WHEELS AND TIRES

DATA AND SPECIFICATIONS

	Models	P-30, LP-1	P-31, LP-2
Wheels	Type	Steel Disc	
	Rim	Drop Center—Safety Wheel	
	Wheel Size	14 x 5 in. Std. 14 x 5½ (Spec. Equip.) 14 x 6 (Spec. Equip. for 12″ Brakes)	
	Number of Bolts to Attach Wheel	5	
	Bolt Hole Circle—(dia.)	4½ in.	
	Bolt Size	½ in.—No. 20 65 ft. lbs. Torque	
Tires	Type	Super Soft Cushion Tubeless	
	Tire Size	7.50 x 14 in. Std. 8.00 x 14 (Spec. Equip.)	
	Ply	4	
	Tread	TwinGrip	
	TIRE PRESSURE Pounds—Cold (7.50 x 14 & 8.00 x 14)	22	24

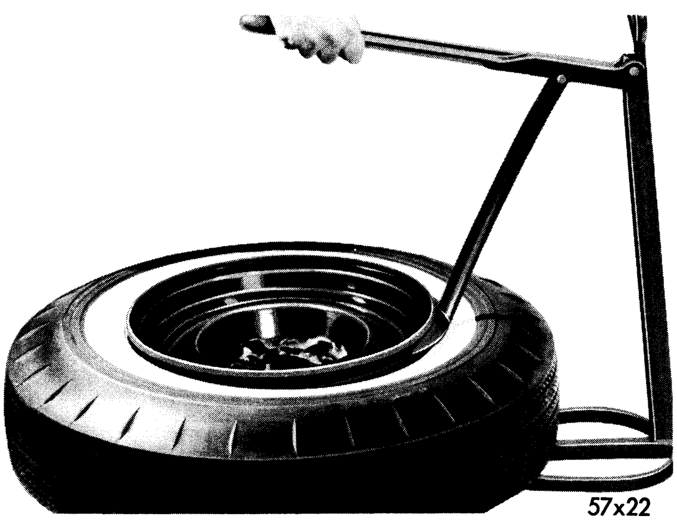

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Figure 1—Removing Tire from Rim with Tool C-715

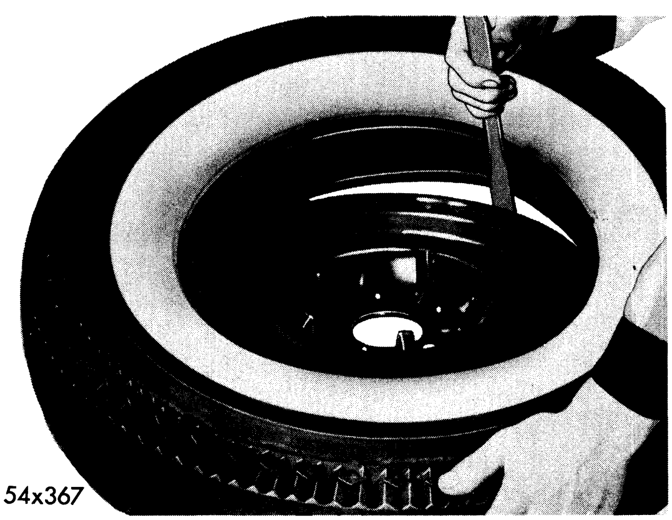

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Figure 2—Installing Tire Beads

PART ONE—CHASSIS

SECTION V—WHEELS AND TIRES

1. DISMOUNTING AND MOUNTING TIRES

SAFETY RIM WHEELS

The wheel rim incorporate a special safety feature to give added protection in case of a blow out or rapid deflation of the tire while the car is in motion. It is a raised section between the rim flange and the rim well, as shown in "A" of Figure 3. Inflation of the tire snaps the tire bead over this raised section and out against the flange. The force required to pull the bead back over this raised portion tends to keep the tire out against the flange even though rapid deflation occurs.

REMOVING TIRE FROM SAFETY RIM

With wheel and tire removed from car, deflate tire completely by removing valve core. After loosening both beads, squeeze both sides of tire (at one place) together and work into rim well. Then opposite this point, insert a regular tire tool and pry casing off wheel rim using care not to damage sealing grooves on tire bead.

REMOVING TIRE WITH SPECIAL SERVICE TOOL

Completely deflate tire by removing valve core. Place tire and wheel over base of Tool C-715, then insert pry arm on the tire directly next to the rim of the wheel. See Figure 1. Holding the tool in the compressed position, press the complete tire bead into the well with the foot. Then remove tire in the regular manner.

MOUNTING TIRES

To install tubeless tires on the wheel apply a very mild soap and water solution (1 or 2%) on the tire beads. See Figure 2. After the tire has been mounted on the wheel and with the valve core out, apply a blast of air. If the beads do not contact both bead seats sufficiently to seal the pressure then the beads must be spread by constricting the tread centerline, as shown in Figures 4 and 5.

The use of tool C-3440 (Figure 4) will seat the beads to seal the pressure for inflation. If the mechanical constrictor is not available, a simple rope tourniquet can be used. See Figure 5. When using the rope tourniquet, use one or two turns around the tire (depending on the size of the rope). Using a tire iron, twist the rope and at the same time, pound the tread (using a rubber mallet) at various places to evenly distribute the tension.

