

INCH-POUND

MIL-DTL-25959F  
19 January 2007

SUPERSEDING  
MIL-DTL-25959E  
28 June 2000

## DETAIL SPECIFICATION

### TIE DOWN, TENSIONERS, CARGO, AIRCRAFT

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

#### 1. SCOPE

##### 1.1 Scope.

This specification covers two types and styles of aircraft cargo tie down tensioners, and excludes cargo chains. Type I (10,000 pound) and Type II (25,000 pound) cargo chains are governed under MIL-DTL-6458 and are procured separately from the tensioners in this specification.

##### 1.2 Classification.

Tie down tensioners covered by this specification are one of the following types and styles:

Type I - 10,000 pound capacity.

Style A - MB-1

Style B - CGU-4/E

Type II - 25,000 pound capacity.

Style A - MB-2

Style B - CGU-3/E

Comments, suggestions, or questions on this document should be addressed to ASC/ENOI, 2530 Loop Road West, Bldg 560, Wright-Patterson AFB OH 45433-7101 or e-mailed to [Engineering.Standards@wpafb.af.mil](mailto:Engineering.Standards@wpafb.af.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

AMSC

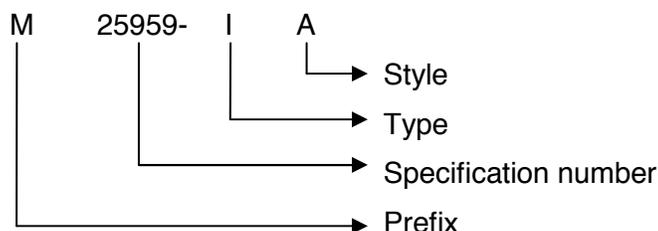
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**1.3 Part or Identifying Number (PIN)**

PINs to be used for aircraft cargo tie down tensioners acquired to this specification are created as follows:



Type		Style	Government designation
I	10,000 lb capacity	A	MB-1
I	10,000 lb capacity	B	CGU-4/E
II	25,000 lb capacity	A	MB-2
II	25,000 lb capacity	B	CGU-3/E

**2. APPLICABLE DOCUMENTS****2.1 General.**

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

**2.2 Government documents.****2.2.1 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 cited in the solicitation (see 6.2).

**DEPARTMENT OF DEFENSE SPECIFICATIONS**

MIL-DTL-6458 Chain Assemblies, Single Leg, Aircraft Cargo Tie Down

**DEPARTMENT OF DEFENSE STANDARDS**

MIL-STD-130 Identification Marking of U.S. Military Property

MIL-STD-810 Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

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(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Ave., Bldg 4D, Philadelphia PA 19111-5094.)

**2.3 Non-Government publication.**

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

**AMERICAN SOCIETY FOR QUALITY (ASQ)**

ANSI/ASQ Z 1.4                      Sampling Procedures and Tables for Inspection by Attributes

(Copies of this document are available from [www.asq.org](http://www.asq.org) or the American Society for Quality, 600 North Plankinton Ave., Milwaukee WI 53203-2914 or [www.ansi.org](http://www.ansi.org) or the American National Standards Institute, 25 West 43<sup>rd</sup> St., 4<sup>th</sup> Floor, New York NY 10036.)

**2.4 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 Qualification.**

The tie down tensioners furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable Qualified Products List before contract award (see 4.2 and 6.3).

**3.2 Materials.**

All materials shall be suitably treated to resist corrosion due to electrolytic decomposition, fungus, salt spray, and any other atmospheric condition that may be encountered during operational use or storage.

**3.3 Design and performance.**

Tie down tensioners shall be a simple one handle release mechanism, lightweight, compact as possible and shall be constructed so that no parts will work loose in service. It should be of rugged construction so as to withstand the rough handling encountered in installation and service. Frequent dropping of the tensioner from a height of 16 feet onto a concrete runway should not deform the tensioner in such a manner that it would cause it to be rendered inoperable. There shall be no sharp corners or other stress risers, which would tend to cause cracks with repeated use under normal operating conditions. All mechanisms shall be so constructed that they will not cause injury to operating personnel. The MB-1 and MB-2 design shall be such that the adjuster mechanism hooks face downward when the tie down tensioners are positioned with the release levers on top. The CGU-4/E is the same as the MB-1 except the adjuster mechanism hook is turned 180 degrees, and the CGU-3/E is the same as the MB-2 except the adjuster mechanism hook is turned 180 degrees.

