

MIL-B-21902A(Wep)

17 April 1963

Superseding

MIL-H-21902(Aer)

19 December 1958

MILITARY SPECIFICATION

BOYD HELICOPTER RESCUE SEAT

This specification has been approved by the Bureau of Naval Weapons, Department of the Navy.

1. SCOPE

1.1 Scope - This specification covers one type of floatable rescue seat.

2. APPLICABLE DOCUMENTS

2.1 The following specifications, standards, and drawing form a part of this specification. Unless otherwise specified, the issue in effect on date of invitation for bids shall apply.

SPECIFICATIONS

Federal

NN-P-515	Plywood, Container Grade
QQ-A-327	Aluminum Alloy Plate and Sheet, 6061
QQ-L-171	Lead; Pig
TT-C-490	Cleaning Methods and Pretreatment of Ferrous Surfaces for Organic Coatings
UU-P-268	Paper, Kraft, Untreated, Wrapping
WW-T-789	Tube, Aluminum Alloy, Round, Square, Rectangular, and Other Shapes, Drawn, Seamless, 6061 and 6062
PPP-B-591	Boxes, Fiberboard, Wood-Cleated

FSC 4220

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PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-636	Box, Fiberboard
PPP-B-665	Boxes, Paperboard, Metal Stayed (Including Stay Material)
PPP-B-676	Boxes, Set-Up, Paperboard

Military

MIL-T-5021	Tests, Aircraft and Missile Welding Operators, Qualifications
MIL-H-6088	Heat Treatment of Aluminum Alloys, Process for (Aircraft Applications)
MIL-I-6866	Inspection, Penetrant Method of
MIL-P-7962	Primer Coating; Cellulose - Nitrate Modified Alkyd Type, Corrosion- Inhibiting, Fast-Drying (For Spray Application Over Pretreatment Coating)
MIL-C-8514	Coating Compound, Metal Pretreatment, Resin-Acid
MIL-W-8604	Welding of Aluminum Alloys, Process for
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-B-10377	Box, Wood, Cleated, Veneer, Paper- Overlaid
MIL-L-19537	Lacquer; Acrylic - Nitrocellulose Gloss (for Aircraft Use)
MIL-P-21929	Plastic Material, Cellular Polyurethane, Rigid, Foam-In-Place

STANDARDSFederal

Fed. Std. No. 595	Colors
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Military

MIL-STD-19	Welding Symbols
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-410	Certification of Penetrant Inspection Personnel

DRAWING

Air Crew Equipment Laboratory

5-952 Helicopter Rescue Hook

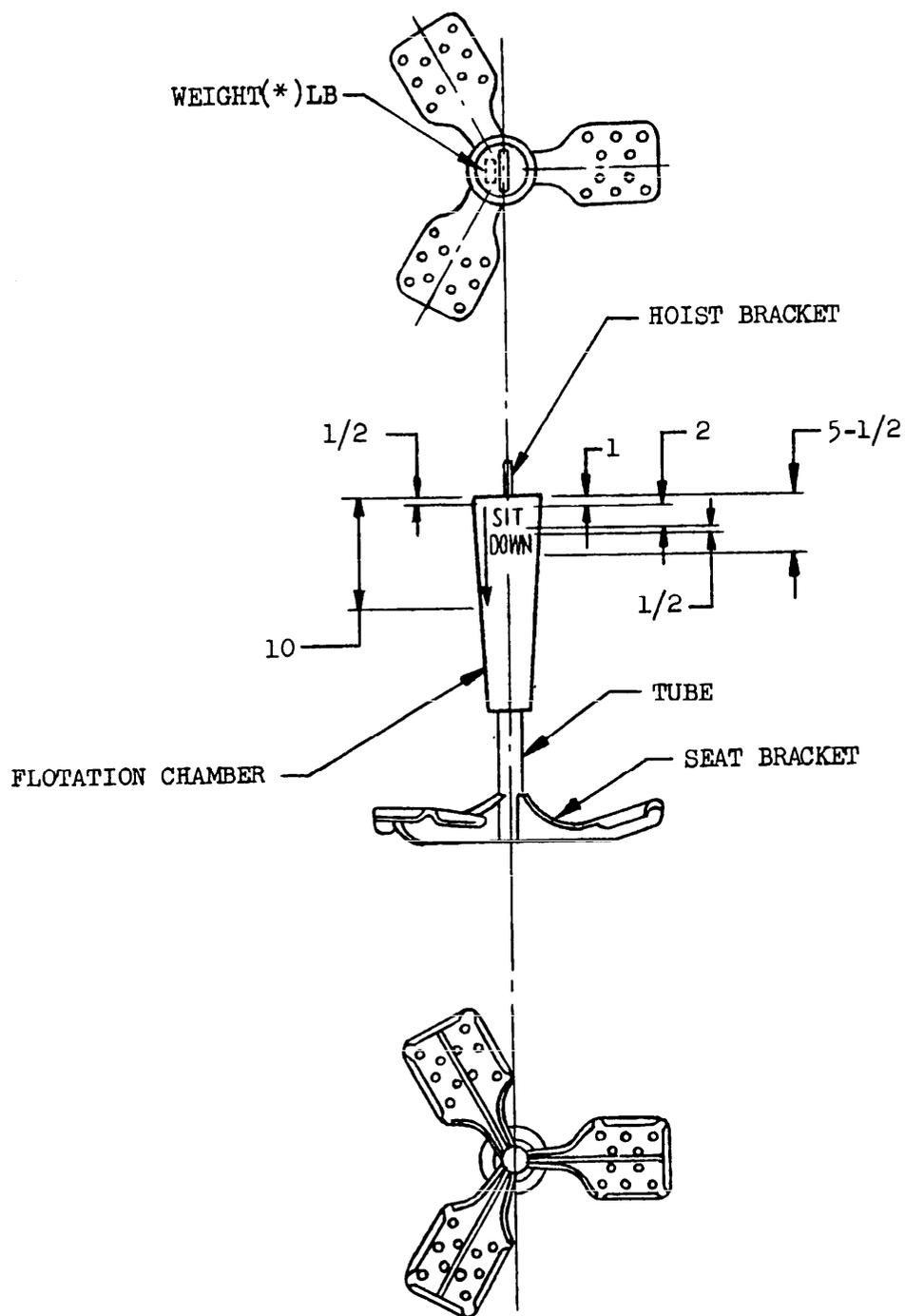
(When requesting any of the applicable documents, refer to both title and number. All requests should be made via the cognizant Government quality control representative. Copies of this specification and other unclassified specifications and drawings required by contractors in connection with specific procurement functions should be obtained upon application to the Commanding Officer, Naval Supply Depot (Code DOX), 5801 Tabor Avenue, Philadelphia 20, Pennsylvania. All other documents should be obtained from the procuring activity or as directed by the Contracting Officer.)

