

MIL-K-818D
30 September 1985
SUPERSEDING
MIL-K-818C
8 June 1964

MILITARY SPECIFICATION

KNIFE, POCKET, GENERAL PURPOSE

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

1. SCOPE

1.1 Scope. This document covers one type and size of a corrosion-resisting steel, general purpose knife equipped with a cutting blade, a can opener blade, a leather punch blade, a combination screw driver and bottle cap lifter blade, and a clevis.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

PPP-P-40 - Packaging and Packing of Hand Tools

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to U.S. Army Natick Research and Development Center, Natick, MA 01760-5014, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 5110

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STANDARDS

FEDERAL

- FED-STD-66 - Steel, Chemical Composition and Hardenability
FED-STD-151 - Metal, Test Methods

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-130 - Identification Marking of U.S. Military Property

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

2.2 Order of precedence. In the event of conflict between the text of this document and the references cited herein, the text of this document shall take precedence.

3. REQUIREMENTS

3.1 Standard product. Except for any design modifications and additional requirements specified herein, the pocket knife shall be the manufacturer's current, standard commercial product.

* 3.2 Materials. Unless otherwise specified herein, the knife shall be fabricated from corrosion-resisting steel conforming to the type A.I.S.I. steel numbers, as indicated on figures 1 through 9 and as specified in FED-STD-66. Recycled materials may be used (see 6.4).

3.3 Design and construction. The knife shall be the 4-blade type with a free rotating clevis attached to the screw driver and leather punch end of the knife. Construction of all components and assemblies shall be in accordance with the requirements specified herein. Suitable designs for the knife and components are illustrated in figures 1 through 11 (see 6.3). Unless otherwise specified, dimensional tolerances shall be plus or minus 0.005 inch for decimals. Using the thumb nail, it shall be possible to open any of the blades with the remaining blades open or closed. Nail marks, where required, shall be completely accessible.

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3.3.1 Cutting blade. The cutting blade shall conform to the basic shape and dimensions as designated on figure 1. The blade shall have a spear point and a common nail mark on one side, shall be uniformly ground, shall have common swages on both sides, and shall be sharpened to a uniform and keen edge. The blade shall be heat treated to within 1/4 inch of the tang to a Rockwell "C" hardness ranging from 57 to 61, and to a Rockwell "C" hardness ranging from 45 to 50 for the tang. The cutting blade shall show a fracture grain size not coarser than 8 when compared with Shepherd fracture grain size standards.

3.3.2 Can opener blade. The can opener blade shall conform to the basic shape and dimensions as designated on figure 2. The blade shall be so designed that the cutting action turns the ragged edge of the can down into the can. The blade shall have a common nail mark and the words "CAN OPENER" indented on the side as indicated on figure 2. The blade shall be heat treated to within 1/4 inch of the tang to a Rockwell "C" hardness ranging from 45 to 50, and to a Rockwell "C" hardness ranging from 40 to 45 for the tang. The blade shall show a fracture grain size not coarser than 8 when compared with Shepherd fracture grain size standards.

3.3.3 Leather punch blade. The leather punch blade shall conform to the basic shape and dimensions as designated on figure 3. The blade shall be hollow formed on one side and convex formed on the opposite side. The blade shall be ground and sharpened to a keen cutting edge and point. The blade shall be heat treated to within 1/4 inch of the tang to a Rockwell "C" hardness ranging from 45 to 50, and to a Rockwell "C" hardness ranging from 40 to 45 for the tang. The blade shall show a fracture grain size not coarser than 8 when compared with Shepherd fracture grain size standards.

* 3.3.4 Screw driver and bottle cap lifter blade. The screw driver and bottle cap lifter blade shall conform to the basic shape and dimensions as designated on figure 4. The blade shall have a common nail mark on one side. The blade shall be heat treated to within 1/4 inch of the tang to a Rockwell "C" hardness ranging from 45 to 50, and to a Rockwell "C" hardness ranging from 40 to 45 for the tang. The blade shall show a fracture grain size not coarser than 8 when compared with Shepherd fracture grain size standards.

