

EO 110-5-1

ROYAL CANADIAN AIR FORCE



**IDENTIFICATION
AIRCRAFT TIRES AND TUBES**

(This EO replaces EO 110-5-1 dated 15 Dec 59)

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

6 AUG 63

LIST OF RCAF REVISIONS

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PART 1**INTRODUCTION****GENERAL**

1 This EO is published to furnish maintenance personnel with information concerning the application of aircraft tires and tubes. Authorized substitutes are not listed in this publication. The supply of substitute tires and inner tubes for aircraft will be the responsibility of AMCHQ.

2 When requisitioning tires and tubes, see Figure 1-1, specify on the demand the specific type, model and series of aircraft for which the tires and tubes are to be used.

NOTE

Plain type tread and rib or non-skid type tread tires should not be installed together on main wheels of aircraft. Tires must be of like ply rating.

Dual wheels are to be equipped with tires of like wear. Not one bald and one new.

3 Figure 1-1 contains complete identifying information and other pertinent data (such as NATO stock numbers, sizes, ply rating and tread pattern) on all aircraft tires and tubes being used by the RCAF.

TIRES									
AIRCRAFT	POSITION	NSN	TYPE	TT or TL	SIZE	SPECIFICATION OR RCAF DWG. No.	PLY RATING	TREAD	
ALBATROSS	Main	2620-21-800-8476	VII	TT	40 x 12	MIL-T-5041D	14	N	
	Nose	2620-21-800-8475	II	TT	26 x 6	MIL-T-5041D	10	N	
ARGUS	Main	2620-21-804-2811	VII	TT	36 x 11	RCAF Dwg. 43306	12	R	
	Nose	2620-21-804-2816	VII	TT	29 x 7.7	RCAF Dwg. 43302	16	R	
BRISTOL FREIGHTER	Main (1)	2620-00-174-1754	III	TT	15, 50-20	MIL-T-5041D	14	R	
	Nose	2620-21-805-5513	III	TT	9.75-8	Part DR9920	3	R	
CANUCK	Main	2620-21-804-3999	VII	TT	27 x 6.50-15	RCAF Dwg. 43304	14	R	
	Nose	2620-21-804-3998	VII	TT	19 x 6.00-8	RCAF Dwg. 43311	10	R	
CARIBOU	Main (2)	2620-21-800-6448	III	TT	11,00-12	MIL-T-5041D	3	R	
	Nose	2620-21-802-6539	III	TL	7.50-10	MIL-T-5041D	6	R	
CF101B & F	Main	2620-00-580-8024	VIII	TL	31 x 11,50-16	MIL-T-5041D	22	R	
	Nose	2620-00-839-1849	VII	TT	18 x 5.5	MIL-T-5041D	14	R	
CF104 & D	Main	2620-21-801-8753	VII	TL	25 x 6.75	RCAF Dwg. 45494	16	R	
	Nose	2620-21-801-8752	VII	TL	18 x 5.5	RCAF Dwg. 45491	14	R	
C5	Main	2620-21-805-5504	III	TT	15,50-20	MIL-T-5041D (Civil)	16	R	
	Nose	2620-21-805-5512	I	TT	44	MIL-T-5041D (Civil)	14	R	
C119	Main (1)	2620-00-174-1754	III	TT	15,50-20	MIL-T-5041D	14	R	
	Nose	2620-00-277-4818	III	TT	9,50-16	MIL-T-5041D	10	R	
CESSNA L19 (A & E)	Main	2620-00-269-7553	III	TT	7,00-6	MIL-T-5041D	6	R	
	Tail	2620-00-367-8484	COMM	TT	8,00-3	SCOTT 3228	4	N	
CESSNA (L132D)	Main	2620-21-807-4174	III	TL	6,00-6	COMMERCIAL	6	R	
	Nose	2620-21-806-1346	III	TL	5,00-5	COMMERCIAL	6	R	
GRIPWINK	Main	2620-00-277-4823	III	TT	6,00-6	MIL-T-5041D	4	R	
	Tail	2620-21-801-0577	COMM	TT	2,50-4	FIRESTONE	4	R	
COMET	Main	2620-21-805-5500	NA	TT	35 x 9,00-17	Dunlop Dwg. DC1723	14	D	
	Nose	2620-21-805-5501	NA	TT	30 x 9,00-15	Dunlop Dwg. DC4833	10	D	
COSMOPOLITAN	Main	2620-21-800-8070	VII	TL	39 x 13	RCAF Dwg. 45474	14	R	
	Nose	2620-21-800-8071	VII	TL	28 x 7.7	RCAF Dwg. 45473	5	R	
DAKOTA	Main	2620-21-800-6445	III	TT	17,00-1b	MIL-T-5041D	12	R	
	Tail	2620-00-269-7694	III	TT	9,00-b	MIL-T-5041D	10	R	