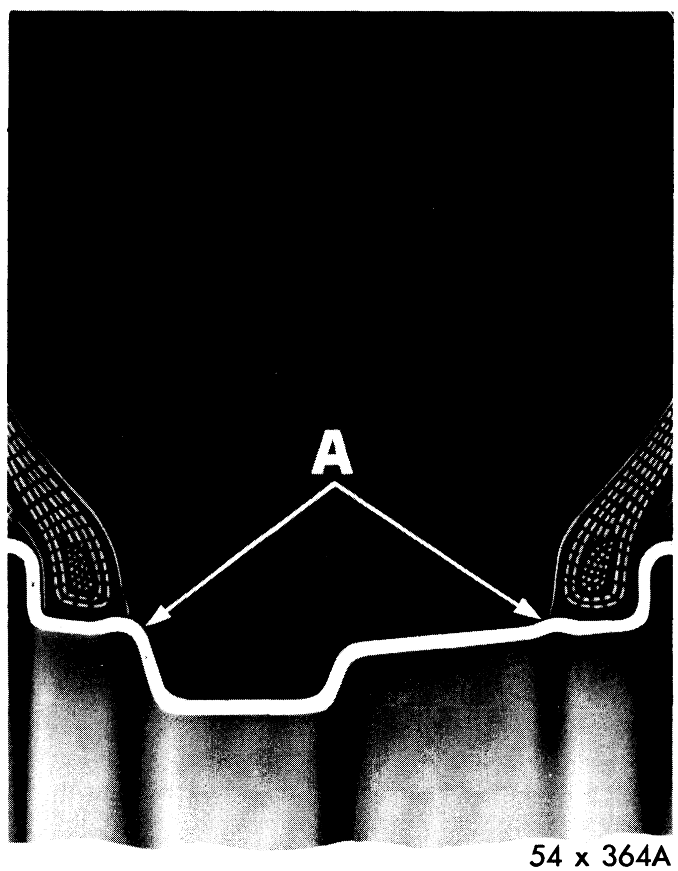

Figure 3—Safety Wheel Rim

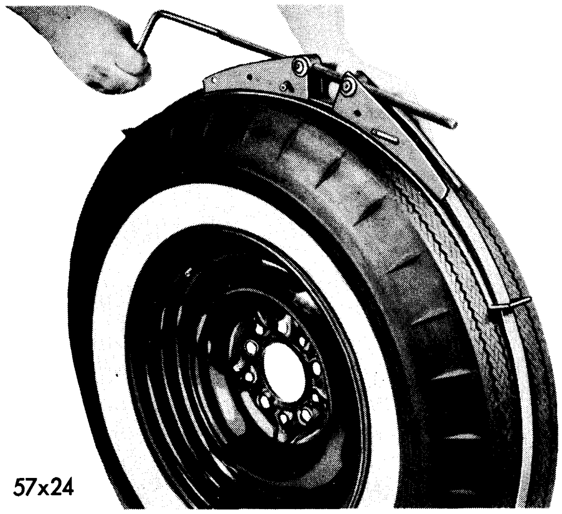

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Figure 4—Constricting Centerline of Tire with Mechanical Tool

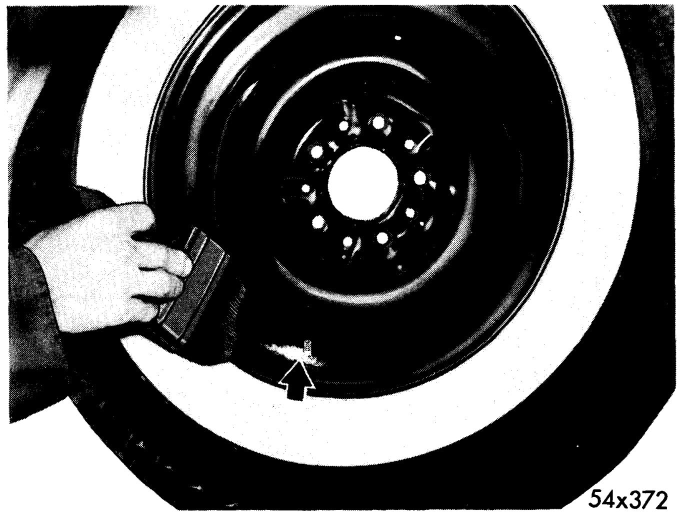

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Figure 6—Leak at Valve Stem

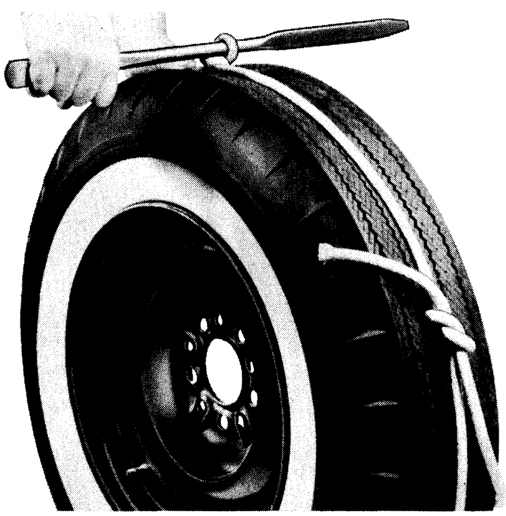

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Figure 5—Constricting Centerline of Tire with Rope Tourniquet