* 3.3.5 Springs. Each spring shall conform to the basic shape and dimensions as designated on figure 5. The entire spring shall be uniformly heat treated and stress relieved to a Rockwell "C" hardness ranging from 46 to 50. The spring shall show a fracture grain size not coarser than 8 when compared with Shepherd fracture grain size standards.

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3.3.6 Liners and center spacers. Liners and center spacers shall conform to the basic shapes and dimensions as designated in figures 6 and 7.

3.3.7 Handle plates. Handle plates shall conform to the basic shape and dimensions as designated on figure 8. The plates shall have a design on the outer surface similar to the one indicated in figure 8. The surfaces opposite the design indentations shall show no signs of deformation or unevenness. A nail notch shall be on one handle plate only, on the side adjacent to the leather punch blade (pile side).

3.3.8 Clevis. The clevis shall conform to the basic shape and dimensions as designated on figure 9. The ends shall be flattened, with holes to receive the assembly pin centered in the flattened area.

3.3.9 Rivets. The rivets shall conform to figure 10 and shall be fabricated from nickel silver wire having a nickel content of not less than 18 percent. Rivets shall have smooth, polished, rounded heads. Rivets shall be designed and firmly assembled to ensure that components fit tightly and that the blades are held firmly while still permitting easy opening. The rivet used to attach the clevis shall hold the components in place without the clevis attached (friction fits will not be acceptable). The clevis, when attached, shall be held firmly in place and shall rotate freely around its axis.

3.4 Physical characteristics.

3.4.1 Grain size. Fracture grain size specified herein shall be in the "as quenched condition" and shall be determined in accordance with 4.3.1.1.

3.4.2 Hardness. Rockwell hardness values specified herein shall be determined in accordance with 4.3.1.2.

3.5 Performance requirements.

3.5.1 Cutting blade. The cutting blade shall be capable of withstanding the test specified in 4.3.2.1 without showing undue wear such as turning over, nicking, fracturing, or breaking of any part of the cutting edge.

3.5.2 Can opener blade. The can opener blade shall not bend, fracture, break, or show any visible permanent set of the blade when tested as specified in 4.3.2.2. The tops of the cans shall be completely severed with the ragged remaining edge of the can turned down into the can.

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3.5.3 Screw driver and bottle cap lifter blade. The blade shall have a maximum side-play of $5/64$ inch and a maximum end-play of $1/64$ inch. It shall not exhibit a permanent set, fracture, break, or any other deformity that may affect serviceability when tested as specified in 4.3.2.3.

3.5.4 Springs. Springs shall not break, crack, distort, or show a permanent set when tested as specified in 4.3.2.4.1 and 4.3.2.4.3. The screw driver blade spring shall not permit any closure of the screw driver blade when tested as specified in 4.3.2.4.2.

3.6 Finish.

3.6.1 Blades. Before assembly, all blades, tang sides, edges, and ends shall be polished to a mirror finish and then passivated or cleaned with a suitable solvent.

3.6.2 Springs. Each spring shall be uniformly and smoothly ground. Before assembly, each spring shall be polished on the inside edge with no visible cross scratches where the end of each blade tang travels on its respective spring and then passivated or cleaned with a suitable solvent.

3.6.3 Liners and center spacers. Each liner and center spacer shall be uniformly and smoothly ground. Before assembly, the sides adjacent to the blades and the inside edges shall be polished and then passivated or cleaned with a suitable solvent.

3.6.4 Handle plates. Handle plates shall be uniformly ground on the inside surfaces. Before assembly, the inside and outside surfaces shall be polished to the equivalent of a No. 6 finish (Tampico Brush) and then passivated or cleaned with a suitable solvent.

3.6.5 Clevis. Before assembly, the entire surface of the clevis shall be polished to a No. 4 finish or better and then passivated or cleaned with a suitable solvent.

3.6.6 Assembled knives. After assembly, the backs and ends of the knives shall be ground and highly polished so that all mating components are flush where applicable.

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3.7 Marking for identification. The letters "U.S.," in the size and location specified in figure 8, shall be indented on the handle plate adjacent to the can opener and screw driver blades (mark side). The manufacturer's name, trade mark, or trade name and the year of contract shall be indented in characters 1/16 inch high in location shown on figure 9 or in the alternate location shown on figure 1. The markings shall be in accordance with MIL-STD-130.