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**3.3.1 Tensioning ability.**

After preliminary adjustment of the tie down tensioner to remove excess slack, the tensioning assembly shall be operable and shall be capable of applying tension to the chain of not less than 300 pounds with a manually applied torque of not more than 60 inch pounds acting on the tensioning adjustment control. Additionally, no component of the tensioner shall fail when torques of 85 inch pounds are applied to the tensioning adjustment control, in the tensioning direction while the tensioner is fully retracted, and in the loosening direction, when in the fully extended position. Failure is defined as catastrophic as well as permanent deformation of components. The tensioning adjustment control shall have a minimum height of one inch. It shall be of circular design with raised area to aid grip during tensioning.

**3.3.2 Tension releasing.**

The tie down tensioner shall be so designed that the chain assembly (component attached to the cargo) can be manually released and automatically separated from the tensioning assembly with one hand in a single operation with an applied force not exceeding 50 pounds while restraining loads that apply 5000 pounds tension on the chain. Tension release mechanism designs which require personnel to grasp or touch any portion of the tensioner or chain assembly that will remain attached to the cargo after operating the mechanism are unsafe, and unacceptable. It shall also be possible, by the application of additional force not to exceed 100 pounds (for both the type I and II tensioners), to release the chain assembly from the tensioning assembly while restraining loads that apply 10,000 pounds tension (MB-1 and CGU-4/E) or 25,000 pounds (MB-2 and CGU-3/E). Any release mechanism, which results in any component of the tensioning assembly becoming detached or damaged or does not permit the tie down tensioner to be immediately reapplied shall not be acceptable. The mechanism shall be designed in such a manner that inadvertent release of the mechanism by personnel moving about the aircraft does not occur. Any design, which requires operating personnel to exercise extreme caution in releasing the tie down under the proof loads, cited in this specification shall not be acceptable.

**3.4 Components.**

Installed cargo tie down assemblies consist of a chain assembly attached to a tensioning assembly

**3.4.1 Chain assembly.**

The chain assembly shall conform to MIL-DTL-6458 as follows:

- a. Type I chain assembly for MB-1 and CGU-4/E tie down (10,000 pound capacity).
- b. Type II chain assembly for MB-2 and CGU-3/E tie down (25,000 pound capacity).

**3.4.2 Tensioning assembly.**

The tensioning assembly adjustment shall be capable of quickly providing any adjustment within the range of 0 to at least 3.5 inches for MB-1 and CGU-4/E tie down, and 0 to at least 4.5 inches for the MB-2 and CGU-3/E tie down. Preliminary adjustment of the tie down length shall be accomplished as specified (see 3.4.2.2). Final adjustment of the tie down length shall be provided by a take-up in the tensioning assembly itself.

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**3.4.2.1 Ring attachment hook.**

One end of the tensioning assembly shall be provided with a flat hook to permit rapid attachment of the tensioning assembly to a ring having a minimum clear open diameter of 1.25 inches for the MB-1 and CGU-4/E tie downs and a minimum of two (2) inches for the MB-2 and CGU-3/E tie downs. The stock cross-sectional diameter shall not be less than 0.875 inch for the MB-1 and CGU-4/E tie downs and not less than one (1) inch for the MB-2 and CGU-3/E tie downs. The tip of the hook shall be wedge shaped so that operating personnel can use the tensioning assembly as a handle to scoop up and attach the hook to tie down rings in the aircraft floor. A spring-loaded mechanism or similar positive automatic-acting system shall be provided on the hook to prevent inadvertent disengagement when the tensioner is subjected to ultimate proof load. Pressure of the ring against the keeper shall permit the ring to enter the hook. Disengagement of hook and tie down ring shall be accomplished by manually depressing the keeper.

**3.4.2.2 Chain attachment.**

As a preliminary adjustment, the opposite end of the tensioning assembly shall be provided with a mechanism that will permit the tensioning assembly to be quickly attached to any link of the chain assembly with the exception of end links. This attachment shall provide any tie down length within the limits imposed by the chain link configuration and the lengths of the chain and tensioning assemblies. A spring loaded chain attachment mechanism or similar positive automatic-acting system shall be provided so that the chain will not become detached from the tensioning assembly during the operations required to apply the tie down when in use. The chain shall not become detached due to any manipulation of the chain including pushing, pulling, and twisting the links of the free end of the chain. Any design that requires the chain assembly to thread through the tensioning assembly or requires manipulation of the mechanism to attach the chain assembly will not be acceptable. The MB-1 and CGU-4/E chain attachment mechanism shall be capable of attachment to any chain that falls within dimensional requirements of MIL-DTL-6458, type I. The MB-2 and CGU-3/E chain attachment mechanism shall be capable of attachment to any chain that falls within dimensional requirements of MIL-DTL-6458, type II.

