

INCH-POUND

MIL-DTL-32054A
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 SUPERSEDING
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DETAIL SPECIFICATION

MOUNTING MT-1995/A
 FOR USE WITH COAXIAL TYPE SA-521A/A
 RADIO FREQUENCY TRANSMISSION LINE SWITCH

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

1. SCOPE

1.1 Scope. This specification covers the requirements for the mounting device used in conjunction with radio frequency (RF) switch Type SA-521A/A (see MIL-DTL-25879).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract ([see 6.2](#)).

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-25879 - Switch, Radio Frequency Transmission Line, Coaxial Type SA-521A/A.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-202 - Test Method Standard Electronic and Electrical Component Parts.

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil> or from the Defense Automated Printing Service, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract ([see 6.2](#)).

AEROSPACE INDUSTRIES ASSOCIATION (AIA)

AIA/NAS NASM20426 - Rivet, Solid, Countersunk 100° Precision Head, Aluminum and Titanium Columbium Alloy (DoD adopted).

(Copies are available online at <http://www.aia-aerospace.org/> or from Aerospace Industries Association, 1000 Wilson Blvd, Suite 1700, Arlington, VA 22209-3928.)

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Columbus, ATTN: DSCC-VAT, P.O. Box 3990, Columbus, OH 43218-3990, or e-mailed to TubesAmps@dsccl.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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ASTM INTERNATIONAL (ASTM)

ASTM-B108 - Aluminum-Alloy Permanent Mold Castings (DoD adopted).

(Copies may be purchased online at <http://astm.org> or from ASTM INTERNATIONAL, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

NATIONAL CONFERENCE OF STANDARDS LABORATORIES (NCSL)

NCSL-Z540.1 - Laboratories, Calibration, and Measuring and Test Equipment (DoD adopted).

(Copies are available online at <http://www.ncsli.org> or from National Conference of Standards Laboratories (NCSL), 2995 Wilderness Place Suite 107, Boulder, CO 80301-5404.)

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

3. REQUIREMENTS

3.1 First article approval. Mountings furnished under this specification shall be products that meet requirements for first article approval (see 4.4 and 6.3). The mounting MT-1995/A and the switch SA-521A/A (see MIL-DTL-25879), shall be first article approved together and at the same time (see figure 1).

3.1.1 Materials. Materials shall be used that will enable the mounting to meet the requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product (see 4.2). The mounting MT-1995/A shall be aluminum alloy casting in accordance with ASTM-B108, alloy 356, temper T6, or equivalent, as determined by the preparing activity (see 6.3).

3.1.1.1 Dissimilar metals. Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other. Dissimilar metals are defined as metal specimens that are in contact or otherwise electrically connected to each other in a conductive solution and that generate an electric current.

3.1.1.2 Fungus. Materials used in the construction of mountings shall be fungus inert. Fungus inert material is defined as a material which, in all modified states and grades, is not a nutrient to fungi.

3.1.1.3 Finish. The mounting MT-1995/A, except the bottom surface of the mounting, shall be anodized. For guidance on finishes see 6.5.

3.1.1.4 Pure tin. The use of pure tin as an underplate or final finish is prohibited both internally and externally. Tin content of the waveguide switch components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.8).

3.1.2 Maintainability. Mounting provisions shall ensure that a minimal amount of maintenance time and effort is required for removal and replacement, using standard tools only.

