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AEROSPACE STANDARD

SAE AS53731

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Fuse Holder, Block Type, Aircraft

FSC 5920

NOTICE

This document has been taken directly from U.S. Military Specification MIL-F-5373D and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-F-5373D. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this SAE technical document.

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1. SCOPE:

1.1 Scope:

This specification covers fuse holders for use in aircraft electric circuits in conjunction with MIL-F-5372 current limiter type fuses. These fuse holders are suitable for operation at -54° to 125°C.

1.2 Classification:

1.2.1 Style: A style of fuse holder block shall consist of all part numbers covered by one military standard (MS) or specification sheet. For example: all part numbers of MS24000 shall be the same style (see 6.3).

1.2.2 Poles: The number of individual circuits (poles) shall be 1, 2 or 3 as shown on the applicable military standard or specification sheet.

2. APPLICABLE DOCUMENTS:

2.1 Government documents:

2.1.1 Specifications and standards: The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

QQ-S-365	Silver Plating, Electrodeposited; General Requirements for

MILITARY

MIL-M-14	Molding Compounds, Thermosetting
MIL-W-5086	Wire, Electric, Polyvinyl Chloride Insulated, Copper or Copper Alloy
MIL-F-5372	Fuse, Current Limiter Type, Aircraft
MIL-F-5373/1	Fuse Holder, Receptacle, Limiter Type, 1-60 Amp
MIL-T-7928	Terminals, Lug & Splices, Conductor, Crimpstyle, Copper
MIL-E-17555	Electronic and Electrical Equipment, Accessories, and Provisioned Items (Repair Parts) Packaging of

2.1.1 (Continued):

STANDARDS

MILITARY

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-STD-454	Standard General Requirements for Electronic Equipment
MIL-STD-704	Aircraft Electric Power Characteristics
MIL-STD-831	Test Reports, Preparation of
MIL-STD-889	Dissimilar Metals
MIL-STD-970	Standards and Specifications, Order of Preference for the Selection of
MIL-STD-45662	Calibration System Requirements
MS20659	Terminal, Lug, Crimp Style, Copper, Uninsulated, Class 1 Ring Tongue, Type I, Class 1 for 175°C Total Conductor Temperature
MS24000	Fuse Holder, Block Type, 1, 2 and 3 Pole, 1 to 30 Ampere, Aircraft
MS24001	Fuse Holder, Block Type, 1, 2 and 3 Pole, 35 to 60 Ampere, Aircraft

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from DODSSP, Standardization Document Order Desk, 700 Robbins Avenue, Bldg. 4D, Philadelphia, PA 19111-5094.)

2.2 Non-government publications:

The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

ASTM B194-88	Plate, Copper Beryllium Alloy, Sheet, Strip, and Rolled Bar
ASTM D635-88	Plastics, Self-supporting in a Horizontal Position, Rate of Burning and/or Extent of Time of Burning Of

(Application for copies should be addressed to the American Society of Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

2.3 Order of precedence:

In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets or military standards), 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 Specification sheet and military standard (MS):

The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet or military standard (MS). In the event of any conflict between the requirements of this specification and the specification sheet or military standard, the latter shall govern (see 6.2).

3.2 Qualification:

The fuse holders furnished under this specification shall be products which are authorized by the Qualifying Activity for listing on the applicable Qualified Products List at the time of award of the contract (see 6.5).

3.3 Materials:

The material shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the fuse holders to meet the performance requirements of this specification. Recovered material shall be used to the maximum extent possible.

3.3.1 Fungus: Materials used shall not be nutrients for fungus as specified in MIL-STD-454, Requirement 4.

3.3.2 Plastic material: Plastic material shall be in accordance with MIL-M-14, as indicated on the applicable military standard or specification sheet. Plastic material shall not emit toxic or noxious gases when subjected to electrical arcing. Plastic material containing cellulose fillers shall not be used. Plastic materials shall be certified to exhibit a minimum ignition time of 90 seconds and a maximum extinguishing time of 90 seconds when tested for flammability in accordance with ASTM D635-88.