3. REQUIREMENTS

3.1 Material - Materials shall conform to applicable specifications as specified herein. Materials for which there are no applicable specifications, or which are not specifically described herein, shall be of the best quality and entirely suitable for the purpose intended.

3.2 Design and construction - The helicopter rescue seat shall be designed to meet all the requirements and tests specified herein. Design dimensions and constructions shall be in accordance with Figures 1 to 5 inclusive. The components shall be welded by either the arc or gas welding process in accordance with Specification MIL-W-8604. Welding shall be continuous along the joints. Unless otherwise specified, no intermittent welds shall be permitted. Welding shall be performed only by welding operators who have met the requirements of Specification MIL-T-5021. Only aluminum welding rods designated as A-356 composition shall be used. Prior to the first heat treating, all welding shall be completed with the exception of welding -5 chamber top and -6 chamber bottom to the -4 flotation chamber. The -4 flotation chamber shall be welded along the side making it a conical chamber open at both ends. After the first heat treatment all items shall be anodized, heat treated, assembled, cleaned, and painted. Prior to sealing the flotation chamber, the interior of the chamber shall be filled with plastic material conforming to Specification MIL-P-21929.

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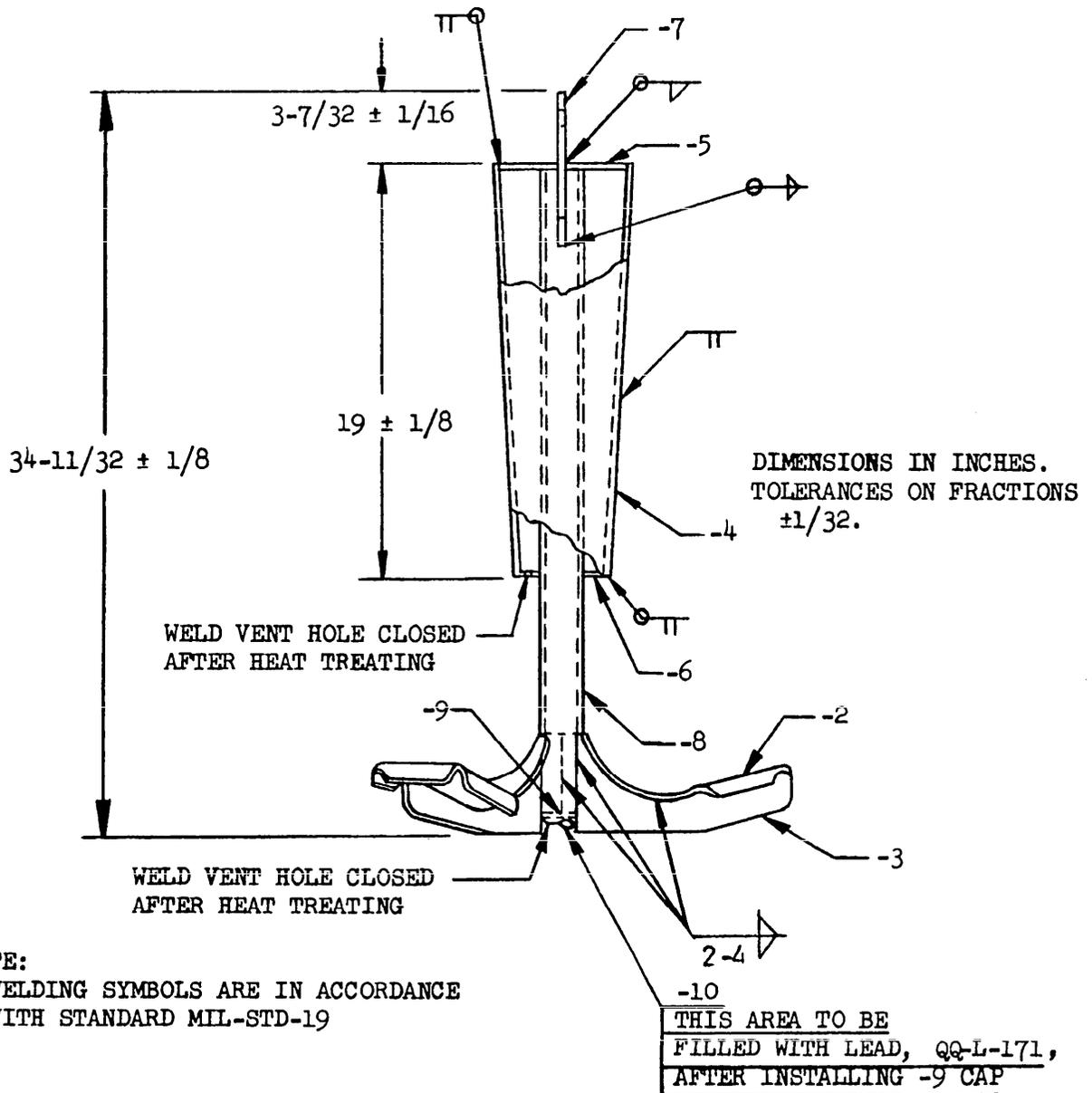