**3.4.2.3 Tensioning threads.**

Threads used for the primary tensioning mechanism where exposed shall be tolerant of damage due to dropping that may impair tensioning ability. Threads shall have a pitch no finer than that of UNC for the diameter used. Alternative thread profiles may be used.

**3.4.3 Dimensions.**

The dimensions of the tensioning assembly, including the space through which levers and other mechanisms move, shall not exceed envelope sizes as shown in table I.

**TABLE I. Tie down dimensions**

<b>Tie down</b>	<b>Length</b>	<b>Width</b>	<b>Height</b>
MB-1 and CGU-4/E	15 inches	4 inches	3.5 inches
MB-2 and CGU-3/E	18 inches	5 inches	4 inches

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**3.5 Operation.**

The four styles of tie downs listed in this specification shall be capable of being easily operated in world wide environmental conditions (see 3.7). The tie downs must function easily by personnel wearing aircrew cold weather work gloves (or mittens) and/or chemical/biological gloves (or mittens). The tension release mechanism shall be designed to allow one handed operation using a three or four finger grasp by personnel wearing aircrew cold weather work gloves (or mittens) and/or chemical/biological gloves (or mittens). All mechanisms shall be manually operable without the use of tools or supplementary devices. Positive locking shall be incorporated in the tensioning mechanism and automatically engage upon completion of the tensioning operation. It shall be possible to override the positive locking feature to gradually remove tension without releasing and separating the chain. The mechanism shall be capable of one handed tensioning and release by one crewmember.

**3.6 Loads.****3.6.1 Proof loads.**

Tie down tensioners shall be capable of withstanding a proof load of 12,000 pounds for the MB-1 and CGU-4/E and 30,000 pounds for the MB-2 and CGU-3/E for 30 seconds without permanent deformation or damage to include plastic yielding or cracking. Additionally, no component of the tensioner shall be damaged or permanently deformed when torques of 85 inch pounds are applied to the tensioning adjustment control, in the tensioning direction while the tensioner is fully retracted, or in the loosening direction, when in the fully extended position.

**3.6.2 Axial torque loads.**

Tensioners shall be capable of withstanding an axial torque load of 2000 inch-pounds for the MB-1 and CGU-4/E and 4000 inch pounds for the MB-2 and CGU-3/E in either direction for 30 seconds without permanent deformation or damage.

**3.6.3 Ultimate loads.**

Tensioners shall be capable of withstanding a sustained ultimate load of 14,100 pounds for the MB-1 and CGU-4/E and 35,250 pounds for the MB-2 and CGU-3/E for 30 seconds without failure. During this test, part damage and deformation is allowed but complete rupture of hardware or failure to withstand load shall not be permitted.

**3.6.4 Maximum service load rating.**

The maximum allowable service load, or max load rating for safe operation is 10,000 pounds for the MB-1 and CGU-4/E and 25,000 pounds for the MB-2 and CGU-3/E tie down tensioners. Tensioners shall be permanently marked with the appropriate rating per paragraph 3.11.

**3.7 Environmental conditions.**

The tie downs shall be capable of operating satisfactorily under the following conditions:

- a. Exposure to salt sea atmosphere.
- b. Sand and dust particles as encountered in desert areas.
- c. Vibrations encountered during use in transport aircraft (see 6.2).

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- d. Must be capable of operating (per 3.3.1, 3.3.2) at both high and low extreme temperatures from ranges of -65 thru 160 °F .

**3.8 Weight.**

**3.8.1 Weight of the MB-1 and CGU-4/E.**

The weight of the MB-1 and CGU-4/E tensioning assembly shall not exceed 3.9 pounds each.

**3.8.2 Weight of the MB-2 and CGU-3/E.**

The weight of the MB-2 and CGU-3/E tensioning assembly shall not exceed 6.5 pounds each.

**3.9 Reliability.**

The tie down shall perform in its intended environment (see 3.7) for at least 30 years of continuous use with no loss of function or safety.

**3.10 Interchange.**

All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

**3.11 Identification.**

Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130. The contract number and date, date of manufacture, contractor part number, and classification is mandatory. The tensioner shall be marked to indicate the maximum load rating specified in 3.6.4. These markings must be permanent.