3.3.3 Metal: All metals used in the construction of the fuse holders shall be corrosion resistant or shall be suitably protected to resist corrosion. The use of dissimilar metals, especially contacts between brass, copper, or steel and aluminum or magnesium alloys, shall be avoided. Where contact between dissimilar metals is unavoidable, the metals shall be protected against electrolytic corrosion. Dissimilar metals are defined on MIL-STD-889.

3.3.4 Protective coating: The use of any protective coating that will crack, chip, or scale will not be permitted.

3.3.5 Selection of materials: Specifications and standards for all materials, parts and Government certification and approval of processes and equipment, which are not specifically designated herein and which are necessary for the execution of this specification, shall be selected in accordance with MIL-STD-970.

3.3.5.1 Standard parts: Standard parts (MS or AN) shall be used wherever they are suitable for the purpose, and shall be identified on the drawing by their part numbers. Commercial utility parts, such as screws, bolts, nuts and cotter pins may be used, provided they possess suitable properties and are replaceable by the standard parts (MS or AN) without alteration, and provided the corresponding standard part numbers are referenced in the parts list and, if practicable, on the contractor's drawing. In the event there is no suitable corresponding standard part in effect on date of invitation for bids, commercial parts may be used provided they conform to all requirements of this specification.

3.4 Design and construction:

Fuse holders shall conform to MIL-F-5373/1, MS24000 or MS24001. The fuse holders shall be so designed and constructed so that no parts will work loose in service. They shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

3.4.1 Weight and dimensions: The weight and dimensions shall be as shown on the applicable military standard or specification sheet.

3.4.2 Rejection: The fuse holder shall be so designed that it shall not be possible to insert fuse units which are outside the rating range of the block.

3.4.3 Mounting: The arrangement of mounting holes shall be as shown on the applicable military standard or specification sheet. The fuse holders shall be so arranged that they can be mounted in groups and conveniently interconnected to form buses.

3.4.4 Spring clips: Spring clips shall be of beryllium copper conforming to ASTM B194 and shall be silver plated in accordance with QQ-S-365, type III, grade A.

3.4.5 Spacing and creepage distances: The minimum clearance in air (phase-to-phase and phase-to-ground) shall be 0.125-inch. The minimum creepage distance on insulation surfaces shall be 0.250-inch.

3.4.6 Terminals: The fuse holders shall accommodate terminal lugs conforming to MS20659 of the proper size as determined by the fuse holder rating (see 4.7.3).

3.4.7 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.

3.4.8 Screw: Screws shall be as specified on the applicable fuse holder military standard or specification sheet.

3.5 Performance:

Fuse holders shall meet the performance requirements of this specification and the applicable military standard or specification sheet when tested as specified in section 4.

3.5.1 Dielectric withstanding voltage: When fuse holders are tested as specified in 4.8.1, there shall be no breakdown, flashover, arcing, or current flow to ground in excess of 1 milliampere (mA).

3.5.2 Temperature rise:

3.5.2.1 Cycling load: When tested as specified in 4.8.2.1, the temperature rise at any given point on the fuse holder during the 25th cycle shall not differ by more than 10 percent from the maximum temperature rise measured on the same point during the first cycle.

3.5.2.2 Steady state: When fuse holders are tested as specified in 4.8.2.2, the temperature rise of each fuse holder terminal shall not exceed 90°C (194°F).

3.5.3 Contact resistance: When fuse holders are tested as specified in 4.8.3, the contact resistance shall not exceed 0.005 ohms. Following the temperature cycling and moisture resistance tests, the contact resistance shall not exceed 0.010 ohms.

3.5.4 Moisture resistance: When fuse holders are tested as specified in 4.8.4, there shall be no breaking, cracking, spalling, or loosening of terminals.

3.5.5 Thermal shock: When fuse holders are tested as specified in 4.8.5, there shall be no breaking, cracking, spalling or loosening of terminals.