Figure 1-1 (Sheet 1 of 4) Tires and Tube Size Identification and Classification

TIRES									
AIRCRAFT	POSITION	NSN	TYPE	TL	SIZE	SPECIFICATION: OR RCAF DWG. NO.	PLY RATING	TREAD	TT or TL
EXPEDITOR	Main (2)	2620-21-800-6448	III	TT	11.00-12	MIL-T-5041D	3	R	TT
	Tail	2620-21-804-3638	I	TT	14.50	MIL-T-5041D	5	P	TT
HARVARD 4	Main	2620-00-269-7685	I	TT	27	MIL-T-5041D	16	R	TT
	Tail	2620-00-640-2330	I	TT	12.50	MIL-T-5041D	5	C	TT
HERCULES (C130B)	Main	2620-00-269-7611	III	TT	20.00-20	MIL-T-5041D	22	R	TT
	Nose	2620-00-141-8814	III	TT	12.50-16	MIL-T-5041D	12	R	TT
LANCASTER	Main	2620-21-804-3989	NA	TT	24.00-19	1GGTR21	14	N	TT
	Tail	2620-21-804-3991	NA	TT	12.50-10	NXR31	12	C	TT
NEPTUNE	Main	2620-21-804-7000	I	TT	56	MIL-T-5041D & RCAF Dwg.	22	R	TT
	Nose	2620-21-804-7007	VII	TT	34 x 9.9	MIL-T-5041D & RCAF Dwg.	14	R	TT
NORTH STAR	Main (1)	2620-00-174-1754	III	TT	15.50-20	MIL-T-5041D	14	R	TT
	Nose	2620-21-804-3993	I	TT	44	MIL-T-5041D	12	R	TT
OTTER (LAND)	Main (2)	2620-21-800-6448	III	TT	11.00-12	MIL-T-5041D	8	R	TT
	Tail (3)	2620-21-804-7001	III	TT	6.00-12	MIL-T-5041D	6	R	TT
OTTER (EDO FLOAT)	Main	2620-21-804-7131	III	TT	8.50-10	MIL-T-5041D - Civil Rating Dunlop DA13935 (Marstrand)	5	R	TT
	Nose	2620-21-804-7129	III	TT	5.50-4		6	C	TT
SABRE	Main (4)	2620-21-804-7133	VII	TT	26 x 6.6	RCAF Dwg. 43570	14	R	TT
	Nose	2620-00-269-7687	VI	TT	22 x 7.25-11.50	MIL-T-5041D	5	R	TT
SIKORSKY H5 (S51)	Main	2620-21-804-3995	III	TT	6.50-10	MIL-T-5041D	6	R	TT
	Nose (3)	2620-21-804-7001	III	TT	6.00-6	MIL-T-5041D	6	R	TT
SIKORSKY H19 (S55)	Main (5)	2620-21-805-5505	III	TT	7.50-10	MIL-T-5041D	6	N	TT
	Nose (3)	2620-21-804-7001	III	TT	6.00-6	MIL-T-5041D	6	R	TT
SIKORSKY H34A (S58)	Main	2620-00-174-1746	III	TT	11.00-12	MIL-T-5041D	5	R	TT
	Tail (3)	2620-21-804-7001	III	TT	6.00-12	MIL-T-5041D	6	R	TT
T33	Main (4)	2620-21-804-7133	VII	TT	26 x 6.6	RCAF Dwg. 43570	14	R	TT
	Nose	2620-21-804-7119	VI	TT	22 x 7.25-11.50	MIL-T-5041D	5	P	TT

