WHEELS AND TIRES

CONTENTS OF THIS SECTION

GENERAL DESCRIPTION

Drop center rim steel wheels secured by right-hand thread nuts on both sides of car are used on all models. The rim width is 5.0'' and wheel diameter 14''. Low pressure 6.95 x 14 4 ply rating tires are standard equipment on all models except station wagons and V-8 engine option. Station wagons and cars having V-8 engine option are equipped with 7.35 x 14 (with optional 7.95 x 14) 4-ply rating tires. All tires are of tubeless construction.

TIRES: RECOMMENDED TIRE PRESSURE (PSI TIRES COOL)

TEMPEST –

6.95 x 14	All Models	24 Frt.	22 Rr.
	Over 5 Pass. Load*	26 Frt.	30 Rr.
7.35 x 14	Safari Station Wagon	24 Frt.	26 Rr.
	Over 5 Pass. Load*	26 Frt	30 Rr.
	All Other Models	24 Frt.	22 Rr.
	Over 5 Pass. Load*	26 Frt.	30 Rr.
7.75 x 14	Safari Station Wagon	22 Frt.	24 Rr.
	Over 5 Pass. Load*	24 Frt.	30 Rr.
	All Other Models	22 Frt.	20 Rr.
	Over 5 Pass. Load*	24 Frt.	30 Rr.

*Normally front tire loads do not increase appreciably with passenger or cargo loading. The rear pressure may be increased up to 30 psi on original equipment tires depending on the extent of rear wheel loading.

Eight-ply rated tires are available as optional equipment (Pontiac only) and are recommended for extra load service. They may be inflated as high as 40 psi for increased load-carrying capacity.

VEHICLE LOAD LIMITS –

Sedans		1100 lbs. 3 Pass. Front 3 Pass. Rear 200 lbs. Luggage
Safari Station Wagons		1200 lbs.
2 Seat	3 Pass. Front 3 Pass. Rear 300 lbs. Luggage	

Fig. 3A-1 Tire Pressure Chart

PERIODIC SERVICE

INFLATION OF TIRES:

Maintenance of correct inflation pressure is one of the most important elements of tire care. The inflation pressure recommended for any model of car is carefully worked out as the best pressure to give a correct balance of those factors in good car performance which are affected by inflation pressure. Some of these factors are: satisfactory ride, stability, steering, tread wear, cord life and resistance to stone bruises.

Tire pressure, with tires cold, should be checked once a month. Pressure should be changed if necessary, to conform to specifications on chart (Fig. 3A-1). It is normal for air pressure in tires to increase as temperature of tires increases due to car being driven.

When it is not possible to check air pressure when tire is cold, it may be checked with tires warm, using pressure recommended for city and highway driving given in specifications. It must be recognized that this method is not as accurate as checking pressure when tires are cold. One driver's tires may get warmer than another driver's due to difference in speed, acceleration and braking.

NOTE: Always check tires with accurate gauge.

Tire valve caps should always be reinstalled on the valve and tightened finger tight. They assist in keeping air in the tire in case of a valve leak, and keep dust and water out of the valve.

Higher than recommended inflation pressure will give:

1. A harder riding car.

2. A tire carcass more susceptible to bruising or carcass damage directly under the tread.

3. Poorer traction at rear wheels resulting in uneven wear.

4. Fast tread wear at center of tire.

Lower inflation pressures than recommended will give:

1. Increased tire squeal on turns.

2. Harder steering.

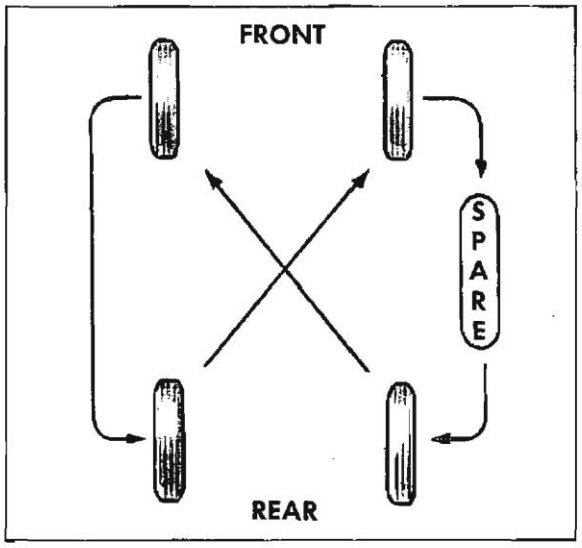

Fig. 3A-2 Diagram for Switching Tires

3. Rapid and uneven wear on the edges of tire tread.

4. A tire more susceptible to rim bruises and various types of rupture.

5. Increased cord fatigue or broken tire cords.

6. Increased tramp and shimmy troubles.

7. Higher tire temperatures.

8. Increased car roll when turning a corner or making a sharp swerve in traffic.

TIRE ROTATION:

Uneven tire wear is frequently the cause of tire noises which are attributed to rear axle gears, bearings, wheels, etc., and at times unnecessary work has been done on rear axle assemblies in an endeavor to correct this noise.

To minimize the possibility of tire noise and equalize wear, it is recommended that tires be rotated as shown in Fig. 3A-2, approximately each 6,000 miles. They should be rotated more frequently when tires are subjected to extremely hard use. This will prevent undue wear on any particular tire which might cause excessive noise. More important from the owner's viewpoint, will be equalization of wear on all tires and the saving made through getting some use from the spare tire which all too often is allowed to remain as a spare until the other tires are worn

out. When this occurs, the spare tire, while appearing to be new will actually have deteriorated through disuse. If the rotating of tires is followed each 6,000 miles in accordance with Fig. 3A-2, all tires will have had the same number of miles in each wheel position at the end of the fourth change or when ready to interchange tires for the fifth time. The car will have been driven 80,000 miles, but each tire will have only 24,000 miles of use.

CAUTION: Hub caps are made of brass and care should be used not to damage them when removing or installing them.

Each time tires are switched they should be inspected for signs of abnormal wear, bulging, etc., and all stones, nails, glass, etc., removed before reinstalling tire and wheel on car.

MINOR REPAIRS

TEST FOR LEAKS:

1. Use soapy water to check valve for leaks. In many cases air loss can be corrected by simply tightening the valve core.

2. If the reason for air loss is not immediately discernible, submerge the complete wheel assembly in a tank of water.

3. Mark the tire and rim at the point where air is escaping.

Tire Mounting and Dismounting Instructions:

The wheel assembly has a flat hump bead seat on the outboard (valve hole) side of rim (Fig. 3A-3). This design provides a tight tire fit, making it necessary to use a rubber lubricant or a vegetable oil soap solution for tire mounting and dismounting. This design also makes it mandatory that tire mounting and dismounting be done with the inboard side of the wheel up.

WHEEL STUD

REMOVE AND REPLACE

1. Press the damaged stud out or carefully drive out with hammer.

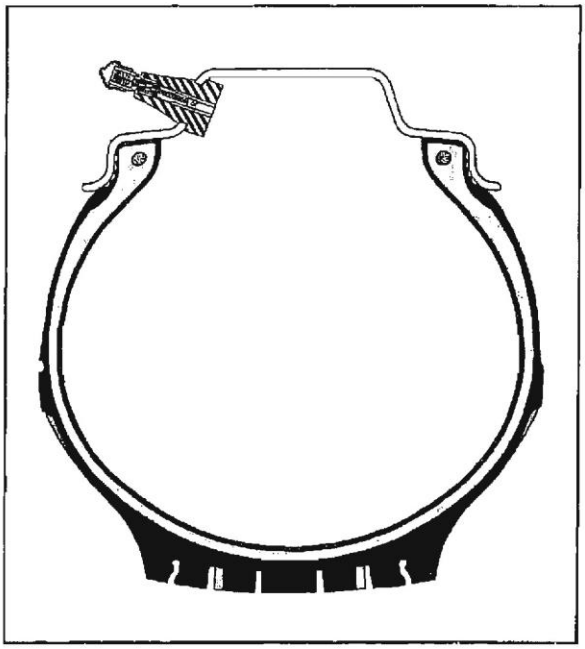

Fig. 3A-3 Cross Section of Typical Tubeless Tire

2. Insert the new stud taking utmost care to realign the serrations of the stud with the serrations in the drum.

CAUTION: Proper serration alignment is necessary to avoid distortion and breaking out of metal around the machined flat surface that contacts the wheel rim lugs.