3.5.6 Salt spray: When fuse holders are tested as specified in 4.8.6, there shall be no evidence of excess corrosion. Excess corrosion is defined as that which interferes with the electrical or mechanical performance and, in the case of plated metals, corrosion which has passed through the plating and exposes the base metal. There shall be no warping, cracking, or other damage.

3.5.7 Vibration: When fuse holders are tested as specified in 4.8.7, there shall be no breaking, cracking, loosening of either the terminals or the fuse blade in the spring clips.

3.5.8 Random drop: When fuse holders are tested as specified in 4.8.8, there shall be no breaking, cracking or chipping. The limiter shall not dislocate from the fuse holder.

3.5.9 Acceleration: The fuse holder shall be tested as specified in 4.8.9. The limiter shall not dislocate from the fuse holder.

3.5.10 Mechanical shock: The fuse holder shall be tested as specified in 4.8.10. The limiter shall not dislocate from the fuse holder.

3.5.11 Life test:

3.5.11.1 Electrical: There shall be no physical damage to the fuse holder as a result of the life test specified in 4.8.11.1.

3.5.11.2 Mechanical: There shall be no physical damage to the fuse holder as a result of the life test specified in 4.8.11.2.

3.5.12 Altitude: The fuse holder shall be tested as specified in 4.8.12. There shall be no evidence of arcing or tracking.

3.6 Marking:

The following information shall be plainly marked on each fuse holder:

MS or specification sheet part no.
Manufacturer's name or trademark

3.7 Workmanship:

Workmanship shall be in accordance with MIL-STD-454, requirement 9.

3.7.1 Cleaning: Prior to final assembly, the fuse holder shall be thoroughly cleaned of loose, spattered, or excess solder, metal chips, and other foreign material. Burrs, sharp edges and resin flash shall be removed.

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 (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance: All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Test equipment and inspection facilities: The supplier shall establish and maintain a calibration system in accordance with MIL-STD-45662.

4.2 Classification of inspection:

The inspection specified herein are classified as follows:

a. Materials inspection (4.3).
b. Qualification inspection (4.5).
c. Quality conformance inspection (4.6)
d. Periodic inspection (4.6.2)

4.2.1 Concurrent examinations: When examinations and tests in this specification require the use of limiters conforming to MIL-F-5372, and the requirements of MIL-F-5372 duplicate those of this specification, it is acceptable to conduct the tests simultaneously if approved by the qualifying activity.

4.3 Materials inspection:

Material inspection shall consist of certification that the materials are in accordance with the requirements of 3.3.

4.4 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.

4.5 Qualification inspection:

Qualification inspection shall be performed at a laboratory acceptable to the Government on sample units produced with equipment and procedures normally used in production.

4.5.1 Sampling instructions: Qualification inspection samples shall consist of not less than 12 fuseholders of each style rating. A minimum of one single pole and two three pole fuseholders shall be included in each test group. Approval of the single pole and three pole fuseholders will extend approval, without testing, to the 2 pole fuseholder. Samples shall be representative of the manufacturer's normal production and shall be identified by the manufacturer's part number.

4.5.1.1 Submission of test data and samples: Unless otherwise specified, the tested items along with a report covering the associated qualification tests shall be submitted to the activity responsible for qualification (see 6.5). The test report shall be prepared in accordance with MIL-STD-831. The tested items shall be appropriately identified to indicate the tests to which each was subjected.

4.5.2 Test routine: The qualification inspection samples for fuseholders shall be subjected to the tests specified in table I in the order shown. All sample units shall be subjected to Test Group I then divided as indicated into the various remaining tests groups.

TABLE I. Qualification Inspection.