Figure 1-1 (Sheet 2 of 4) Tires and Tube Size Identification and Classification

TIRES									
AIRCRAFT	POSITION	NSN	TYPE	TT or TL	SIZE	SPECIFICATION OR RCAF DWG. NO.	PLY RATING	TREAD	
TUTOR	Main	2620-21-807-4727	VII	TT	20 x 4.4	MIL-T-5041D	10	R	
	Nose	2620-21-806-1346	III	TT	5.00-5	MIL-T-5041D	8	R	
VERTOL (H21A & B) (H44A)	Main	2620-00-270-3598	VII	TT	24 x 7.7	MIL-T-5041D	10	N	
	Nose (5)	2620-21-805-5505	III	TT	7.50-10	MIL-T-5041D	6	N	
VERTOL CH113 (107)	Main	2620-21-804-5305	VII	TL	18 x 5.5	MIL-T-5041D	8	R	
	and Nose								
YUKON	Main	2620-21-803-6952	VII	TL	40 x 12	RCAF Dwg. 43568	20	R	
	Nose	2620-21-803-6951	VII	TL	32 x 8.8	RCAF Dwg. 43567	12	R	

<p>TREAD PATTERNS</p> <p>R - Ribbed</p> <p>N - Nonskid</p> <p>P - Plain</p> <p>C - Channel or Twin Contact</p> <p>D - Dimple</p>	<p>TIRE TYPES</p> <p>I Smooth Contour</p> <p>II High Pressure</p> <p>III Low Pressure</p> <p>IV Extra Low Pressure</p> <p>VI Low Profile</p> <p>VII Extra High Pressure</p> <p>VIII Extra High Pressure, Low Profile</p>
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NOTE: (1), (2), etc, denotes like tires.

Figure 1-1 (Sheet 3 of 4) Tires and Tube Size Identification and Classification

TUBES						
AIRCRAFT	NSN	SPECIFICATION OR RCAF DWG.	SIZE	AIRCRAFT	NSN	SPECIFICATION OR RCAF DWG.
ALBATROSS	2620-21-800-8557 2620-21-800-8556	MIL-T-5014C MIL-T-5014C	40 x 12 26 x 6	HARVARD 4	2620-21-800-6444 2620-21-800-6450	MIL-T-5014C MIL-T-5014C
ARGUS	2620-21-804-2813 2620-21-804-2819	43306 43302	36 x 11 29 x 7.7	HERCULES (C130B)	2620-00-267-3052 2620-00-267-3050	MIL-T-5014C MIL-T-5014C
BRISTOL FREIGHTER	2620-00-555-7723 2620-21-805-5510	MIL-T-5014C DT9900	15.50-20 9.75-8	LANCASTER	2620-21-804-3990 2620-21-804-3992	1GG2 NX2
CANUCK	2620-21-805-5509 2620-21-804-3996	43304 LH2	27 x 6.50-15 19 x 6.00-8	NEPTUNE	2620-21-804-7006 2620-21-804-7008	MIL-T-5014C MIL-T-5014C
CARIBOU	2620-21-800-6449	MIL-T-5014C	11.00-12	NORTH STAR	2620-00-555-7723 2620-21-804-3994	MIL-T-5014C MIL-T-5014C
CF101B & F	2620-00-269-7701	MIL-T-5014C	18 x 5.5	OTTER (LAND)	2620-21-800-6449 2620-21-804-7002	MIL-T-5014C MIL-T-5014C
C5	2620-00-555-7723 2620-21-804-3994	MIL-T-5014C MIL-T-5014C	15.50-20 44	OTTER (EDO FLOAT)	2620-21-804-7130 2620-21-804-7128	MIL-T-5014C MIL-T-5014C
CL19	2620-00-555-7723 2620-21-805-5507	MIL-T-5014C MIL-T-5014C	15.50-20 9.50-16	SABRE	2620-21-804-7004 2620-21-804-7005	MIL-T-5014C MIL-T-5014C
CESSNA (L19 A & E)	2620-00-269-7266 2620-00-214-0482	MIL-T-5014C COMMERCIAL	7.00-6 8.00-3	SIKORSKY H5 (S51)	2620-00-269-7268 2620-21-804-7002	MIL-T-5014C MIL-T-5014C
CHIPMUNK	2620-21-804-7002 2620-21-800-6442	MIL-T-5014C COMMERCIAL	6.00-6 2.50-6	SIKORSKY H19 (S55)	2620-21-805-5506 2620-21-804-7002	MIL-T-5014C MIL-T-5014C
COMET	2620-21-805-5502 2620-21-805-5503	DUNLOP 1705 DUNLOP FE3	35 x 9.00-17 30 x 9.00-15	SIKORSKY H34A (S58)	2620-21-800-6449 2620-21-804-7002	MIL-T-5014C MIL-T-5014C
COSMOPOLITAN	2620-21-806-8855	FOR TT NOSE TIRE	7.50-14	T33	2620-21-804-7004 2620-21-804-7005	MIL-T-5014C MIL-T-5014C
DAKOTA	2620-21-800-6446 2620-21-800-6447	MIL-T-5014C MIL-T-5014C	17.00-16 9.00-6	TUTOR	2620-00-270-3659 2620-00-288-0246	MIL-T-5014C MIL-T-5014C
EXPEDITOR	2620-21-800-6449 2620-21-804-3639	MIL-T-5014C MIL-T-5014C	11.00-12 14.50	VERTOL (H21A & B) (H44A)	2620-00-269-7436 2620-21-805-5506	MIL-T-5014C MIL-T-5014C

