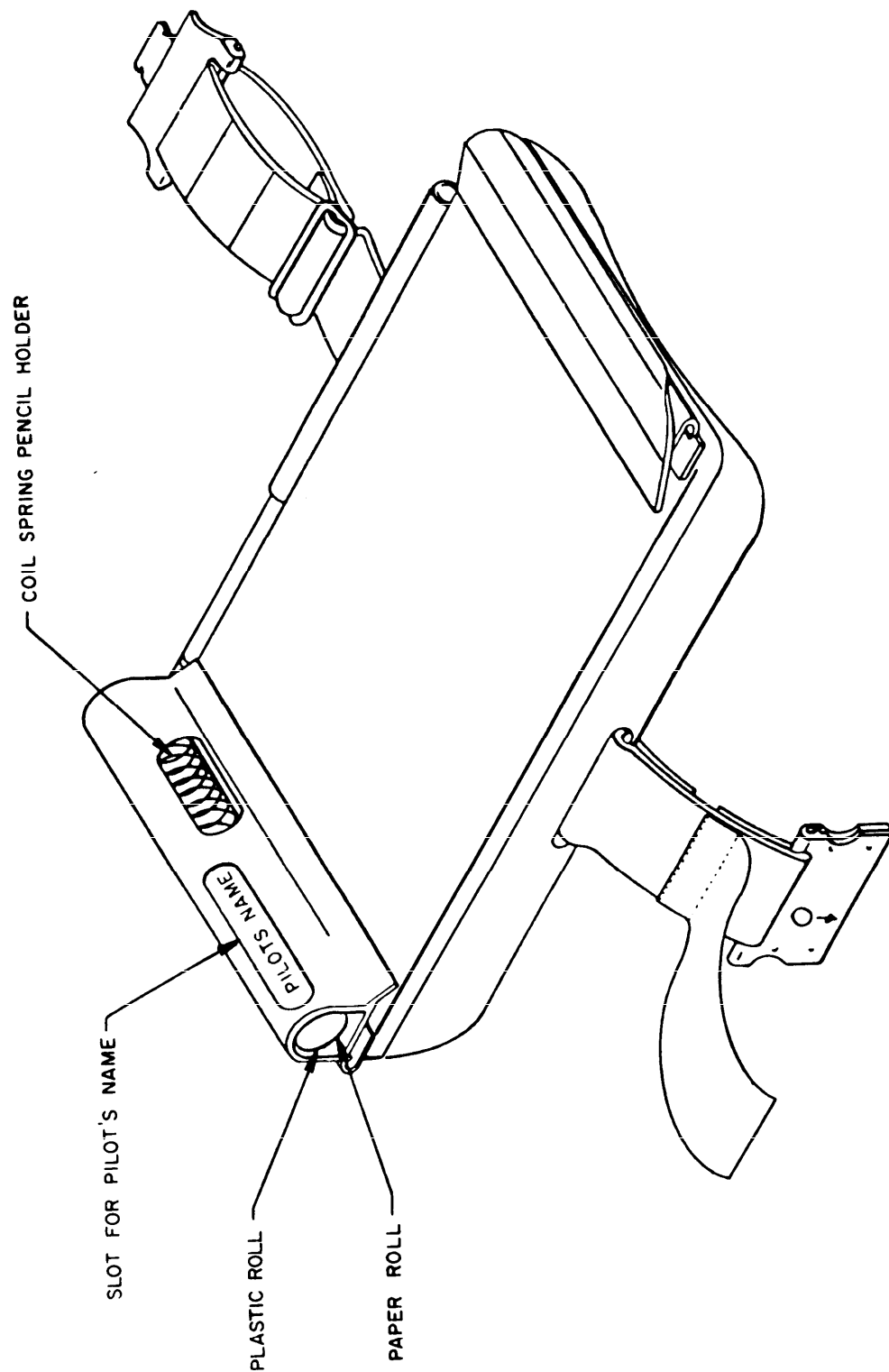