**3.12 Safety.**

The tie downs shall be functional without sharp edges, burrs, or protrusions that might injure operational personnel or prevent the operation of the tie downs in restricted locations. Operation of tie down equipment shall not present undue hazards to personnel during tie down of cargo, while the cargo is secured, during the release of cargo restraint, or during removal or stowage of the tie downs. Tie down tensioners shall be capable of being released using only one hand to allow the safe airborne jettison of cargo. Normal operation shall not present cutting, pinching, stabbing, nor abrupt impact hazards to personnel or present a chemical/biological gear tearing hazard.

**3.13 Maintenance.**

The tie down shall not require periodic maintenance or adjustment (other than lubrication every five years) to maintain its serviceability.

**3.14 Recycled, recovered, or environmentally preferable materials.**

Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the materials meet or exceed the operational and maintenance requirements, and promote economically advantageous life cycle costs.

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**3.15 Toxic chemicals, hazardous substances, and ozone depleting chemicals (ODCs).**

The use of toxic chemicals, hazardous substances, or ODCs shall be avoided, whenever feasible.

**4. VERIFICATION****4.1 Classification of inspection.**

The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.2).
- b. Conformance inspection (see 4.3).

**4.1.1 Sampling for inspection.**

Except as otherwise specified, sampling and associated procedures for formation of lots shall be in accordance with ANSI/ASQ Z1.4.

**4.2 Qualification inspection.**

Qualification inspection shall be performed on three tie down assemblies. This inspection shall include the examination under 4.6 and the tests indicated in 4.7.

**4.2.1 Qualification matrix.**

The testing sequence is shown in table II.

**TABLE II. Testing sequence.**

Test Paragraph	Test Article A	Test Article B	Test ArticleC
4.7.1 & all subparagraphs	1		
4.7.1.4		5	3
4.7.1.5		6	4
4.7.2.1		2	
4.7.2.2		3	
4.7.2.3		4	
4.7.2.4			1
4.7.2.5			2
4.7.3.1	2		
4.7.3.2	3		
4.7.3.3	4		
4.7.4		1	
4.7.5			5

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**4.2.2 Inspection sample.**

The inspection sample shall consist of three tie downs, of the type submitted for qualification, which shall be identified with the supplier's product identification number and any additional identification required by the procuring activity.

**4.3 Conformance inspection.**

Conformance inspection shall include examinations and inspections under 4.3.1, 4.3.2, and 4.6 and tests included in 4.7.1.4 and 4.7.1.5.

**4.3.1 Visual characteristics examination.**

The sample unit shall be one tie down. Characteristics to be examined are shown in table III. Major defects are unacceptable and constitute failure to meet this specification. Defects classified as minor will require qualifying activity (77AESG/TA) review for acceptance.

**TABLE III. Visual examination**

Examine	Defect	Classification	
		Major	Minor
Tie down tensioner	Component missing.	X	
	Cracks, yielding deformation & other damage that could affect performance.	X	
	Minor surface rust or corrosion.		X
	Test induced burrs or sharp edges.		X
Identification marking	Missing, incomplete, incorrect, or not legible.	X	
Workmanship	Manufacturing induced loose, cocked, or inadequately headed rivets; distorted or loose bushings and pins; burrs and sharp edges; rough, malformed, misaligned, or improperly fabricated fittings.	X	

**4.3.2 Dimensional inspection.**

The sample unit shall be one tie down. Inspection shall be made to determine conformance to the applicable dimensional requirements (see 3.4.2, 3.4.2.1, 3.4.2.2, and 3.4.3).

**4.4 Test conditions.**

Unless otherwise specified, all tests shall be performed in accordance with the test conditions specified in MIL-STD-810 for the applicable test.

**4.5 Requirements cross-reference matrix.**

Table IV provides a cross-reference matrix of the section 3 requirements tested or verified in section 4.

