

CHAPTER 8: TIRE

8-1	SPECIFICATIONS, CONSTRUCTION AND HANDLING PROCEDURES ON TIRES	8-1
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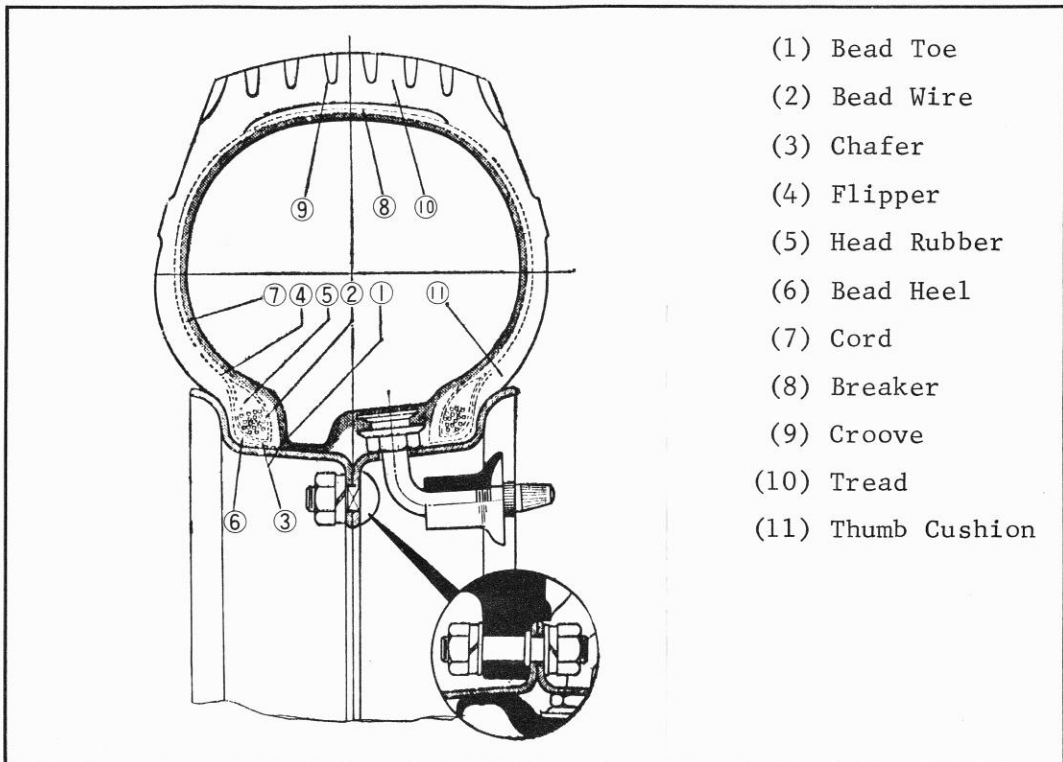
CHAPTER 8: TIRE

8-1: SPECIFICATIONS, CONSTRUCTION AND HANDLING PROCEDURES ON TIRES

A. SPECIFICATIONS

	Subaru 360 Sedan	Subaru 360 Custom
Tire	4.80 x 10 - 2P	4.50 x 10 - 4P
Rim	3.00D x 10	3.00D x 10
Tire Width	Approx. 121 mm (4.76 in)	Approx. 122 mm (4.84 in)
Tire Outer Diameter	Approx. 500 mm (19.6 in)	Approx. 485 mm (19.0 in)
Valve	TR-244	TR-244
Standard Air Pressure		
Front Tire	0.85-0.99 kg/cm ² (12-14 psi)	0.9-1.0 kg/cm ² (13-14 psi)
Rear Tire	1.7-1.85 kg/cm ² (24-26 psi)	1.9-2.0 kg/cm ² (27-28.5 psi)
Spare Tire	1.85 kg/cm ² (26 psi)	2.0 kg/cm ² (28.5 psi)

B. FUNCTION AND CONSTRUCTION



- (1) Bead Toe
- (2) Bead Wire
- (3) Chafer
- (4) Flipper
- (5) Head Rubber
- (6) Bead Heel
- (7) Cord
- (8) Breaker
- (9) Groove
- (10) Tread
- (11) Thumb Cushion

(a) TIRE FUNCTIONS

The tire acts as a part of the springing system supporting the vehicle body and absorbs shock from the road surface for greater driving comfort. At the same time, it transmits the driving force from the engine as well as the braking force. When the vehicle swerves to one side, the tires produces a force which compensates for the centrifugal force to provide good maneuverability and high stability. Since the tires have such important functions, adequate care must be exercised in their handling and maintenance.