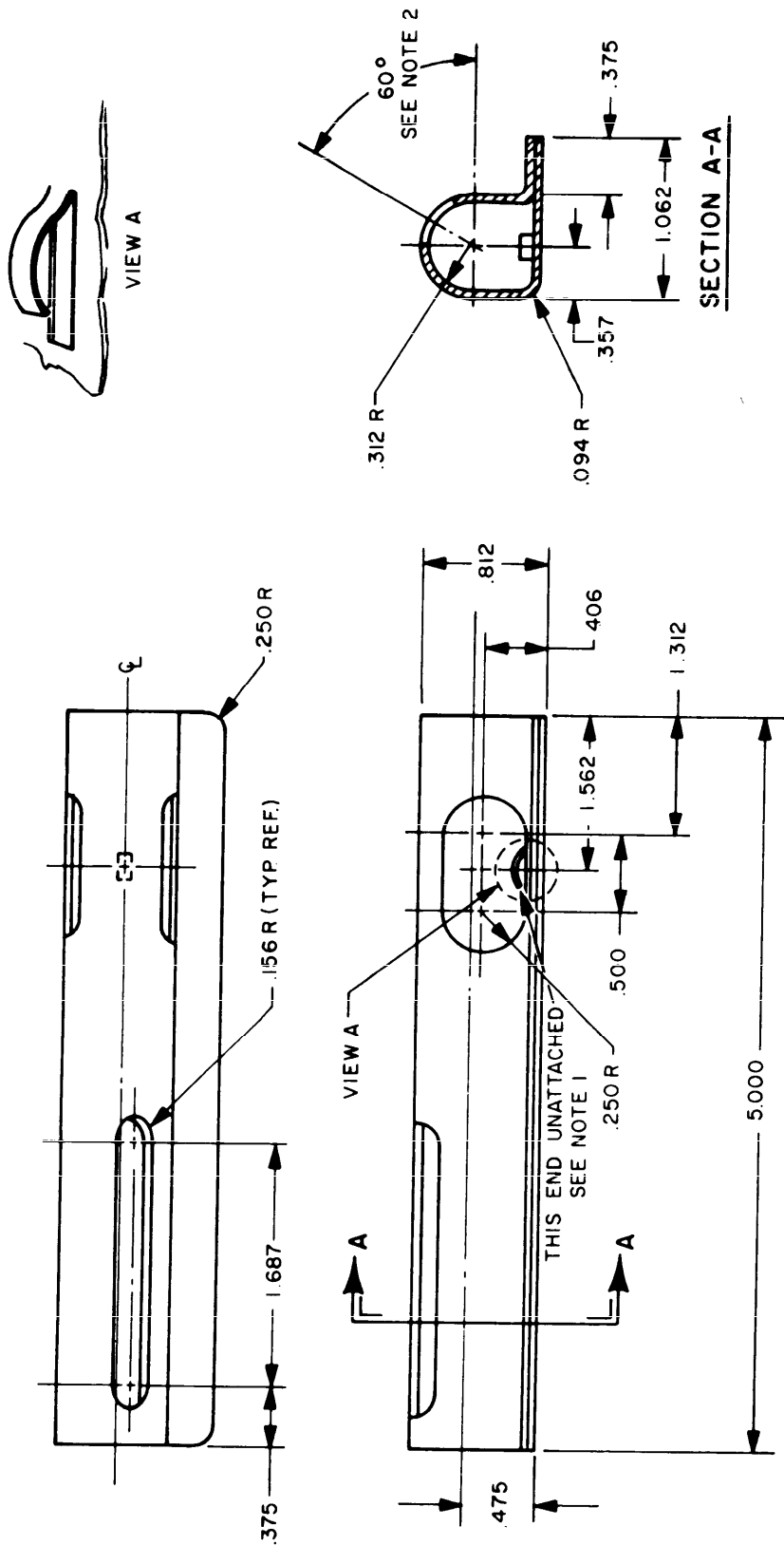


