INCH-POUND

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MILITARY SPECIFICATION

QUICK RELEASE, PERSONNEL PARACHUTE HARNESS MX-683(V) 1P

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

1. SCOPE

1.1 Scope. This specification covers a quick release for personnel parachute harness. The quick release is designated MXU-683(V)1/P.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards. Unless otherwise specified, specifications, standards form a part of this specification to extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

PPP-B-636	Boxes, Shipping, Fiberboard

MILITARY

MIL-P-116	Preservation, Method of

STANDARDS

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	Marking for Shipment and Storage

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this use in improving this document should be addressed to the SA-ALC/TIRDM, Kelly AFB, TX 78241-5609, by using the self-addressed Standardization Document Proposal DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 1670

MIL-STD-130	Identification Marking of US Military Property
MIL-STD-831	Test Reports, Preparation of
MIL-STD-970	Standards & Specifications, Order of Preference For The Selection Of
MIL-STD-1949	Inspection, Magnetic Particle
MIL-STD-2175	Castings, Classification and Inspection of
MIL-STD-6866	Inspection, Liquid Penetrant

(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

DRAWINGS

AIR FORCE

81116	Release Assembly
81118	Canopy Link Assembly
81128	Quick Release, Personnel Parachute Harness MXU-683 (V)1/P

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

2.2 Non-Government publications. The following documents form 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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM E 18	Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E 192	Standard Reference Radiographs of Investment Steel Castings for Aerospace Applications

(Copies of publications can be obtained from the American Society for testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

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 MS standards), the text of this document takes precedence. Nothing in this document, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.3), a sample shall be subjected to first article inspection (see 6.2) in accordance with 4.3.1.

3.2 Major components. The major components of the quick release shall be as follows:

a. Release assembly.
b. Canopy link assembly.

3.3 Selection of specification and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-970.

3.4. Design and construction. The design and the construction of the quick release shall be in accordance drawing 81128 and the drawings referenced thereon.

3.4.1 Release assembly. The release assembly shall conform to Drawing 81116 and shall mate with the tongue portion of the canopy link assembly.

3.4.1.1 Principles of operation. The release assembly and the canopy link assembly shall be coupled together and locked or disconnected by the manual operating of the release assembly. The release assembly shall be locked to the canopy link assembly by two rotary lockpins in the release body which engage the two mating protuberances on the tongue of the canopy link assembly. Manual disconnection of the hardware shall be effected by the rotating the safety latch on the top of the release assembly body toward the link, after which the slide that mates with this latch shall be moved away from the link. (These operations are actually performed by squeezing the latch handle and the slide toward each other). A bushing fastened to this slide shall operate the crank arms attached to the rotary lockpins to turn the latter and free the link. Both the slide and the safety latch shall be spring loaded toward their normal (locked) positions.

3.4.2 Canopy link assembly. The canopy link assembly shall conform to drawing 81118. The canopy link assembly shall have an integral tongue and body that will separate as a unit from the release assembly in response to the manual operation of the release assembly and shall have a removable crossbar.

3.4.3 Cleaning of castings. The cleaning of stainless steel castings shall be accomplished by glass bead blasting to avoid corrosive surface deposits.

3.4.4 Annealing of stainless steel. The cleaning of stainless steel parts shall be accomplished in a vacuum furnace or an inert atmosphere.

3.5 Performance.

3.5.1 Interchangeability. The quick releases shall be completely interchangeable with respect to the mating of the male and the female components.

3.5.2 Cycling. When the quick release is cycled by engaging the release assembly with the canopy link assembly and disengaging the release assembly from the canopy link assembly for at least three times, the slide and the latch shall move freely and rapidly upon actuation and shall return quickly and fully to the starting position during all cycles.

3.5.3 Static operation. With a 300-pound tension load applied across the quick release, the manual operation of the release assembly with an actuation force not exceeding 35 pounds shall quickly and easily disconnect the canopy link assembly from the release assembly.

3.5.4 Proof load. The coupled release assembly and the canopy link assembly shall sustain a proof load of 4,500 pounds without permanent deformation or damage.

3.5.5 Ultimate load. The coupled release assembly and the canopy link assembly shall sustain an ultimate load of not less than 8,500 pounds for a 60 second period without structural failure. After the removal of the ultimate load, the mated components of the quick release shall disconnect when an operating force of not more than 35 pounds is applied as specified in 3.4.1.1.

3.6 Marking. Each release assembly shall be marked for identification in accordance with MIL-STD-130.

3.7 Identification of Product. The information included in the identification marking shall be as specified in 3.7.1 through 3.7.3. In the event the requirements specified in 3.7.1 through 3.7.3 conflict with the requirements of the drawings referenced herein, the requirements in 3.7.1 through 3.7.3 shall apply.