Figure 1-1 (Sheet 4 of 4) Tires and Tube Size Identification and Classification

PART 2

GENERAL INFORMATION

RETREADED TIRES

- 1 Retreaded tires are to be used when available.

INFLATION PRESSURE

- 2 The tire inflation pressures MUST be in strict accordance with the aircraft gross take-off weight inflation pressures, as cited in the applicable aircraft -2 EO.

TIRES AND TUBE SIZE

IDENTIFICATION AND CLASSIFICATION

MAXIMUM GROUND SPEEDS
FOR AIRCRAFT TIRES

- 3 All type VII and type VIII tires have a minimum speed rating of at least 139 knots (160 mph). Unless otherwise specified tires classified as high speed tires shall be capable of 174 knots (200 mph) or greater.

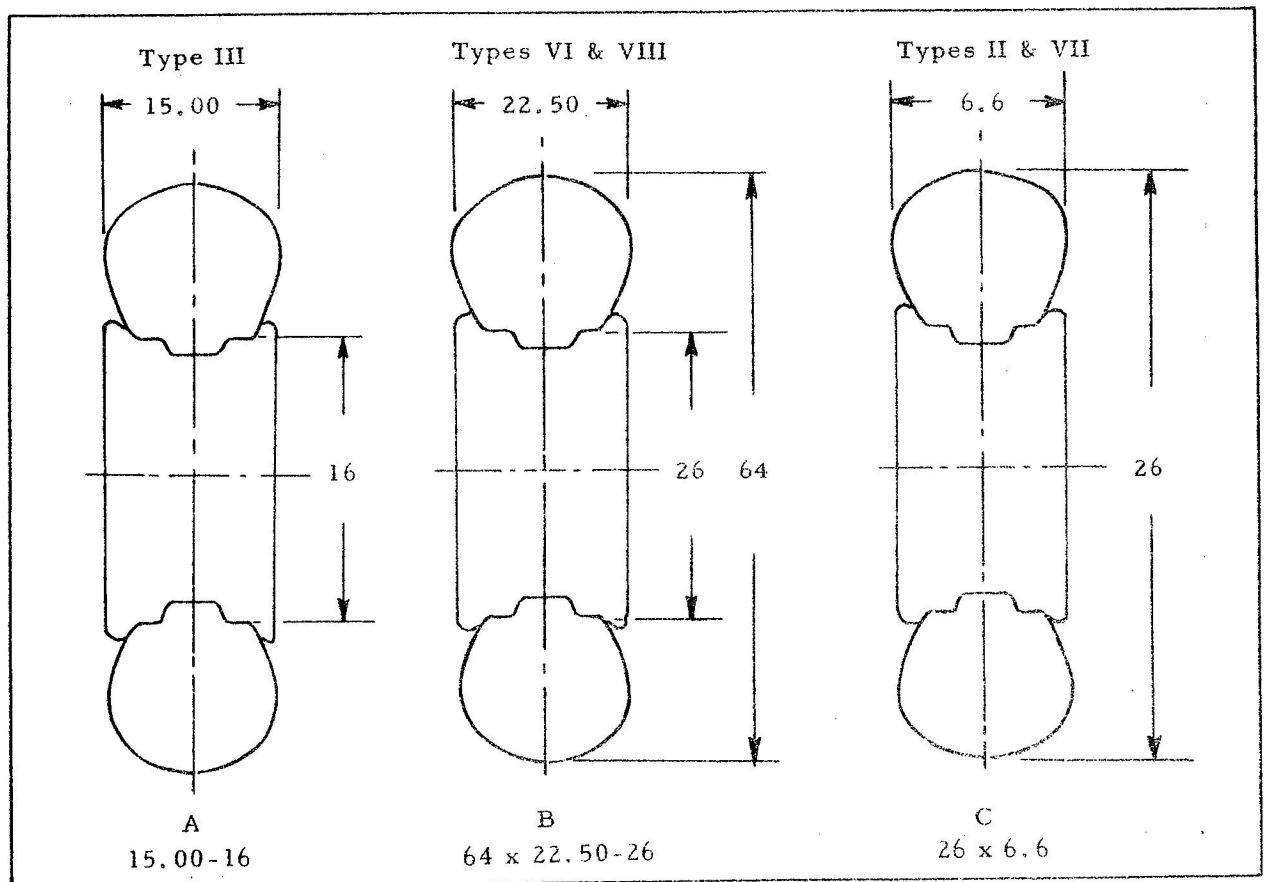


Figure 2-1 Tire Size Identification

4 All type I, II, III and IV aircraft tires have a maximum speed rating of 139 knots.

5 Tires with the "Helicopter" marked on sidewall have a maximum speed rating of 35 knots (40 mph).

6 Tire sizes are usually identified by two or three dimensions, all of which give an indication of the essential size of the tire, Figure 2-1 shows how these dimensions are related to the nominal size of the tire.

7 These dimensions are in inches. For sketch "A", 15.00 indicates the nominal cross-sectional width of the inflated tire, and 16 refers to the actual bead diameter and therefore the diameter of the bead seat on the wheel.

8 Some American tire sizes only give the overall diameter measurement of the inflated tire. The American and English systems have been combined to provide overall diameter, cross section, and a bead seat diameter. An example of this is shown in sketch B and C.

9 Tire sizes are generally written in the following form, see Figure 2-1:

(a) Sketch A - 15.00-16.

(b) Sketch B - 64 x 22.50-26.

(c) Sketch C - 26 x 6.6.

10 The term "ply rating" is used to identify a given tire with its maximum recommended load when used in a specific type of service. It is an index of tire strength and does not necessarily represent the number of cord plies in the tire.