Figure 3. Pilot's clipboard (MARK 2A), upper side.



- NOTES:
1. ONE END SHALL BE UNATTACHED SO THAT SPRING MAY BE PRESSED UNDERNEATH FOR SECURING & PREVENTING MOVEMENT
 2. 60° ANGLE IS FOR LOCATION OF CENTER OF SLOT
 3. DIMENSIONS LABELED REF. ON FOLDED PIECE ARE SHOWN AS ACTUAL DIMENSIONS ON LAY-OUT.

Figure 4. Clip for pilot's clipboard, MARK 2A.

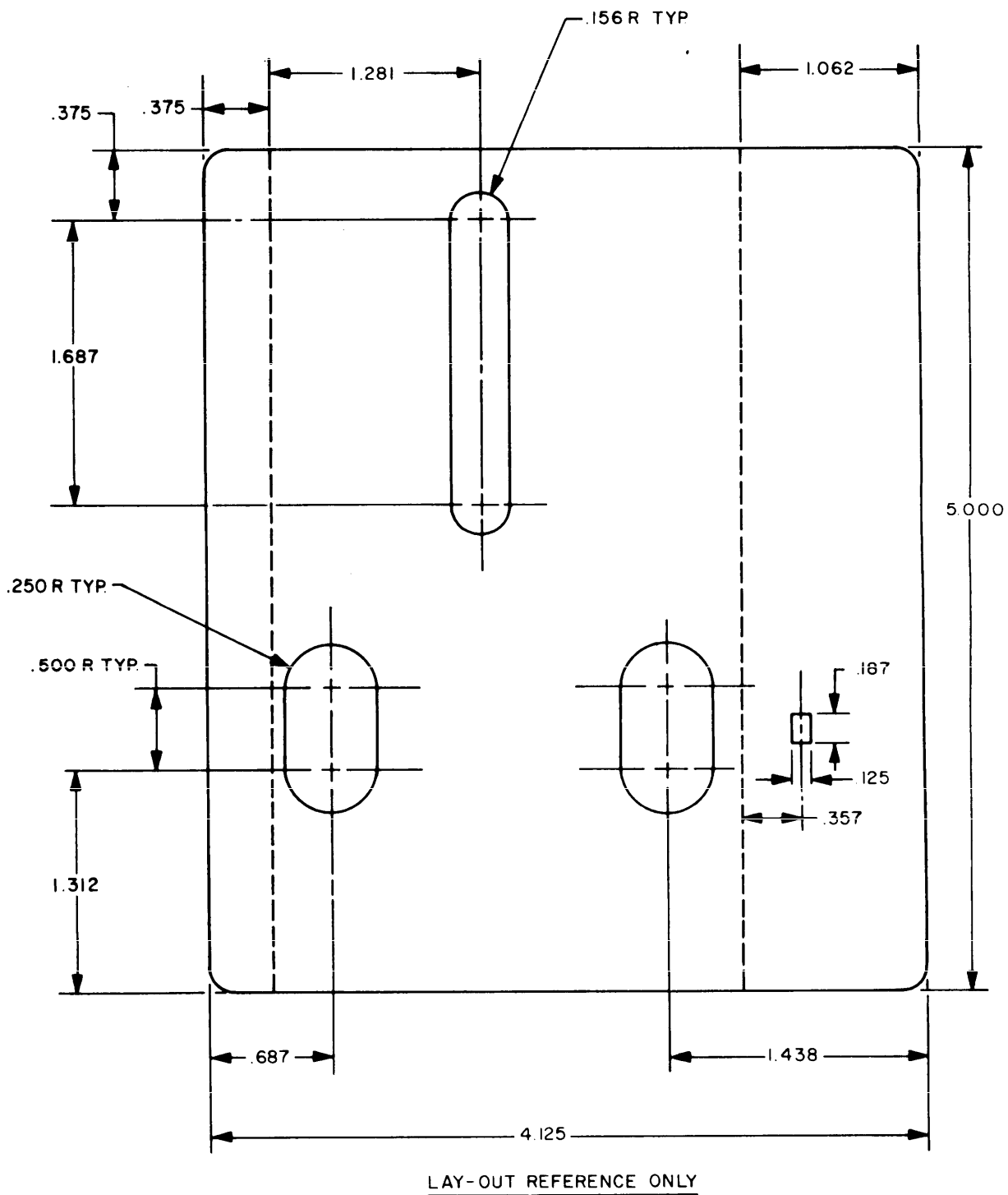


Figure 5. Clip layout for pilot's clipboard, MARK 2A.