Examination or Test	Sample Qty.	Reqmt. Para.	Test Para.
Group I	12		
Visual examination		3.4	
Contact resistance		3.5.3	4.8.3
Dielectric withstanding voltage		3.5.1	4.8.1
Group II	3		
Thermal Shock		3.5.5	4.8.5
Moisture resistance		3.5.4	4.8.4
Random Drop		3.5.8	4.8.8
Temperature rise, cycling load		3.5.2.1	4.8.2.1
Dielectric withstanding voltage		3.5.1	4.8.1
Group III			
Vibration	3	3.5.7	4.8.7
Salt spray		3.5.6	4.8.6
Contact resistance		3.5.3	4.8.3
Dielectric withstanding voltage		3.5.1	4.8.1
Group IV	3		
Mechanical life		3.5.11.2	4.8.11.2
Acceleration		3.5.9	4.8.9
Mechanical Shock		3.5.10	4.8.10
Temperature rise, steady state		3.5.2.2	4.8.2.2
Contact Resistance		3.5.3	4.8.3
Dielectric withstanding voltage		3.5.1	4.8.1
Group V	3		
Altitude		3.5.12	4.8.12
Electrical Life		3.5.11.1	4.8.11.1

4.5.3 Retention of qualification: To retain qualification, the supplier shall forward at 24-month intervals to the qualifying activity, a summary of the results of Group A and Group B tests indicating, as a minimum, the number of lots that passed and the number that failed. Every 36 months, the supplier shall furnish a test report of Group C tests. Failure to submit the summary of Group A and Group B tests or the failure to submit the Group C test report shall result in loss of qualification for the product. In addition to periodic submission and testing, the supplier shall immediately notify the qualifying activity, through the local Government representative, at any time, that the inspection data indicates failure of the qualified product to meet the requirements of the specification. In the event that no production occurred during the reporting period, a report shall be submitted to the qualifying activity certifying that the company still has the capabilities and facilities necessary to produce the time. If there has been no production during the next reporting period, the manufacturer may be required by the qualifying activity to perform Group C testing on the products in accordance with 4.6.

4.6 Quality conformance inspection:

4.6.1 Inspection of product for delivery: Inspection of product for delivery shall consist of Group A inspection. Except as specified in 4.6.3.2, delivery of products that passed Group A and Group B inspections shall not be delayed pending the results of Group C inspection.

4.6.1.1 Group A inspections: Group A inspections shall consist of the examinations and tests specified in table II and shall be made on all production items, in the order shown. If the manufacturer has established a statistical process control (SPC) system that is approved by the qualifying activity, and this system includes testing limiters to the Group A inspections, the Group A inspections need not be performed. The manufacturer must provide access to the information developed by his SPC system when requested by the qualifying activity.

TABLE II. Group A Inspections.

Examination or Test	Reqmt. Para.	Test Para.
Critical dimensions 1/	3.4, 3.4.1	
Contact Resistance	3.5.3	4.8.3

1/ Critical dimensions are those dimensions indicated on the applicable military standard or specification sheet.

4.6.1.2 Sampling: Sampling for critical dimensions shall be 2 fuseholders of each style from each 400 fuseholders, or portion thereof, produced.

4.6.1.3 Rejection: When any item from a lot fails the specified examinations, the lot shall be rejected.

4.6.2 Group B inspection: Fuseholders shall be tested as specified in table III in the order shown.

4.6.2.1 Sampling: Sampling for group B inspection shall be 2 fuseholders of each style from each 400, or portion thereof, produced.

TABLE III. Group B inspection.

Inspection or Test	Reqmt. Para.	Test Para.
Dielectric Withstanding Voltage	3.5.1	4.8.1

4.6.3 Periodic inspection: Periodic inspection shall consist of Group C inspection.

4.6.3.1 Group C inspections: Fuseholders shall be tested as specified in table IV. Sample units that have been subjected to and passed Group A and B inspections shall be used, unless the qualifying activity considers it more practical to select a separate sample.

TABLE IV. Group C inspections.