DIMENSIONS IN INCHES. TOLERANCE ON FRACTIONS $\pm 1/32$.

* TO BE ADDED BY THE MANUFACTURER

FIGURE 1. RESCUE SEAT ASSEMBLY

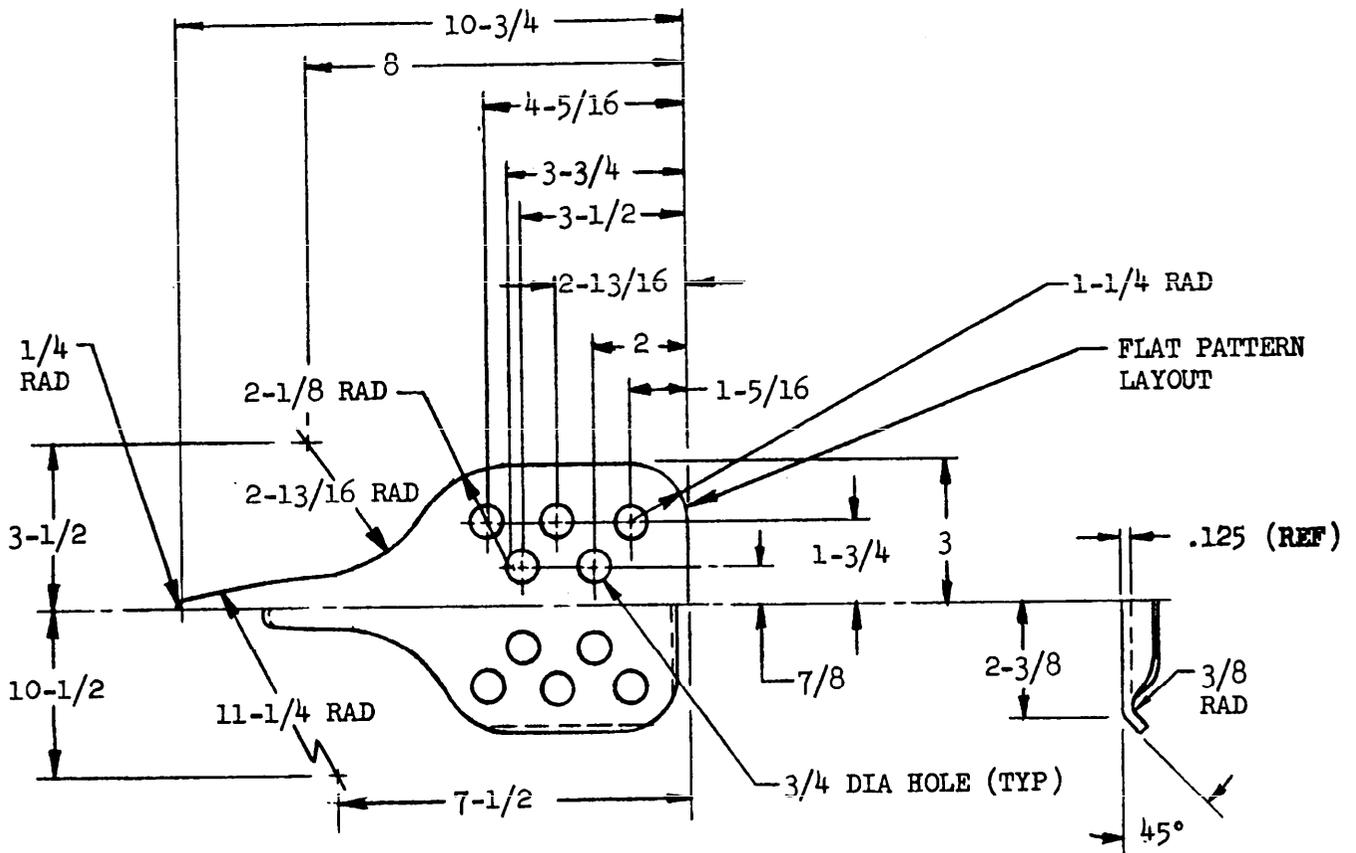
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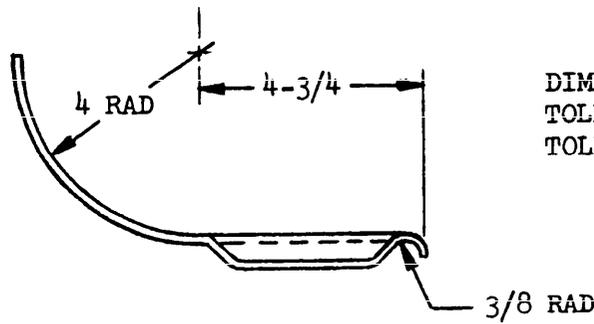
ITEM NO.	DESCRIPTION	STOCK SIZE
-1	Assembly	
-2	Seat	.125 x 6 x 11
-3	Seat Bracket	.250 x 4-1/2 x 10-3/4
-4	Flotation Chamber-Side	.063 x 19 x 19
-5	Flotation Chamber-Top	.125 x 6 x 6
-6	Flotation Chamber-Bottom	.125 x 4 x 4
-7	Hoist Bracket	.250 x 3-1/4 x 7-3/8
-8	Tube	2 DIA x .120 WALL x 30-7/8
-9	Cap	.125 x 1-3/4 x 1-3/4
-10	Weight	One Pound

