

INCH-POUND  
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SUPERSEDING  
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## PERFORMANCE SPECIFICATION

### RETREAD TIRES, RIBBED TREAD, PNEUMATIC AIRCRAFT, GENERAL SPECIFICATION FOR

This specification is approved for use by the Department of the Air Force and available for use by all departments and agencies of the Department of Defense.

#### 1. SCOPE.

1.1 Scope. This specification covers requirements for a retreaded bias ply or radial ply aircraft tire which has had worn casing restored by renewing the tread material or the tread and sidewall material. A rebuilt aircraft pneumatic tire may be a tube-type or tubeless ribbed and is intended for use on an aircraft wheel. The drawing and slash sheet matrix (shown as Table I.) identifies these retreaded tires by size and ply rating.

#### 2 APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are cited in Sections 3 and 4 of this specification. These lists do not include documents cited in other sections of this specification or recommended for additional information as examples. While every effort has been made to ensure the completeness of these lists, document users are cautioned that they must meet the requirements specified in the documents cited in Sections 3 and 4 of this specification, whether or not they are listed. See Table II for requirements and examination matrix.

Beneficial comments (recommendations, additions and deletions) and any pertinent data which may be of use in improving this documents should be addressed to: Landing Gear Branch, Ogden Air Logistics Center (OO-ALC/LILE), 6040 Gum Lane, Hill AFB, Utah 84056-5825 by using the Standardization Document Identifier Proposal (DD Form 1426) at the end of this document.

AMSC N/A

FSC 2620

DISTRIBUTION STATEMENT A. Approved for public release: distribution is unlimited.

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 (see Section 6.2), the applicable issues of these documents are those listed in the specific issue of the Department of Defense's Index of Specification and Standards (DoDISS) and supplement thereto cited in the solicitation.

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-PRF-5041 - Tires, Ribbed Tread, Pneumatic, Aircraft, General Spec

STANDARDS

DEPARTMENT OF DEFENSE

MS 14113 - Tape, Identification, Color Coded, for Aircraft Tires

(See Supplement 1 for associated MS sheets)

(Unless otherwise indicated (see Section 6.2) copies of the above specifications and standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 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 (see Section 6.2), the applicable issues are those cited in the solicitation.

DRAWINGS

(See Supplement 1 for Air Force drawings)

FEDERAL AVIATION ADMINISTRATION (FAA) PUBLICATIONS

TSO-C62 Technical Standard Order – Aircraft Tires

AC 145-4 Inspection, Retread, Repair, and Alterations of Aircraft Tires

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

2.3 Non-Government Publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the applicable issues of the documents, which have been adopted by Department of Defense, are those listed in the specific issue of the DoDISS cited in the solicitation. Unless otherwise specified (see Section 6.2), the documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR QUALITY (ASQ)

- ANSI/ASQC Z1.4 - Sampling Procedures and Tables for Inspection by Attributes  
(DoD adopted)

(Application for copies should be addressed to: the American Society for Quality, 611 East Wisconsin Ave., P.O. Box 3005, Milwaukee, WI 53202 or the American National Standards Institute, 11 West 42<sup>nd</sup> Street, New York, NY 10036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM D413 - Rubber Property – Adhesion to Flexible Substrate (DoD Adopted)
- ASTM D746 - Plastics and Elastomers by Impact, Brittleness, Temperature of  
(DoD Adopted)

(Application for copies should be addressed to: The American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

THE TIRE AND RIM ASSOCIATION, INC. (TRA)

TRA AIRCRAFT YEARBOOK

(Application for copies should be addressed to the Tire and Rim Association, Inc., 175 Montrose West Ave., Suite 150, Copley, OH 44321.)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

- SAE 4834 - Aircraft Tire Retreading Practice – Bias and Radial

(Application for copies should be addressed to: Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-2001.)

### 3. REQUIREMENTS

3.1 Qualification. The retreaded tires furnished under this specification shall be products that are authorized by the qualifying activity for listing on the application Qualified Products List (QPL) before contract award (see 4.2 and 6.3). Changes in plants, construction, materials, or processes that affect performance of the retreaded tire shall require requalification per this specification. Qualification testing is only required with the first (R-1) application of a new tread or as otherwise specified in this document. Design and construction differences between radial tires of different manufacturers dictate that retread qualification (dynamometer) testing be conducted on each radial tire manufacturer's casing. Qualification of bias tire retreads on a single manufacturer's casing qualifies the retread on other manufacturers' compatible casings of the same size, ply rating, speed rating, and National Stock Number.