Examination or Test	Sample Qty.	Reqmt. Para.	Test Para.
TEST GROUP I	3		
Thermal Shock		3.5.5	4.8.5
Moisture Resistance		3.5.4	4.8.4
Contact Resistance		3.5.3	4.8.3
Dielectric Withstanding Voltage		3.5.1	4.8.1
TEST GROUP II	3		
Temperature Rise		3.5.2	4.8.2
Random Drop		3.5.8	4.8.8
Dielectric Withstanding Voltage		3.5.1	4.8.1

4.6.3.2 Non-compliance: If a sample fails to pass Group C inspection, the supplier shall take corrective action on the materials or processes, or both, as warranted, and all units or processes which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc., and which are considered subject to the same failure. Acceptance of the product shall be discontinued until corrective action acceptable to the Government has been taken. After corrective action has been taken, Group C inspection shall be repeated on additional sample units (all inspections, or the inspection which the original sample failed, at the option of the Government). Group A and B inspections may be reinstituted; however, final acceptance shall be withheld until the Group C reinspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and the corrective action taken shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6.3.3 Inspection of preparation for delivery: Sample packages or packs and the inspection of the preservation, packaging, packing and marking for shipment and storage shall be in accordance with the requirements of Section 5.

4.7 Test conditions:

4.7.1 Standard conditions: Unless otherwise specified, all load tests shall be conducted in still air at a temperature of 25 ±5°C which shall be considered room ambient and at sea level pressure. The atmospheric pressure at the test facility may be used in lieu of sea-level pressure if the elevation of the test facility is not greater than 3,000 feet above sea level.

4.7.2 Power supply: For qualification tests, unless otherwise specified, the power source for ac current tests shall be 118 ±3 volts at a frequency of 400 ±20 Hz with waveform and harmonic content in accordance with the requirements of MIL-STD-704, and for dc shall be 28 ±1 volt. For Group B test, unless otherwise specified, all ac current tests shall be 118 ±3 volts at a frequency of 60 ±1 Hz and for ac shall be 28 ±1 volt. Higher voltages may be used at manufacturer's option.

4.7.3 Test cables: Test cables in accordance with table V shall be used for all tests that require fuseholders to carry current. Test leads from the fuseholder to the source of power shall be a minimum of three feet in length and shall conform to MIL-W-5086/2.

TABLE V. Test leads.

Limiter Rating (Amperes)	Wire Size	Terminal Lug MIL-T-7928 Type
1 thru 10	20	MS20659-102
15	18	MS20659-102
20	16	MS20659-107 or 127
25 - 30	14	MS20659-107 or 127
35 - 40	12	MS20659-105 or 128
50	10	MS20659-105 or 128
60	8	MS20659-107 or 129

4.7.4 Limiters: All tests requiring limiters shall be performed with applicable limiters as specified in MIL-F-5372.

4.8 Test methods:

4.8.1 Dielectric withstanding voltage: The fuse holder assembled to a grounded metal plate shall be tested in accordance with MIL-STD-202, Method 301. The following conditions shall apply:

Test Voltage - 2500V ac
Points of application - Between adjacent phases and each phase to ground.

There shall be no breakdown of insulation as a result of this test.

4.8.2 Temperature rise:

4.8.2.1 Cycling load: The fuse holder containing dummy fuses or applicable limiters shall be subjected to the following duty cycle at 25°C and shall be repeated 25 times (see 3.5.2.1):

Percent load	Time (minutes)
100	30
140	1
0	29

4.8.2.2 Steady state: A test limiter shall be inserted in the fuse holder, and a thermocouple of No. 28 to 32 shall be placed on each fuse holder terminal. The fuse holder shall be energized at the maximum current rating of the limiter at any voltage within the limiter rating. The temperature rise shall be measured when a constant temperature has been reached, as indicated by three successive readings taken at 10 minute intervals and differing by not more than plus or minus 1°C. all sections of a multipole fuse holder shall be tested simultaneously (see 3.5.2.2).

