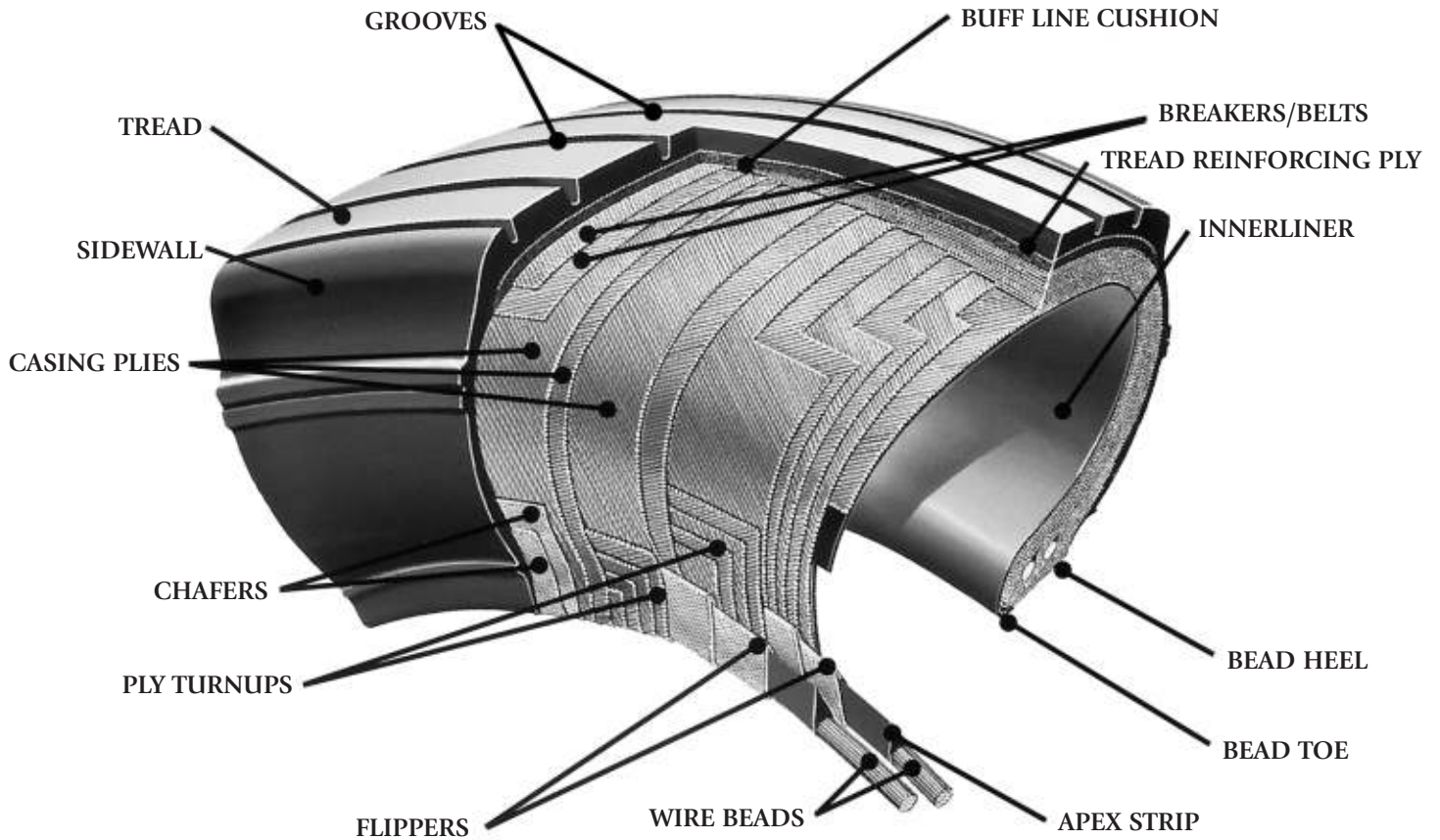


1 General Data

BIAS PLY AIRCRAFT TIRE CONSTRUCTION

Bias aircraft tires feature a casing which is constructed of alternate layers of rubber coated ply cords which extend around the beads and are at alternate angles substantially less than 90° to the center line of the tread.



