INCH-POUND

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SUPERSEDING
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AND
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26 March 1970

MILITARY SPECIFICATION

# RELEASE, CARGO PARACHUTE, 5000-POUND CAPACITY

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

## 1. SCOPE

1.1 Scope. This specification covers one type of 5000-pound capacity, cargo parachute release assembly consisting of a release mechanism, a delay assembly (firing mechanism), and a link assembly. Delay assemblies and link assemblies may be procured separately (see 6.2). The delay assembly employs a 20-second time delay cartridge which is stocked separately (see 6.4).

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 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).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be used in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5017, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 1670

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads
MIL-STD-2073-1 - DoD Material Procedures for Development and Application of Packaging Requirements

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

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

U.S. ARMY NATICK RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

11-1-4786 - Release Assembly, Cargo Parachute, 5000 Pound Capacity

(Copies of drawings are available from the U.S. Army Natick Research, Development, and Engineering Center, ATTN: SATNC-MII, Natick, MA 01760-5017.)

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).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a 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. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 Materials and components. The materials and components used in the manufacture of the cargo parachute release shall conform to the requirements specified, or as shown on Drawing 11-1-4786 and the subsidiary detail drawings thereto. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

3.3 Construction. Construction of the 5000-pound capacity cargo parachute release shall conform to Drawing 11-1-4786 and all the subsidiary drawings and parts lists pertaining thereto, and as specified herein.

3.4 Performance.

3.4.1 Release assembly proofload. The release assembly, components thereof, and load suspension link assembly shall show no visual evidence of failure or permanent deformation when subjected to a tensile proofload of not less than 15,000 pounds for not less than 15 seconds when tested as specified in 4.4.5.

3.4.2 Delay assembly sear extraction force. The sear extraction force of the delay assembly shall be 15 pounds, plus or minus 7 pounds when tested as specified in 4.4.5.

3.4.3 Release mechanism. The link assembly shall separate from the release mechanism when the reduced tensile load reaches 1000 pounds, plus or minus 200 pounds, when tested as specified in 4.4.5.

3.5 Workmanship. The workmanship of the release assembly and components thereof shall conform to the quality of product established by this specification and the occurrence of defects shall not exceed the applicable quality levels.

## 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 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point, or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article is required (see 3.1 and 6.2), it shall be examined for the defects specified in 4.4.3 and 4.4.4 and shall be tested for the characteristics specified in 4.4.5. Any nonconformance shall be cause for rejection of the first article.

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

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

4.4.2 In-process inspection. Inspection of subassemblies shall be made to ascertain that construction details which cannot be examined in the finished

product are in accordance with specified requirements. The Government reserves the right to exclude from consideration for acceptance, any material or service for which in-process inspection has indicated nonconformance.

4.4.3 End item visual examination. The end items shall be examined for the defects listed in table I. The lot size shall be expressed in units of complete cargo parachute release assemblies consisting of a release mechanism, delay assembly, and a link assembly. The sample unit shall be one complete cargo parachute release assembly with release mechanism, delay assembly, and link assembly. The inspection level for complete release assemblies, (link assemblies and delay assemblies, when procured separately), shall be III. The finding of any defect for complete release assemblies, (link assemblies and delay assemblies, when procured separately) shall be cause for rejection of the lot.

TABLE I. End item visual defects

| Examine | Defect | Classification Major | Minor |
|---|---|---|---|
| Finish | Omitted or not type specified | 101 | |
| | Coating powdery, coarse grained, mottled, not adherent, evidence of corrosion | 102 | |
| | Supplementary treatment omitted, not type specified, tacky | 103 | |
| | Color not as specified | 104 | |
| | Dirt, oil, grease or other foreign matter | | 201 |
| Design | Any departure from design specified on drawings | 105 | |
| Construction and workmanship | Surface roughness value in excess of rating specified on drawings | 106 | |
| | Any component missing, cracked, malformed, misaligned, damaged | 107 | |
| | Sharp edges, burrs or metal slivers | 108 | |
| | Components incorrectly assembled | 109 | |
| | Components loose | 110 | |
| | Movement of parts inhibited | 111 | |
| | Threaded sections damaged | 112 | |
| Identification marking | Missing, incomplete, illegible, improper location, or not as specified | | 202 |