4.8.3 Contact resistance: Contact resistance of the fuse holder shall be measured in accordance with MIL-STD-202, Method 302 (see 3.5.3). The following test conditions shall apply:

a. An appropriate dummy fuse shall be inserted
b. Test current - 1 ampere
c. Maximum open circuit test voltage - 3 Vdc
d. Resistance measurements shall be taken across fuse holder terminals

4.8.4 Moisture resistance: The limiter shall be inserted in the specified fuse holder and subjected to the moisture resistance test in accordance with MIL-STD-202, Method 106 except that step 7B of this method shall be omitted. Subsequent to this test and immediately after a 24-hour conditioning at 25° ±2°C and at a relative humidity of 50 ±5 percent, the fuse holder shall be tested and shall meet the dielectric withstanding voltage requirement of 4.8.1 (see 3.5.4).

4.8.5 Thermal shock: A limiter shall be inserted in the specified limiter holder and subjected to 5 thermal-shock cycles in accordance with MIL-STD-202, Method 107, test condition B except that -54°C shall be used in lieu of -65°C (see 3.5.5).

4.8.6 Salt spray: A limiter shall be inserted in the specified limiter holder and subjected to 48 hours of salt-spray exposure in accordance with MIL-STD-202, Method 101 of using a salt solution concentration of 5 percent. After drying, residue may be removed using a brush (see 3.5.6).

4.8.7 Vibration: The vibration test (see 3.5.7) shall be accomplished in accordance with MIL-STD-202, Method 204, test condition B.

a. Three applicable limiters shall be inserted in the fuse holder which shall be mounted on the vibration fixture. The center limiter and one other shall carry 100 percent of rated current at 28V dc, while the third limiter shall carry no current for the entire vibration test.

b. The test shall be done at room ambient condition. The limiters that carry current shall have current applied for at least 30 minutes prior to the vibration test.

c. Suitable test circuitry with indicating provisions shall be connected to the terminals of the fuse holder to establish that electrical continuity is maintained by each limiter during the entire vibration test.

4.8.8 Random drop: A limiter shall be inserted in the fuse holder which shall be rigidly mounted in a mounting fixture and subjected to the random-drop test in accordance with MIL-STD-202, Method 203. The limiters shall remain inserted in the fuse holders throughout the test (see 3.5.8).

4.8.9 Acceleration: With the limiter normally inserted in the fuse holder, the acceleration test of MIL-STD-202, Method 212, condition A, shall be conducted, except that the force shall be limited to 14g (see 3.5.9).