FIGURE 2. -1 SEAT ASSEMBLY

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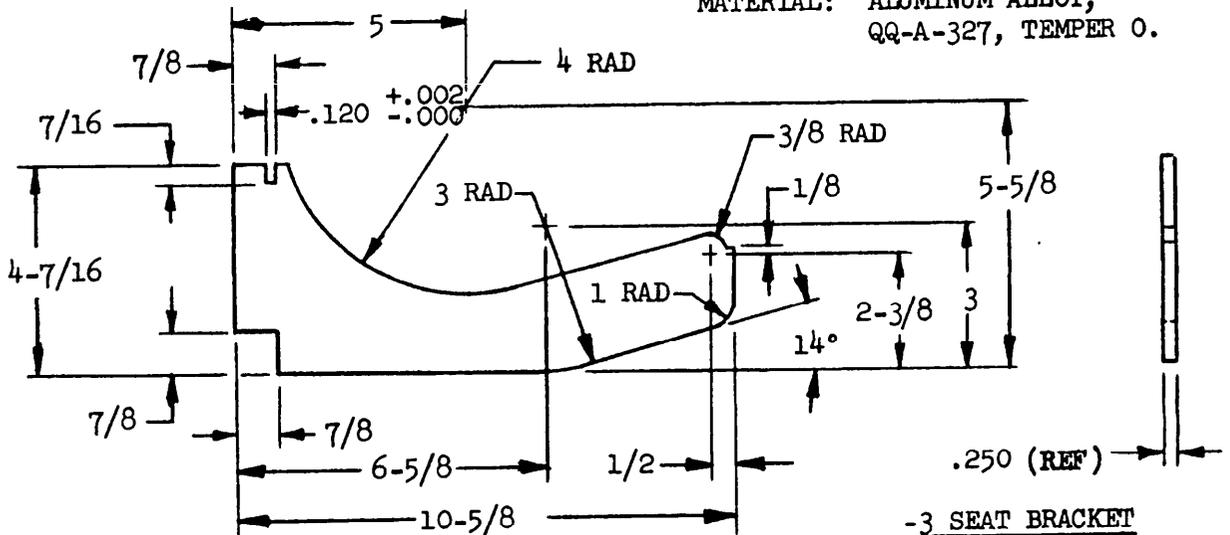


DIMENSIONS IN INCHES.
TOLERANCE ON FRACTIONS $\pm 1/32$.
TOLERANCE ON ANGLES $\pm 2^\circ$.



-2 SEAT

MATERIAL: ALUMINUM ALLOY,
QQ-A-327, TEMPER 0.