3.1.1 Qualification casing requirements. Unless otherwise specified in a Table I, referenced drawings or specification sheets (hereinafter referred to as slash sheets), maximum damage {i.e. cuts, fatigue, casing ply exposure, etc.) to candidate tire casings (see 6.5) used for retread qualification shall be in accordance with FAA publication AC 145-4. Each retread manufacturer shall provide a "Process Specification" document detailing the maximum permissible repairs that have been validated by tests, or analysis, or both for approval by the qualifying activity prior to being applied in service. The casings selected for qualification testing shall have no less than 80% of their new molded skid depth (see 6.5) removed by wear (i.e. worn by aircraft usage).

3.1.2 Retread level escalation. Following successful qualification of retreaded tires at the first retread level (see 6.5), each part number shall be escalated in accordance with AC 145-4. The qualification test requirements of this document take precedence over those specified by AC 145-4.

3.2 General requirements. Unless otherwise specified (see 6.2), retreaded tires shall be suitable for use on military aircraft, on all types of improved and unimproved runways, including ships (usually aircraft carrier decks), under all conditions of weather. For retreaded tires not found in a Table I referenced drawing or slash sheet, performance or interface requirements shall be provided by the qualifying activity (see 6.2).

3.2.1 Ambient temperature range. The ambient temperature range over which the retreaded tire is required to operate is -58°F to 125°F (-50°C to 52°C). All retreaded tire compounds maintain their fracture toughness and strength characteristics within this temperature range.

3.2.2 Tire sizing. The retreaded tire size, when inflated to rated inflation pressure and allowed to stretch due to inflation for 12 hours, must meet the grown tire dimensional envelope established for that size by the TRA Aircraft Yearbook. In addition, the retreaded tire, when inflated to its rated pressure and rotated at its rated speed, must meet the "grown and thrown" dimensional envelope established for that size by the TRA Aircraft Yearbook.

3.2.3 Tire dimensions and weight. Dimensions and weight of the retreaded tire shall be as specified in the Table I referenced drawing or slash sheet. All lettering, decorative ribs and designs shall be included in the dimensions. The definition of the tire shoulder (for use in shoulder height and width requirements found in the drawing or slash sheet) is found in the TRA Aircraft Yearbook.

3.2.3.1 Tire dimensions for helicopters. The maximum allowable increase in dimensions for helicopter application of a tire given that the maximum allowable inflation pressure for this application is 1.80 times rated inflation pressure (see 6.5) is 4 percent.

3.2.3.2 Tire bead width. The tire bead width shall not exceed the minimum wheel ledge width as specified in the TRA Aircraft Yearbook.

3.3 Rim interface. Each retreaded tire shall interface with the rim as specified in the Table I referenced drawing or slash sheet.

3.4 Materials. Materials shall be of a quality that will meet the performance requirements specified in Section 3.5 or in the Table I referenced drawing or slash sheet. The use of toxic chemicals, hazardous substances, or ozone depleting chemicals shall be avoided whenever possible.

### 3.5 Performance.

3.5.1 Basic tire performance. Unless otherwise specified (see 6.2), the basic performance of the retreaded tire shall be as specified in the Table I referenced drawing or slash sheet.

3.5.2 Tire speeds. Unless otherwise specified in the Table I referenced drawing or slash, the retreaded tire shall have a minimum velocity capability of 120 mph at the rated load and rated inflation pressure (see 6.5).

3.5.3 Tread pattern. The tread pattern shall be ribbed, having a minimum of three grooves for tires with a cross-sectional width greater than 6.0 inches and a minimum of two grooves for tires with a cross-sectional width of 6.0 inches or less. The grooves shall be continuous and circumferential.

3.5.4 Retreadability. Unless otherwise specified (see 6.2), tires shall have a retread buff line (RBL) (see 6.5) visible in the cross-sectional cut.

3.5.5 Sidewall. The sidewall shall protect the casing against abrasion and weathering.

3.5.6 Venting. Means shall be provided to vent any trapped gases from the casing. If vent holes are used, there shall be at least eight functioning vent holes per sidewall located above the rim flange.