3.2 Design and construction. The mounting MT-1995/A outline and dimensions shall be consistent with figure 1.

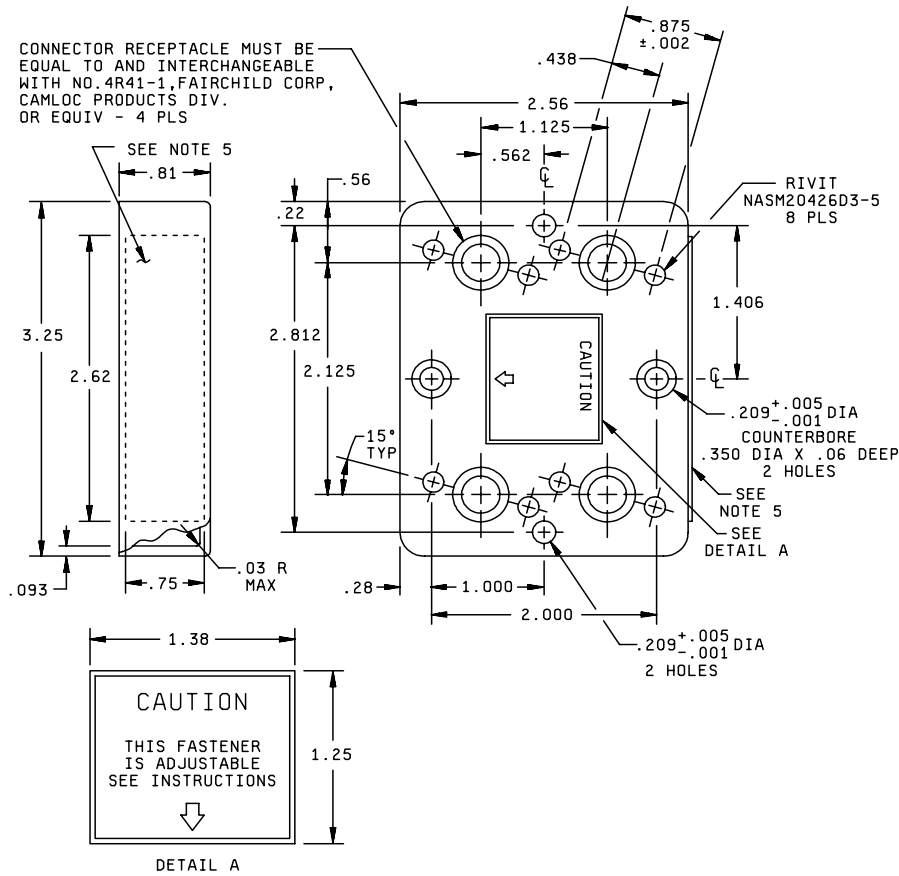
3.2.1 Drawings and procedures. The original design and construction drawings and production procedures as approved by first article testing shall remain available for inspection by the cognizant government inspector. No changes or waivers shall be allowed without approval of the preparing activity (see 6.3).

3.2.2 General. Any military specification, standard, or handbook referred to in this specification may be replaced by an equivalent commercial standard as determined by the preparing activity (see 6.3).

3.2.3 Mounting provisions. The mounting MT-1995/A shall mate with the R.F. switch SA-521A/A (see MIL-DTL-25879). Positive electrical continuity between the switch unit and the individual fasteners shall be assured.

3.2.4 Retention devices. All screws and other hardware shall be adequately equipped with retaining devices to prevent loosening from vibration or shock over the life of the mounting.

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Inches	Millimeters	Inches	Millimeters	Inches	Millimeters
.001	.02	.350	8.89	1.25	31.75
.002	.05	.438	11.12	1.38	35.05
.003	.08	.56	14.22	1.406	35.71
.03	.76	.562	14.27	2.000	50.80
.06	1.52	.75	19.05	2.125	53.98
.093	2.36	.81	20.57	2.56	65.02
.209	5.31	.875	22.22	2.62	66.55
.22	5.59	1.000	25.40	2.812	71.42
.28	7.11	1.125	28.58	3.25	82.55

NOTES:

- Dimensions are in inches.
- Metric equivalents (to the nearest 0.01 mm) are given for general information only, based upon 1 inch = 25.4 mm.
- Unless otherwise specified, tolerances are .010 inch (0.25 mm) for three place decimals and ±.03 inch (0.76 mm) for two place decimals.
- Except as shown, inside radii shall be .19 inch (4.83 mm) maximum.
- The following instructions are to be printed in .06 inch (1.52 mm) high letters: "One quarter turn left releases the fastener. To fasten, push in, turn left and test to right for unrestricted quarter turn. If resistance is felt, turn more to the left, turn right to engage and tighten."

FIGURE 1. Outline and dimensions for mounting MT-1995/A.

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3.2.5 Weight. The weight of the mounting shall not exceed 8 ounces.

3.3 Environmental requirements. The mounting shall not degrade or deteriorate due to environmental test exposure that the mounting experiences during environmental testing with an associated switch. The mounting shall in no way contribute to switch failure or switch degradation during environmental tests.

3.3.1 Thermal shock. When tested as specified in 4.7.2, the mounting shall exhibit no evidence of deterioration or degradation.

3.3.2 Shock. When tested as specified in 4.7.3, the mounting shall exhibit no evidence of deterioration or degradation.

3.3.3 Random vibration. When tested as specified in 4.7.4, the mounting shall exhibit no evidence of deterioration or degradation.

3.3.4 Humidity. When tested as specified in 4.7.5, the mounting shall exhibit no evidence of deterioration or degradation.

3.3.5 Salt spray. When tested as specified in 4.7.6, the mounting shall exhibit no evidence of deterioration or degradation.

3.3.6 Reliability. When tested as specified in 4.7.7, the mounting shall exhibit no evidence of deterioration or degradation.

3.4 Marking (see 3.1). Mountings shall be marked in a legible and permanent manner with the following information. Minimum marking shall include the following:

- a. Part or Identifying Number (PIN): MT-1995/A.
- b. Contract number: As assigned by acquiring agency.
- c. Manufacturer CAGE code.