3. Using a wheel nut and several large flat washers, pull the stud into place by tightening the nut.

REMOVE TIRE FROM WHEEL:

1. Remove valve cap and valve core. Let out all the air.

2. With valve hole side of tire down, break beads away from rim. Use only conventional bead-breaker type machine.

CAUTION: Do not use hammer or tire irons.

3. Apply a liberal amount of rubber lubricant or thin vegetable oil soap solution to both beads and remove the first bead, using the machine method.

CAUTION: During the entire operation of breaking beads away from rim and removing tire from rim, special care should be taken not to damage the sealing ridges along the tire beads.

PUNCTURE REPAIRS:

Puncture repairs may be quickly and permanently performed, using one of several kits available through tire manufacturer's dealer outlets.

WHEEL LEAKS:

Examine rim flanges for sharp dents. Any dent visible to the eye should be straightened.

CAUTION: Under no circumstance should wheels be brazed, welded or peened.

PREPARATION OF TIRE:

Remove excess "strings" of rubber hanging from tire bead.

PREPARATION OF RIM:

1. Clean the rim flanges using a small piece of No. 3 coarse steel wool or emery cloth removing all oxidized rubber, soap solution, rust, etc. If rim is badly pitted a file can be used.

2. Straighten or replace rim if it is bent or damaged.

MOUNTING TIRE ON WHEEL:

1. Install valve if valve was removed. Always install valve recommended by car manufacturer.

2. Apply liberal amounts of vegetable oil soap solution or approved rubber lubricant to rim edges and tire beads.

3. Mount the tire on the wheel with valve hole side down using the machine method.

4. Remove valve core from stem to increase flow of air.

5. With casing on the rim so that the beads are resting uniformly on the bead ledge, quickly apply a large volume of air. This forces the bead on the bead seat and against the flanges where the air seal for the tire is obtained. Inflate tire until beads are completely forced against rim flanges.

CAUTION: Do not stand over tire when inflating. Bead wire may break when bead snaps over safety bump. Do not exceed 40 lb. air pressure when inflating. If 40 lbs. pressure will not seat beads properly, deflate, lubricate, and reinflate.

6. Once the beads are seated against the rim flanges, the air pressure can be released.

7. Install valve core and inflate to proper specifications.

8. General precautions in mounting tires:

   a. Use tire mounting and dismounting machine.

   b. Do not use hammer or tire irons.

   c. Work over rim flange so that the section nearest the valve stem will be applied last.

TIRE BALANCING

Factory specifications call for wheel and tire assemblies to be in balance within 6 inch ounces maximum. Under certain circumstances it may be necessary to use weights greater than maximum to obtain satisfactory balance. When greater than 3 ounces of weight are used, split weights between inside and outside of rim. Use heavier weight on the inside if weights added are not equal. When total weights used exceed 6 ounces, this is an indication of a bad tire.

Wheels on new cars are statically balanced at the factory to less than 6 oz. which is well within requirements for smooth operation on the car.

Shimmy or tramp may be caused by radial runout or eccentricity of the tire and/or wheel assembly as well as out of balance. Radial runout may be caused by a variation in tire tread surface caused by skidding, a damaged tire, a bent or distorted wheel, or an improperly mounted tire.

NOTE: Shimmy is always aggravated by worn front tires. When shimmy is a problem, use best tires on front of car.

All four tires and wheels should be checked for radial runout at the points indicated on the diagram, see Figs. 3A-4 and 3A-5.