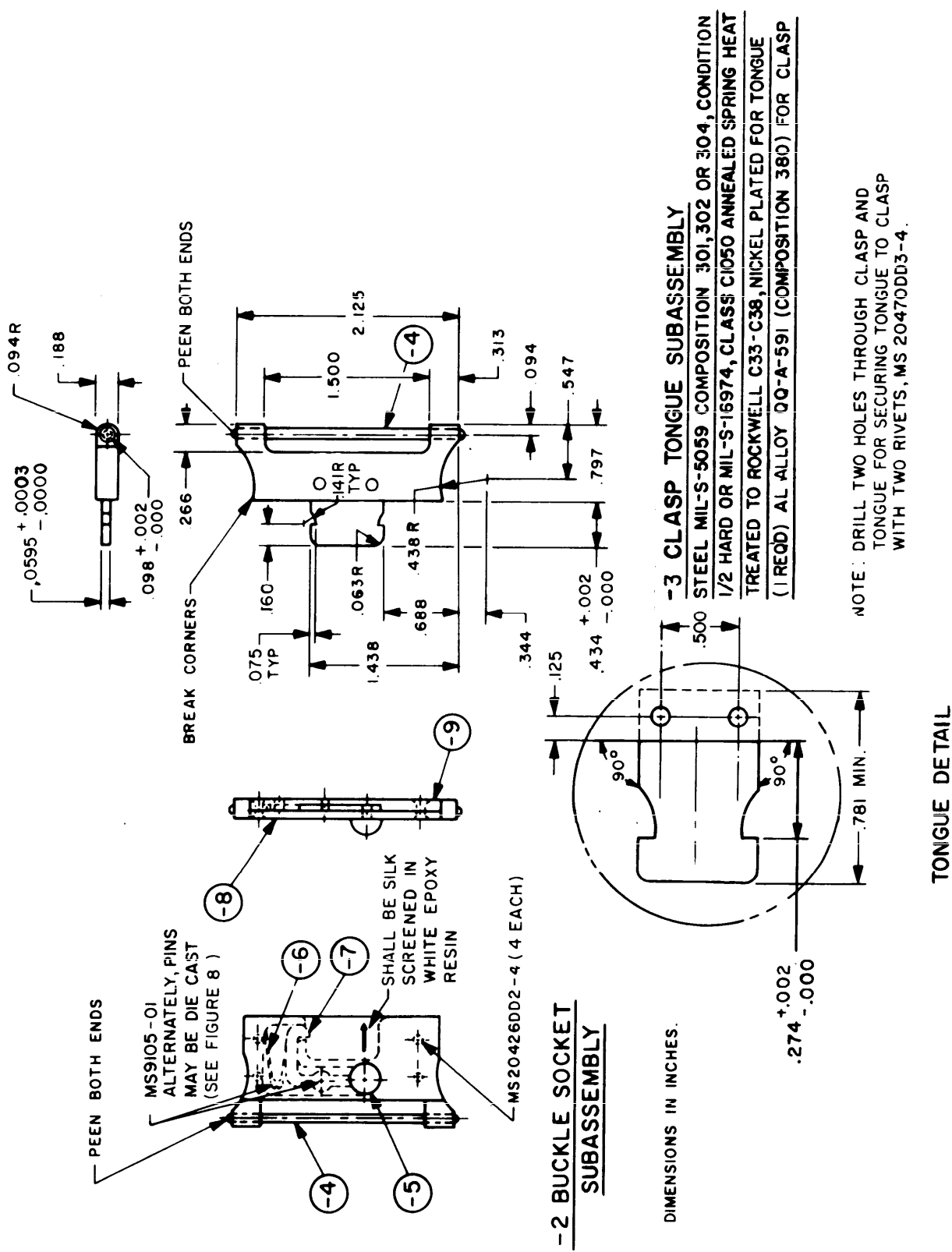
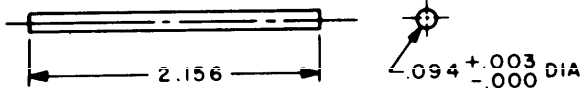
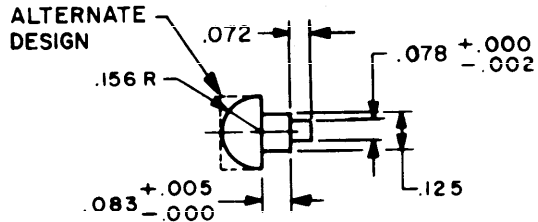


FIGURE 6.