4.4.4 End item dimensional examination. The end items shall be examined for conformance to the dimensions specified on the drawings. Only those dimensions that can be evaluated without damaging or disassembling the end items shall be examined. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of complete cargo parachute release assemblies consisting of a release mechanism, delay assembly, and a link assembly. The sample unit shall be one complete cargo parachute release assembly with release mechanism, delay assembly, and link assembly. The inspection level for the complete cargo parachute release assemblies consisting of a release mechanism, delay assembly and a link assembly shall be S-2. The finding of any defect for the complete cargo parachute release assemblies, consisting of a release mechanism delay assemblies and link assemblies, shall be cause for rejection of the lot.

4.4.5 End item testing. The end items shall be tested for the characteristics listed in table II. The lot size shall be expressed in units of: complete release assemblies and link assemblies (less delay assemblies, sear spacers and attachment bolts): link assemblies: delay assemblies. The sample unit shall be one complete release assembly and link assembly (less delay assembly, sear spacer and attachment bolt), one link assembly, or one delay assembly, as applicable. Release assembly proofload and release mechanism operation tests specified in table II shall be performed on the same release in the sequence specified in 4.5.1 and 4.5.3. The inspection levels shall be as specified in table II. The finding of any defect shall be cause for rejection of the lot.

TABLE II. End item tests

| Characteristic | Requirement paragraph | Test method | Inspection level |
|---|---|---|---|
| Proofload for: | | | |
| Release assembly with link assembly or link assembly only if procured separately | 3.4.1 | 4.5.1 | I |
| Delay assembly sear extraction force | 3.4.2 | 4.5.2 | S-4 |
| Operation of the release mechanism | 3.4.3 | 4.5.3 | I |

4.4.6 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in

units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2. The finding of any defect shall be cause for rejection of the lot.

| Examine | Defect |
|---|---|
| Marking (exterior and interior) | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |
| Materials | Any component missing, damaged, or not as specified |
| Workmanship | Inadequate application of components, such as: incomplete sealing or closure of flap, improper taping, loose strapping, or inadequate stapling<br>Bulged or distorted container |
| Content | Number per container is more or less than required |

4.4.7 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1. The finding of any defect shall be cause for rejection of the lot.

| Examine | Defect |
|---|---|
| Finished dimensions | Length, width, or height exceeds specified maximum requirement |
| Palletization | Pallet pattern not as specified<br>Load not bonded as specified |
| Weight | Exceeds maximum load limits |
| Marking | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |

4.5 Methods of inspection.

4.5.1 Release assembly proofload test. The release and link assembly (less the delay assembly, sear spacer and attaching bolt) shall be assembled with the link assembly in the 2201 to 5000 pound position and the catch locked by rotating the spinner fully clockwise as shown on Drawing 11-1-4786. Secure the release and link assembly in a tension testing device by coupling the yoke to the upper attachment provision and the link to the lower provision. The tension testing device shall have the capability of reducing the applied tensile load at a rate of 20 to 40 pounds per second. Coupling may be made by 2-inch wide webbing or other suitable means. The upper attachment

of the tension testing device shall have the ability to rotate plus or minus 5 degrees from vertical in the plane of the release housing body to provide for alignment of tensile forces through the release. Sufficient elasticity in the lower attachment fitting shall be provided to permit approximately 0.03125 inch movement between the fittings at a tensile force level below 1200 pounds to allow for the motion required at the point when the catch releases from the hook in the release-link separation process. Apply a force of not less than 15,000 pounds in the direction shown on Drawing 11-1-4786 at a rate of not less than 5000 pounds per minute. Maintain the 15,000 pound load for not less than 15 seconds, then release the load. The release and link assemblies, or link assembly only if procured as a replacement item, shall be examined after release of the proofload and shall show no visible evidence of failure or permanent deformation.

4.5.2 Delay assembly sear extraction force test. Any suitable fixture may be used to secure the delay assembly for the sear extraction force test. Attach a device to the sear to record the force applied. Remove the safety pin and apply force through the force recording device until the sear is extracted from the delay assembly. Record the force necessary to extract the sear. The delay assembly is considered defective if the force required to extract the sear does not conform to 3.4.2.