The marking shall remain legible after completing all environmental tests.

3.5 Workmanship. Mountings shall be manufactured and processed in a careful and workmanlike manner, in accordance with good design and sound engineering practice, and to requirements of this specification. For guidance on workmanship see 6.6.

4. VERIFICATION

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

- a. Materials inspection (see 4.2).
- b. First article inspection (see 4.4).
- c. Conformance inspection (see 4.5).

4.2 Materials inspection. Materials inspection shall consist of certification supported by verifying data (see 6.3) that the materials used in fabricating the mountings are in accordance with the applicable specifications or requirements listed in table I prior to such fabrication.

TABLE I. Materials inspection.

Material	Requirement paragraph
Dissimilar metals - - - - -	3.1.1.1
Fungus - - - - -	3.1.1.2
Finish - - - - -	3.1.1.3

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4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 First article inspection (see 3.1). First article inspection shall be performed at a laboratory acceptable to the Government (see 6.3) on sample units produced with equipment and procedures normally used in production. First article approval inspection of mountings shall be conducted together and at the same time as first article approval inspection of associated switch samples.

4.4.1 Sample size. Twelve mountings shall be subjected to first article inspection tests specified herein.

4.4.2 Inspection routine (see 3.3). The sample shall be subjected to the inspections specified in table II, in the order shown. All sample units shall be subjected to the inspections of group I. The sample shall then be divided into two groups of six units each. The sample units shall then be subjected only to the inspections indicated for their particular group.

TABLE II. First article inspection.

Examination or test	Requirement paragraph	Test paragraph
<u>Group I (all samples)</u>		
Visual, mechanical and environmental	3.2, 3.3	4.7.1
Marking	3.4	4.7.1
Workmanship	3.5	4.7.1
Weight	3.2.5	4.7.1
Thermal shock	3.3.1	4.7.2
Humidity	3.3.4	4.7.5
Salt spray	3.3.5	4.7.6
<u>Group II (6 samples)</u>		
Shock	3.3.2	4.7.3
Random vibration	3.3.3	4.7.4
<u>Group III (6 samples)</u>		
Reliability	3.3.6	4.7.7

4.4.3 Failures. No failures shall be allowed for first article inspection; a failure shall be anything that does not meet the requirements of the specification.

4.5 Conformance inspection.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A.

4.5.1.1 Inspection lot. An inspection lot shall consist of all mountings produced under essentially the same conditions, and offered for inspection at one time. The lot size shall not exceed 200.

4.5.1.2 Group A inspection. Group A inspection shall consist of the examination and tests specified in [table III](#), in the order shown.

4.5.1.2.1 Inspection plans. This specification utilizes an accept on zero defect ($c = 0$) sampling plan. Sampling shall be in accordance with [table III](#). Sample categories indicated in [table III](#) shall be cross referenced to the appropriate sample sizes in [table IV](#).

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TABLE III. Group A inspection.

Examination or test	Requirement paragraph	Test paragraph	Sample category
<u>Subgroup I</u>			
Visual and mechanical	3.2	4.7.1	A
Marking	3.4	4.7.1	B
Workmanship	3.5	4.7.1	B
Weight	3.2.5	4.7.1	A
<u>Subgroup II</u>			
Reliability	3.3.6	4.7.7	1/

1/ Monthly sample size shall be a minimum of three per lot.

TABLE IV. Sampling plans.

Sample category	Sample size		
	A	B	C
<u>Lot size</u>			
2 to 8	all	all	all
9 to 15	all	all	all
16 to 25	all	16	all
26 to 50	all	20	26
51 to 90	all	20	32
91 to 150	all	20	32
151 to 200	all	20	32

4.5.1.3 Tightened inspection. If a lot fails, sample size C in accordance with table IV shall be used in place of sample size B for group A inspection until at least three consecutive lots have passed.

4.5.1.4 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out the defective units, and resubmit for re-inspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be clearly separate from new lots, and shall be clearly identified as re-inspected lots.

4.5.1.5 Disposition of sample units. Sample units which have been subjected to group A, subgroup II inspection shall not be delivered on the contract or purchase order.

4.5.2 Group B inspection. Group B inspection shall consist of the tests specified in table V, in the order shown. Group B inspection shall be made on sample units which have passed group A subgroup I inspection. Except where the results of these inspections show noncompliance with the applicable requirements, delivery of products which have passed group A shall not be delayed pending the results of these verification inspections.

TABLE V. Group B inspection. 1/

Test	Requirement paragraph	Test paragraph
Thermal shock -----	3.3.1	4.7.2
Random vibration -----	3.3.3	4.7.4
Shock -----	3.3.2	4.7.3

1/ Inspection shall be performed on a sample of 6 units. No failures shall be allowed. A sample unit having one or more defects shall be considered as a single failure.