BIAS PLY AIRCRAFT TIRE CONSTRUCTION (CONT'D)

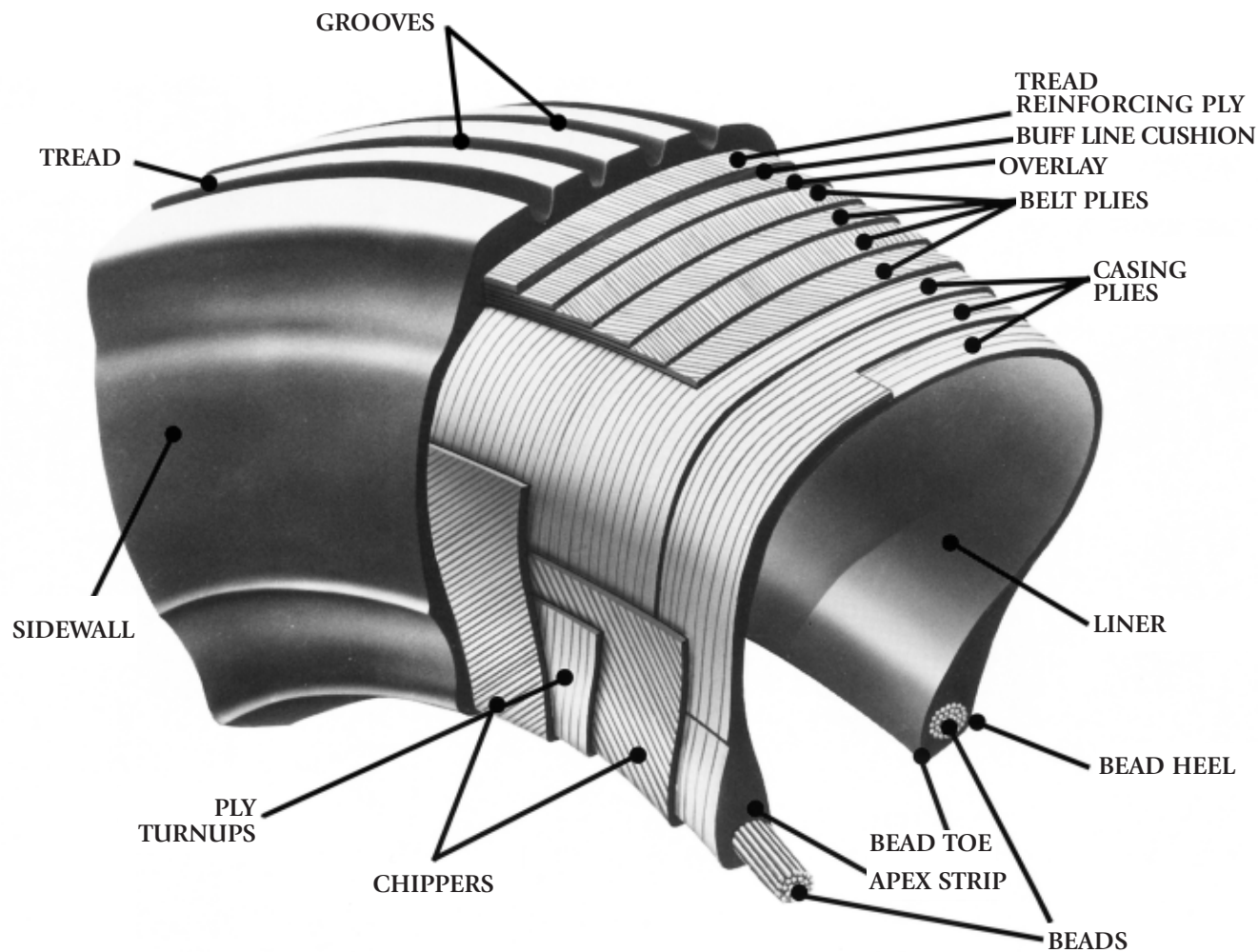
Glossary

Apex Strip	The apex strip is a wedge of rubber affixed to the top of the bead bundle.
Bead Heel	The bead heel is the outer bead edge that fits against the wheel flange.
Bead Toe	The bead toe is the inner bead edge closest to the tire centerline.
Breakers	Breakers are reinforcing plies of rubber coated fabric placed under the buffline cushion to protect casing plies and strengthen and stabilize tread area. They are considered an integral part of the casing construction.
Buff Line Cushion	The buff line cushion is made of rubber compound to enhance the adhesion between the tread reinforcing ply and the breakers or casing plies. This rubber layer is of sufficient thickness to allow for the removal of the old tread when the tire is retreaded.
Casing Plies	Ply are alternate layers of rubber-coated fabric (running at opposite angles to one another) which provide the strength of the tire.
Chafer	A chafer is a protective layer of rubber and/or fabric located between the casing plies and wheel to minimize chafing.
Chines	Also called deflectors, chines are circumferential protrusions that are molded into the sidewall of some nose tires that deflect water sideways to help reduce excess water ingestion into the engines.
Flippers	These layers of rubberized fabric help anchor the bead wires to the casing and improve the durability of the tire.
Grooves	Circumferential recesses between the tread ribs.
Liner	In tubeless tires, this inner layer of low permeability rubber acts as a built-in tube and restricts gas from diffusing into the casing plies. For tube-type tires a thinner rubber liner is used to prevent tube chafing against the inside ply.
Ply Turnups	Casing plies are anchored by wrapping them around the wire beads, thus forming the ply turnups.
Sidewall	The sidewall is a protective layer of flexible, weather-resistant rubber covering the outer casing ply, extending from tread edge to bead area.
Tread	The tread is made of rubber, compounded for toughness, durability and wear resistance. The tread pattern is designed in accordance with aircraft operational requirements. The circumferential ribbed tread is widely used today to provide good traction under varying runway conditions.
Tread Reinforcing Ply	Tread reinforcement is one or more layers of fabric that strengthen and stabilize the tread area for high-speed operation. It also serves as a reference for the buffing process in retreadable tires.
Wire Beads	The beads are hoops of high tensile strength steel wire which anchor the casing plies and provide a firm mounting surface on the wheel.

1 General Data

RADIAL PLY AIRCRAFT TIRE CONSTRUCTION