3.5.6.1 Tube type tires. If vent holes are used, they shall be marked with a white or aluminum colored dot. Vent holes may penetrate the liner of the tire (see 6.5).

3.5.6.2 Tubeless tires. If vent holes are used, they shall be marked with a bright green dot. Vent holes shall not penetrate the liner of the tire (see 6.5).

3.5.7 Maximum wear limit (MWL) indicator. The tire shall be provided with a maximum wear limit indicator (i.e. ply count indicator) to specify the maximum number of fabric layers to the outermost structural ply that may be exposed before the tire must be removed from service. A colored wear limit indicator may be incorporated in addition to the ply count indicator. Retreaded tires for Department of Navy use do not require a MWL indicator.

3.5.8 Burst pressure. The retreaded tire shall be designed to withstand a minimum burst pressure as specified in the Table I referenced drawing or slash sheet. If the tire is not listed in Table I, the tire shall be designed to withstand a minimum burst pressure of three times the rated inflation pressure for land-based aircraft or four times the rated inflation pressure for carrier-based aircraft.

3.5.9 Dynamic durability. Unless otherwise specified (see 6.2), excluding wear, retreaded tires for fighter, attack, and trainer aircraft shall withstand a minimum of 50 cycles of taxi, takeoff, and landing; and retreaded tires for other aircraft shall withstand a minimum of 100 cycles of taxi, takeoff, and landing. In addition, for Department of Navy aircraft with carrier-based requirements, retreaded tires shall withstand normal catapults, landing arrestments, and cable strikes without failure.

3.5.9.1 Cord fraying. During the dynamic life (as defined in 3.5.9 above) of the retreaded tire, cord fraying, if present in the groove of the tire, shall be only of the outer layer or cord.

3.5.9.2 Tread chunking. During the dynamic life (as defined in 3.5.9 above) of the retreaded tire, any tread chunk shall not exceed 1 square inch in area or 75 percent of the skid depth (see 6.5). There shall be no more than 3 chunks, each 1/2 to 1 square inch in area; and there shall be no more than 10 chunks totaling more than 4 square inches in area.

3.5.9.3 Groove cracking. During the dynamic life (as defined in 3.5.9 above) of the retreaded tire, there shall be no groove cracking in retreaded tires having all rubber tread. In retreaded with fabric tread (see 6.5), any void in the bottom of the groove shall be no deeper than a void caused by the outer layer of cord being pulled through the rubber stock in the bottom of the groove. There shall be no rib undercutting.

3.5.9.4 Bead separation. Retreading of the tire shall not adversely affect the bead bundle (see 6.5.1). During the dynamic life (as defined in 3.5.9 above) of the retreaded tire, the bead bundle shall not show evidence of separating from the casing plies (see 6.5.3). If bead

wires are used, individual wires shall not show evidence of separating from each other, or of being kinked, broken, or exposed.

3.5.10 Wheel/tire slippage. A mounted retreaded tire, inflated to rated inflation pressure, shall not slip on the wheel rim to such an extent that would damage the tube or valve in a tube type tire or the inflation seal of a tubeless tire.

3.5.11 Inflation pressure retention - tubeless tires. After an initial 12-hour growth, starting at rated inflation pressure, the pressure loss from rated inflation pressure in a tubeless, retreaded tire assembly during the subsequent 24-hour period shall not exceed 5 percent of rated inflation pressure specified in the Table I referenced drawing or slash sheet.

3.5.12 Balance. Retreaded tires shall be balanced, when not inflated, within tolerances specified in the Table I referenced drawing or slash sheet. Out-of-tolerance conditions may be corrected by utilizing balance pads affixed to the inside of the tire. In tube type retreaded tires, the pads shall not chafe the tubes. Balance pad adhesion values shall be as follows: 8 pounds force per inch-width minimum for tubeless tires and 1.5 pounds force per inch-width minimum for tube type tires.

3.5.13 Tread adhesion. Retreaded tires shall have a minimum of 30 pounds force per inch-width adhesion at the interface between the tread or undertread and the outermost structural ply (casing, breaker, or belt ply).