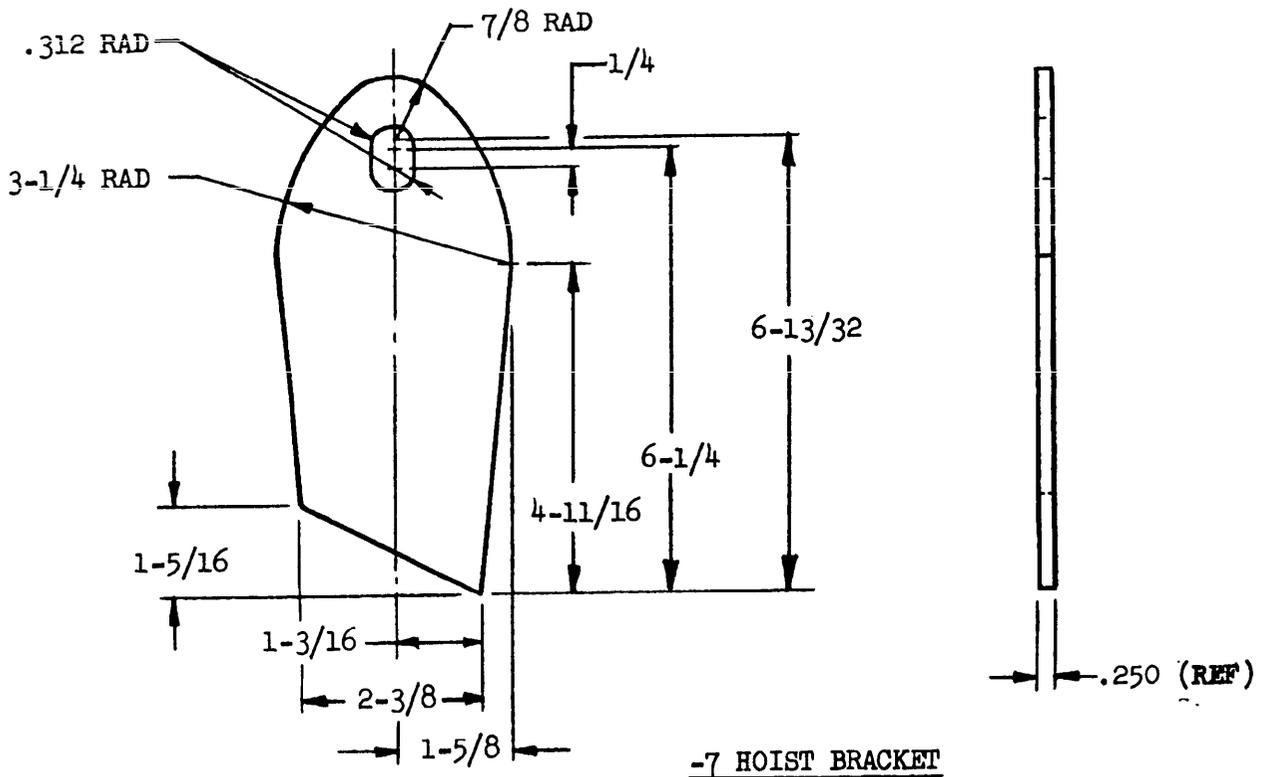
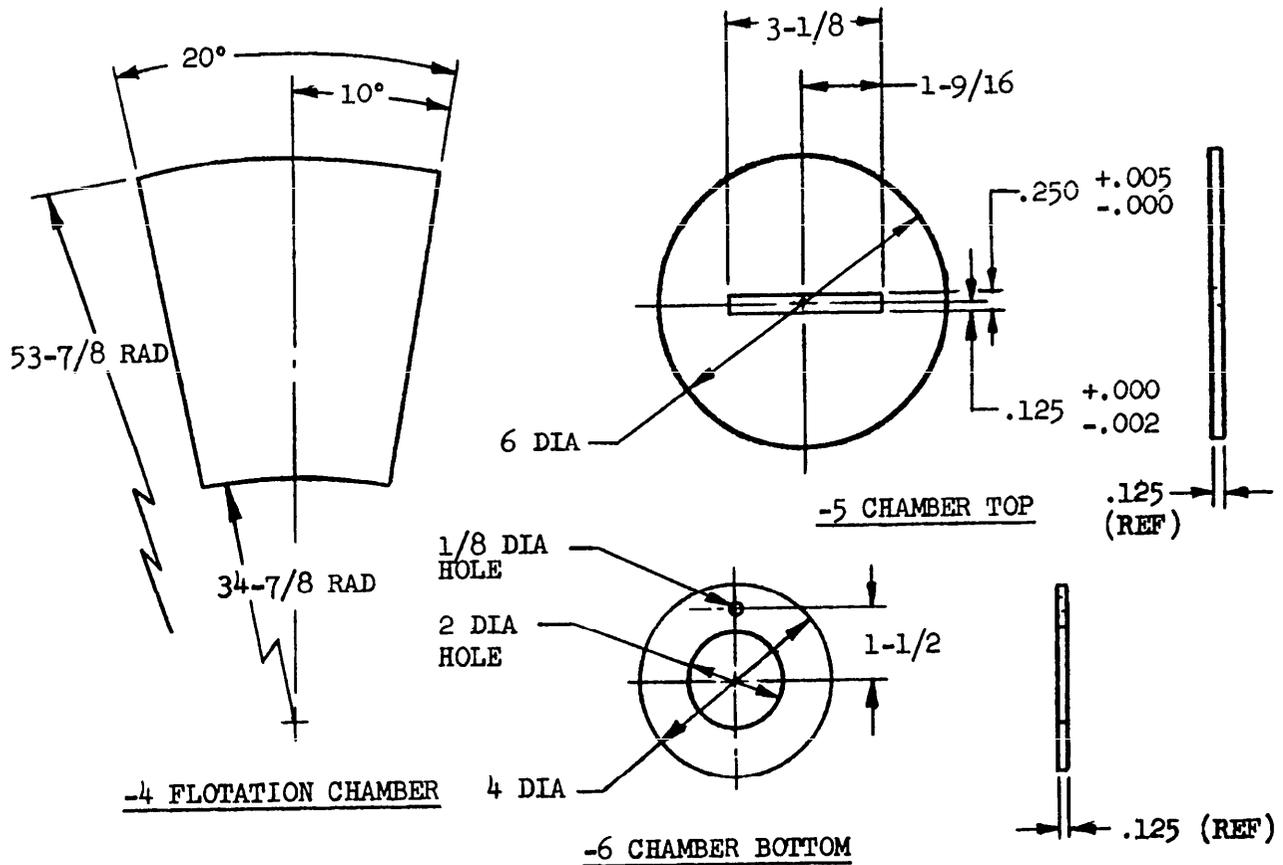


-3 SEAT BRACKET

FIGURE 2. SEAT DETAILS

MATERIAL: ALUMINUM ALLOY.