3.7.1 Release assembly. Each release assembly shall have an identification label that is marked with the following information:

Quick Release, Personnel Parachute Harness MXU-683(V)1/P
Part Number of Release Assembly
Date (Month and Year) of Manufacture or serial number (first digits of S/N must be year of manufacture)
Contract or Purchase Order Number
Manufacturer's Identification

3.7.2 Canopy link assembly. Each canopy link assembly shall be marked with the following information:

Part Number of Canopy Link Assembly
Date (Month and Year) of Manufacture
Manufacturer's Identification

3.7.3 Crossbar. Each crossbar shall be marked with its part number (including dash number).

3.8 Workmanship. The release is a component in a life support system and the life of the user depends on its functioning properly. The release must be free of cracks when inspected visually and in accordance with paragraphs 4.6.1.1 and 4.6.1.2. Burrs and sharp edges shall be removed in accordance with the applicable drawing(s).

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.

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

(a) First article inspection
(b) Quality conformance inspection

4.3 First article inspection. When specified by the procuring activity (see 3.1 and 6.2), the contractor shall subject the quick release specified in 4.3.1 to the first article inspection. The first article inspection shall consist of all of the inspection methods described herein except that the ultimate load test described in 4.6.6 shall be required for only one quick release. Approval of the first articles shall not preclude the requirement for the performance of the quality conformance inspection.

4.3.1 First articles. The first articles shall consist of three quick releases. The first articles shall be representative of the materials, the processes, the components, the desisgn, the construction, and the worksmanship to be used in the production items. Each first article shall be identified with a tag that is plainly marked with the following information:
Samples submitted by (manufacturer's name) on (date) for first article inspection in accordance with the requirements of (this specification number and applicable revision letter) under Contract No._____.

4.3.2 First article inspection report. When specified by the procuring activity (see 6.2), a first article inspection report shall be prepared in accordance with MIL-STD-831.

4.4 Quality conformance inspection

4.4.1 Materials, processes, and components. Materials, processes, and components shall be inspected to ensure compliance with 3.4.3 and 3.4.4 and with the applicable requirements of the subsidiary documents referenced herein and on the drawings specified herein.

4.4.2 End item inspection

4.4.2.1 Individual inspection. Each quick release shall be subjected to the following:

(a) Proof load (see 4.6.5)
(b) Interchangeability (see 4.6.2)
(c) Cycling (see 4.6.3)

4.4.2.2 Sampling inspection. The end items shall be subjected to the sampling inspection described in plans A through D.

4.4.2.2.1 Plan A. The inspection level for plan A shall be II of MIL-STD-105. The acceptable quality level for plan A shall be 1.0 defect per 100 units. Samples that have been selected in accordance with plan A shall be subjected to the dimensional examination described in 4.6.1.3.

4.4.2.2.2 Plan B. The inspection level for plan B shall be S-4 of MIL-STD-105. The acceptance quality level for plan B shall be 1.0 defect per 100 units. Samples that have been selected in accordance with plan B shall be subjected to the examination of identification marking described in 4.6.1.4.

4.4.2.2.3 Plan C The inspection level for plan C shall be S-3 of MIL-STD-105. The acceptable quality level for plan C shall zero defects per 100 units. Samples that have been selected in accordance with plan C shall be subjected, in the sequence listed, to the following inspection methods:

(a) Static operation (see 4.6.4)
(b) Ultimate load (see 4.6.6)

4.4.2.2.4 Plan D. The inspection level for plan D shall be II of MIL-STD-105. The acceptable quality level for plan D shall be 1.5 defects per 100 units. Samples that have been selected in accordance with plan D shall be subjected to the visual examination described in 4.6.1.5.

4.4.2.3 Inspection Results.

a. If any quick release fails an individual inspection (4.4.2.1) that release shall be rejected.

b. If any inspection under 4.4.2.2 is failed, a corrective action plan shall be developed and implemented to prevent similar failures on future lots. The lot that the samples represent shall be rejected with the exception of lots that fail plan B above. If plan B is failed, the lot may be either rejected or the markings may be corrected and the lot re-submitted for quality conformance inspections.

4.5 Examination of packaging. Shipping containers fully prepared for delivery except for closure shall be examined, for the defects listed in table I, to determine compliance with the packaging requirements. The sample unit and the unit for the expression of the lot size for this examination of packaging shall be one shipping container fully prepared for delivery except for closure. The inspection level for this examination of packaging shall be S-3 of MIL-STD-105. The acceptable quality level for this examination of packaging shall be 2.5 defects per 100 units.

4.6 Inspection methods

4.6.1 Examinations

4.6.1.2 Dimensional examination. The end item shall be measured with suitable certified instruments or gages to determine conformation to the dimensions specified on the drawings referenced herein.

4.6.1.3 Examination of identification marking. The end item shall be examined to determine compliance with the identification marking specified in 3.7 through 3.7.3

4.6.1.4 Visual examination. The end item shall be subjected to a visual examination (including the use of optical instruments if appropriate) to detect defects such as excessive pits, porosity, cracks, burrs, sharp edges, blistering, flaking, or any other evidence of the inadequate adherence of the plating and of the solid film lubricant coating.

4.6.2 Interchangeability. Each major component shall be tested with a master type of go-no-go gage to determine conformance to the requirements specified in 3.6.1.

