

MIL-A-21165A
 27 August 1965
 SUPERSEDING
 MIL-A-21165(Aer)
 20 November 1957

MILITARY SPECIFICATION

ADAPTERS, QUICK-DISCONNECT, PASSENGER SEAT TO FLOOR

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

1. SCOPE

1*1 Scope - This specification covers the requirements for passenger seat to floor quick-disconnect adapters for installation in military aircraft.

1.2 Classification - Adapters shall be of the following sizes as specified (see 6.2):

.855/.850-inch diameter	(MS22034-1)
.885/.882-inch diameter	(MS22034-2)
.867/.864-inch diameter	(MS22034-3)
.752/.748-inch diameter	(MS22034-4)
.893/.890-inch diameter	(MS22034-5)
.917/.914-inch diameter	(MS22034-6)

2. APPLICABLE DOCUMENTS

2,1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

L-P-378	Plastic Film, Polyethylene, Thin Gage
PPP-B-566	Boxes, Folding, Paperboard
PPP-B-636	Box, Fiberboard
PPP-B-640	Boxes, Fiberboard, Corrugated, Triple, Wall
PPP-B-676	Boxes, Set-up, Paperboard

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Military

MIL-P-116	Preservation, Methods of
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys

STANDARDS "

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U. S. Military Property
MS21234	Adapter, Tiedown Cargo Ring and Seat Stud, 5,000 Lb, Type I
MS21235	Adapter, Tiedown Cargo Ring and Seat Stud, 10,000 Lb, Type II
MS22034	Adapter, Quick-Disconnect, Passenger Seat to Floor
MS33586	Metals - Definition of Dissimilar

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

3. REQUIREMENTS

3*1 Preproduction- This specification makes provisions for preproduction testing (see 4.3).

3.2 Materials - Materials shall conform to applicable specifications and shall be as specified herein and on applicable drawings. Materials which are not covered by specifications, or which are not specifically described herein, shall be of the best quality, of the lightest practicable weight, and suitable for the purpose intended.

3.2.1 Metal parts - Metal parts shall be of a corrosion-resistant material or treated in a manner to render them adequately resistant to corrosion.

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3 . 2 . 1 . 1 Dissimilar metals - Unless suitably protected against electrolytic corrosion dissimilar metals as defined in MS33586 shall not be used in intimate contact,

3.2.1.2 Aluminum alloy parts - Aluminum alloy parts, when used, shall be covered with a protective film conforming to MIL-A-8625.

3.2.2 Protective treatment - When materials are used in the construction of the adapters that are subject to deterioration when exposed to environmental conditions likely to occur during service usage, they shall be protected against such deterioration in a manner that in no way prevents compliance with the performance requirements of this specification.

3.3 Design and construction - The adapters shall conform to MS22034. The adapter shall be designed and constructed to withstand the strains, jars, vibration, and other conditions incident to shipping, storage; installation, and service. The adapter shall not be subject to opening by shock or jar, It shall be designed to insure smooth and positive operation at extremely low and high temperatures.

3.4 Performance - The adapters shall conform to the following requirements when subjected to the applicable tests of Section 4.

3.4.1 Strength - The adapters shall not slip off the studs and shall not break, slight deformation being acceptable, when subjected to the loading specified in 4.5.2.1, 4.5.2.2, and 4.5.2.3

3.4.2 Vibration - The adapters shall not disengage when subjected to the vibration tests specified in 4.5.3.

3.4.3 Endurance - The adapters shall be capable of sustaining 1000 cycles without malfunction when subjected to the endurance tests specified in 4.5.4.

3.5 Lubrication - Lubrication shall not be required,

3.6 Finish - The finish shall be as specified on the applicable drawings. Protective coatings and finishes which might crack, chip, or scale during normal service life or under extremes of atmospheric conditions, shall not be used.

3*7 Identification of product - Each adapter shall be permanently marked at the location indicated on MS22034 for identification with the part number and the manufacturer's name, symbol, or trademark in accordance with MIL-STD-130.

3.8 workmanship - The adapters shall be free from irregularities or defects which could adversely affect performance? reliability, or durability.

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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.