### 3.6 Product identification and marking.

3.6.1 Original tire identification data. Unless otherwise specified (see 6.2), the following identification data (required of the original tire manufacturer) are required to remain on the tire, and shall be replaced by engraving or embossing if removed during retread manufacture:

- a. Size.
- b. On tube type tires, include "TUBE TYPE".
- c. Ply rating ("PR" is permissible).
- d. Serial number. If necessary, re-identify casing with the same number on the same side as originally marked.
- e. Manufacturer's name or trademark, or both (to be located by the manufacturer).
- f. Part number (ensures traceability of casing).

g. Original cut-limit dimension shall remain on the tire only if the limit for the retreaded tire is identical. The cut-limit dimension identification shall be molded once on each sidewall (180 degrees from the cut-limit marking on the opposite sidewall) as shown in Figure 1. Retreaded tires for the Department of the Navy shall have two cut limit identification markings on each sidewall of the tire 180 degrees apart.

h. The original maximum wear limit (MWL) marking shall remain on the tire sidewall only if the limit for the retreaded tire is identical. If the maximum wear limit for the retread is different from the previous limit, the marking shall be rebranded to reflect the current maximum wear limit. The marking shall be "MWL#" (where # specifies the ply count), molded on a separate box. If the tire is constructed with a colored wear limit indicator, a separate "RC" marking shall be molded adjacent to the MWL marking. The MWL marking shall be molded once on each sidewall, 180 degrees from the cut-limit marking, as shown in Figure 1. Retreaded tires for the Department of Navy do not require a MWL marking.

i. The National Stock Number (NSN) shall be located on one side of the tire, on the same side as the serial number. The prefix NSN shall be included. The NSN shall not contain dashes or spaces (example: "NSN 2620XXXXXXXXXX").

j. The casing manufacturer's original qualification test report (QTR) number, prefixed by the letters "QTR".

l. Additional markings as required by the referenced drawings and sheets in Table I.

3.6.2 Retreaded tire identification data. Unless otherwise specified (see 6.2), the following information shall be legibly molded on the retreaded tire and shall be placed on the sidewall area that the identification becomes a portion of the retreading compound. Placement of the identification shall be such that normal wear of the tread surface shall not deface or remove any part of the identification.

a. The letter "R" followed by an Arabic number "1", "2", "3"... to signify the first, second, third, retreading of the casing. This is known as the retread level marking (see 6.5).

b. The month and year of retread manufacture. This marking shall be placed near but not adjacent to the retread level marking. At least 0.5 inch should separate the retread date from the retread level marking.

c. Name of the retread manufacturer and plant location.

d. Retreaded tires with a fabric tread shall be marked "FABRIC TREAD".

- e. If not present or if removed during retreading, the National Stock Number (NSN) shall be placed on the side of the tire (see 3.6.1.i).
- f. Cut-limit dimension (see Figure 1 and 3.6.1.g).
- g. Retread mold identification number.
- h. The retread manufacturer's qualification test report (QTR) number prefixed by the letters "QTR".

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

3.8 Age. The retreaded tire shall not be more than 36 months old from date of current retread manufacture to the date of delivery.

#### 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).

4.2 Qualification inspection. Qualification inspection shall be performed on tires when qualification is required (see 3.1 and 6.3). The qualification test sample shall consist of the tire (or tires) that participated in the qualification testing. This inspection shall include all the tests listed in 4.6. The tire(s) shall be identified and marked as specified in 3.6. A waiver to the marking requirements on tires supplied for qualification tests may be granted when agreed to between the qualifying activity and the manufacturer.

4.3 Conformance inspection. Conformance inspection shall include the individual tests of 4.3.1 and sample tests outlined in 4.3.2.

4.3.1 Individual tests. Each retreaded tire shall be subjected to the following tests:

- a. Pre-retread inspection test (see 4.6.1).
- b. Examination of product test (materials, bead width, tread pattern, sidewall, venting, identification, and age requirements only) (see 4.6.2).
- c. Balance test (see 4.6.3).
- d. Tire dimensions, weight, and rim interface test (weight only) (see 4.6.4).

4.3.2 Sample tests. Unless otherwise specified (see 6.2), retreaded tires shall be sampled in accordance with ANSI/ASQC Z1.4 at an initial inspection level of normal, and the tread adhesion test (see 4.6.12) shall be performed.

4.4 Test conditions. Unless otherwise specified in the individual test description (see 6.2), all tests shall be conducted at ambient temperature and pressure as outlined in applicable paragraphs below.