4.6.3 Cycling. The end item shall be cycled at least three times. One cycle shall consist of the full engagement of a release assembly from a canopy link assembly. If the latch or the slide fails to move freely and rapidly upon actuation and to return quickly and fully to the starting position during all cycles, the item shall be rejected.

TABLE I. Examination of packaging

Examine	Defects
Marking	Omitted; incorrect; incomplete; illegible; or improper size, location, sequence, or method of application
Materials	Any component missing or not as specified
	Any component damaged or otherwise defective
Workmanship	Inadequate application of components such as incomplete closure of case liners or container flaps; loose strapping; or inadequate stapling
	Bulging or distortion of containers
Weight	Gross or net weight exceeds requirement
Contents	Quantity of hardware assemblies per container more or less than specified

4.6.4 Static operation. The components shall be subjected to the static operation test. The quick release shall be installed in a tensile testing apparatus that is capable of applying and maintaining the load specified in 3.5.3 but still allowing access to and operation of the release assembly. The quick release shall be mounted and restrained so that the release assembly can be operated and the load can be

released without damage to the release assembly or the canopy link assembly and without risk of injury to the test operator. The load specified in 3.5.3 shall be applied. The release assembly shall then be operated both manually and via calibrated spring scale. This step may have to be repeated several times before the release force stabilizes. The force required to effect release during the first static operation test shall not exceed 35 pounds. The force required to effect release during the second static operation test shall be within plus or minus 20 percent of the force that was obtained in the first static operation test but shall not exceed 35 pounds.

4.6.5 Proof load. Each major component(3.2) shall be subjected to the proof load test. Suitable lengths of nylon webbing that has a breaking strength at least equal to the ultimate strength of the hardware shall be installed in a manner simulating its use in a parachute harness section. The hardware shall be centered between the webbing grips. The hardware shall be loaded to the proof load specified in 3.5.4. The proof load shall be sustained for 5seconds and then reduced to zero. The hardware shall be examined for freedom from permanent deformation and damage.

4.6.6 Ultimate load. The component(s) shall be subjected to the ultimate load test described herein. The hardware shall be installed in webbing sections that have a strength at least equal to the ultimate strength of the hardware to be tested. The ends of the webbing shall be installed in a suitable tensile testing machine. The hardware shall be centered between the jaws of the machine. The hardware shall be loaded to the ultimate load specified in 3.5.5 at the jaw separation rate of approximately 4 inches per minute. The ultimate load shall be sustained for 60 seconds and then removed. After the ultimate load has been removed, the release assembly of the quick release shall be manually operated to determine compliance with the requirements specified in 3.5.5. When specified by the procuring activity (see 6.2), the hardware shall then be subjected to loads that are greater than the ultimate load specified in 3.5.5, at the jaw separation rate of approximately 4 inches per minute, until structural failure occurs.

5. PACKAGING

5.1 Preservation and packaging. Preservation and packaging shall be level A or C (see 6.2).

5.1.1 Level A. Each quick release shall be preserved and packaging in accordance with method III of MIL-P-116.

5.1.2 Level C. Each quick release shall be preserved and packaged in a manner that will afford adequate protection against corrosion, deterioration, and physical damage during shipment from the supply source to the first receiving activity. The supplier may use his commercial practice provided it meets this requirement.

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

5.2.1 Level A. Quick releases that have been preserved and packaged as specified in 5.1.1 shall be packed in a weather resistant shipping container that conforms to PPP-B-636. The grade of each shipping container, determined by the gross weight and size, shall be limited to the applicable special requirement table of the specification. Where practical the exterior shipping container shall be of uniform shape and size and of minimum cube and tare weight. Closure and strapping shall be in accordance with the appendix of PPP-B-636.

5.2.2 Level B. Level B packing shall be the same as level A packing except that the shipping container shall be class domestic.

5.2.3 Level C. The quick releases shall be packed in a shipping container that will be acceptable to the carrier, at the lowest rate, and in a manner to ensure safe transportation to point of delivery. The containers shall comply with the rules and regulations that are applicable to the mode of transportation.

5.3 Marking. In addition to any other marking required by the contract, the interior and the exterior containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The quick release is covered by this specification is a flight-safety and life-saving device that is intended to be use in all types of parachute harnesses to disconnect the parachute harness shoulder straps from the parachute canopy risers.

6.2 Order data. Procurement documents should specify the following:

(a) Title, number, and date of this specification
(b) First article requirements (see 3.1, 4.3, 4.3.1, 4.3.2, 4.6.6, and 6.3)
(c) Selection of applicable levels of preservation and packaging and packing (see 5.1 and 5.2

6.3 First articles. First articles (if required) should be tested and approved under the appropriate provisions of 7-104.55 of the Armed Services Procurement Regulation. The first articles (see 4.3.1) should be preproduction samples and should consist of three quick releases. The contracting officer should include specific instructions, in all procurement instruments, regarding arrangements for the inspection and the approval of the first articles.

6.4 Subject term (key word) listing.

Canopy Link
Cross Bar

Custodian:
Air Force - 99

Preparing activity:
Air Force - 82

Project 1670-F746