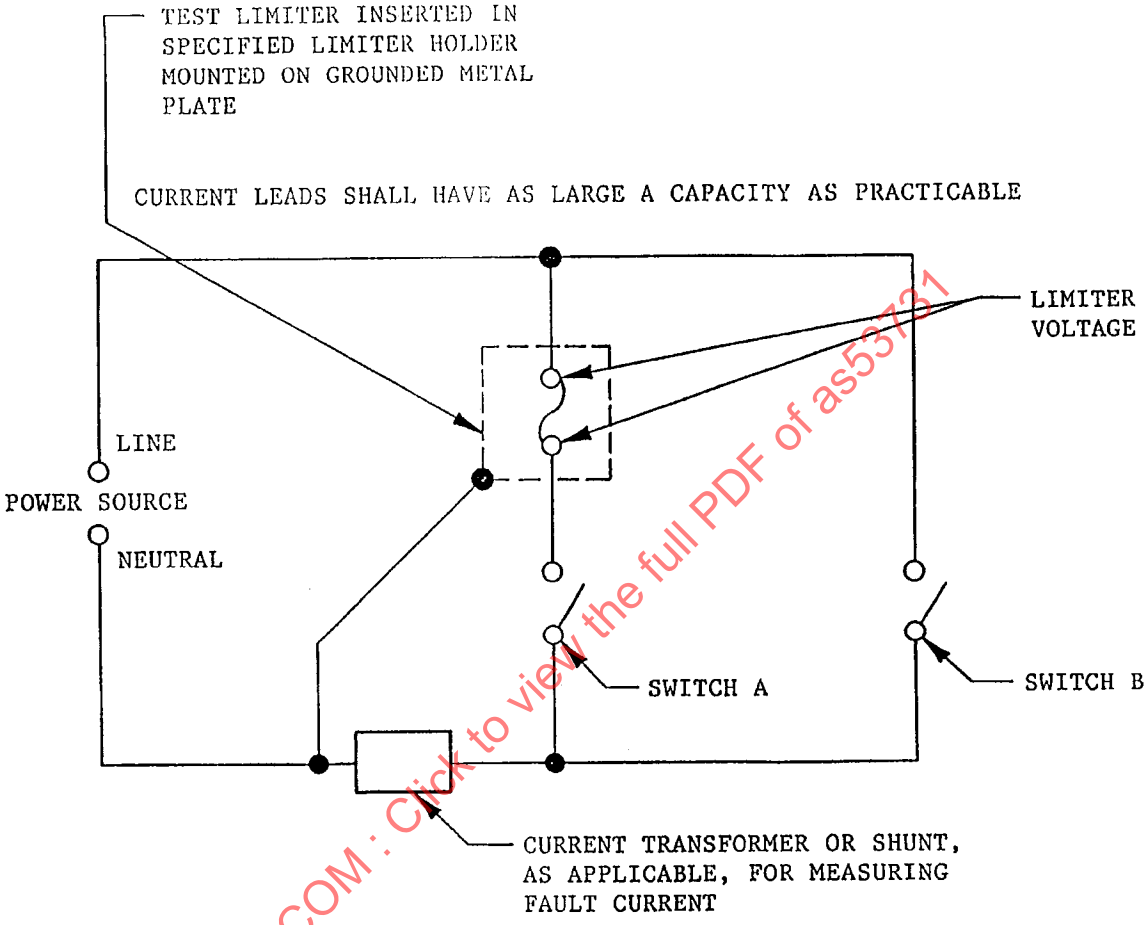
4.8.10 Mechanical shock: Three limiters shall be inserted in the fuse holder, which shall be mounted by normal means on a mounting fixture. The specimen shall be tested in accordance with MIL-STD-202, Method 213, test condition J. The test shall consist of 18 shocks (6 shocks in each of 3 mutually perpendicular planes, 3 shocks in each direction). The limiter shall remain in the fuse holder throughout the test (see 3.5.10).

4.8.11 Life test:

4.8.11.1 Electrical: The maximum current limiter rated for the fuse holder shall be inserted into the fuse holder and subjected to a 1000 hour life test at any convenient ac or dc voltage, consisting of 500 hours of operation at each of the ambient temperature extremes of -54° ±5°C and 125° ±5°C. While at each of these temperature extremes, the limiter shall carry rated current continuously for 250 hours and then be subjected to 2500 off and on cycles with each cycle consisting of 3 minutes at rated current and 3 minutes at no current (see 3.5.11.1).

4.8.11.2 Mechanical: An applicable limiter, or a dummy fuse having the same dimensions and made of the same material as the limiter, shall be inserted and removed from the fuse holder 50 times (see 3.5.11.2).

4.8.12 Altitude: Fuse holders containing the applicable limiters of maximum rating shall be tested by applying loads, both line-to-neutral and line-to-line, that will cause the limiter to open (see 3.5.12).



SWITCH A SHALL NOT CONTAIN BOUNCE EXCEEDING 250 MICROSECONDS. AN OSCILLOGRAPH HAVING A RESPONSE RATING OF AT LEAST 3000 HZ SHALL BE USED TO RECORD TEST CURRENT AND LIMITER VOLTAGES. TIME MEASUREMENTS SHALL BE ACCURATE TO 0.1 MILLISECOND.

PROCEDURE:

(a) WITH SWITCH A OPEN, CLOSE SWITCH B TO DETERMINE IF THE CURRENT CAPACITY OF THE CIRCUIT IS IN ACCORDANCE WITH THE REQUIREMENT.
(b) OPEN SWITCH B.
(c) INSERT TEST LIMITER IN LIMITER HOLDER.
(d) CLOSE SWITCH A.

FIGURE 1. Line to neutral test circuit.