-4 PIN, BUCKLE
 STEEL, MIL-S-7720 COMPOSITION
 302 OR 316 (2 REQ'D)

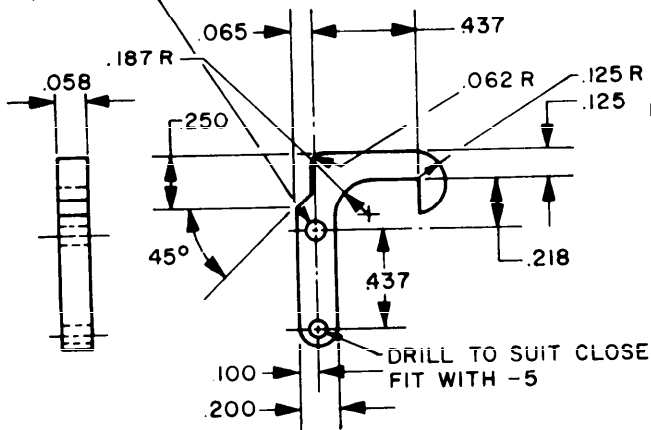


-5 BUTTON CLASP

STEEL, MIL-S-7720 COMPOSITION
 302 OR 316 (1 REQ'D)

NOTE: THE SHANK OF -5 SHALL BE
 PEENED AFTER ASSEMBLY TO -7

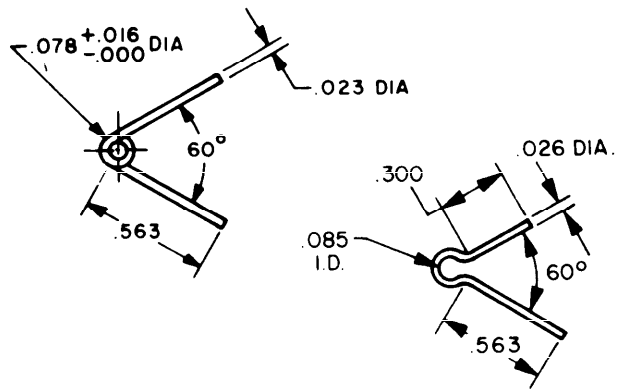
DRILL FOR RUNNING FIT
 OF .093 +.000 DIA. DIECAST PIN
 -0.003
 OR .063 DIA. STEEL PIN



-7 CLASP HOOK

STEEL, MIL-S-5059 COMPOSITION 301,
 302 OR 304, CONDITION 1/2 HARD (1 REQ'D)

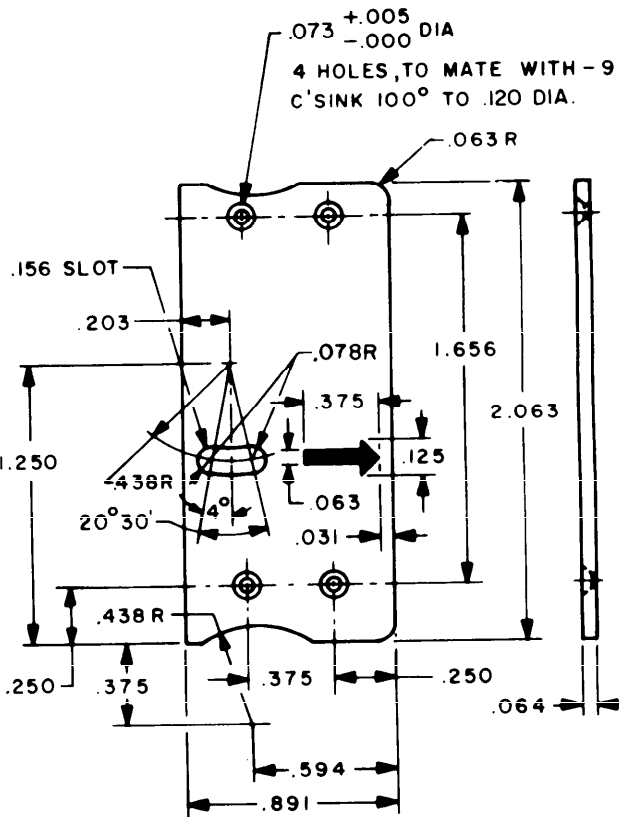
DIMENSIONS IN INCHES



ALTERNATE DESIGN

-6 SPRING CLASP

STEEL, MUSIC WIRE QQ-W-470 (1 REQ'D)