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4.5.2.1 Post tests. The manufacturer, at his option, need not perform post test examination after each environmental test as referenced in 3.3 until after all environmental tests are complete. Requirements for each post test must be met at this time.

4.5.2.2 Failures. If there are any failures, the sample shall be considered to have failed.

4.5.2.3 Disposition of sample units. Sample units which have been subjected to group B inspection shall not be delivered on the contract or purchase order.

4.6 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained by the supplier. The establishment and maintenance of a calibrated system to control the accuracy of the measuring and test equipment shall be in accordance with NCSL-Z540.1.

4.7 Methods of examination and test.

4.7.1 Visual and mechanical examination (see 3.1.1, 3.1.1.1, 3.1.1.3, 3.2, 3.2.3, 3.2.4, 3.2.5, 3.3, 3.4, 3.5). Mountings shall be examined to verify that the materials, size, mounting, retention of devices, weight, design, construction, finish, marking, and workmanship are in accordance with the applicable requirements. For guidance on finishes, refer to 6.5 through 6.5.2. Following environmental testing, the mounting shall exhibit no evidence of deterioration or degradation.

4.7.2 Thermal shock (see 3.3.1). The mounting shall be tested in accordance with method 107 of MIL-STD-202, test condition A, except the minimum temperature shall be -40°C. At the conclusion of the test, the mounting shall be removed from the test chamber; returned to standard temperatures; and within a period of one hour, examined visually.

4.7.3 Shock (see 3.3.2). The mounting shall be tested in accordance with method 213 of MIL-STD-202, test condition J. The test pulse duration shall be 11 ms. There shall be no visible evidence of loosening of parts.

4.7.4 Random vibration (see 3.3.3). The mounting shall be tested in accordance with method 214 of MIL-STD-202, test condition I, letter A. The test duration shall be specified as 1.5 hours.

4.7.5 Humidity (see 3.3.4). The mounting shall be tested in accordance with method 103 of MIL-STD-202, test condition A. After completion of the test, visual inspection shall show no signs of visible deterioration.

4.7.6 Salt spray (see 3.3.5). The mounting shall be tested in accordance with method 101 of MIL-STD-202, test condition A.

4.7.7 Reliability (see 3.3.6). Reliability testing shall be in accordance with the manufacturer's reliability assurance program, with the following temperature range: -54°C to +85°C.

5. PACKAGING

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

6. NOTES

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

6.1 Intended use. The mounting MT-1995/A covered by this specification is intended for use with coaxial type SA-521A/A radio frequency transmission line switch.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. Part number: The mounting should normally be ordered separately from the switch.

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6.3 First article approval. The activity responsible for the first article approval of mountings is Defense Supply Center Columbus, Code VQE, P.O. Box 3990, Columbus, OH 43218-3990 (vqe.chief@dla.mil), and information pertaining to first article approval of products may be obtained from this activity.

6.4 Subject term (key word) listing.

Aluminum-alloy
Anodized
Castings
Dissimilar metals
Finish

6.5 Finish.

6.5.1 Chemical conversion coating. Based on past experience, treatment of aluminum in accordance with MIL-C-5541, class 3, has been used successfully to meet the requirements of this specification.

6.5.2 Anodized finish. Based on past experience, mounts anodized in accordance with MIL-A-8625, type II, have been used successfully to meet the requirements of this specification.

6.6 Workmanship.

6.6.1 Cleaning. After fabrication, the mounting should be cleaned of smudges; weld metal; metal chips and mold release agents; or any other foreign material which might detract from intended operation, function, or appearance of the mounting.

6.6.2 Threaded parts or devices. Screws, nuts and bolts should show no evidence of cross threading, mutilation, or detrimental or hazardous burrs, and should be firmly secured.

6.7 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. Table VI lists the Environmental Protection Agency (EPA) top seventeen hazardous materials targeted for major usage reduction. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein ([see Section 3](#)).

TABLE VI. EPA top seventeen hazardous materials.

Benzene	Dichloromethane	Tetrachloromethylene
Cadmium and Compounds	Lead and Compounds	Toluene
Carbon Tetrachloride	Mercury and Compounds	1, 1, 1 - Trichloroethane
Chloroform	Methyl Ethyl Ketone	Trichloroethylene
Chromium and Compounds	Methyl Isobutyl Ketone	Xylenes
Cyanide and Compounds	Nickel and Compounds	

6.8 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers ([see 3.1.1.4](#)). For additional information on this matter, refer to ASTM-B545 (Standard Specification for Electrodeposited Coatings of Tin).

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

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Custodians:
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Air Force - 99

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