(b) FEATURES OF THE SUBARU TIRES

The 4.80 x 10 tires used on the Subaru is of 2-ply construction with high durability. In order to achieve good maneuverability, high stability and superior riding comfort, the following factors have been incorporated into their design. (The tires on the Custom are 4.50 x 10 - 4P.)

- (1) Lightweight
- (2) Low Spring Constant
- (3) High Stability
- (4) High Frictional Constant
- (5) Durability

(c) THE CONSTRUCTION DETAILS OF SUBARU TIRES

The tire and tube can be considered as a container for air which supports the load made to bear on the tire. The core of the tire is the cord which supports the inner pressure through tensile force. Rubber is used along with the cord as an insulation to eliminate friction of the cords and also as protection from wear and tear. To absorb shocks from the outside, the breaker is incorporated between the cord and tread. A cushion layer is formed here which with the breaker serves to prevent separation through minimizing sudden changes in flexibility. The bead which is a rigid piece of steel wire helps to secure the tire in the rim. The surface which contacts the rim is protected by the chafter to prevent frictional damage to the cord. The flipper is inserted to gradually reduce the rigidity from the very hard bead to the side where more flexibility is required.

The outside surface of the tire which contacts the road surface is provided with treads for protection against wear. It has a pattern which has been functionally designed to adequately carry out the functions of the tire. The tread further provides a larger exterior surface for dissipating the internally accumulated heat.

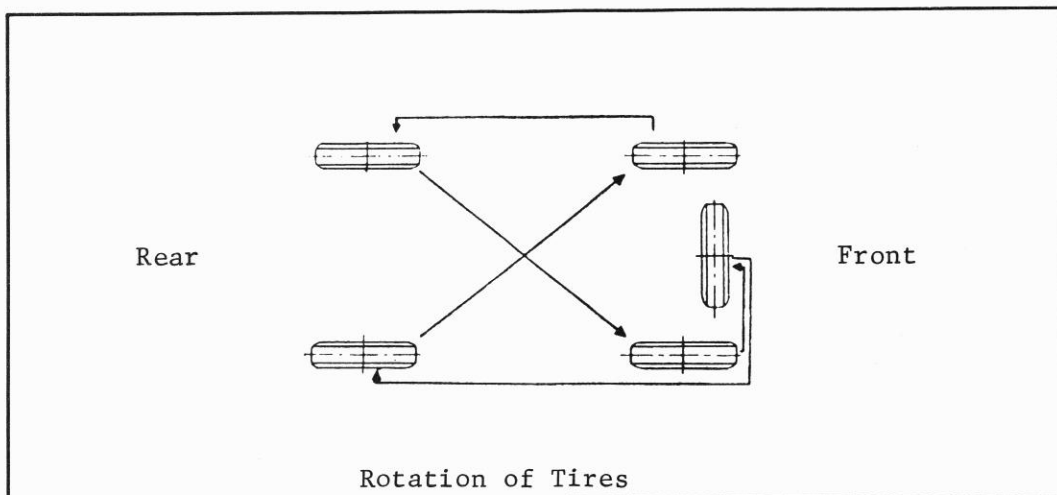
C. TIRE MAINTENANCE

(a) TIRE PRESSURE CHECK

Check and adjust the tire pressures daily. As explained previously, the compressed air in the tire supports the vehicle load, and a certain inner pressure has been set as a standard for performing this function the best. The design of the vehicle body, its suspension system and its steering system is based on tires inflated to a certain standard pressure. Therefore insufficiently or excessively inflated tires will not only shorten the tire service life but will also lower the vehicle performance and vehicle life.