-8 CLASP-COVER PLATE

AL ALLOY QQ-A-250/4 (1 REQ'D)
 ALTERNATELY AL ALLOY QQ-A-591 (COMPOSITION 380)

NOTE: THE DIRECTION ARROW SHALL BE SILK SCREENED
 IN WHITE EPOXY RESIN & BAKED

Figure 7.

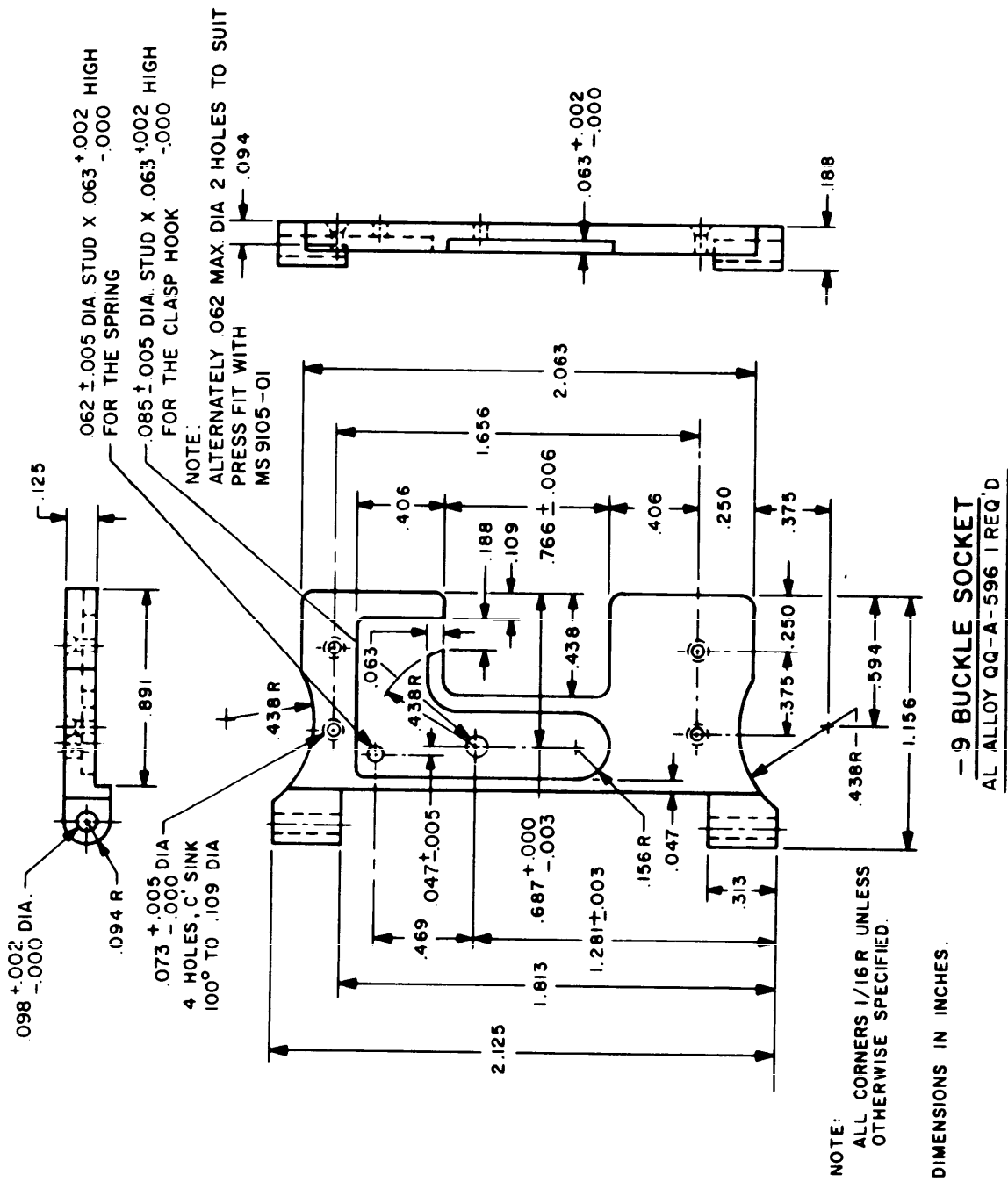


Figure 8.