4.5 Requirement cross-reference matrix. Table II provides a cross-reference matrix of the section 3 requirements tested or verified in the paragraphs below.

4.6 Tests.

4.6.1 Pre-retread inspection test. All tire casings covered by this specification shall be inspected before retreading to determine compliance with the requirements for acceptable casing conditions (see 3.1.1 and 3.1.2). Nondestructive inspection (NDI) techniques, other than visual, shall be utilized to check all casings for separations or other damage and to check tubeless casings for leaks.

4.6.2 Examination of product test. The tire and associated documentation shall be examined to determine compliance with size, materials, dimensions, weight, bead width, tread pattern, sidewall, venting, identification, interchangeability, and age requirements.

4.6.3 Balance test. The retreaded tire shall be balance checked to determine that the moment required to static balance the tire does not exceed the limits specified in the Table I referenced drawing or slash sheet.

4.6.4 Tire dimensions, weight, and rim interface test. The retreaded tire shall be mounted on its rim, inflated to rated inflation pressure specified in the Table I referenced drawing or slash sheet, allowed to stand for 12 hours minimum at room temperature, and then readjusted to rated inflation pressure. The tire dimensions and weight shall then be determined and compared to values in the Table I referenced drawing or slash sheet. The tire weight may be measured unmounted.

4.6.5 Balance pad adhesion test. Balance pad adhesion shall be tested in accordance with ASTM D 413 to determine compliance with the balance pad adhesion requirement.

4.6.6 Dynamic durability test. A dynamic durability test shall demonstrate satisfactory retread tire performance during the taxi, takeoff, and landing cycles. Unless otherwise specified (see 6.2), test parameters for taxi, takeoff, and landing are specified in a Table I referenced drawing or slash sheet. Suggested test methods for 120 mph and 160 mph tires are provided in ARP 4834.

4.6.6.1 Dynamic durability test temperature. Unless otherwise specified (see 6.2), the inflation medium temperature or highest casing temperature at the start of 80 percent of the taxi, takeoff, and landing cycles shall be no less than  $105^{\circ} \pm 5^{\circ} \text{ F}$  ( $41^{\circ} + 3^{\circ} \text{ C}$ ).

4.6.6.2 Post-test inspection. At the conclusion of the dynamic durability tests, the examination of product test (see 4.6.2) shall be performed with the retreaded tire at rated inflation pressure. In addition, the tire and associated documentation shall be examined to determine compliance with the chafing, MWL indicator, tread chunking, groove cracking, cord fraying, bead separation, retread-ability, and wheel/tire slippage requirements. Nondestructive inspection techniques, other than visual or air injection, shall be utilized to verify that separations are not present. The post-test inspection shall include examination of a cross-sectional cut.

4.6.6.3 Bead separation test. If bead bundle or wire separation is found in the cross-sectional cut, the material around the bead bundle shall be stripped back at least one inch to determine if the separation was caused by the cross-sectional cut of the post-test inspection or during the dynamic durability test. If no separation is found in the stripped area, the bead construction shall be considered satisfactory.

4.6.7 Low temperature test. Samples of the retread compounds shall be tested in accordance with ASTM D 746 at -58°F (-50°C). An alternate test method may be utilized provided that data is submitted substantiating an equivalent test method and the alternate method is approved by the responsible qualifying activity.

4.6.8 Inflation pressure retention test for tubeless tires. The retreaded tire shall be to rated inflation pressure specified in the Table I referenced drawing or slash sheet and allowed to stand for a minimum of 12 hours, at which time the pressure loss due to stretch shall be replaced. The tire shall then stand for an additional 24 hours, at which time the pressure shall be recorded. Ambient temperature shall be measured at the start and finish of the test to ensure that the pressure change was not caused by an ambient temperature change. At no time shall the tire be inflated above rated inflation pressure.

4.6.9 Burst pressure test. The minimum burst pressure specified in the Table I referenced drawing or slash sheet shall be applied to the mounted tire and held for a minimum of 3 seconds. The tire shall not fail under this pressure. The burst pressure test of a tubeless tire may be conducted with a tube in the same manner as for tube type tires.

4.6.10 Retreadability test. The verification of retreadability shall be the presence of a retread buff line (RBL) when inspecting a tire cross-sectional cut during the post-test inspection (see 4.6.6.2).