4.2 Classification of inspection - The examination and testing of the adapters shall be classified as follows:

- (a) Preproduction inspection - Preproduction inspection consists of examinations and tests performed on adapters which are representative of the production item after award of a contract to determine that the production item meets the requirements of this specification,
- (b) Quality conformance inspection - Quality conformance inspection consists of examinations and tests performed on individual products or lots to determine conformance of the products or lots with the requirements set forth in this specification,

4.3 Preproduction inspection - The preproduction inspection of the adapters shall consist of examinations and tests for all the requirements of this specification,

4.3.1 Preproduction samples -

4.3.1.1 Applicable to the Bureau of Naval Weapons - Unless otherwise specified; as soon as practicable after award of the contract or order, the manufacturer shall submit twelve adapters of the MS part number contracted for, three for each of the three strength tests, and three adapters for the vibration and endurance tests. The samples shall be representative of the construction, workmanship, components and materials to be used during production. When a manufacturer is in continuous production of these adapters from contract to contract, submission of further preproduction samples on the new contract may be waived at the discretion of the procuring activity. Approval of the preproduction samples or the waiving of preproduction inspection does not preclude the requirements of submitting to the quality conformance inspection. The preproduction samples shall be forwarded to the Supply Officer, Naval Air Engineering Center, Philadelphia, Pennsylvania 19112, Attention: Director, Aerospace Crew Equipment Laboratory. The samples shall be plainly identified by securely attached durable tags marked with the following information:

Sample submitted by (name) (date) for preproduction inspection in accordance with the requirements of MIL-A-21165A under Contract No.

MS Part Number
Manufacturers Part No.

4*3.1.1.1 Upon completion of the preproduction inspection, all the applicable inspection reports and when applicable, recommendations and comments pertinent for use in monitoring production shall be forwarded to the Government quality control representative. One approved adapter shall be returned to the manufacturer for use in monitoring production. The other adapters shall be consumed or destroyed in the preproduction inspection and shall not be considered as part of the quantity to be delivered under contract.

4.3.1.2 Applicable to the Air Force and Army - For purchases by the Air Force and Army, the quantity and kind of samples, the name and address of the preproduction inspection activity, and other pertinent information (see 4.3.1.1 and 4.3.1.1.1 for information) shall be as specified by the contracting officer (see 6.2).

4.4 Quality conformance inspection - The quality conformance inspection shall consist of the following:

Visual examination of the adapters
Strength tests
Vibration
Endurance
Preparation for delivery

4*4.1 Sampling -

4.4.1.1 Inspection lot -

4.4.1.1.1 Adapters - An inspection lot size shall be expressed in units of one adapter made under essentially the same conditions and from the same materials and components, The sample unit shall be one adapter,

4.4.1.1.2 Preparation for delivery - An inspection lot size shall be expressed in units of one fully prepared shipping container, containing adapters fully prepared for delivery made from essentially the same materials and components The sample unit shall be one shipping container, containing adapters fully prepared for delivery with the exception that it need not be sealed.

4.4.1.2 Sampling for tests and examinations of the adapters - The sample size, acceptance criteria, tests and examinations required for the adapters shall be as specified in Table I.

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TABLE I
SAMPLE SIZE, ACCEPTANCE CRITERIA, TESTS, AND EXAMINATIONS
OF THE ADAPTERS

INSPECTION	TYPE OF INSPECTION	PARAGRAPH		SAMPLE SIZE	ACCEPTANCE CRITERIA
		RQMT	METHOD		
Visual examination (see classification of defects)	Critical Minor	--		Every adapter	Reject all units with any critical defects. An acceptable quality level of 4.0 defects per hundred units for minor defects.
Strength tests 1 1) Static horizontal loading 2) Static vertical loading 3) Impact loading	Critical	3.4.1	4.5.2 4.5.2.1 4.5.2.2 4.5.2.3	Inspection Level S-1 for each strength test 2/	Acceptance number zero rejection number 1.
Vibration and Endurance 1/	Critical	3.4.2 3.4.3	4.5.3 4.5.4	Inspection Level S-1 2/	Acceptance number zero rejection number 1.
Preparation for delivery	Minor			2/	4.0 total percent defective

1/ Samples subjected to these tests shall not be delivered as part of the contract or order but shall be discarded.

2/ The sample size shall be based only on the applicable sample size code letter corresponding to the specified inspection level of MIL-STD-105.

k. 5 Inspection methods

4.5.1 Visual examination

4.5,1.1 Adapter - Every adapter shall be checked dimensionally and examined visually to determine conformance to this specification and MS22034. The classification of defects, Table II, shall be used to classify the defects found.

TABLE II

CLASSIFICATION OF DEFECTS FOR VISUAL EXAMINATION OF THE ADAPTER

Critical	Minor
1. Material - failure to meet specified requirements. 2* Surface - rough, malformed, misaligned or improperly machined. 3. Improper assembly - any component missing, malformed, fractured or otherwise damaged. 4. Other discrepancies which might impair the function of the adapter. 5. Any functioning part that works with difficulty. 6. Any component loose or otherwise not securely retained. 7. Faulty workmanship which might impair the serviceability of the adapter. 8. Dimensions not within specified tolerances.	201. Marking - missing, insufficient, incorrect, illegible, or not permanent.