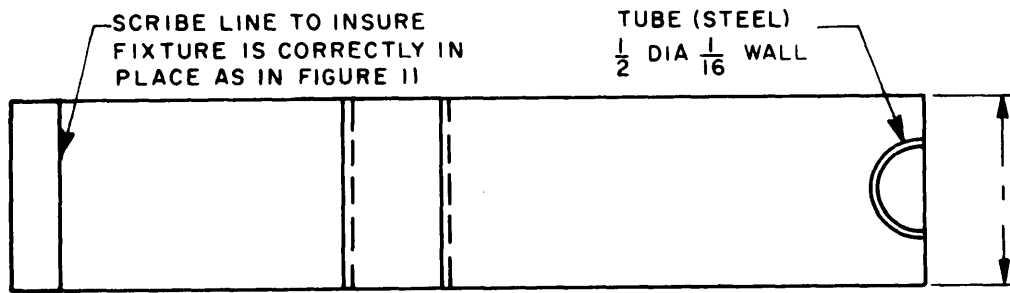
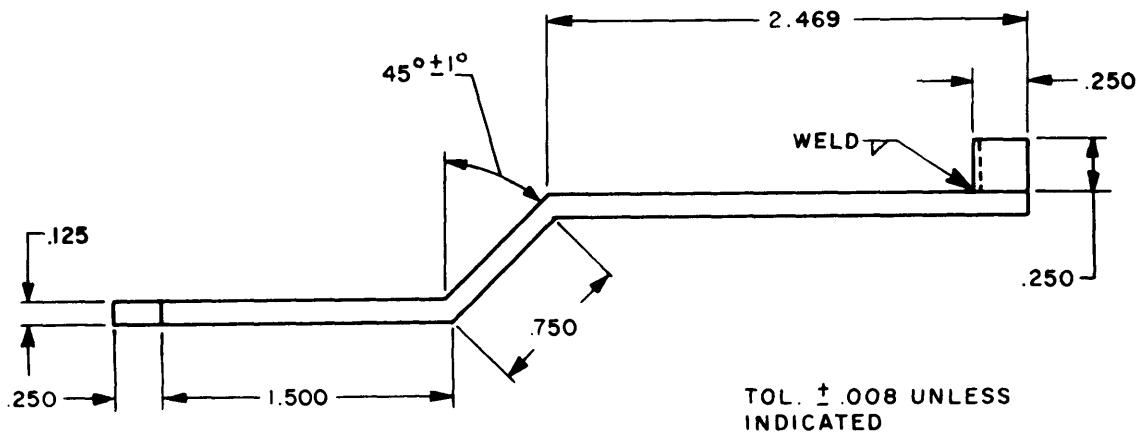


Figure 9. Clip tension fixture

DIMENSIONS IN INCHES

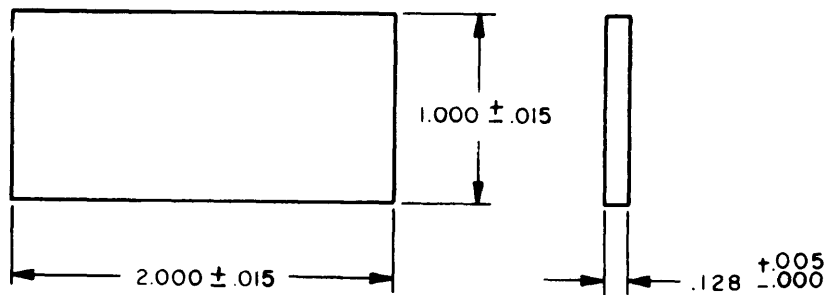


Figure 9. Clip tension spacer.