4.6.11 Colored wear limit indicator test. If a colored wear limit indicator is used, the indicator shall be visible when observing the cross-sectional cut made during post-test inspection (see 4.6.6.2).

4.6.12 Tread adhesion test. Adhesion tests shall be performed on samples taken from a retreaded tire to determine the force required to separate the tread, or undertread, from the outermost structural ply (casing, breaker, or belt ply) interface. A suggested test method is provided in AC 145-4.

## 5 PACKAGING

5.1 Packaging requirements. 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 packaging activity within the military department or defense agency, or within the Military Activity's System Command. Packaging data retrieval is available from the managing military department 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. Tires covered by this specification are intended for use on aircraft wheels.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of the DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2, and 2.3).
- c. Operational environment, if different from that in 3.2.
- d. Performance or interface requirements for tires not found in Table I
- e. Basic tire performance requirements, if different from 3.5.1.
- f. Retreadability requirement, if different from that in 3.5.4.
- g. Taxi, takeoff, and landing cycle conditions to be met by the tire, if different from those in section 3.5.9.
- h. Tire identification data, if different from 3.6.1 and 3.6.2.
- i. Initial inspection level or sample tests, if different than 4.3.2.
- j. Test conditions, if different from those in 4.4.
- k. Dynamic durability test requirements (see 4.6.6), and test temperature requirements if different from those in 4.6.6.1.
- l. Packaging requirements (see 5.1 and 5.2).
- m. Data required.

6.3 Qualification. Awards will be made only for products that are, at the time of contract award, qualified for inclusion on the Qualified Products List (QPL), QPL-7726-9, whether or not such products have actually been so listed by that date. Manufacturers are urged to have the products that they propose to offer to the Federal Government tested for qualification so that they are eligible to be awarded contracts or purchase orders for products covered by this specification. Information pertaining to qualification of products or qualification test reports may be obtained from OO-ALC/LILE, 6040 Gum Lane, Hill AFB, UT 84056-5825 (see 3.1). For information regarding qualification procedures, applicants proposing to submit a product for qualification approval should refer to Defense Standardization Document SD-6, entitled Provisions Governing Qualification.

#### 6.4 Additional Information.

6.4.1 Use of tubeless tire in tube type applications. In tube type applications, tubeless (with a tube installed) may be used in lieu of tube type tires.

#### 6.4.2 Suggested marking nomenclature and lettering height.

6.4.2.1 Serial number. The lettering should be a minimum of 3/16 inch in height.

6.4.2.2 Cut-limit dimension identification. The cut-limit dimension should be expressed as increments of 1/32 inch and should be rounded to the next smaller increment of 1/32 inch when a fraction of 1/32 inch is involved. The lettering should be a minimum of 1/4 inch in height and the diameter of the circle should be a minimum of 1 inch.

6.4.2.3 Maximum wear limit marking. The lettering should be a minimum of 3/8 inches high and the dimensions of the rectangle should be a minimum of 1/2 inch by 1-1/4 inches.

6.4.2.4 National Stock Number. The lettering should be a minimum of 1/4 inch in height.

6.4.3 Dynamic durability test temperature. During the dynamic durability test, the use of highest casing temperature is preferred over use of contained inflation medium temperature.

#### 6.5 Definitions.

6.5.1 Bead bundle. High tensile strength steel wires embedded in rubber. The beads anchor the casing plies and provide a firm-mounting surface on the wheel.

6.5.2 Casing. The casing consists of the beads, cord body, and sidewall of a tire intact.

6.5.3 Casing ply. One or more strips or layers of fabric found in the casing.

6.5.4 Fabric tread. A fabric tread is one with a fabric ply or plies constructed in the tread ribs above the bottom of the tread grooves.

6.5.5 Liner. The inner layer of low permeability rubber in a tubeless tire, which acts as a built-in tube and prevents gas from seeping through the casing plies.

6.5.6 Rated Inflation Pressure. The specified inflation pressure corresponding to the rated load for the tire.

6.5.7 Rated load. Rated load is the maximum permissible load at the specified inflation pressure. Rated loads are established and standardized by the Tire and Rim Association (TRA). The rated load combined with the rated inflation pressure will be utilized when selecting tires for application to an aircraft and for testing to the performance requirements of this document.