4.5.1.2 Preparation for delivery - Each of the fully prepared shipping containers, containing adapters, selected as a sample unit from the lot shall be visually examined to determine that the packaging, packing, and marking conform to this specification. The classification of defects, Table III, shall be used to classify the defects found.

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TABLE III

CLASSIFICATION OF DEFECTS FOR PREPARATION FOR DELIVERY

Item	Defects
Exterior and interior markings	Missing, incorrect, incomplete, illegible, of improper size, location, sequence or method of application; marking not the same on interior and exterior containers.
Packaging and packing materials	Any non-conforming component; any component missing, damaged or otherwise defective.
Workmanship	Inadequate application of components such as incomplete closure of the unit package, intermediate package, container flaps, or loose strappings, etc., bulging or distortion of the container.
Exterior and interior weight or content	Number per container is more or less than required; gross or net weight exceeds the requirement.

4.5.2 Strength tests - Each sample adapter shall be subjected to the following strength tests and shall meet the requirements of 3.4.1.

4.5* 2.1 Static horizontal loading - Apply a load of 2300 pounds to a collared adapter parallel to the base of the adapter, as shown in Figure 1.

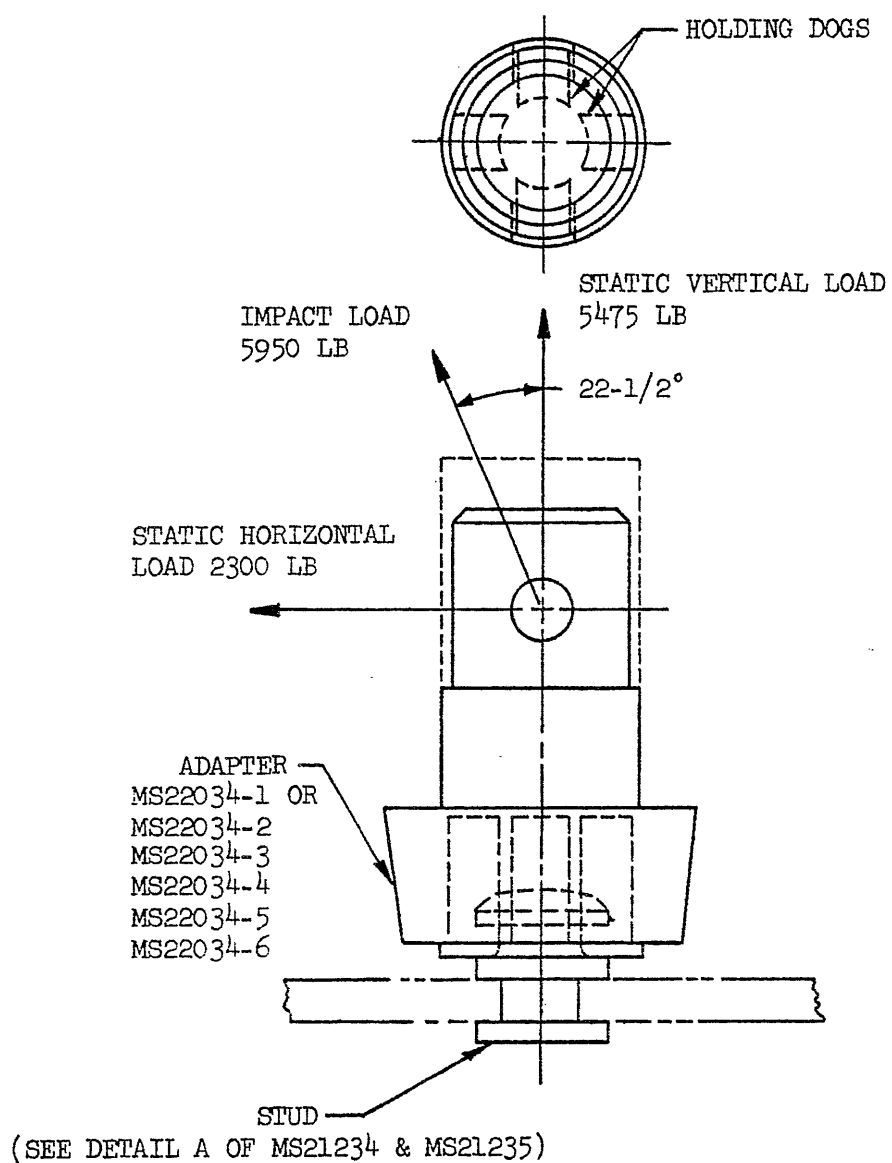
4.5.2.2 Static vertical loading - Apply a load of 5475 pounds to a collared adapter through the longitudinal axis of the adapter, as shown in Figure 1.