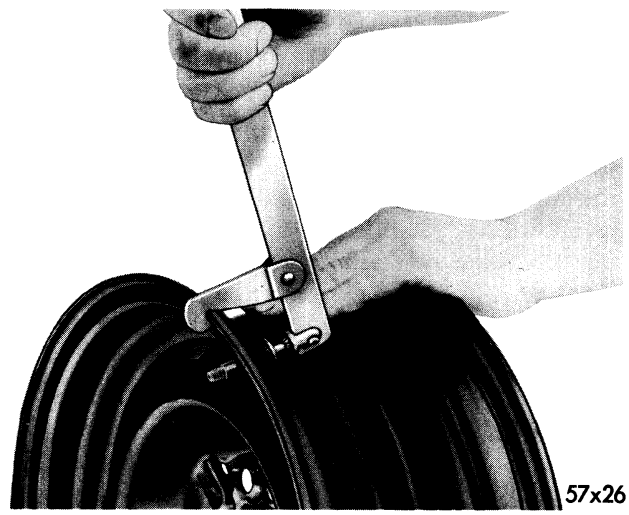

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Figure 7—Installing Snap-In Type Valve Stem Using Special Tool

When the beads have moved out to contact the seats, again apply air pressure, but only enough to seat the beads. Remove the constricting tool or rope, install the valve core and inflate the tire to the recommended pressure.

2. REPAIRING TUBELESS TIRES

LOCATING LEAKS

In most cases the tire and wheel need not be removed from the car for repair if the leak can be readily found. The puncturing object, when found, can be removed and leak repaired using the plug method.

If the tire is flat, reinflate and listen for a fast leak. If the leak is too slow to be found by sound, remove the wheel and tire and submerge in a water test tank.

When a test tank is not available, apply a coating of soap solution with a paint brush or hand spray. Cover surface of tire, valve stem and the juncture of tire and rim flange. Allow five minutes, any slow leak will show up as an accumulation of white foam or air bubbles. Fast leaks will sometimes blow through the soap film and not form bubbles or foam. If no foam shows, reapply the coating carefully, watching at the same time for large bubbles.

Valve leaks usually show up as bubbles issuing from between the valve stem and wheel. Drop some soap solution at this point and watch for the bubble, as shown in Figure 6.

There have been cases of rim leakage through cracks or around rivets. If the leak does not show up from the usual places (punctures, rim flange, valve or stem) then be sure to check the rim.

The metal-type valve stem can be repaired, in most cases, by replacement of the rubber gasket. A snap-in type rubber valve stem that leaks must be replaced. See Figure 7.

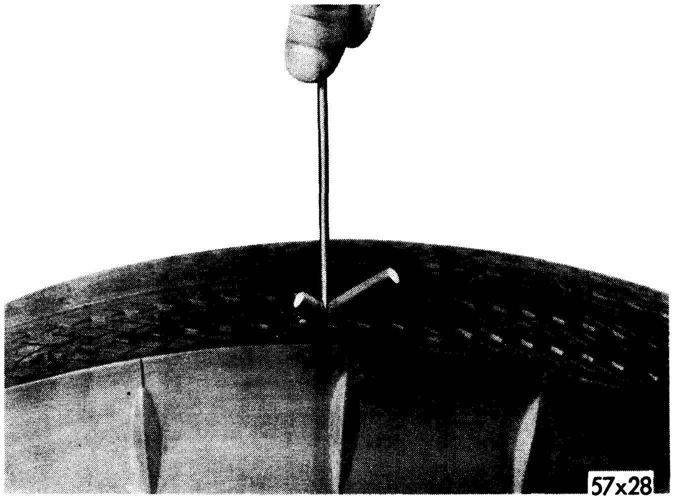


Figure 8—Inserting Needle and Plug In Puncture

54 x 386A

Figure 10—Plug and Needle Installed In Puncture

OUTSIDE REPAIR METHOD

Ordinary punctures are easy to repair with a tubeless tire repair kit, using the plug method. The repair can be made with the tire inflated or flat without removing the tire from the rim. The repair kit contains an assortment of rubber plugs, a needle inserting tool and repair cement and instructions for their use. See Figure 8.

Remove the puncturing object from the hole. Dip the needle in the repair cement and probe into the puncture to locate its direction, as shown in Figure 9.

Repeat until hole is well lubricated. Do not force the needle if it seems to be blocked. Forcing may make a double hole that is difficult to seal completely.

Select the plug or plugs according to the size of the hole. The plug should be about twice the diameter of the hole. Dip the plug and needle end in the repair cement and immediately insert into the hole in the tire with a firm and steady motion.

Push the needle and plug in until the short end of the plug snaps through the tire, as shown in Figure 10. Remove the needle by pulling straight out. The plug will unhook automatically. Trim the plug approximately ⅛″ above the tread surface, as shown in Figure 11. A properly installed plug will last the life of the tire.