6.5.8 Retread buff line (RBL). The RBL is a definitive, continuous, circumferential layer of uninterrupted rubber, 0.060 inch minimum thick, extending shoulder to shoulder above the outermost non-removable fabric layer in the finished retreaded tire.

6.5.9 Retread level marking. Reflects the number of retreading operations the tire has undergone (e.g., first retread is represented with a "1", second retread is represented with a "2", etc.).

6.5.10 Retread tire. A retread aircraft tire has had the worn casing restored by renewing the tread material or the tread and sidewall material. Retreaded tires are sometimes referred to as "rebuilt", "recapped", or "remanufactured" tires.

6.5.11 Skid depth. Skid depth is the radial distance, measured along the centerline of the tire, from the line enveloping the outer cross-section of the tread to the line enveloping the outer cross-section at the bottom of the deepest groove.

6.6 Subject term (key word) listing.

- Cut-limit dimension
- Fabric tread
- Ply rating
- Rated inflation pressure
- Rated load
- Retreaded tire
- Skid depth
- Tread chunking
- Tubeless
- Tube type

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 extent of the changes.

TABLE I. Tire Drawing and Slash Sheet Matrix.

Wheel Type 1/ Tubeless	Size	Ply Rating	Old Drawing or MS Number 2/	New Drawing or Slash Sheet Number 4/
TL	12.50-16	12	MS22080	
TL	20.00-20	26	MS27823	
TL	20 x 5.5	14	MS3380(AS)	
TL	24 x 5.5	16	MS3381(AS)	
TL	28 x 7.7	14	MS3384(AS)	
TL	36 x 11	22	66D32270	N/A
TL	36 x 11	22	855955	N/A
TL	36 x 11	24	MS14186(AS)	
TL	38 x 11	14	MS27818	
TL	40 x 14	28	MS3387(AS)	
TL	44 x 16	28	MS27815	
TL	46 x 16	28	TSO-C62 3/	N/A
TL	49 x 17	26	MS27811	
TL	49 x 17	26	71204	N/A
TL	56 x 16	38	MS27813	
TL	22 x 6.6-10	20	MS 14187(AS)	
TL	22 x 6.75-10	18	MS 14185(AS)	
TL	30 x 11.5-14.5	26	MS14172(AS)	
TL	34.5 x 9.75-18	26	855954	N/A
TL	37 x 11.5-16	28	MS14170(AS)	
TL	50 x 21.0-20	30	PS 17026	N/A

1/ TL-Tubeless

2/ The above listed Air Force and Navy drawings and MS (slash) sheets contain only performance data and do not contain detail drawings.

3/ TSO-C62 is a technical standard order that prescribes the minimum performance standards for certain tires.

4/ Department of Navy Activity AS, which is the Preparing Activity, will convert the existing MS drawings to slash sheets after the issuance of this document.

TABLE II. Paragraph Cross-Reference Matrix.

<u>Section 3 Requirement Paragraph</u>	<u>Qualification Examination or Test Paragraph</u>
3.1 Qualification	4.2 and 4.6
3.1.1 Qualification casing requirement	4.2 and 4.6.1
3.1.2 Retread level escalation	4.2 and 4.6.1
3.2 General requirements	4.6
3.2.1 Ambient temperature range	4.6.6 and 4.6.7
3.2.2. Tire sizing	4.6.2
3.2.3 Time dimensions and weight	4.6.2 and 4.6.4
3.3 Rim interface	4.6.4
3.4 Materials	4.6.2
3.5.1 Basic tire performance	4.6
3.5.2 Tire speeds	4.6.6
3.5.3 Tread pattern	4.6.2
3.5.4 Retreadability	4.6.10
3.5.5 Sidewall	4.6.2 and 4.6.6
3.5.6 Venting	4.6.2 and 4.6.6
3.5.7 Maximum wear limit (MWL) indicator	4.6.11
3.5.8 Burst pressure	4.6.9
3.5.9 Dynamic durability	4.6.6
3.5.10 Wheel/tire slippage	4.6.6.2
3.5.11 Inflation pressure retention/tubeless tire	4.6.8
3.5.12 Balance	4.6.3 and 4.6.5
3.5.13 Tread adhesion	4.6.12
3.6.1 Original tire identification data	4.6.2
3.6.2 Retreaded tire identification data	4.6.2
3.7 Interchangeability	4.6.2
3.8 Age	4.6.2