4.5.2.3 Impact. loading - A force of 5950 pounds resulting from impact loading shall be applied to the adapter at an angle of 22-1/2 degrees as shown in Figure 1. The impact loading shall be applied as a half-sine wave with a base of 0.050 seconds and a peak of 5950 pounds.

4*5* 3 Vibration - Each sample adapter shall be fastened and vertically tensioned to 200 pounds and vibrated in this condition on a vibration table at a double amplitude of 1/16 inch at 60 cycles per second for a period of 6 hours. The adapter shall meet the requirements of 3.4.2. The endurance test shall be conducted after the completion of this test.

4.5.4 Endurance - The sample adapter which has been subjected to the vibration test, shall be subjected to 1000 cycles of engaging and disengaging, The adapter shall meet the requirements of 3.4.3.

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NOTE: The loading shall be applied to a collared adapter, the load acting through the pinhole to simulate actual loading transmitted by the leg attachment of the passenger seat.

Figure 1. Test Load Diagram

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5* PREPARATION FOR DELIVERY

5.1 Preservation and Packaging - Preservation and packaging shall be Level A or C as specified by the procuring activity (see 6.2).

5.1.1 Level A - Unless otherwise specified, five adapters shall be packaged within a unit container in accordance with MIL-P-116, Method III. Each adapter shall be individually bagged or wrapped within polyethylene film conforming to L-P-378, (or the commercial equivalent) minimum gauge of .001 inch. Five adapters (individually bagged) shall be packaged within a close fitting, folding or set-up paperboard box conforming to PPP-B-566 or PPP-B-676. The containers to be used shall be of a square configuration, to accommodate nesting of the adapters thereby minimizing internal movement.

5.1.2 Level C - Adapters shall be packaged in a manner that will prevent physical damage and deterioration during transit from the supply source to the point of delivery. The contractor's commercial practice may be utilized when it conforms to the criteria stated herein.

5.2 Packing - Packing shall be Level A, B or C as specified by the procuring activity 6.2). Insofar as practicable, shipping containers shall effect a close fit, contain identical quantities and be of uniform dimensional configuration,

5.2.1 Level A - Adapters, packaged as specified in 5.1.1, shall be packed for shipment in fiberboard shipping containers conforming to PPP-B-636, Class-Weather-resistant Grade V3s/V3c or PPP-B-640, Class 2, Grade A. The gross weight of each packed container shall not exceed 70 pounds for the PPP-B-636 container or 200 pounds for the PPP-B-640 container. The closure, sealing and reinforcing (banding) of the containers shall be accomplished in accordance with the procedure specified in the appendix of the applicable container specification.

5.2.2 Level B - Adapters, packaged as specified in 5.1.1, shall be packed for Shipment in fiberboard shipping containers conforming to PPP-B-636, Class-Domestic, Grade 275 or PPP-B-640, Class 1. The gross weight of each packed container shall not exceed 90 pounds for the PPP-B-636 containers nor 200 pounds for the PPP-B-640 containers. The container closure and reinforcing (banding) shall be accomplished in accordance with the procedure specified in the appendix of the applicable container specification.

5.2.3 Level C - Adapters, packaged as specified, shall be packed for shipment in a manner that will afford protection against damage during transit from the supply source to the shipping point. The pack shall as a minimum, comply with the rules and regulations applicable to the mode of transportation utilized.

5*3 Marking - In addition to any special marking specified by the contract or order, marking shall be in accordance with MIL-STD-129. Unit packages shall also be marked with the contract or order number.

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6. NOTES

6.1 Intended use - The adapters covered by this specification are intended to provide a convenient means of connecting or disconnecting the passenger seat legs to the floor studs of cargo-transport type military aircraft.

6.2 ordering data - Procurement documents should specify the following:

- (a) Title number, and date of this specification
- (b) Quantity desired
- (c) MS Part Number
- (d) Selection of applicable levels of packaging and packing
- (e) Whether preproduction inspection is required for Bureau of Naval Weapons, Air Force, or Army purchases (see 4.3.1.1 and 4.3.1.2)

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

Custodians:

Army - MO
Navy - WP
Air Force - 11

Preparing Activity:

Navy . WP

Review Activities:

Army - MO
Navy - WP
Air Force - 11, 82

User Activities:

Navy - CG

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

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004
<p align="center">INSTRUCTIONS</p> <p>This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).</p>		
SPECIFICATION MIL-A-21165A ADAPTERS, QUICK-DISCONNECT, PASSENGER SEAT TO FLOOR		
ORGANIZATION (Of submitter)		CITY AND STATE
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING.		
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED (Printed or typed name and activity)		DATE