Radial aircraft tires feature a flexible casing which is constructed of rubber coated ply cords which extend around the beads and are substantially at 90° to the centerline of the tread. The casing is stabilized by an essentially inextensible circumferential belt.



RADIAL PLY AIRCRAFT TIRE CONSTRUCTION (CONT'D)

Glossary

Apex Strip	The apex strip is a wedge of rubber affixed to the top of the bead bundle.
Bead Heel	The bead heel is the outer bead edge that fits against the wheel flange.
Bead Toe	The bead toe is the inner bead edge closest to the tire center line.
Belt Plies	This is a composite structure which stiffens the tread area for increased landings. The belt plies increase the tire strength in the tread area.
Buff Line Cushion	The buff line cushion is made of rubber compounded to enhance the adhesion between the tread reinforcing ply and the overlay. This rubber layer is of sufficient thickness to allow for the removal of the old tread when the tire is retreaded.
Casing Plies	Casing plies are layers of rubber-coated fabric which run radially from bead to bead. The casing plies provide the strength of the tire.
Chippers	The chippers are layers of rubber coated fabric applied at a diagonal angle which improve the durability of the tire in the bead area.
Chines	Also called deflectors, chines are circumferential protrusions that are molded into the sidewall of some nose tires that deflect water sideways to help reduce excess water ingestion into the engines.
Grooves	Circumferential recesses between the tread ribs.
Liner	In tubeless tires, this inner layer of low permeability rubber acts as a built-in tube and restricts gas from diffusing into the casing plies. For tube-type tires, a thinner rubber liner is used to prevent tube chafing against the inside ply.
Overlay	The overlay is a layer of reinforcing rubber coated fabric placed on top of the belts to aid in high speed operation.
Ply Turnups	Casing plies are anchored by wrapping them around the wire beads, thus forming the ply turnups.
Sidewall	The sidewall is a protective layer of flexible, weather-resistant rubber covering the outer casing ply, extending from tread edge to bead area.
Tread	The tread is made of rubber, compounded for toughness, durability, and tread wear. The tread pattern is designed in accordance with aircraft operational requirements. The circumferential ribbed tread is widely used today to provide good traction under varying runway conditions.
Tread Reinforcing Ply	Tread reinforcement is one or more layers of rubber coated fabric that strengthen and stabilize the tread area for high-speed operation. This also serves as a reference for the buffing process in retreadable tires.
Wire Beads	The beads are hoops of high tensile strength steel wire which anchor the casing plies and provide a firm mounting surface on the wheel.