(b) ROTATION OF TIRES

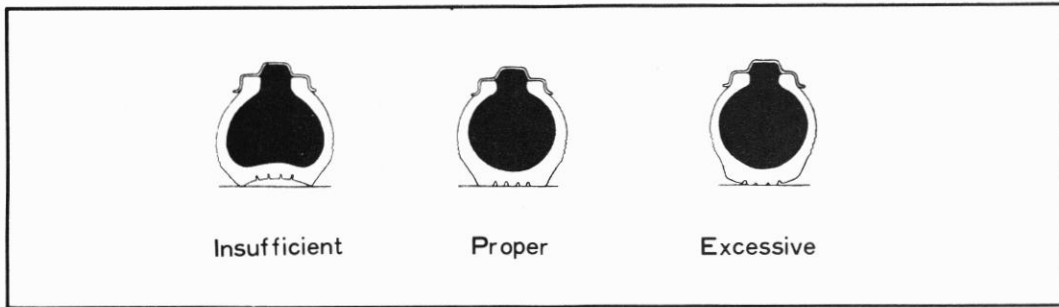
Due to the differences in the functions of the different wheel suspensions, in the road conditions and the everyday driving procedures, the amount of wear on the individual tire will vary to some extent. This will cause unevenness in the tire life. To obtain even wear on all tires, the tires should be rotated periodically after about every 6000 kilometers (3700 miles) of operation. See the following illustration for rotation procedure.



(c) CLEANING THE TIRES

Clean the tires from time to time not only for neat appearance but also for early discovery of trouble. While pouring water on the tire, scrub off dirt and sand with a brush. Be sure to clean the inner side walls and inside the grooves in the tread also. Stones stuck in the grooves will cause damage to the cord. These stones can be removed with a screw driver. Remove nails and wires stuck in the tire with pliers. If these items have gone in deeply and there is a chance that they may have punctured the tube, be sure to check for air leakage after removal.

(d) TIRE AIR PRESSURE INSPECTION



PROPER AIR PRESSURE	
FRONT TIRE	0.85 - 0.99 kg/cm ² (12 - 14 lb/in ²)
REAR TIRE	1.70 - 1.85 kg/cm ² (24.2 - 26.3 lb/in ²)
SPARE TIRE	1.85 kg/cm ² (26.3 lb/in ²)

D. TIRE DEFECTS AND THEIR CAUSES

(a) DEFECTS CAUSED BY FLEX, FATIGUE AND HEAT

The side walls of the tire flex as the tire revolves. If the tire pressure is insufficient or excessive loads are carried on the vehicle, this flexing will become abnormally large leading to separation of the cord from the rubber and ultimately cord breakage. If you drive a vehicle with a flat tire, the tire cords in this flat tire will break almost immediately.

(b) DEFECTS CAUSED BY SHOCK

When the vehicle runs over an object at high speed, the shock that the tire receives will be transmitted to the cording between the beads causing it to break. This is called "shock burst" and the tire will break in a straight line or in a cross. Separation will not normally appear in this case. This trouble is usually caused by over-inflated tires, overloading of vehicle and hazardous high speed operation.

(c) DAMAGES CAUSED BY THE RIM

If the tire are insufficiently inflated, the side walls may become pinched between the rim and the road surface specially when the tire passes over some object. This pinching will

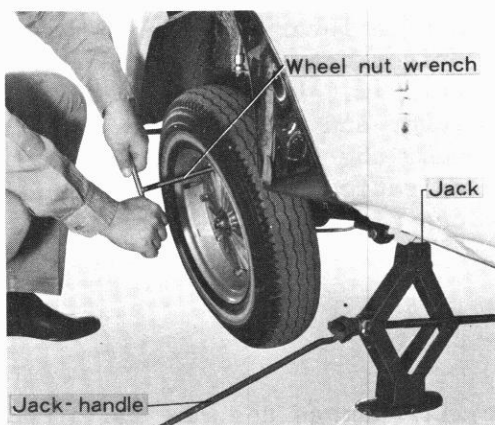
sometime cause the side walls to break. Overloading and over-speeding are contributing factors to such damages. This will also occur when the vehicle is driven with a flat tire.