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MATERIAL: ALUMINUM ALLOY, QQ-A-327, TEMPER O.
 DIMENSIONS IN INCHES. TOLERANCES ON FRACTIONS ±1/32. TOLERANCES ON ANGLES ±2°.

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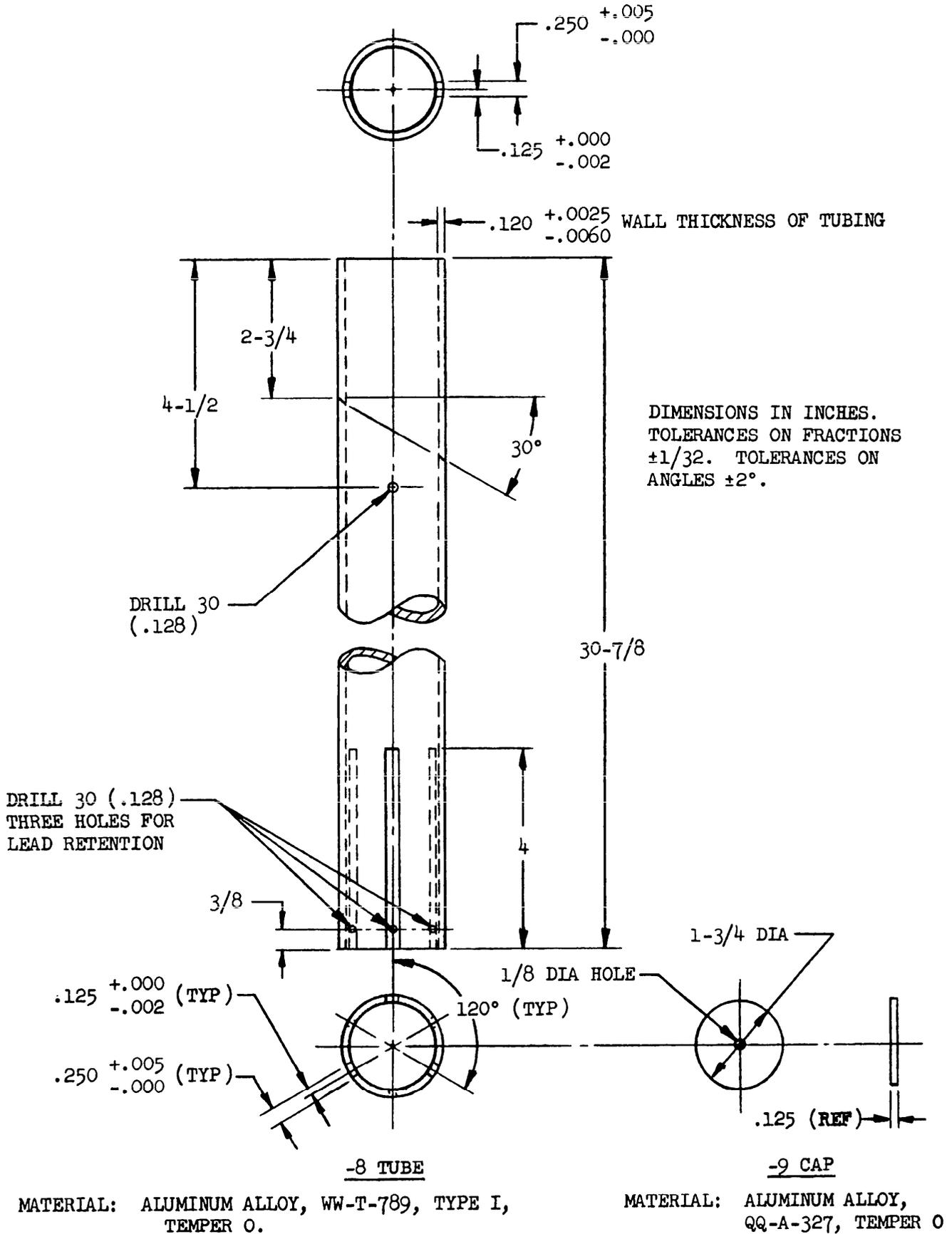


FIGURE 5. TUBE DETAILS

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3.3 Finish -

3.3.1 Heat treatment - All items shall be heat treated in accordance with Specification MIL-H-6088.

3.3.2 Anodizing - All items shall be anodized in accordance with Specification MIL-A-8625.

3.3.3 Cleaning - The rescue seat shall be cleaned in accordance with Specification TT-C-490 prior to painting.

3.3.4 Painting - Apply one coat of wash primer, Specification MIL-P-8514 and one coat of lacquer primer, Specification MIL-P-7962 to the surface of the rescue seat. The side and top of the flotation chamber and the hoist bracket shall receive two coats of lacquer, acrylic-nitrocellulose, gloss, Color No. 12197 of Fed. Std. No. 595 and the remainder of the seat shall receive two coats of lacquer, acrylic-nitrocellulose, gloss, Color No. 13655 of Fed. Std. No. 595, conforming to Specification MIL-L-19537. On the upper portion of the flotation chamber, in two places, stencil in letters 2 inches high "SIT DOWN", with one coat of lacquer, Color No. 17038 of Fed. Std. No. 595, conforming to Specification MIL-L-19537. (See Figure 1.) On the flotation chamber top (-5) stencil, in letters 1 inch high, "WEIGHT" followed with a figure representing the weight to the nearest pound, which in turn is followed by "LB", with one coat of lacquer, Color No. 17038 of Fed. Std. No. 595, conforming to Specification MIL-L-19537. (See Figure 1.)