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**TABLE IV. Requirements cross-reference matrix**

<b>Requirement</b>	<b>Verification</b>
3.2	4.6, 4.7.2.1
3.3	4.6
3.3.1	4.7.1.4
3.3.2	4.7.1.5
3.4	4.6
3.4.1	4.6
3.4.2	4.7.1.3
3.4.2.1	4.3.2, 4.6
3.4.2.2	4.3.2, 4.6
3.4.2.3	4.6
3.4.3	4.3.2
3.5	4.7.1.2
3.6.1	4.7.3.1
3.6.2	4.7.3.2
3.6.3	4.7.3.3
3.7	4.7.2 & sub-paragraphs
3.8.1	4.6
3.8.2	4.6
3.9	4.7.2, 4.7.4, 4.7.2.1 through 4.7.2.4
3.10	4.6
3.11	4.3.1.4.6
3.12	4.6, 4.7.1.2, 4.7.1.5, 4.7.3.3
3.13	4.6
3.14	4.6
3.15	4.6

**4.6 Examination.**

Each tie down assembly shall be examined for compliance with the requirements specified (see 3.2, 3.3, 3.4, 3.4.1, 3.4.2.1, 3.4.2.2, 3.4.2.3, 3.8.1, 3.8.2, 3.10, 3.11, 3.12, 3.13, 3.14, and 3.15). Any redesign or modification of the contractor's standard product to comply with specific requirements or any necessary redesign or modification following failure to meet the specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations for dissimilar metals as well as dimensional requirements (see 6.4).

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**4.7 Tests.****4.7.1 Performance.****4.7.1.1 Test methods.**

Except otherwise specified, tests shall be conducted with the tie down working length adjusted to three to six (3 to 6) feet.

**4.7.1.2 Operations test.**

The operations test ensures that gloves do not cause interference or otherwise present a safety hazard to the user during tie down operations. The test shall be performed in conjunction with the tensioning test (see 4.7.1.4) and the release test (see 4.7.1.5). These tests shall be conducted with test personnel wearing cold weather and/or chemical/biological gloves (see 3.5).

**4.7.1.3 Manual adjustment test.**

This test consists of performing the tensioning test (see 4.7.1.4) at three incremental lengths specified by the Government (see 6.2).

**4.7.1.4 Tensioning test.**

With the tie down connected between two fixed points three to nine (3 to 9) feet apart, the tensioning mechanism shall be operated and checked for compliance with the requirements (see 3.3.1 and 3.4.2).

**4.7.1.5 Release test.**

The tie down shall be adjusted to a length of approximately three to six (3 to 6) feet and assembled in a test machine. A load of 5000 pounds shall then be applied and the release mechanism operated manually while sustaining this load. The assembly shall then be released while sustaining a 10,000-pound load (MB-1/CGU-4/E) or a 25,000-pound load (MB-2/CGU-3/E). The release mechanism shall be as specified (see 3.3.2). The tie down shall be suspended between two (2) free-swiveling rings that are positioned at least 80 inches apart in the same horizontal plane with sufficient slack in the connection to permit at least five (5) inches of sag in the assembly. The tie down shall be rotated slowly through 360 degrees. Under these conditions, the chain shall not become detached from the tensioning assembly.

**4.7.2 Environmental tests.**

Environmental testing shall be planned and conducted under the guidance of MIL-STD-810. At the conclusion of each test, and during the temperature tests, the tie down shall be checked for compliance with the adjustment requirements (see 3.4.2) and subjected to the tests specified (see 4.7.1.4 and 4.7.1.5).

**4.7.2.1 Salt fog.**

The tie down shall be subjected to a salt fog test in accordance with MIL-STD-810, 5% salt spray (see 3.2, 3.7, 3.9) upon completion of accelerated handling test.

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**4.7.2.2 Sand and dust.**

The tie down shall be subjected to a dust test in accordance MIL-STD-810. Note: If 140-mesh silica flour is used, local environmental laws and criteria must be observed (see 3.7 and 3.9).

**4.7.2.3 Vibration.**

The tie down shall be assembled between two points that are three (3) feet apart and tensioned to 300 pounds. The tie down shall be subjected to a random vibration test in accordance with MIL-STD-810. The vibration profiles shall encompass the profiles for jet and propeller cargo aircraft, including the C-130J (see 3.7.c. and 3.9).

**4.7.2.4 Low temperature.**

The tie down shall be subjected to a low temperature functional test in accordance with MIL-STD-810, and a temperature of -65 °F (see 3.7 and 3.9).

**4.7.2.5 High temperature.**

The tie down shall be subjected to a high temperature functional test in accordance with MIL-STD-810, except the maximum temperature shall be 160 °F (see 3.7 and 3.9).

**4.7.3 Load tests.****4.7.3.1 Proof-load test.**

The tie downs shall be subjected to proof loads of 12,000 pounds for the MB-1 and CGU-4/E and 30,000 pounds for the MB-2 and CGU-3E for 30 seconds as specified (see 3.6.1). During this test, there shall be no slippage of the chain through the adjustment device. After this test, there shall be no damage or visible deformation and the tie down must remain fully functioning.