(d) EXTERIOR DAMAGES AND PUNCTURES

These damages are caused when the vehicle runs over pieces of broken glasses and nails. These damages can be easily repaired if attended to right away. If left unattended and dirt and water enters through these holes, the damages will become more serious. Repair such damages to the tire surfaces as soon as possible. It would be a good policy to have them repaired whenever you have a flat tire.

(e) TIRE WEAR

Normal wear and tear on the tires can not be avoided, but every care should be taken to prevent abnormally accelerated wear. The major causes are improper tire pressures and improperly adjusted suspensions systems.



E. DISASSEMBLY AND REASSEMBLY OF WHEEL, TIRE AND TUBE

(a) REMOVING THE TIRE

First, set the parking brake and remove the wheel cap with a screw driver. Loosen the clip nuts. Now, jack up the vehicle. The Subaru is provided with four jacking points, one near each wheel. Be careful to set the jack up straight. After completely jacking up the wheel, remove the wheel nuts and washers to take off the wheel.

(b) REMOVING THE INNER TUBE

Deflate the tube. The rim is of the two-piece type and when the four bolts connecting the two halves are removed, the two pieces will separate. The tube can be taken out through the gap between the two half-rims without actually removing the tire from the rim. When reinserting the tube and reassembling the rim, the following precautions must be taken:

- (1) Check the interior surfaces of the tire and repair any damages. Remove any foreign objects found inside.
- (2) Before installing, tighten the tube valve and inflate. Check the tube and valve thoroughly for leaks in water.

- (3) Insert the tube after deflating through the rim gap and properly align the valve with the valve hole.
- (4) Inflate the tube sufficiently so that it will not be caught between the two rims when they are reassembled.
- (5) Match the two rim-halves and join together with bolts, spring washers and nuts. Be careful to insert the bolts from the outer rim-half with the three claws for attaching the wheel cap. When the bolt holes are cleanly matched, it will make the installation of the brake drum easier.
- (6) Inflate the tire to the required pressure and attach the valve cap. Care must be taken when measuring tire pressure with pocket gauges as the readings are affected by how it is applied. Check such pocket gauges against master gauges in garages and service stations from time to time.

(c) REMOVING THE RIM FROM THE TIRE



Remove the tube and lay the wheel on the floor. Insert a tire lever or a large screw driver between the tire and the rim. Bear down on the lever and separate the rim from the tire. Repeat this operation around the rim and one rim-half can be easily removed.

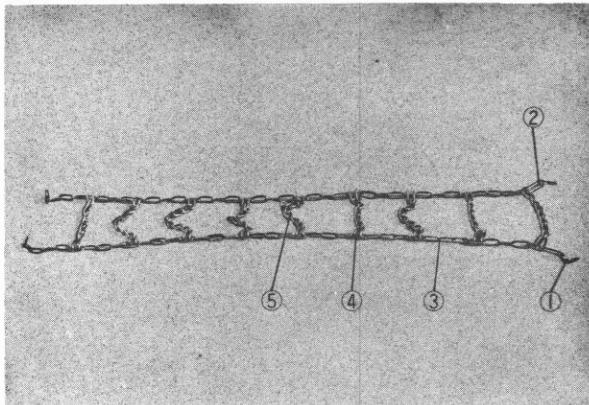
Refrain from using a hammer as it will damage the rim and tire. If it becomes unavoidable, try and use a rubber hammer to lessen the chances of damage as much as possible.

To remove the remaining rim-half, turn the tire over and repeat the above operation. This will be made easier if the tire is placed on top of the rim-half already removed.

F. TIRE CHAIN

- (a) When the road conditions are bad with snow, mud or gravel, use tire chains for safe operation to prevent slipping. It will also help to keep down your fuel consumption.
- (b) The Subaru tire chains have been specially designed for maximum safety and long service life.

(c) The Subaru tire chain is constructed as shown in the following in the photo.



- (1) Fastener
- (2) Clip
- (3) Side Chain
- (4) Hook
- (5) Cross Chain

(d) To install the tire chain, jack up the vehicle and place the center of inner side of the chain under the tire. Bring the ends of the inner chain around the tire and connect at the top with fastener. Then fasten the outside part of the chain.