MIL-C-23157D

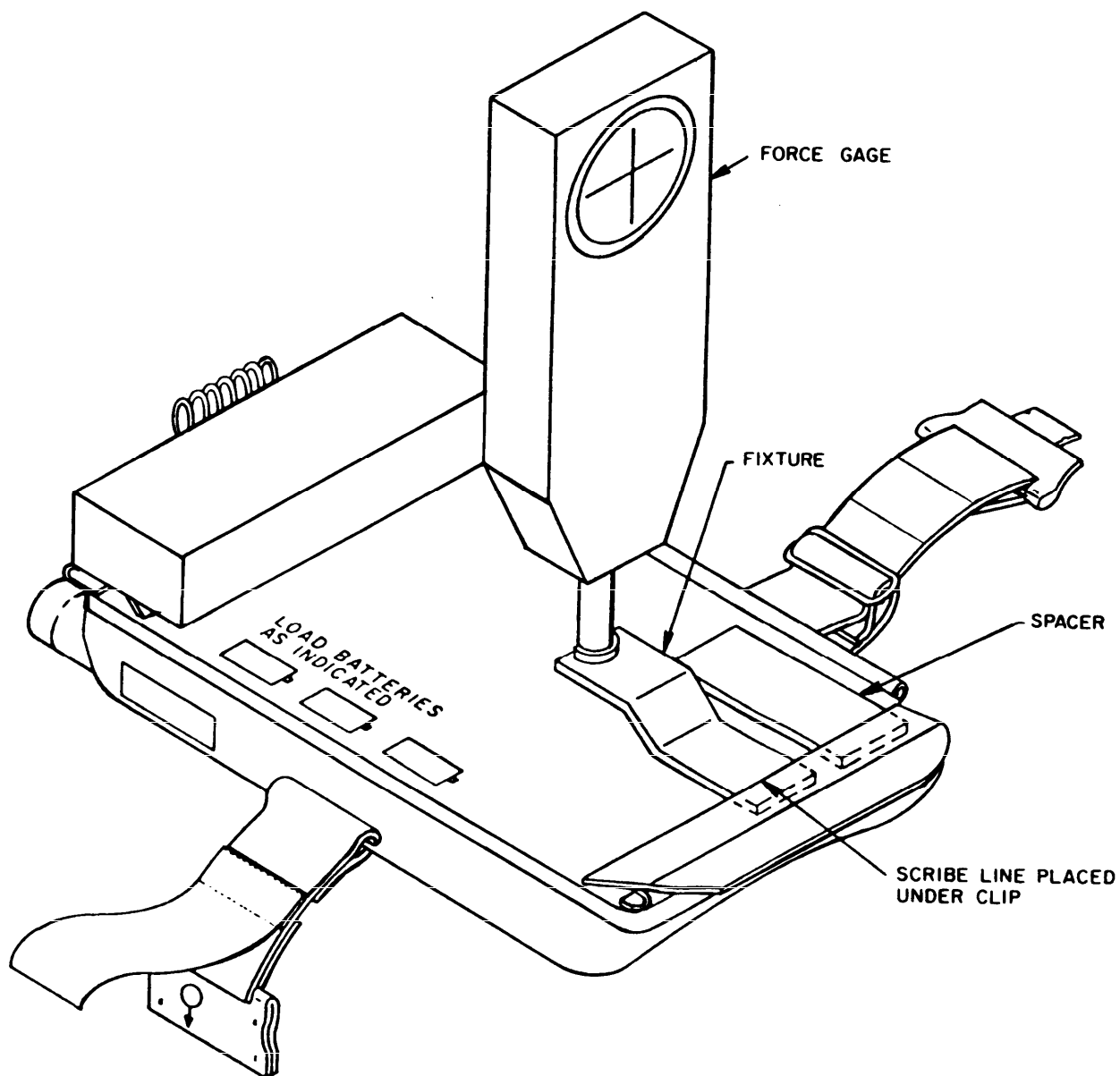


Figure 10. Pilot's clipboard (MXU-163/P) with force gage and spacer in place.

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DOCUMENT IDENTIFIER (Number) AND TITLE	
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	DATE

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1 OCT 76

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