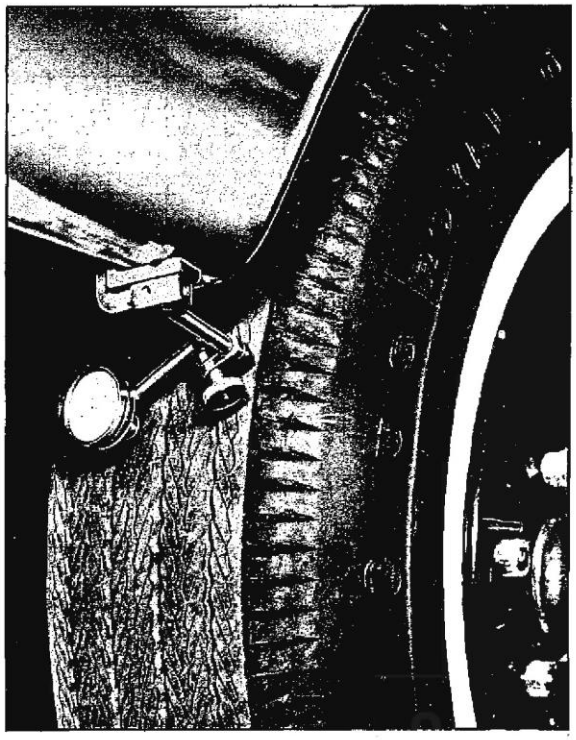

Fig. 3A-4 Mounting Dial Indicator

NOTE: Wheels and tires are beyond tolerance and should be replaced before proceeding if runout exceeds the following wheel radial runout .035" or wheel and tire assembly radial runout .050".

Lateral runout of each front wheel and tire may be checked by placing a dial indicator against either of the tire buff ribs. Make the check on the inside buff rib if the outside is worn or distorted due to hard curbing.

The maximum allowable lateral runout of each front wheel and tire is 1/8". The following corrective steps are taken if this is not obtainable.

1. Rotate tire on wheel.

2. Make wheel and tire runout check.

3. Make wheel runout check if lateral wheel and tire runout exceeds 1/8" after tire rotation.

4. Excessive runout is in wheel if runout obtained in step 3 is greater than 1/8", and in tire if runout obtained in step 3 is less than 1/8".

Balance all tire and wheel assemblies on the car with tires at normal operating temperature as follows:

1. Spin assembly with balancer spinner to locate heaviest point. Mark point with chalk.

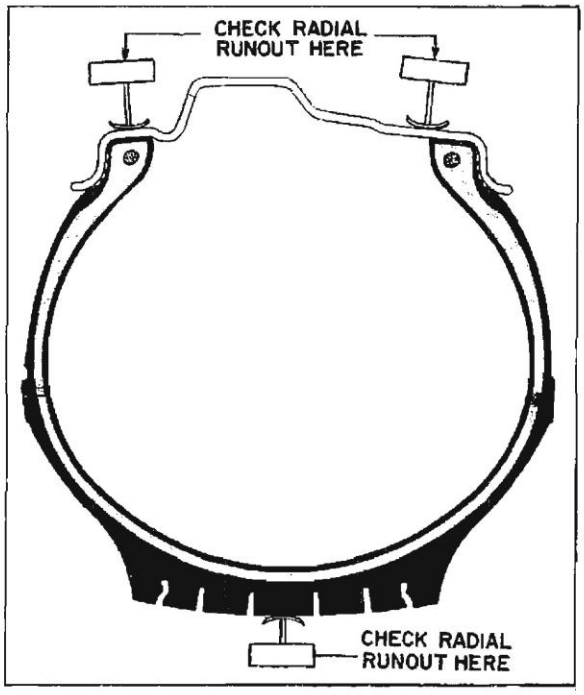

Fig. 3A-5 Checking Radial Runout

2. Remove wheel and tire assembly and rotate on drum until heaviest point of the assembly indexes with lightest point on the drum (the weight on the outer rim of the drum face marks the lightest point on the drums) are balanced light at manufacture, see Fig. 3A-6.