INSIDE REPAIR METHOD

When a tire has been punctured by an irregular shaped object, it may still leak when repaired by the "outside or plug" method. The "outside method" is recommended first because it is the easiest. This condition, when found, will require the use of the "inside" method for repair.

PREPARATION—Remove the tire from the wheel. Install spreaders, as shown in Figure 12.

Trim the inside end of plug flush with the liner. Next, buff the liner approximately 1 inch around the puncture. (Be sure and leave the plug in the hole as this will serve to keep moisture out of the tire fabric).

Figure 9—Lubricating Puncture with Cement

54 x 388A

Figure 11—Sealing Plug Correctly Installed

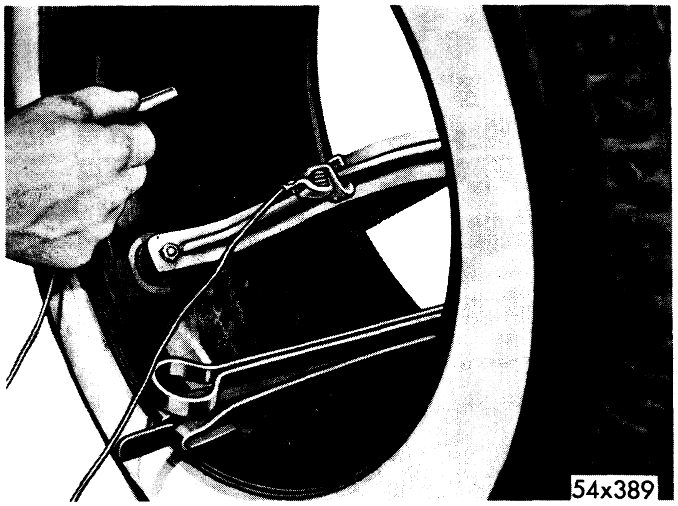


Figure 12—Spreaders Installed in Casing

If no plug is available, a little extra repair gum should be worked into the hole before applying the patch.

It is not necessary to use cement to obtain good adhesion.

EQUIPMENT—Two types of equipment are now available for curing inside patches. The "Match Patch" or power burning type depends upon heat from the slow fire. The "Electric" type has a "fuse" plug that automatically cuts off the power when the cure is completed. Both types depend upon "C" clamps for pressure during cure.

NOTE

All inside tire repairs must be made with HOT PATCHES to insure proper curing and adhesion.

PATCHING—Remove the strip from the rubber patch on the metal curing plate and center over puncture. Apply pressure and cure according to instructions supplied with the equipment.

The inside curing methods will provide easy, completely permanent repair for any kind of a tubeless tire puncture that has not seriously damaged the cord body.

3. TIRE CARE

TIRE PRESSURE

The air pressure in tires (tubeless or with tubes) will increase after the car has been driven, due to pressure build-up. Never reduce this build-up pressure. When the tires are cold, such as after standing over night, the pressure will be less than when the tires are warm after driving.

After driving at moderate speeds, such as in the city, a pressure build-up (summer or winter) of at least 3 pounds over the cold pressure is normal.

After driving at high speeds on the highway, a pressure build-up (summer or winter) of at least 5 pounds over the cold pressure is normal.

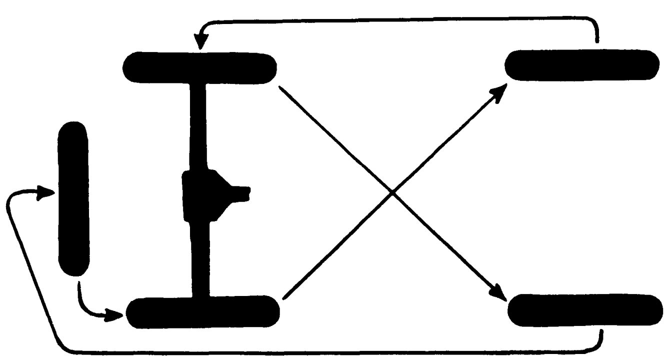
TIRE PRESSURES

	6 cyl.	V-8
Cold	22 lbs.	25 lbs.
Moderate	25 lbs.	27 lbs.
Hot	27 lbs.	29 lbs.

Always use an accurate gauge when testing tire pressure. An inaccurate gauge can be in error as much as 2 or 3 pounds, which is ten percent of the recommended tire pressure.

TIRE ROTATION

The rotation of tires every 3,000 miles evens out normal tire wear at the different wheel positions and increases the life of the tire. By including the spare, the total mileage available from the set of five tires will be increased. See Figure 13.



ROTATION OF TIRES EVERY 3,000 MILES IS THE ONLY WAY TO EVEN OUT TIRE WEAR AT THE DIFFERENT WHEEL POSITIONS AND TO OBTAIN MAXIMUM TIRE LIFE.

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Figure 13—Tire Rotation Plan

STATIC ELECTRICITY

Sometimes enough static electricity is built-up by tire friction to give a person a perceptible shock when the door handle or other metal parts of the car are touched. This condition is also sometimes reflected in the performance of the car radio, creating a static noise developing in the radio speaker.

Static under these conditions, can usually be suppressed by the use of Tire Static Suppression Power.