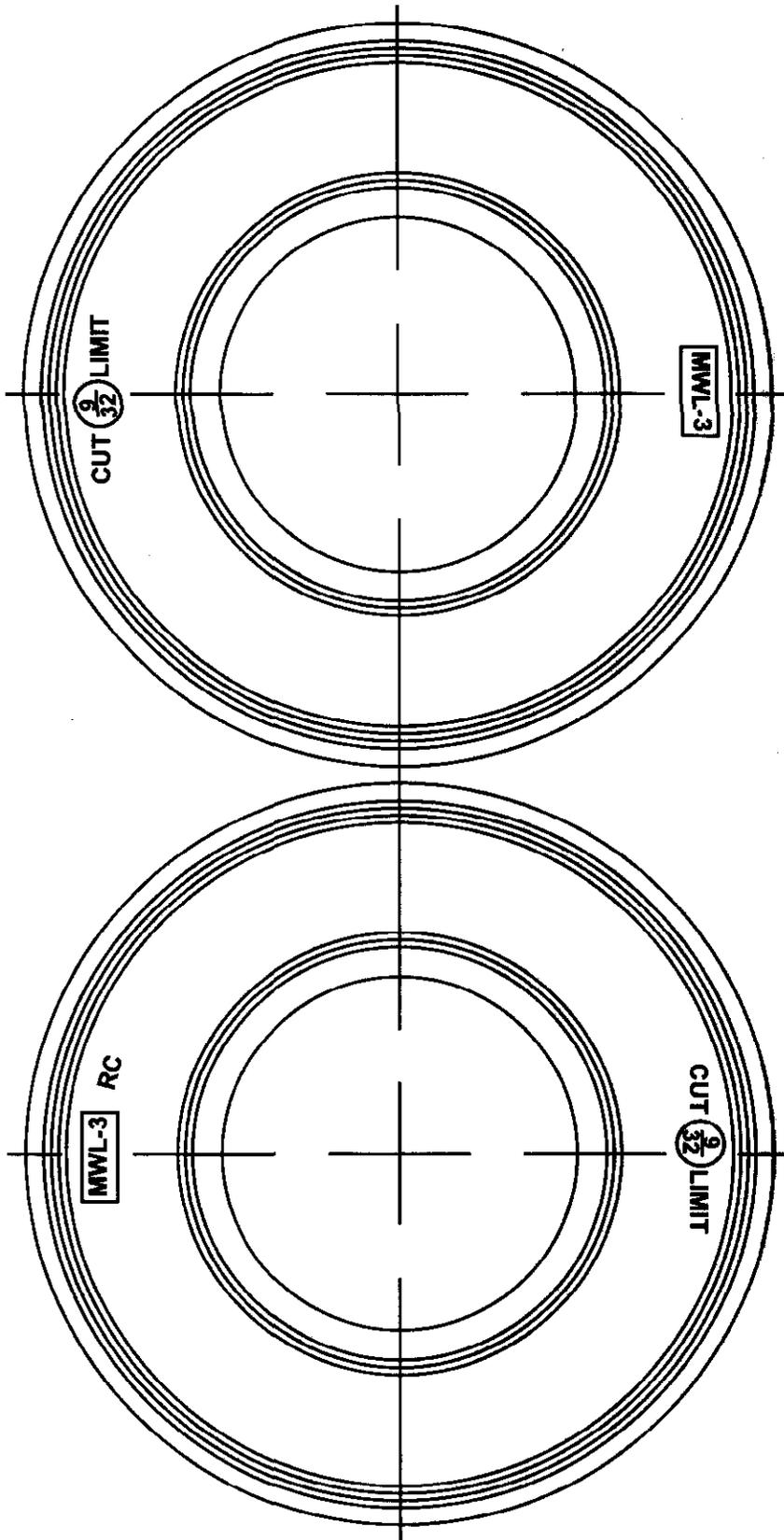


FIGURE 1. Cut-limit dimension and maximum wear limit identification 2-10T23:13Z  
Check the source to verify that this is the current version before use.

MIL-PRF-7726J

Custodians:

Air Force – 99

Army - AV

Navy – AS

Preparing Activity:

Air Force - 70

Project 2620-0276