3.8 Workmanship. The knife shall be clean, well made, and free from any defect that will affect appearance or serviceability. Holes for rivets or assembly pins shall be smooth and free from all burrs. When the blades are closed, there shall be no sharp edges, projections, corners, or burrs that may cause personal injury.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own facilities or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the document where such inspections are deemed necessary to ensure that supplies and services conform to prescribed requirements.

4.2 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.2.1 Inspection of components and materials. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase documents.

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4.2.2 Intermediate testing. Cutting blades, can opener blades, leather punch blades, screw driver and bottle cap lifter blades, and springs shall be tested for grain size and hardness prior to assembly. The sample unit shall be one of each type blade or spring of the inspection lot. Five sample units shall be tested as applicable for each type blade or spring. Failure of any sample to pass specified requirements shall be cause for rejecting the lot represented by the sample.

4.2.2.1 Grain size. The sample units shall be tested in accordance with 4.3.1.1 for compliance with fracture grain size requirements. The inspection lot shall be all the cutting blades, can opener blades, leather punch blades, screw driver and cap lifter blades, or springs in the "as quenched condition" (untempered), made and treated as a batch or under the same process or control.

4.2.2.2 Hardness. The sample units shall be tested in accordance with 4.3.1.2 for compliance with Rockwell hardness requirements. The inspection lot shall be all the cutting blades, can opener blades, leather punch blades, screw driver and bottle cap lifter blades, or springs heat treated as a batch or under the same process or control.

* 4.2.3 In-process inspection. In-process inspection shall be performed to ensure compliance with the requirements for passivation or cleaning, as applicable, specified in 3.6.1, 3.6.2, 3.6.3, 3.6.4, and 3.6.5.

4.2.4 End item inspection. The sample unit for this inspection shall be one completely assembled and finished pocket knife. The inspection lot shall be all pocket knives offered for delivery at one time. For sampling purposes, the lot size shall be expressed as the number of knives in the inspection lot.

* 4.2.4.1 Visual examination. Visual examination of the knives shall be in accordance with the classification of defects set forth in table I. The inspection level shall be II and the acceptable quality level (AQL) shall be a total of 6.5 defects per hundred units, with a maximum of 2.5 major defects per hundred units.

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TABLE I. Examination for defects

Examine	Defect	Classification	
		<u>Major</u>	<u>Minor</u>
Finish	Any component not finished as specified	101	
	Any component surface rough, misaligned, or containing cracks, tears, nicks, burrs, dents, pit marks, or otherwise defective	102	
	Any component surface containing embedded foreign material	103	
	Any area of rust or corrosion	104	
	Any component surface not clean		201
Construction and Workmanship: General	Any component not of specific design	105	
	Component missing	106	
	Burrs, sharp corners, or projections that may cause injury	107	
	Nail marks not accessible for opening the blades	108	
	Any component bent, misshapen, deformed, distorted, or otherwise defective	109	
	Blade requires undue force to open or close		202
	Mating parts not flush; component part projecting beyond or recessed below mating part		203
Cutting Blade	Blade does not have common swage on both sides	110	
	Cutting edge not ground uniformly and sharpened to a keen edge	111	
	Edge does not extend full length of blade as shown on drawing	112	
	Cutting edge broken in any place or contains nicks, burrs, etc.	113	

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TABLE I. Examination for defects - Continued

Examine	Defect	Classification	
		Major	Minor
Can Opener Blade	Words "CAN OPENER" not indented as specified		204
Leather Punch Blade	Not hollow formed on one side and convex on the other side	114	
	Not ground and sharpened to a keen cutting edge and point	115	
	Cutting edge does not run full length of blade	116	
Handle Plates and Clevis	Do not have rounded edges		205
	Design on outer handles not as specified		206
	Clevis does not rotate freely around its rivet		207
	Not free of nicks, slivers, or burrs		208
	Does not hold knife together securely when clevis is removed	117	
Rivets	Heads not rounded, not polished, and free of burrs, slivers, or nicks		209
	Head does not hold clevis securely		210
Identification Marking	Missing, incomplete, not legible, not specified type or size, or not in proper location		211

4.2.4.2 Dimensional examination. Examination shall be made of the end item for compliance with specified dimensions. Any dimension not within specified tolerances shall constitute a defect. The inspection level shall be S-2 and the AQL shall be 4.0 defects per hundred units.