3.4 Performance requirements - The seat shall satisfactorily meet the following performance requirements when tested as specified in Section 4.

- (a) Strength
- (b) Leakage
- (c) Floatability

3.5 Workmanship - The rescue seat shall be uniform in quality and shall be free from irregularities or defects which could adversely affect performance, reliability, or durability. Because of the emergency use of this equipment, the importance of providing a product of uniform excellent quality cannot be over emphasized.

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 where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.2 Classification of tests - The inspection and testing of the rescue seat shall be classified as follows:

- (a) Quality conformance inspection - Quality conformance inspection is the inspection performed on rescue seats manufactured and submitted for acceptance under contract.

4.3 Quality conformance inspection - The quality conformance inspection of the rescue seat shall consist of Visual inspection (4.3.2) and Sampling inspection (4.3.4) and Individual tests (4.3.5).

4.3.1 Inspection lot - An inspection lot shall consist of all rescue seats produced under essentially the same manufacturing conditions. The unit of inspection shall be one rescue seat.

4.3.2 Visual inspection - Visual examination shall consist of examination of each rescue seat for conformance to the classification of defects (Table I), with an AQL of 1.5 defects per 100 units for major defects and 15.0 defects per 100 units for minor defects.

TABLE I

Classification of Defects

DEFECTS	MAJOR	MINOR
Dimensions not within specified tolerances	X	
Any components missing, malformed, fractured or otherwise damaged	X	
Any break in continuous weld	X	
Any component loose or otherwise not securely attached	X	
Incorrect assembling or improper positioning of components	X	
Sharp edges or projections	X	
Material imperfections		X
Color not as specified		X
Surface unclean, nicked, or other flaws		X

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4.3.3 Examination of preparation for delivery - The lot size shall be expressed in units of one fully prepared shipping container containing one complete rescue seat fully prepared for delivery from essentially the same materials and components and offered for delivery at one time. The sample unit shall be one fully prepared shipping container with the exception that it need not be sealed. The sample size for examination shall be determined in accordance with Standard MIL-STD-105, Inspection Level L-4, with a total AQL of 4.0 percent defective.

4.3.3.1 Classification of defects - Each of the fully prepared shipping containers selected as a sample unit from the lot submitted shall be visually examined to determine that the packaging, packing, and marking conform to this specification. The classification of defects, Table II, shall be used to classify the defects found.

TABLE II

Classification of Defects for Preparation for Delivery

EXAMINE	DEFECT
Markings, Exterior and Interior	Omitted; incorrect, illegible, of improper size, location, sequence or method of application.
Materials	Any component missing; damaged, affecting serviceability.
Workmanship	Inadequate application of components such as incomplete closure of case liners, container flaps, loose strapping, inadequate stapling. Bulging or distortion of containers.
Weight or Content, Exterior and Interior	Number of intermediate packages is more or less than required; gross/net weight exceeds requirements.

4.3.4 Sampling inspection - Sampling inspection shall consist of the following tests on sampled rescue seats:

- (a) Strength
- (b) Leakage
- (c) Floatability

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4.3.5 Individual tests - All welds in each helicopter rescue seat shall be subject to penetrant inspection. Any evidence of cracks or sharp discontinuities will be cause for rejection. Random indications less than 1/16 inch in length will be permitted providing not more than two indications appear in any linear inch of weld. Rejected welds may be repaired by grinding out defects, until no indications show by penetrant inspection, and rewelding. Rewelded and adjacent areas shall be subjected to penetrant inspection. Penetrant inspection shall be conducted in accordance with MIL-I-6866 and personnel involved shall be certified in accordance with MIL-STD-410.

4.3.6 Sampling for examinations and tests at a commercial laboratory - Upon completion of the tests and examinations of this specification, a random sample shall be selected from each inspection lot in accordance with Standard MIL-STD-105, Inspection Level L-6. The acceptance number shall be zero for each test and examination, rejection number 1, except that the acceptable quality level for the dimensional check shall be a total of 40.0 defects per hundred units. The sample size shall be based only on the applicable size code letter corresponding to the Inspection Level L-6. Each rescue seat selected as a sample unit shall be forwarded to a commercial laboratory, acceptable to the Air Crew Equipment Laboratory, for the following examinations and tests:

EXAMINATIONS AND TESTS

Visual inspection (4.3.2)
 Strength (4.4.2)
 Leakage (4.4.3)
 Floatability (4.4.4)
 Individual tests (4.3.5)

The examinations and tests shall be conducted in the order listed. The lot from which the rescue seats were selected shall not be shipped pending results of the examinations and tests from the commercial laboratory. Rejected lots shall not be resubmitted except with the permission of the Air Crew Equipment Laboratory.