The power is supplied as a service package for one car and consists of a large envelope containing five smaller envelopes, each of which includes the right amount of power for injection in one tire. The tool for injecting the power into the tire is known as a tire static suppression power injector.

4. WHEEL BALANCE

The need for balancing wheels is indicated by heavy vibration of the steering wheel of the car, when driving at speeds above 40 miles an hour over a smooth straight highway.

STATIC BALANCE

To balance a wheel statically, remove oil seal and grease from bearings to permit free rolling of the wheel. Then install the wheel, hub and drum assembly on the steering knuckle spindle. The brakes must be fully released so that they do not drag.

Rotate wheel. When wheel stops rotating, heavy part of the assembly will be at the bottom. Install two external balance weights directly opposite the heavy side of the wheel. See Figure 14.

Gradually move weights apart—equal distance from the starting point until the wheel is in balance. The wheel is in balance when it will stand in any position of its accord.

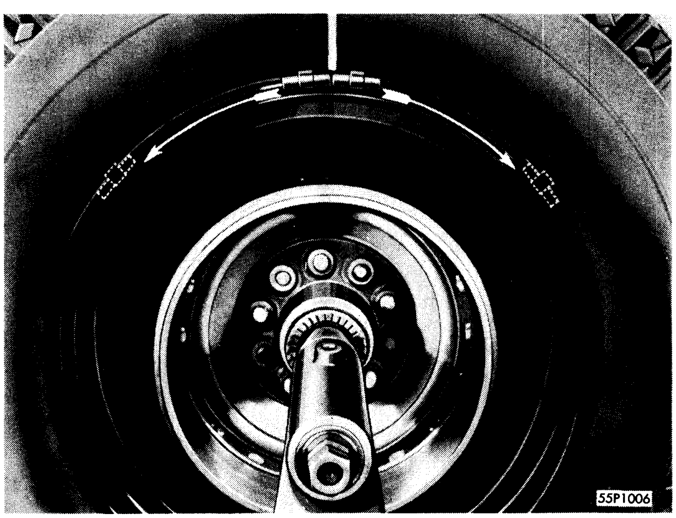

Figure 14—Balancing Wheel and Tire Assembly Statically

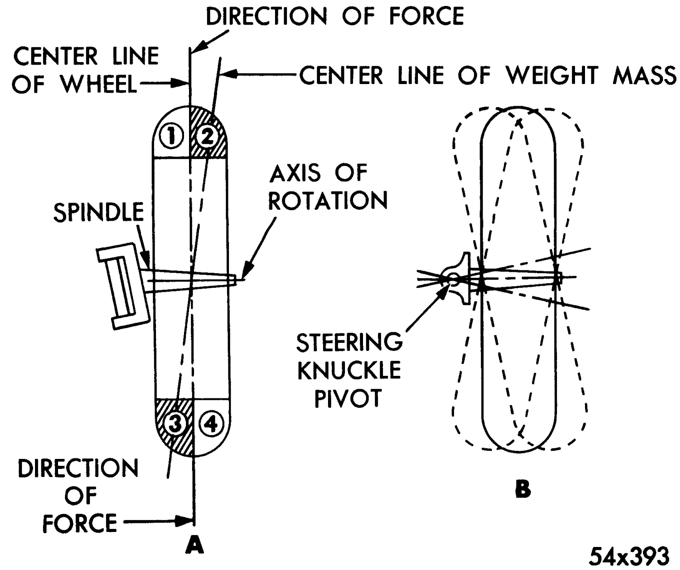

Figure 15—Dynamic Unbalance

A wheel and tire assembly which has been balanced statically may rotate freely without bouncing or shimmying if the amount of weight added to the rim flange does not throw the assembly out of dynamic balance. The use of wheel balancing equipment will greatly facilitate the operation of balancing the assembly both statically and dynamically.

DYNAMIC BALANCE

Dynamic balance (running balance) is the even distribution of the total weight of the wheel and tire assembly around its axis of rotation. An assembly can be in static balance yet not balanced dynamically. A wheel and tire assembly correctly balanced should run smoothly at all speeds on its axis of rotation through the centerline of the wheel. See Figure 15.

If wheel and tire weight is unevenly distributed in relation to the centerline of the wheel, as shown at "A", centrifugal force will throw the wheel out of line first in one direction then in the opposite, as the wheel rotates 180° and will increase as car speeds increase. This can cause wheel wobble or shimmy.

To correct this condition, weight should be added so that the total weight is evenly distributed in relation to both the axis of rotation and the centerline of the wheel, as shown in Figure 16.