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4.2.4.3 End item testing. Each sample unit shall be tested in the specified sequence in accordance with 4.3.2. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

* 4.2.5 Packaging inspection. Preservation, packing, and marking shall be inspected in accordance with the quality assurance provisions of PPP-P-40.

4.3 Testing.

4.3.1 Intermediate testing (components).

4.3.1.1 Grain size. Samples selected in accordance with 4.2.2.1 shall be tested for compliance with fracture grain size requirements by notching each sample at the middle of its length, fracturing it by impact, and then determining the fracture grain size of the samples by comparison with the Shepherd fracture grain size standards as reproduced in Supplement "A" of FED-STD-151. Grain sizes not within the specified limits shall be considered noncompliance.

4.3.1.2 Hardness. Samples selected in accordance with 4.2.2.2 shall be tested for compliance with Rockwell hardness requirements as specified in Test Method 243.1 of FED-STD-151. Blade hardness shall be determined at a minimum of 3 locations: tang, center, and point. Spring hardness shall be determined at 3 locations: center and each end. Any hardness reading not within specified limits shall be considered noncompliance.

4.3.2 End item testing.

4.3.2.1 Cutting blade. The cutting blade of each sample unit selected in accordance with 4.2.4.3 shall be tested for compliance with 3.5.1 by cutting at least ten (10) shavings, not less than 1/16 inch thick by 1/4 inch wide by at least 2 inches long, from a strip of oak or other hardwood. In cutting the shavings, the blade shall enter the wood at an angle of not less than 30 degrees. Any indication of undue wear of the blade such as turning over, nicking, fracturing, or breaking of any part of the cutting edge shall be considered noncompliance.

4.3.2.2 Can opener blade. The can opener blade of each sample unit selected in accordance with 4.2.4.3 shall be tested for compliance with 3.5.2 by severing the tops of 3 circular, 3 elliptical, and 3 rectangular cans, each having a circumference of at least 20 inches. Can opener blades unable to completely sever the tops of the cans with the ragged remaining edge

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turned down into the can shall have failed the test. Any bending, fracturing, breaking, or visible permanent set of the blade shall also be considered noncompliance.

4.3.2.3 Screw driver and bottle cap lifter blade. The screw driver and bottle cap lifter blade of each sample unit selected in accordance with 4.2.4.3 shall be tested as follows for compliance with 3.5.3. With the screw driver end of the blade secured in a slot (depth not more than twice the thickness of the blade), apply a force of 20 inch-pounds to the handle of the knife in both a right and left direction. Any permanent set, fracture, break, or other deformity that may affect serviceability, or any side-play or end-play not within specified tolerances shall be considered noncompliance.

4.3.2.4 Spring tests.

4.3.2.4.1 Deflection test. Each sample unit selected in accordance with 4.2.4.3 shall be tested as follows for compliance with 3.5.4. The knife, with all blades open, shall be placed in a fixture and the end of the screw driver blade spring shall be deflected at least 0.120 inch twenty-five (25) times. The same procedure shall be followed for the end of the cutting blade spring. Any spring that breaks, cracks, distorts, or shows signs of a permanent set shall have failed the test.

* 4.3.2.4.2 Closing action test. Each sample unit selected in accordance with 4.2.4.3 shall be tested as follows for compliance with 3.5.4. The knife, with the screw driver blade in the full open position, shall be placed, back up, in a horizontal plane and a 4-pound weight shall be suspended from the blade 1 inch from the screw driver blade tip. Any blade that partially or fully closes shall have failed the test.

4.3.2.4.3 Durability test. Each sample unit selected in accordance with 4.2.4.3 shall be tested as follows for compliance with 3.5.4. The knife shall be placed in a fixture and the cutting blade shall be automatically opened and closed at a rate of between 30 and 35 cycles per minute for a total of at least 3,000 cycles. Any spring that cracks, breaks, distorts, or shows signs of a permanent set shall have failed the test.

* 5. PACKAGING

5.1 Preservation, packing, and marking. Preservation, packing, and marking for level A, B, or C shall be in accordance with the applicable requirements of PPP-P-40 (see 6.2).