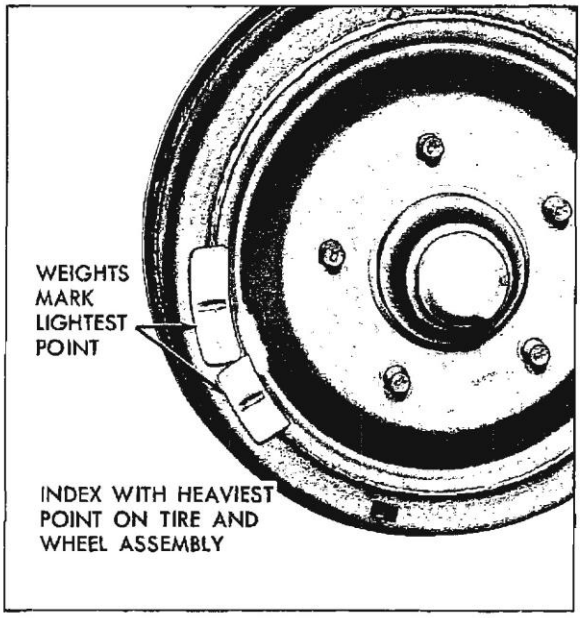

Fig. 3A-6 Indexing Drum

3. Proceed to balance tire and wheel assembly in manner recommended by manufacturer of equipment being used.

NOTE: Amount of weights needed to compensate for static unbalance should be evenly divided and half added to inside of rim and half outside. This will eliminate the necessity of adding weights during dynamic balance to compensate for weights added during static balance.

TROUBLE DIAGNOSIS AND TESTING

TIRE INSPECTION

Upon careful inspection of tires, it may be found that improper wheel alignment, grabbing brakes, poor driving habits, fast cornering or other conditions are the cause of wear, such conditions should be corrected. Listed below are common types of irregular tire wear and possible causes.

UNDERINFLATION

The result of underinflation is shown (Fig. 3A-7). Car weight distorts the normal contour of the tire body and the tire bulges or "bellies out" with an extreme flexing action. This wears the tread at the edges more than the center and generates excessive internal heat, weakening the cords and resulting in bruises, broken cords or ply separation. Underinflation also leads to rim bruises as insufficient resistance is provided to prevent the tire from being jammed against the rim and crushed or cut when the tire strikes a curb, rock, or rut.

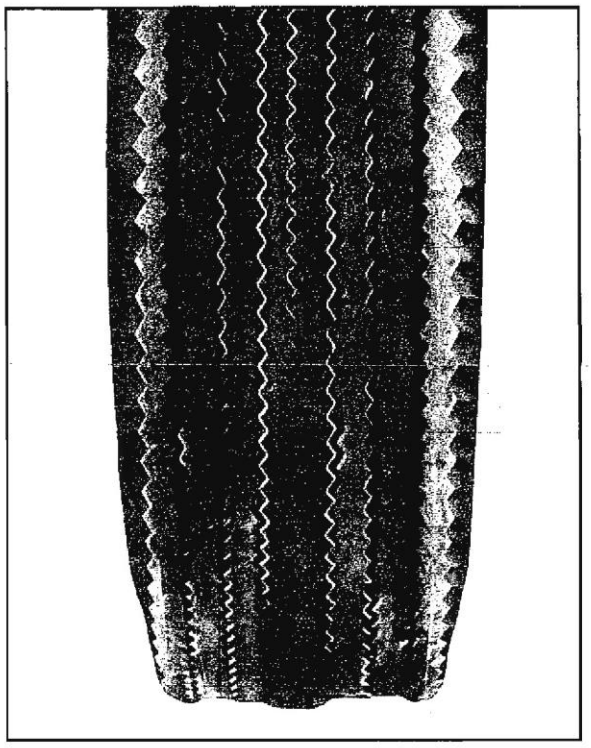

Fig. 3A-7 Wear from Underinflation

OVERINFLATION

The result of overinflation is shown in Fig. 3A-8. When a tire is overinflated, increased tension caused by excessive pressure prevents proper deflection of the sidewalls. This results in wear in the center of the tread and the tire also loses its ability to absorb road shocks. Under this increased strain, cords in the tread area eventually snap under impact, causing either a characteristic X-break or diagonal break.

SIDE WEAR (CAMBERING OR CORNERING WEAR):

There are three reasons why tires wear more rapidly on one side of the tread than on the other.

1. Wheel camber causes the tires to run at a certain angle from the perpendicular, resulting in side wear.

2. Side thrust when rounding turns causes wear on the sides of front tire treads. In making a turn to the left, especially at high speeds, the outside shoulder of the right tire and the inside shoulder of the left tire take most of the wear. When making a right-hand turn, the opposite shoulders of the tires are worn.

3. High crowned roads cause increased wear on the side of the right front tire. This is particularly true when there is too much toe-in on front wheels or when positive camber of right front wheel is greater than the left.

Cornering wear can usually be differentiated from camber wear because cornering wear affects both sides of the tire, giving it a very round appearance (Fig. 3A-9). When camber is incorrect it will cause excessive wear only on one side of the tire tread. Camber wear does not leave the tread rounded as cornering wear does.