CHECKING WHEEL AND TIRE RUN-OUT

Since the general practice of checking a wheel for run-out is to measure the radial and lateral movement of the tire, it should be remembered that such run-out is only an indication and not a proof that the wheel may be at fault. Where measurements indicate that the radial runout of the wheel and tire assembly exceeds .090″ or

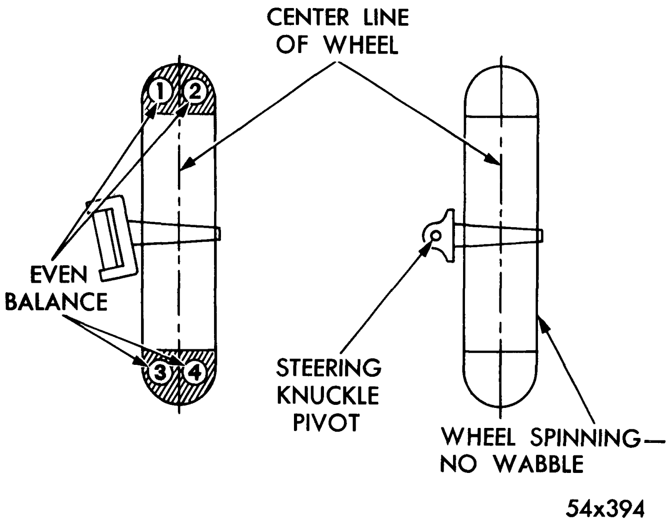

Figure 16—Dynamically Balanced Wheel and Tire

approximately 3/32", or lateral (or wobble) run-out exceeds .120" or approximately 1/8", the tire should be removed from the wheel and the wheel itself checked.

Referring to Figure 17, the radial run-out at each point indicated by "A", should not exceed .045", while the lateral run-out, when checked at points "B", should not exceed .060" or approximately 1/16" total.

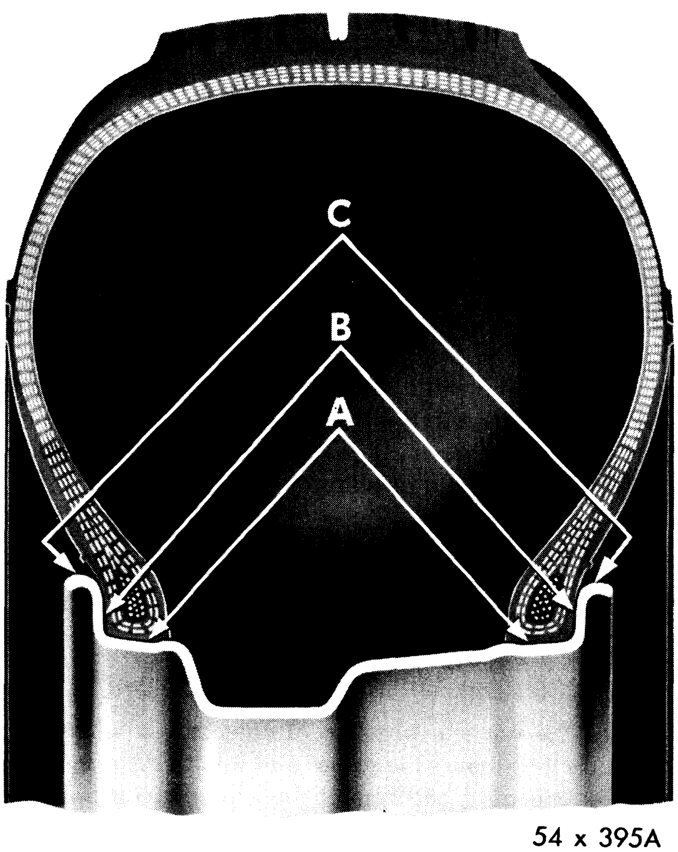

Figure 17—Checking Wheel and Tire Run-Out

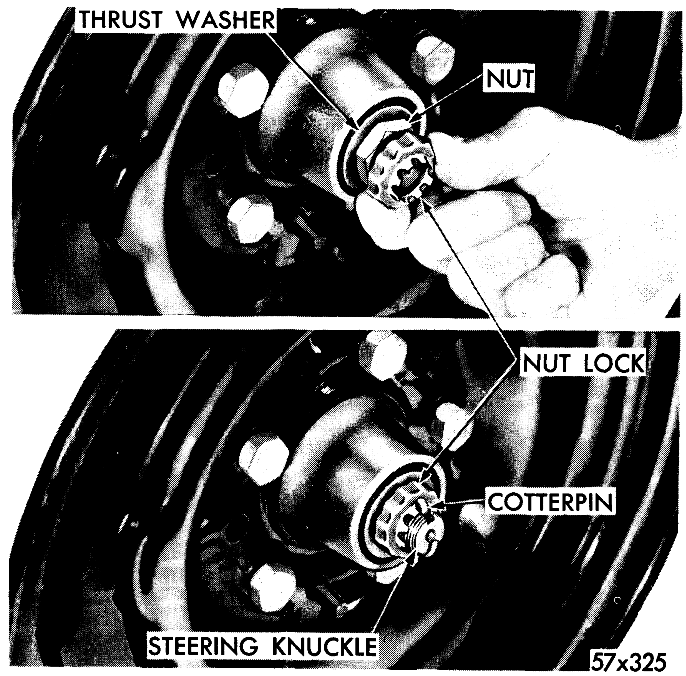

Figure 18—Installing Lock Nut

IMPORTANT

Under no circumstances should points indicated by "C" in Figure 17 be used for checking run-out as this metal has been sheared in the manufacturing process and as a result is not an even surface.

When checking the wheel for run-out, it should be attached to a hub that is free to rotate but tight enough to prevent any wobble; likewise, the dial indicator should be known to be accurate and attached to a firm surface to assure that it will be held steady while taking the run-out readings.