**4.7.3.2 Axial torque load test.**

A tie down for the test shall be adjustable with the hook extended 2.0 inches from the fully retracted position. The hook of the tie down shall be inserted into a fixed ring and a 2000 in/lb torque load shall be applied to the appropriate size chain, or suitable device that simulates the chain, inserted into the chain attachment mechanism for 30 seconds. Alternatively, the chain or chain simulating device may be fixed, and the axial torque load be applied through an adapter connected to the hook that simulates the aircraft tie down attachment ring. For stability the tensioner may rest on fixture hardware, but shall not be clamped in any manner. After the torque load is removed, there shall be no damage or visible deformation and the tie down must remain fully functioning.

**4.7.3.3 Ultimate-load tests.**

Tensioners shall be subjected to torques of 85 inch pounds applied to the tensioning adjustment control, in the tensioning direction while the tensioner is fully retracted, and in the loosening direction, when fully extended. Additionally, the tie downs shall be subjected to ultimate loads of 14,100 pounds for the MB-1, CGU-4/E, and 35,250 pounds for the MB-2 and CGU-3/E for 30 seconds as specified (see 3.6.3). During these tests, part damage and deformation is allowed but complete rupture of hardware or failure to withstand load or torques shall not be permitted. After these tests, the release mechanism must be operable so that the chain can be separated from the tensioning assembly and be immediately reinstalled by hand without the use of tools.

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**4.7.4 Accelerated handling and Inadvertent release test.**

One tie down shall be fully extended and suspended by two (2) feet of the appropriate chain type inside the tumbler with one end of the chain attached to the center of an inside surface of the tumbler vessel, with the other end connected to the tensioner's chain attachment device as intended for flight and described in 3.4.2.2. The dimensions of the tumbler vessel and orientation during testing shall result in the tensioner being suspended at least one (1) inch above the inside surface opposing the chain to tumbler vessel attachment point when the chain surface is rotated to its highest position above the ground. The tumbler shall be designed, configured, and operated in such a manner that causes the tensioner to at times tumble against the inside surface(s), and other times only being supported by its chain. The tumbler and installed tie down shall be operated in this manner at a constant speed for one (1) hour. At the conclusion of this test, all tie down mechanisms shall be inspected to verify the chain was not inadvertently released and then be subjected to the salt fog test (see 4.7.2.1). At the conclusion of these tests the tensioner shall be operable as specified (see 3.3.1 and 3.3.2) by testing as specified (see 4.7.1.4 and 4.7.1.5).

**4.7.5 Drop test.**

One(1) tie down with at least two (2) feet of the appropriate type chain installed in the chain attachment device shall be dropped five (5) times from a height of 16 feet onto a flat concrete surface. At the conclusion of this test, the tie down shall not have inadvertently released the chain, and shall be operable as specified (see 3.3.1 and 3.3.2) by testing as specified (see 4.7.1.4 and 4.7.1.5).

**5. PACKAGING****5.1 Packaging.**

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

**6. NOTES**

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

**6.1 Intended use.**

The tie downs covered in this specification are intended for use in securing cargo for transportation in military aircraft.

**6.2 Acquisition requirements.**

Acquisition requirements must specify the following:

- a. Title, number, and date of this document.
- b. Type and style required (see 1.2).

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- c. Vibration profile consistent with transport aircraft (see 3.7.c).
- d. Incremental lengths for conducting manual adjustment test (see 4.7.1.3).
- e. Any additional end item tests for acceptance or verification purposes.
- f. Packaging requirements (see 5.1).
- g. Item identification (see 3.11).
- h. Whether test reports are required.

**6.3 Qualification.**

With respect to products requiring qualification, awards will be made only for products, which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL 25959 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from 77 AESG/TA, 7909 Lindbergh Landing, Brooks City-Base, TX 78235-5306.

**6.4 Dissimilar metals inspection.**

Historically, MIL-STD-882, Dissimilar Metals, has been used to provide guidance on the use of dissimilar metals.

**6.5 Subject term (key word) listing.**

140-mesh silica flour

Axial torque load

CGU-3/E

CGU-4/E

Dust test

Fog test

MB-1

MB-2

**6.6 Changes from previous issue.**

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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CONCLUDING MATERIAL

Custodian:

Navy – AS  
Air Force - 11

Preparing Activity:

Air Force - 11

Review activities:

DLA – GS1

Project No. 1670-2006-001

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.