11 The casing is defined as the protective outer, load carrying component of a pneumatic tire. A conventional pneumatic tire consists of an assembly of the casing and an inner tube.

12 Tubes are marked with the size of casing it is to fit. Each is peculiar to its particular size of casing and is generally not interchangeable with any other size.

SPECIFICATIONS

13 MIL-T-5041D - Military Specification casings, tires and tubeless tires; aircraft pneumatic.

14 MIL-T-5014C - Military Specification tubes, inner, aircraft pneumatic tire.

15 Where a requirement exists which is not adequately covered by the MIL Specifications, a USAF or RCAF Drawing provides additional information or higher performance requirements.

PART 3**FUNCTIONS OF AIRCRAFT TIRES**

1 The chief functions of the aircraft tire are to support and cushion the machine during take-off, landing and taxiing operations, and while the aircraft is stationary on the ground.

2 The tires are of vital importance during take-off and landing operations. At the same time, once the aircraft is airborne, the tires and wheels become dead weight.

Consequently, aircraft designers have reduced the size and weight of these components to a minimum while retaining an adequate safety factor.

3 With present tire pressures in the RCAF up to 300 psi and the prospect of pressures above this it is mandatory that regular efficient servicing be carried out to maintain this margin of safety.

PART 4

TIRE CONSTRUCTION

1 Aircraft tires are constructed in tubed or tubeless forms; in the latter, see Figure 4-2, the inner tube is in effect made integral with the outer cover which forms an air seal against the wheel body and flange.

2 An aircraft tire, see Figure 4-1, consists of 3 main parts.

(a) The tread and its continuation which is the sidewall.