When cornering wear is encountered, the owner should be shown, by the rough tire surface and

rounded shoulders, that he is severely abrading his tires by fast or sharp turns, and told that he could greatly prolong the useful life of his tires by taking the turns a little slower. The tires and wheels should be switched (Fig. 3A-2) and continued in service the same as with normal camber wear.

TOE-IN OR TOE-OUT MISALIGNMENT WEAR

Front wheels should be straight ahead or toe-in slightly. When there is excessive toe-in or toe-out, tires will revolve with a side motion and scrape the tread rubber off. Front tires will show wear on the outside with a toe-in condition and on the inside with a toe-out condition. The above wear pattern is reversed when considering toe relative to rear tires. Fig. 3A-10 illustrates the wear pattern due to improper toe.

UNEVEN TIRE WEAR

Other types of uneven tread wear such as a single spot or series of cuppings around the tire circumference (Fig. 3A-11) may also be noted on some tires. Such uneven wear may be due to excess toe-in or toe-out with underinflation, uneven camber, or such irregularities as bent or worn suspension, wobbly wheels, improper caster, out of round brake drums, and unequally adjusted brakes.

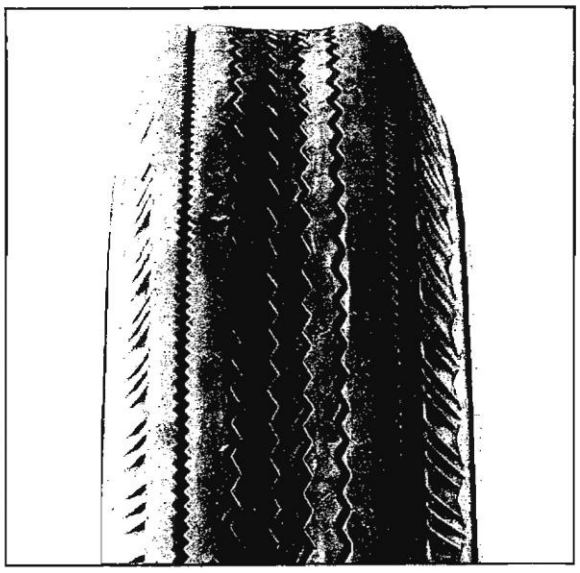

Fig. 3A-8 Wear from Overinflation

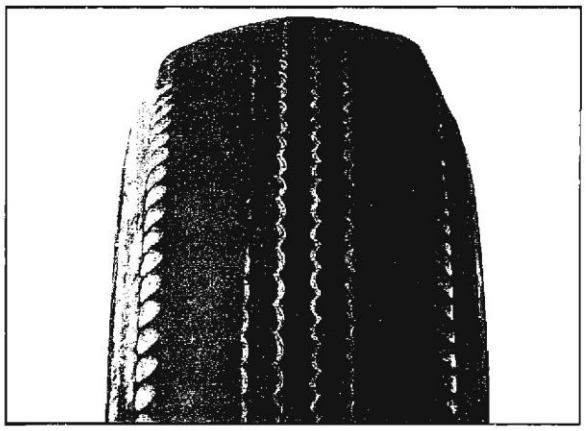

Fig. 3A-9 Cornering Wear

TREAD WEAR

Tread wear is affected by wheel alignment, cornering, inflation pressure, etc., as mentioned previously. There are several factors which must be considered in analyzing tread wear.

A careful driver may obtain many times the mileage from his tires as would be obtained by a severe driver. Also, tires wear much faster in some localities depending on the type of road (some are more abrasive than others), condition of road (rain or snow), the number of sharp turns, hills or mountains the car must go up or down, and the prevailing