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6. NOTES

6.1 Intended use. The knife is intended for use by military personnel for general purposes as required for cutting, leather punching, screw driving, can opening, and bottle cap lifting.

* 6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Selection of applicable levels of preservation and packing (see 5.1).

6.3 Illustrations. The illustrations, figures 1 through 11, are not intended to preclude the acquisition of general purpose pocket knives that otherwise meet the requirements of this document.

* 6.4 Recycled material. The contractor is encouraged to use recycled material when practical, provided that it meets the requirements of this document (see 3.2).

6.5 Changes from previous issue. The margins of this document have been marked with an asterisk (*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content as written irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - GL
Navy - SH
Air Force - 99

Preparing activity:

Army - GL
Project No. 5110-0302

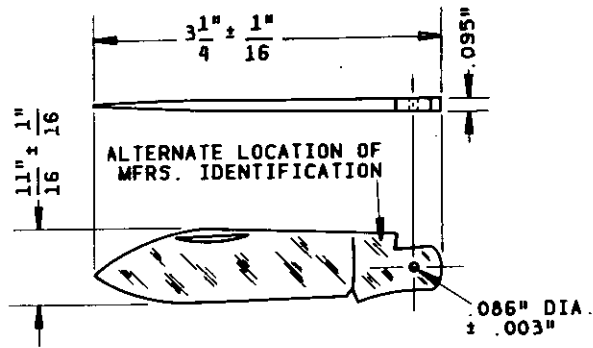
Review activities:

Air Force - 84
DLA - GS

User activity:

Navy - MC

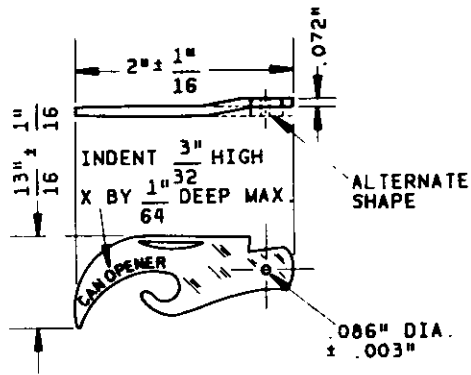
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BLADE, CUTTING

STEEL, CORROSION RESISTING, TYPE A.I.S.I.,
440A, 440B, OR 440C 1-REQ'D.

FIGURE 1

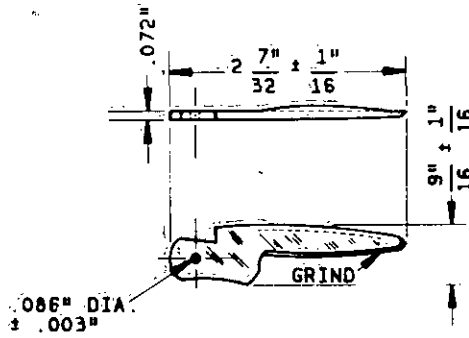


BLADE, CAN OPENER

STEEL, CORROSION RESISTING, TYPE A.I.S.I.,
420 OR 440A 1-REQ'D.

FIGURE 2

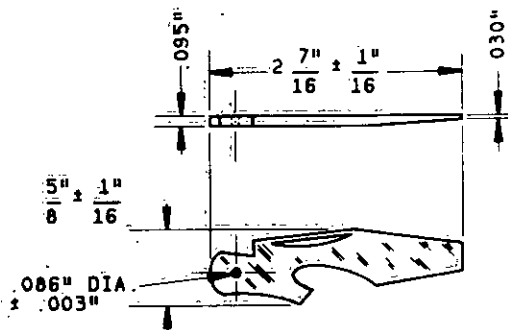
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BLADE, LEATHER PUNCH

STEEL, CORROSION RESISTING, TYPE A.I.S.I. 420
OR 440A 1-REQ'D.