1 General Data

TIRE TERMINOLOGY

PLY RATING - The term "ply rating" is used to indicate an index to the load rating of the tire. Years ago when tires were made from cotton cords, "ply rating" did indicate the actual number of plies in the carcass. With the development of higher-strength fibers such as nylon, fewer plies are needed to give an equivalent strength. Therefore the definition of the term "ply rating" (actual number of cotton plies) has been replaced to mean an index of carcass strength or a load carrying capacity.

RATED LOAD - This is the maximum allowable load that the tire can carry at a rated inflation pressure.

RATED PRESSURE - Rated pressure is the maximum inflation pressure to match the load rating. Aircraft tire pressures are given for an unloaded tire; i.e, a tire not on an airplane. When the rated load is applied to the tire, the pressure increases by 4% as a result of a reduction in air volume.

OUTSIDE DIAMETER - This measurement is taken at the circumferential center line of an inflated tire.

SECTION WIDTH - This measurement is taken at the maximum cross sectional width of an inflated tire.

RIM DIAMETER - This is the nominal diameter of wheel/rim on which the tire is mounted.

SECTION HEIGHT - This measurement can be calculated by using the following formula:

$$\text{Section Height} = \frac{\text{Outside Diameter} - \text{Rim Diameter}}{2}$$

ASPECT RATIO - Measure of the tire's cross section shape. This can be calculated by the following formula:

$$\text{Aspect ratio} = \frac{\text{Section Height}}{\text{Section Width}}$$

FLANGE HEIGHT - This is the height of the wheel rim flange.

FLANGE DIAMETER - The diameter of the wheel including the flange.

FREE HEIGHT - This measurement can be calculated by using the following formula:

$$\text{Free Height} = \frac{\text{Outside Diameter} - \text{Flange Diameter}}{2}$$

STATIC LOADED RADIUS - This is the measurement from the center of the axle to the runway for a loaded tire.

LOADED FREE HEIGHT - This measurement can be calculated by using the following formula:

$$\text{Loaded Free Height} = \frac{\text{Static Loaded Radius} - \text{Flange Diameter}}{2}$$

TIRE DEFLECTION - A common term used when talking about aircraft tires is the amount of deflection it sees when rolling under load. The term % Deflection is a calculation made using the following formula:

$$\% \text{ Deflection} = \frac{\text{Free Height} - \text{Loaded Free Height}}{\text{Free Height}}$$