5. WHEEL BEARINGS

ADJUSTMENT

To adjust the front wheel bearings, remove hub cap and grease cap, then jack up front of car. Remove cotterpin that retains nut lock. Then, remove nut lock. See Figure 18.

Using an inch-pound torque wrench, tighten adjusting nut to 90 inch-pounds, while rotating wheel. Selectively position the nut lock over adjusting nut so that the spindle cotterpin hole is in approximate alignment with one set of slots in nut lock, as shown in Figure 18. Then back off to next slot adjustment, without removing nut lock, until the slots are aligned with cotterpin hole. Install cotterpin, grease cap and hub cap. Remove jack.

LUBRICATION

If grease is emulsified or short in quantity, it should be completely removed, by thorough washing and cleaning of bearings in clean solvent. **NEVER ADD**

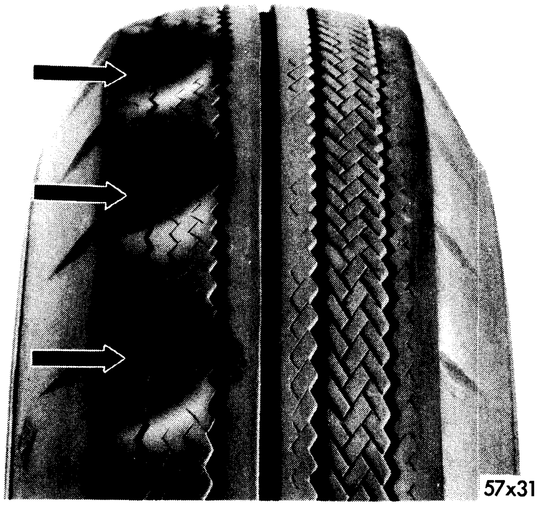

Figure 19—Spotty Wear

GREASE TO WHEEL BEARINGS. After cleaning, inspect the bearing and races for crackling, flaking, brinelling or excessive wear, if found satisfactory, repack bearings with Short Fiber Wheel Bearing Grease and add 2.5 ounces to the inner surface of the hub.

6. DIAGNOSIS PROCEDURES

WHEEL TRAMP

Wheel tramp usually develops at high speeds and is caused by the bouncing of the wheels on the road. The effects of wheel tramp can be felt, not only in the steering wheel, but also, throughout the car. Wheel tramp is caused by excessive looseness of king pin bushings or wheel bearings, lack of control in shock absorbers, or out-of-balance front wheels.

This condition should not be confused with the roughness resulting from spotty wear on front tires. Spotty wear can only be controlled by the rotation of tires at the recommended interval of 3,000 miles.

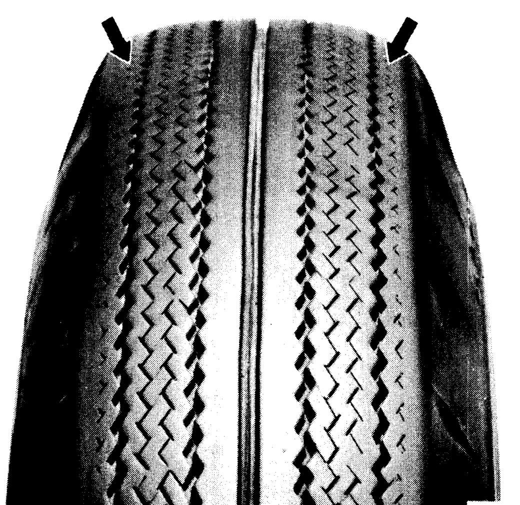

Figure 20—Under-Inflation Wear

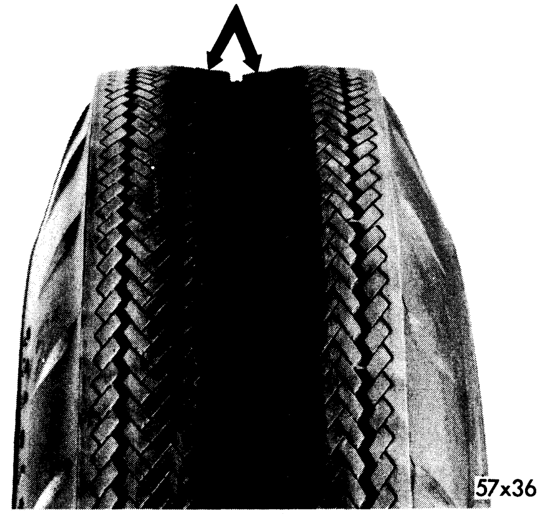

Figure 21—Over-Inflation Wear

EXCESSIVE TIRE WEAR

In addition to normal wear, other types of tire wear are classified as "Spotty Wear," "Under-Inflation Wear," "Toe-In and Toe-Out Wear" and "Camber Wear." Tires wear at a different rate on all four wheels due to driving conditions, the distribution of the car's weight, the power on the rear wheels, and the crown of the road. For this reason, it is recommended that tires be rotated every 3,000 miles to equalize wear and to obtain maximum tire life.

1. SPOTTY WEAR—This condition occurs on front tires (Figure 19), but does not progress to any great extent before the first 3,000 miles of driving. This type of wear is caused by the natural rolling of the tire on the road.