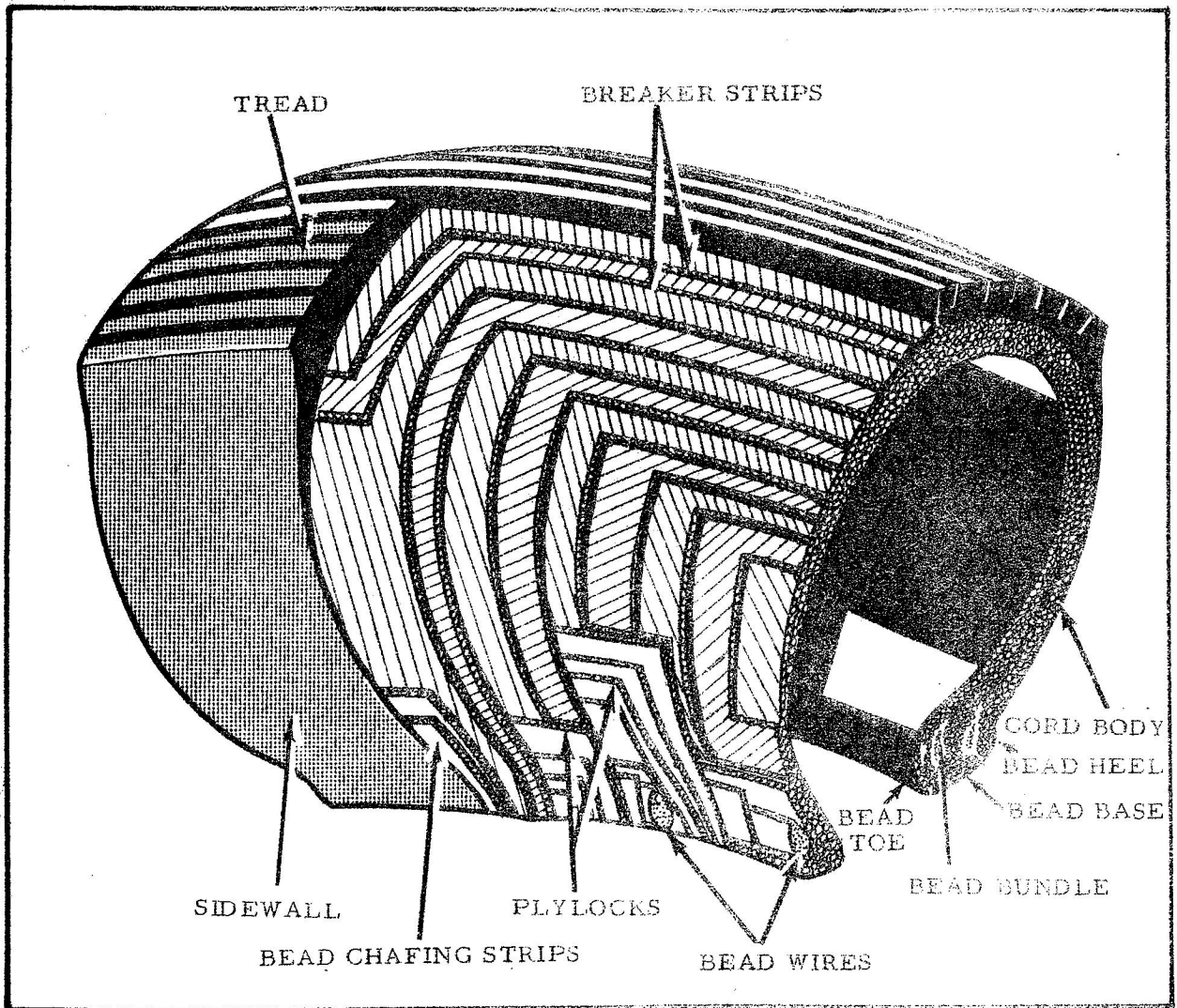


Figure 4-1 Aircraft Tire - Construction

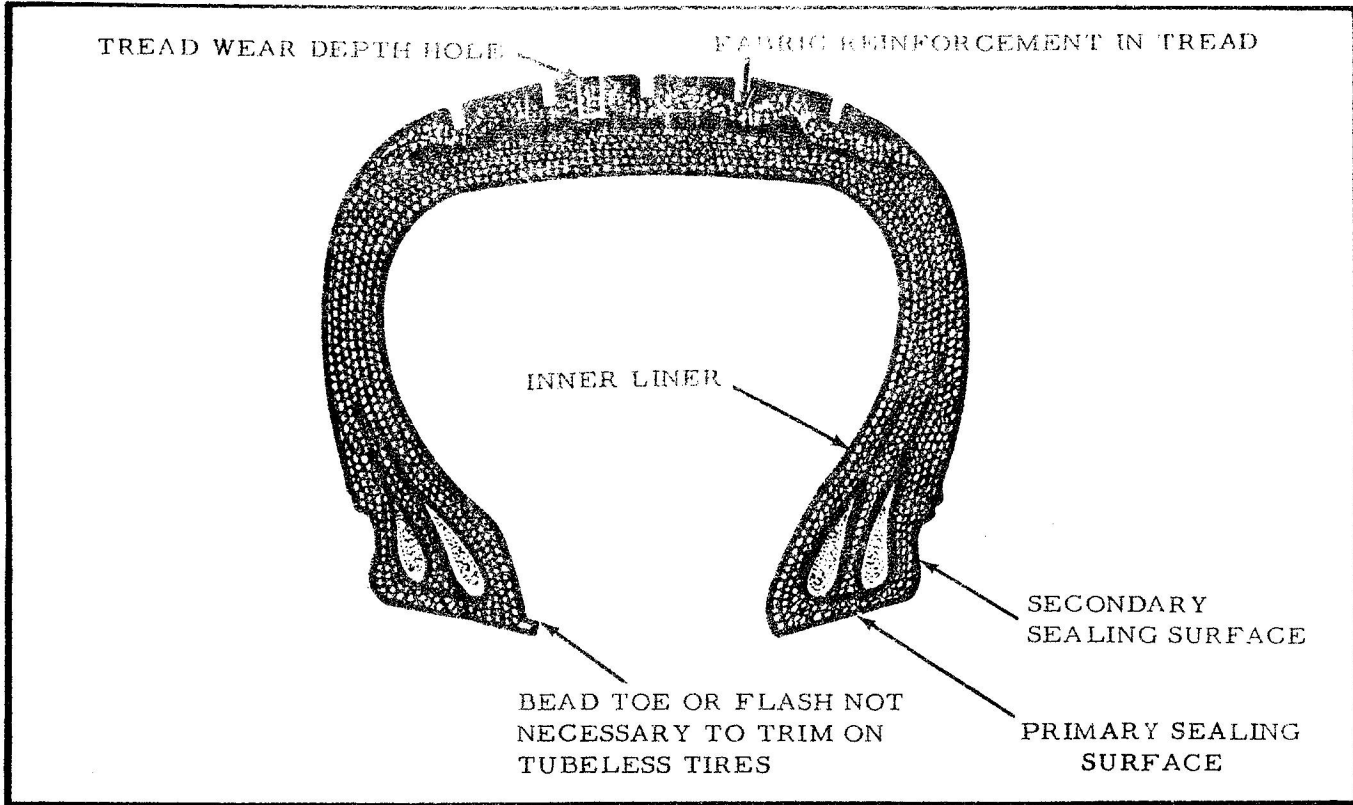


Figure 4-2 Sectional View of Aircraft Tubeless Tire With Fabric Reinforced Tread Illustrating Tread Wear Depth Hole