FIGURE 3

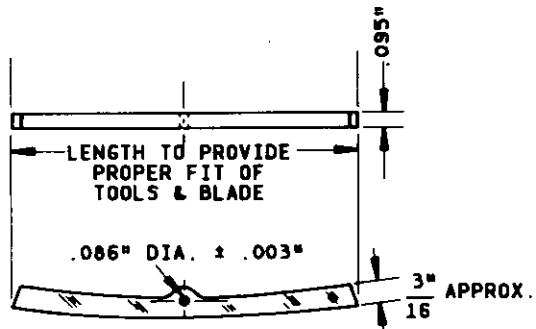


BLADE, SCREW DRIVER
& BOTTLE CAP LIFTER

STEEL, CORROSION RESISTING, TYPE A.I.S.I.
420 OR 440A 1-REQ'D.

FIGURE 4

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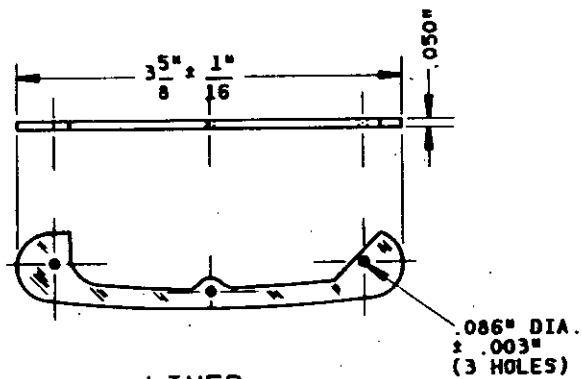


BOTTOM CURVE SAME AS FOR HANDLE PLATE, LINER, ETC.

SPRING

STEEL, CORROSION RESISTING, TYPE A.I.S.I. 420
2-REQ'D.

FIGURE 5

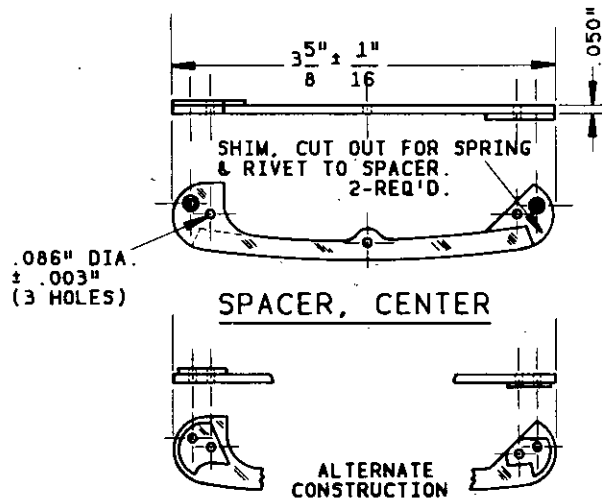


LINER

STEEL, CORROSION RESISTING, TYPE A.I.S.I. 430
2-REQ'D.

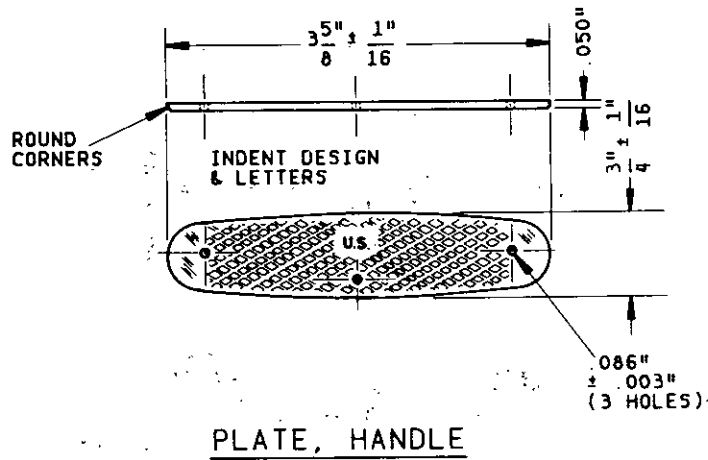
FIGURE 6

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STEEL, CORROSION RESISTING, TYPE A.I.S.I. 430
1-REQ'D.