4.5.3 Release mechanism test. The release and link assembly (less the delay assembly, sear spacer and attaching bolt), shall be assembled and the catch locked by the spinner as specified in 4.5.1. Install the release and link assembly in the tension testing device as specified in 4.5.1. Apply a tensile load of 5000 pounds to the release assembly in the direction shown on Drawing 11-1-4786 and at a rate of not less than 5000 pounds per minute. Reduce the 5000 pound tensile load to 2000 pounds. Using a suitable tool, rotate the spinner counter-clockwise to its stop, arming the release mechanism. (Caution should be exercised in releasing the spinner in view of inadvertant operation of the release mechanism.) Reduce the 2000 pound tensile load at the rate of 20 to 40 pounds per second until the release mechanism functions and the link assembly separates from the release body. Record the tensile load at which the release occurs. The release assembly shall be considered defective if the release load does not conform to 3.4.3.

4.5.4 Procurement of delay assembly as a replacement unit. The delay assembly, when procured as a replacement or spare part shall be tested for conformance to 3.4.2 in accordance with the requirements of 4.4.5 and 4.5.2.

4.5.5 Procurement of link assembly as a replacement unit. The link assembly, when procured as a replacement or spare part (see 6.5) shall be tested for conformance to proofload requirements of 3.4.1 in accordance with requirements of 4.4.5 and 4.5.1. In the proofload test 4.5.1 the contractor may, at his option, simulate the release assembly in the attachment of the link assembly to the tensile testing device.

## 5. PACKAGING

5.1 Preservation and packing. Levels of preservation and packing shall be in accordance with the procurement order/contract or in accordance with MIL-STD-2073-1 and ASTM-D-3951 (see 6.2).

5.2 Palletization. When specified (see 6.2), palletization shall be in accordance with the procurement order/contract or MIL-STD-147.

5.3 Marking. Marking shall be in accordance with the procurement order/contract or MIL-STD-129.

## 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 cargo parachute release is used to automatically disengage the parachute from the load at the moment of ground impact. This prevents the parachute from dragging or overturning the load. The cargo load range for this release is 1,300 to 5,000 pounds.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
c. When a first article is required (see 3.1, 4.3 and 6.3).
d. When a separate procurement of delay assemblies is desired (see 1.1 and 4.5.4).
e. When separate procurement of link assemblies is desired (see 1.1 4.5.5).
f. Levels of preservation and packing (see 5.1).
g. When palletization is required (see 5.2).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation (FAR) 52.209-4. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Delay cartridge. The time delay cartridge used in this release is a 20 second cartridge, NSN 1377-01-178-6691, Naval Sea Systems Command, Drawing No. 6106216.

6.5 Release assembly. The release assembly, if required for test of the link assembly when procured as a replacement unit, shall be obtained from the procuring activity.

6.6 Subject term (key word) listing.

Mechanism, control

6.7 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.

Custodians:

Army - GL
Navy - AS
Air Force - 82

Preparing activity:

Army - GL

(Project 1670-0805)

Review activities:

Army - AV
Navy - MC
Air Force - 99

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

| I RECOMMEND A CHANGE: | 1. DOCUMENT NUMBER | 2. DOCUMENT DATE (YYMMDD) |
|---|---|---|
| | MIL-R-43003F | 940112 |

3. DOCUMENT TITLE

RELEASE, CARGO PARACHUTE, 5000-POUND CAPACITY

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

| a. NAME (Last, First, Middle Initial) | b. ORGANIZATION | |
|---|---|---|
| c. ADDRESS (Include Zip Code) | d. TELEPHONE (Include Area Code)<br>(1) Commercial<br>(2) AUTOVON<br>(If applicable) | 7. DATE SUBMITTED (YYMMDD) |

8. PREPARING ACTIVITY

| a. NAME | b. TELEPHONE (Include Area Code)<br>(1) Commercial | (2) AUTOVON/DSN |
|---|---|---|
| U.S. Army Natick RD&E Center | 508-651-5235 | 256-5235 |
| c. ADDRESS (Include Zip Code)<br>Commander, U.S. Army Natick RD&E Center<br>ATTN: SATNC-UC<br>Natick, MA 01760-5017 | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:<br>Defense Quality and Standardization Office<br>5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466<br>Telephone (703) 756-2340 AUTOVON 289-2340 | |