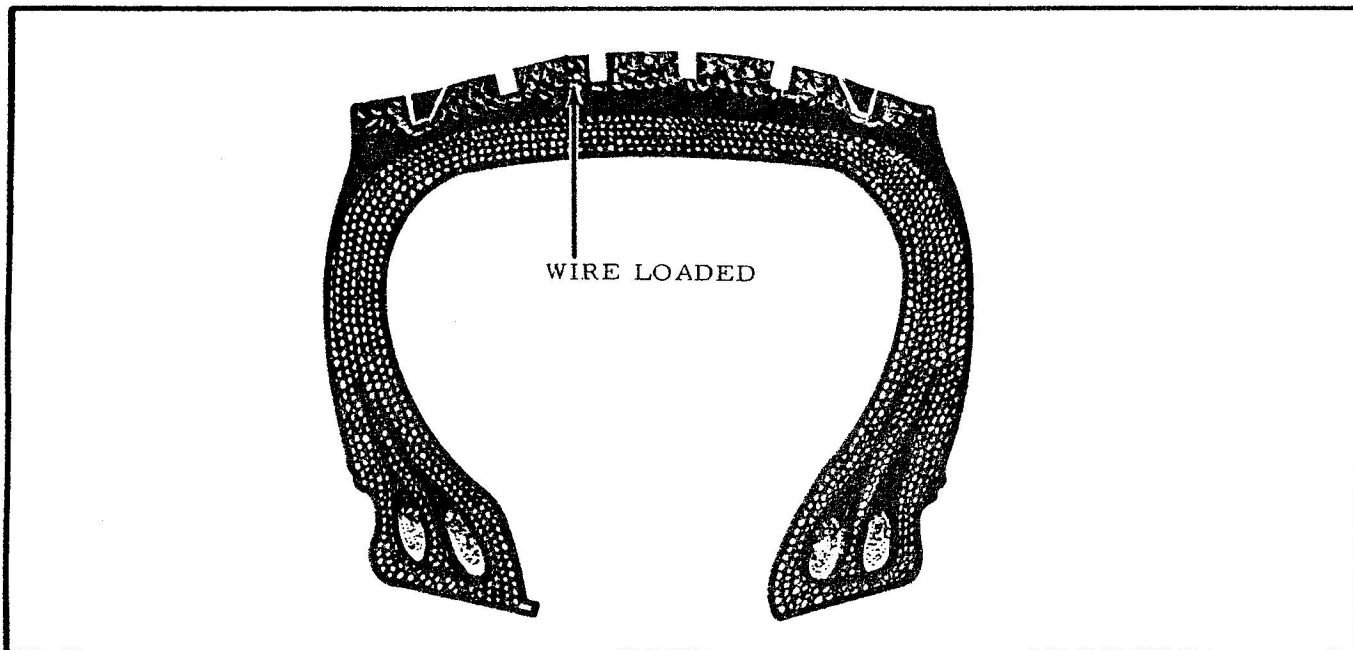


Figure 4-3 Section View of Ice Grip Tire (Wire Loaded)

(b) The cord body or carcass of the tire.

(c) The beads.

3 The tread is a layer of rubber on the outer circumference of the tire and is its wearing surface. It, with the sidewall, helps protect the cord body from cuts, snags, bruises and moisture.

4 The cord body consists of layers (usually an even number) of rubberized cords, made of nylon; it is sometimes reinforced by the addition of breakers or inserts, usually but not always, directly under the tread.

5 Regardless of the type of fabric used in the cord body, plies or breakers, it is impregnated between or around the cords with either natural or synthetic rubber. The plies of adjacent layers run in different directions in order to give balanced strength since one layer of cord fabric has all its strength in one direction only. The cord plies provide the casing with tensile strength to resist internal air pressure and bruising, and they protect the tube.

6 The main function of the breakers is to help distribute impact and landing shocks over

a wider area and to give the tire more strength and protection under the tread.

NOTE

Certain types VII and VIII tires do not contain breaker strips.

7 The tire is also provided with ply locks to tie the wire beads into the casing, and in addition, chafing strips along the outside of the beads help to protect the tire in the bead area from rim chafing and to give it additional strength and rigidity.

8 The beads provide the casing a base around which the plies are bonded, and permit the tire to be held firmly on the wheel. They contain steel wires embedded in rubber, the wires are wrapped with fabric, which helps to tie the bead into position in the tire, and insulate the wire from the inner cord layers.

9 All tire and casings are balanced by means of a balance patch. A balance marker consisting of a red dot is permanently branded into the sidewall to indicate the lightweight point of the tire or casing.

PART 5

AIRCRAFT TUBES

1 The tube is a very important part of the tire assembly since it is the tube which holds the air, and the air in turn absorbs the impact of landing shocks and smooths out the take-off. To function properly, it must fit inside the cover without creasing or undue stretching of any part. Nearly all sizes of tubes are produced by a moulding process, and each tube consists virtually of one piece of vulcanized rubber with no perceptible weakness at the joint or variation in the thickness. Means are provided for preventing entrapped air between casing and tube such as molded vent ridges. All type VII tubes are provided with radial vent ridges designed to remove trapped air from the shoulder and crown areas of the tire.

2 The majority of aircraft tubes are fitted with valves in which the stem is attached to the rubber base by direct vulcanization, and the rubber base is vulcanized to the tube.

This method of valve attachment is vastly superior to the method whereby the valve is secured to the tube by a nut.

3 Balance patches are used to bring the tube within the requirements of the specification. A tube balance mark, positioned on the valve side of the tube consists of a mark approximately 1/2" wide and 2" long in contrasting colour, the long axis of the mark across the section of the tube to indicate the heavy portion of the tube.

NOTE

On installation, the heavy point of the tube must be installed adjacent to the light point of the tire.

4 Dual seal inner tubes, consisting of an inner tube of rubberized fabric within a heavy rubber tube, presently in use are being replaced by standard tubes.