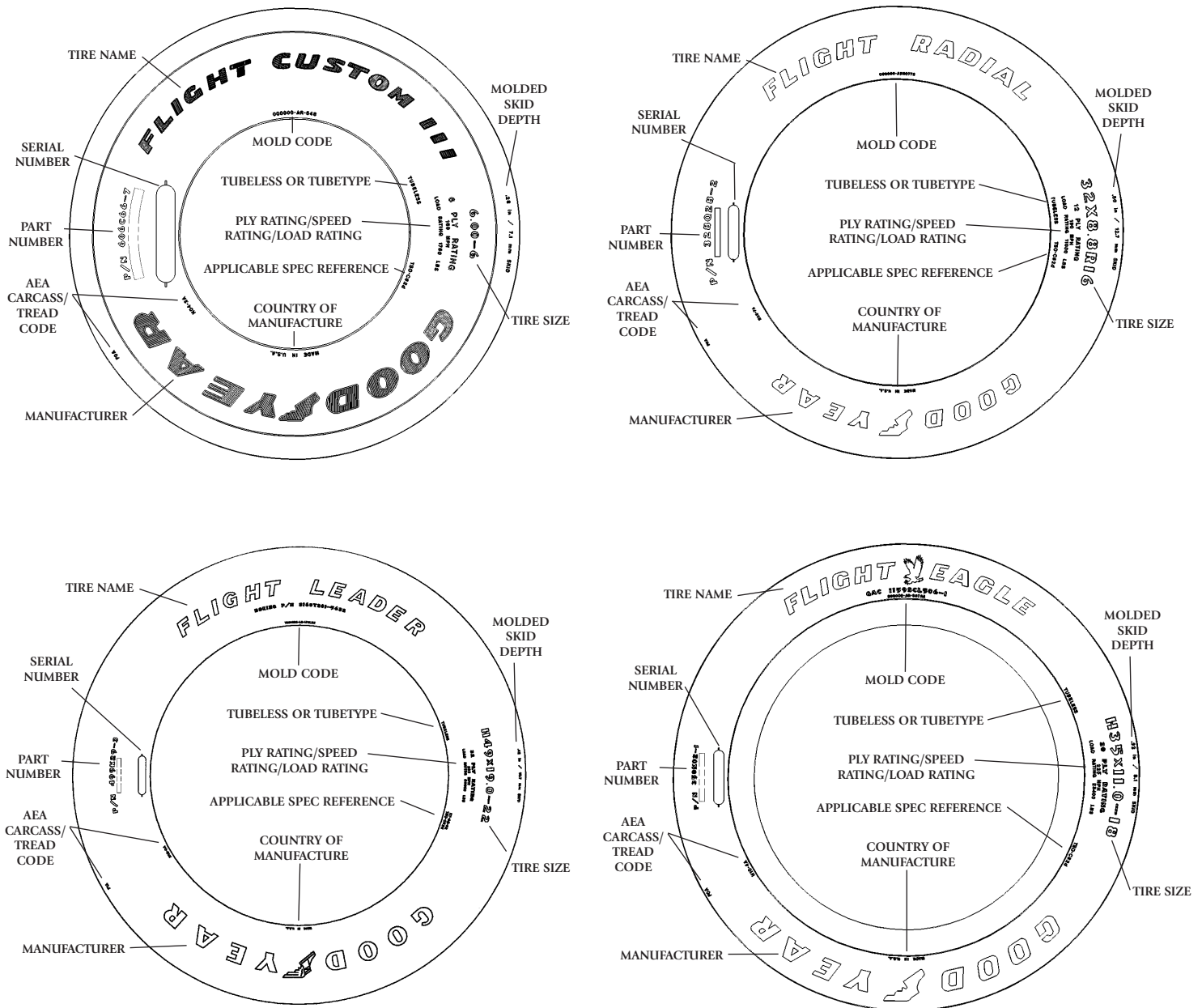
Aircraft tires are designed to operate at 32% deflection, with some at 35%. As a comparison, cars and trucks operate in the 17% range.

SERVICE LOAD (OPERATIONAL LOAD) - Load on the tire at max aircraft takeoff weight.

SERVICE PRESSURE (OPERATIONAL PRESSURE) - Corresponding pressure to provide proper deflection at service load.

RATED SPEED - Maximum speed to which the tire is qualified.

TIRE MARKING



All Goodyear commercial aircraft tires are clearly marked with the following information: Goodyear, size, load rating, speed rating, molded skid depth, Goodyear part number, serial number, Goodyear plant identification and TSO marking. In addition, Goodyear tires are marked with the ply rating and other markings as required by airframe manufacturers or other organizations, such as an AEA code (which defines new tire casing and tread construction).

All TSO-C62b qualified tires with a speed rating of 160 mph or less and all TSO-C62c qualified tires do not require requalification to TSO-C62d unless the tire is changed.

Tires retreaded by all of Goodyear's facilities have the following information marked in the shoulder: the size, ply rating, speed category, retread plant and/or country of retreading, as well as retread level (R-Level), date of retreading and retread AEA code if appropriate.

1 General Data

AIRCRAFT TIRE SERIAL NUMBER CODES

All serials consist of eight (8) characters.

Example: YJJJNNNN

Position 1 (Y) represents the year of production

Positions 2, 3 and 4 (JJJ) signify day of year (Julian Date)

Note: Positions 1 through 4 fulfill requirements of MIL-PRF-5041J for military tires.

Positions 5, 6, 7 and 8 (NNNN) signify the Individual Tire ID Number

Danville's tire IDs range from 0001 to 4999

Thailand's production ranges from 5000 to 5999

Brazil's production ranges from 7000 to 7999

For production prior to January 1, 2001, tires produced in Thailand showed a 'T' in the 5th position, and tires produced in Brazil had a 'B' in the 5th position. Tire IDs for both plants (positions 6, 7 and 8) were 001 through 999. Danville tire IDs have always been 0001 through 4999.

EXAMPLES