4.4 Test methods -

4.4.1 Visual examination - Completed rescue seats shall be carefully examined to determine conformance with this specification with respect to classification of defects.

4.4.2 Strength - The helicopter rescue seat shall be mounted to simulate rescue operation, using a helicopter rescue hook conforming to ACEL Drawing No. 5-952 inserted through the hoist bracket. All loads shall be sustained for a period sufficient to obtain necessary load data. The loads may be applied by means of hydraulic or pneumatic presses, jacks, shot bags, or equivalent high density material on the -2 seats (see figure 2).

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The helicopter rescue seat shall be capable of supporting a 600 pound load for a period of 10 seconds. Each seat bracket shall be test loaded separately, on a tension machine, to a load of 500 pounds, applying the tension at any point for a period of 5 seconds. There shall be no deformation.

4.4.3 Leakage - The rescue seat shall be completely submerged in water for a period of 15 minutes. There shall be no leakage of water into the flotation chamber and tube. The presence of air bubbles not associated with surface air entrapment shall be cause for rejection.

4.4.4 Floatability - The rescue seat shall be placed in fresh water at room temperature and shall float.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging - Preservation and packaging shall be Level A or C, as specified (see 6.2). Other than as specified in paragraph 5.1.1.1, no preservation is required.

5.1.1 Level A -

5.1.1.1 Unit package - Each helicopter rescue seat shall be unit packaged with a suitable Kraft paper wrap, Specification UU-P-268, and placed within a set-up or fiberboard box conforming to Specification PP-B-636, PPP-B-665, or PPP-B-676, Type I or II, Class I, maintaining a snug even fit.

5.1.1.2 Intermediate package - Intermediate packages shall contain the number of unit packages specified by the procuring activity. The intermediate container shall be fiberboard boxes conforming to Specification PPP-B-636.

5.1.2 Level C -

5.1.2.1 Preservation and packaging shall be in accordance with the manufacturer's commercial practice.

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

5.2.1 Level A - Rescue seats packaged as specified in 5.1.1 shall be packed in overseas type cleated fiberboard, cleated plywood or wood cleated, fiberboard, paper-overlaid containers conforming to Specification PPP-B-591, PPP-B-601, PPP-B-636, or MIL-B-10377. The containers shall be closed and strapped in accordance with the requirements of the appendix of the applicable box specification. The gross weight of the exterior shipping container when fully packed shall not exceed approximately 200 pounds. Plywood, when used, shall conform to Specification NN-P-515, Type I or II, Class 2.

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5.2.2 Level B - Rescue seats packaged as described in paragraph 5.1.1 shall be packed in domestic type exterior containers conforming to Specification PPP-B-591, PPP-B-601, PPP-B-636, or MIL-B-10377. The gross weight of wood or wood cleated containers shall not exceed 200 pounds.

5.2.3 Level C - Rescue seats packaged as specified in 5.1.1 shall be packed in a manner to insure carrier acceptance and safe delivery at destination. Containers shall be in accordance with Uniform Freight Classification Rules 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, marking for shipment shall be in accordance with Standard MIL-STD-129 and shall include date of manufacture, month, and year.

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Specification MIL-H-21902A(Wep)

6. NOTES

6.1 Intended use - The helicopter rescue seat covered by this specification is intended to be used by helicopter crewmen to rescue survivors from the sea.

6.2 Ordering data - Procurement documents should specify the following:

- (a) Title, Number and Date of this specification
- (b) Quantity to be furnished
- (c) Applicable levels of packaging and packing

6.3 Standard sample - For access to standard sample, address requests to the procuring activity issuing the invitation for bid. The standard sample may be examined at the hangar of Helicopter Utility Squadron Two, Naval Air Station, Lakehurst, New Jersey.

NOTICE - When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

SPECIFICATION ANALYSIS SHEET
NAVWEPS FORM 4121/3 (8-62)

FORM APPROVED
 BUDGET BUREAU NO. 45-R309

INSTRUCTIONS

This sheet is to be filled out by Government or contractor personnel involved in the use of this specification in procurement of products for ultimate use by the activity shown on the reverse of this sheet.

of this specification suitable products can be procured with a minimum amount of delay and at the least cost.

Comments and the return of this sheet will be appreciated.

This sheet is provided for obtaining information which will aid the activity shown in insuring that through use

Fold on dotted lines on reverse side, staple in corner, and send to the activity shown.

SPECIFICATION (No. and abbrev. title)

ORGANIZATION		CITY	STATE
CONTRACT NUMBER	QUANTITY OF ITEMS PROCURED		DOLLAR AMOUNT \$
MATERIAL PROCURED UNDER A DIRECT GOVERNMENT CONTRACT		OR A SUBCONTRACT	

1. HAS ANY PART OF THIS SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?
 (If so, give paragraph number and wording, and recommendations for correcting the deficiencies.)

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

YES NO

IF YES, IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If additional papers are attached, send this form and papers in an envelope. This form is addressed for use in window envelope when appropriate.)

SUBMITTED BY (Print name and title)

DATE

Fold

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BUREAU OF NAVAL WEAPONS
WASHINGTON 25, D. C.
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