Changes in wheel alignment, balancing of front wheel assemblies, will not correct this condition. The only known method of controlling spotty wear is to keep the

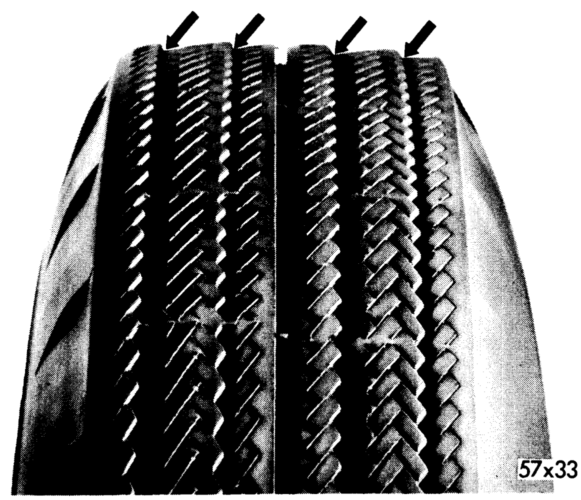

Figure 22—Toe-In Wear

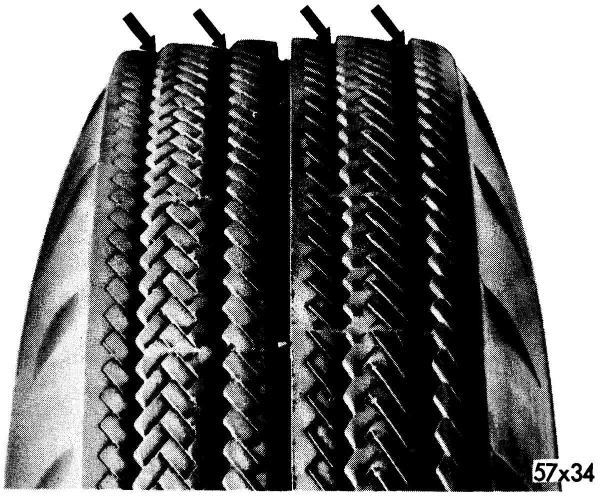

Figure 23—Toe-Out Wear

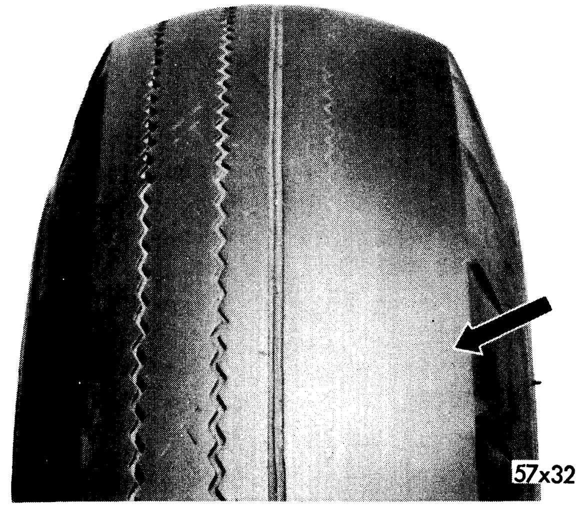

Figure 24—Camber Wear

tires inflated to the recommended pressure and rotate them every 3,000 miles.

2. *UNDER-INFLATION WEAR*—This type of wear can be recognized by excessive wear on the two tread ribs adjacent to the inner and outer shoulder ribs. See Figure 20.

This condition indicates that the tire has been used at a lower operating pressure than that for which it is designed.

3. *OVER-INFLATION WEAR*—This type of wear can be recognized by excessive wear on the center of the tread and little wear on the outer edges of the tire. See Figure 21. Using a tire at higher than recommended operating pressure will result in early failure at the center ribs and may also lead to breaks in the wall.

4. *TOE-IN OR TOE-OUT WEAR*—The amount of toe-in or toe-out of the front wheels affects the rate of tire wear more than any other factor of front wheel alignment. Toe-in wear (Figure 22) produces a feather-like edge at the inside edges of the tread ribs and can usually be felt when the hand is rubbed over the face of the tread.

Toe-out wear (Figure 23) produces the same condition as toe-in wear, except that the feather-like edge is formed on the outside edges of the tread ribs.

5. *CAMBER WEAR*—Excessive positive camber will cause noticeable wear on the outer ribs of the tire. See Figure 24. Excessive negative camber will develop wear on the inner ribs of the tire. Camber wear may also be evident if the car is driven most of the time on highly crowned roads.

6. *GRABBING BRAKE WEAR*—A high spot or out-of-round brake drum, or any condition causing a brake to grab momentarily as the wheel rotates, will cause flat spots to appear on the tire tread.

WHEEL BEARING NOISE

WHEEL BEARINGS—To determine if the wheel bearings are worn or damaged, road test the car and apply brakes. This action will take some of the load off the wheel bearings, and noise, if present, will diminish, indicating that the bearings are at fault. Raise front wheels and check for loose bearings by shaking wheels in and out. If a wheel is loose, remove it and check condition of bearings and bearing cups before tightening the bearings.