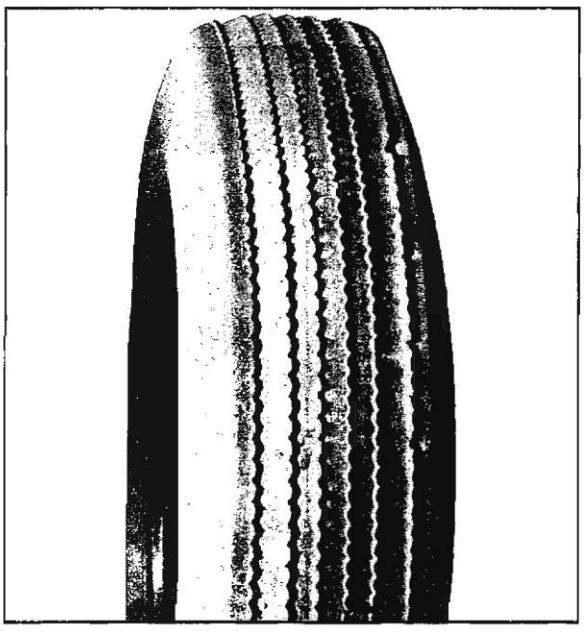

Fig. 3A-10 Toe-in or Toe-out Misalignment Wear

temperature. Fast driving, quick starting, and hard stopping are generally recognized as a definite cause of rapid tread wear. Temperature is often not considered to be as great a factor in tire life as it actually is. By actual test an increase of 40°F in temperature reduces tread mileage by 33%.

TESTING FOR TIRE NOISES

To determine whether tires are causing the noise complained of, use the following procedure:

Check car to see if it is equipped with snow tires. These tires produce a noise which the owner will have to ignore or overlook. If not equipped with snow tires, drive the car at various speeds and note the effect of acceleration and deceleration on noise. Axle and exhaust noise show definite variations under these conditions while tire noise will remain constant. Tire noise generally is most pronounced on smooth black-top roads at speeds between 15 and 40 miles per hour.

Tire thump is the periodic noise with each revolution of the wheel. It is prominent only on smooth black-top pavement that is free of surface irregularities. Tire thump may be checked by driving the car over a smooth black-top pavement with tires at recommended inflation pressure, and again over the same stretch of raod with the tires inflated to 50 lbs. and dropping the pressure in one tire at a time to normal.

CAUTION: Be careful not to strike any obstructions or rocks in road with tire at 50 lbs. pressure as this will lead to a rupture in the casing. Operate car with higher than recommended inflation only while testing. Do not operate car over 50 mph with high tire pressure.

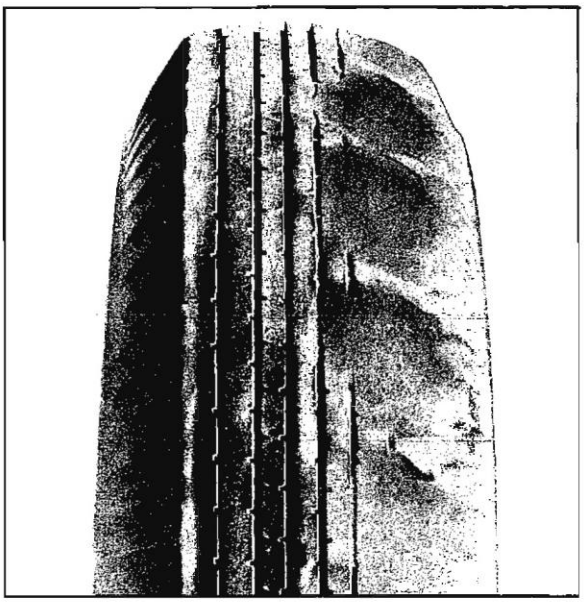

Fig. 3A-11 Spot Wear

Carefully inspect the tire making the noise for bulges, irregular wear, low air pressure, toe and heel (saw tooth) wear, and unusual tread design (ribbed tread gives less noise than some all weather treads; mud and snow treads are very noisy). Checking wheel alignment and rotating tires will usually cure tire noises unless caused by tire tread design, heavy irregular tread wear, or tire bulges.

SPECIFICATIONS

WHEELS

Material	Steel
Type	Drop Center—with flat safety hump
Diameter	14"
Width	5.0"

TIRES

All Exc. Sta. Wag. and V-8	6.95 x 14
Sta. Wag. and V-8	7.35 x 14
Oversize for Sta. Wag. and V-8	7.75 x 14
Type	Tubeless
Ply Rating	4

TORQUE SPECIFICATIONS

	LB. FT.
Wheel to Drum Nut — Front and Rear	70-85