FIGURE 7

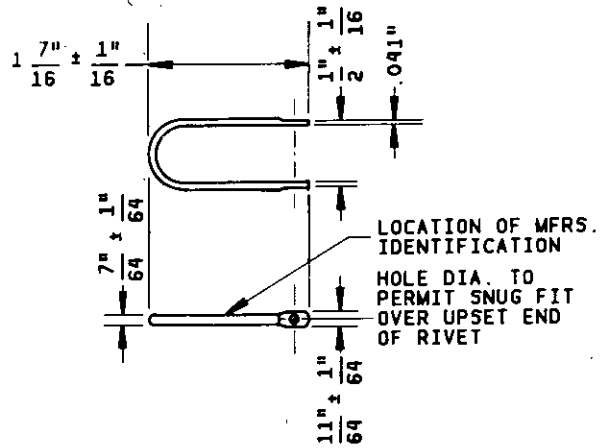


STEEL, CORROSION RESISTING, TYPE A.I.S.I. 430
2-REQ'D.

NOTE: THE NAIL NOTCH AND "U.S." MARKING ARE SHOWN TO INDICATE THESE REQUIREMENTS. THE HANDLE PLATE ON THE "PILE SIDE" SHALL NOT BE MARKED BUT SHALL INCORPORATE THE NAIL NOTCH. THE HANDLE PLATE ON THE "MARK SIDE" SHALL NOT BE NOTCHED BUT SHALL BE MARKED.

FIGURE 8

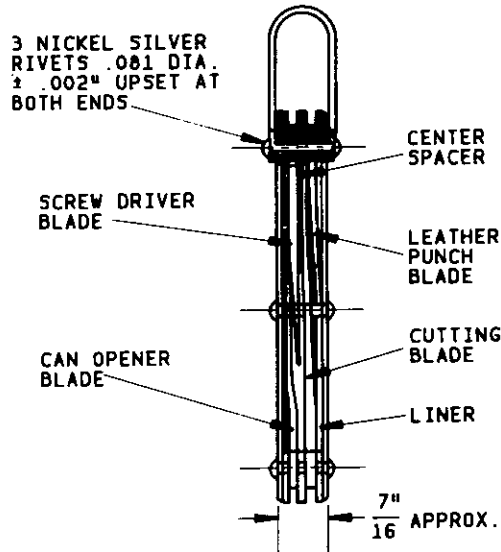
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CLEVIS

STEEL, CORROSION RESISTING, TYPE A.I.S.I. 430
1-REQ'D.

FIGURE 9

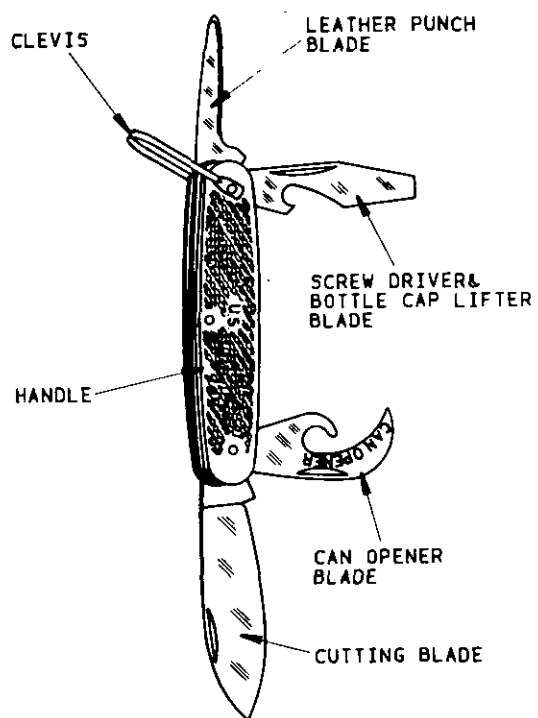


TOP VIEW

KNIFE ASSEMBLY, CLOSED

FIGURE 10

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KNIFE ASSEMBLY, OPEN

FIGURE 11

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-K-818D		2. DOCUMENT TITLE Knife, Pocket, General-Purpose	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION <i>(Mark one)</i>	
b. ADDRESS <i>(Street, City, State, ZIP Code)</i>		<input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER <i>(Specify):</i> _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER <i>(Last, First, MI) - Optional</i>		b. WORK TELEPHONE NUMBER <i>(Include Area Code) - Optional</i>	
c. MAILING ADDRESS <i>(Street, City, State, ZIP Code) - Optional</i>		8. DATE OF SUBMISSION <i>(YYMMDD)</i>	