WHEELS—BEARINGS—TIRES

CONTENTS

General Information

The safety rim wheel (Fig. 1) has raised sections between the rim flanges and the rim well. Initial inflation of the tire forces the beads over these raised sections. In case of a blowout, the raised sections tend to hold the tire in position on the wheel until it can be brought to a safe stop.

Tubeless tires have a uniformly smooth bead contact area in order to form an air seal with the wheel rim. Any foreign matter lodged between the tire bead and rim, may cause an immediate air leak or the formation of rust which will eventually cause an air leak.

Wheel covers should only be removed and installed in the recommended manner to eliminate possible damage.

Front wheel bearing lubricant should be changed at the recommended intervals or at the time of a normal brake reline. Lubricant should not be added to that already in the bearings.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
WHEELS—BEARINGS—TIRES		
SIDE WEAR	(a) Outside (all wheels) excessive cornering speed.	(a) Driver instructions.
	(b) Outside (front) excessive positive camber.	(b) Adjust camber to specifications.
	(c) Inside (front) excessive negative camber.	(c) Adjust camber to specifications.
	(d) Outside and inside—under inflation or vehicle over-load.	(d) Inflate tires to specified pressure and check vehicle for overload.
CENTER RIBS WEAR	(a) Over-inflation.	(a) Adjust tire pressure to specifications.
SHARP RIB EDGES	(a) Inside edges—excessive toe-in.	(a) Adjust toe-in to specifications.
	(b) Outside edges—excessive toe-out.	(b) Adjust toe-in to specifications.
	(c) One tire sharp inside, opposite tire sharp outside—bent arm or knuckle.	(c) Inspect for bent arm or knuckle, replace parts as required.
ABRASIVE ROUGHNESS ACROSS TREAD	(a) Excessive cornering speed.	(a) Driver instructions.
HEEL AND TOE WEAR	(a) High speed driving.	(a) Driver instructions.
	(b) Severe use of brakes.	(b) Driver instructions.
UNIFORM SPOTTY WEAR	(a) Lack of tire rotation.	(a) Rotate tires if required.
	(b) Tires and wheels out of balance.	(b) Balance and rotate assemblies.
IRREGULAR SPOTTY WEAR	(a) Tires and wheels out of balance.	(a) Balance and rotate assemblies.
	(b) Under-inflation.	(b) Inflate tires to specified pressure.
	(c) Loose or worn parts.	(c) Inspect front suspension for worn parts, replace as required.

SERVICE PROCEDURES

WHEELS AND TIRE RUNOUT

Wheels and tires may be measured for both radial and lateral runout. Radial runout (eccentricity) is the difference between the high and low points on the tread of the tire; while lateral runout is the "wobble" of the wheel and/or tire.

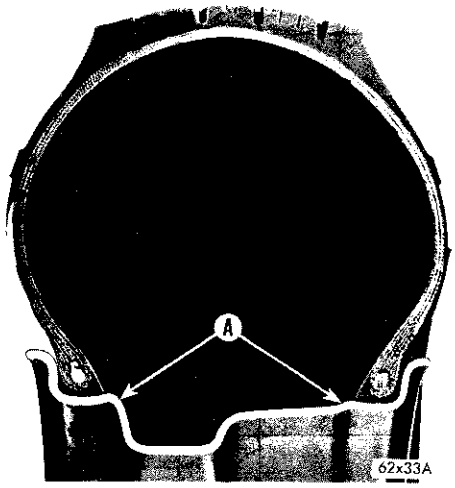

Fig. 1—Safety Type Rim

Prior to measuring wheel and tire for runout, the face of the hub at the mounting bolts should be measured for runout. The car should be driven a short distance before the measurement is made so that "flat-spotting" of the tire (from being parked) does not affect the runout measurement.

(1) Attach dial indicator C-3339 to a firm base so it will be held steady while taking runout readings.

(2) Place plunger of the dial indicator against one of the center ribs of the tire tread and rotate the wheel slowly to measure radial runout. This measurement should not exceed .060 inch.

(3) To measure lateral runout (wobble), position the dial indicator against the side of the tire. This measurement should not exceed .080 inch.

Rotating the tire on the wheel may reduce the runout or it may be necessary to take dial indicator measurements of the wheel itself in order to determine which unit has the excessive runout. Since the exterior surfaces of the wheel rim may have paint runs or bubbles, scratches or other imperfections it is better to dial indicate the protected areas "A" and "B" (Fig. 2). The radial runout, "A" should not exceed .050 inch. The lateral runout (wobble), "B," should not exceed .050 inch.

NOTE: Under no circumstances should point indicated by "C" be used for measuring runout as this metal has been sheared in the manufacturing process and is not an even surface.

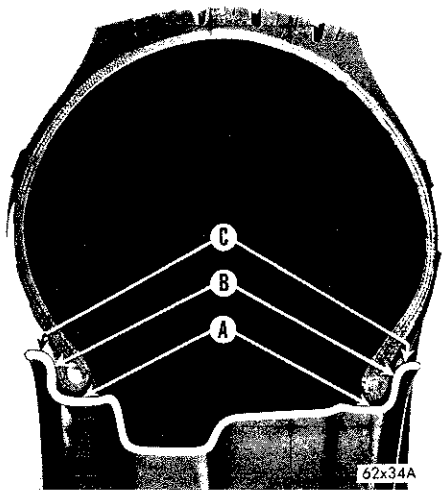

Fig. 2—Runout Checking Area

WHEEL BALANCE

The need for balancing the 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 (still) balance is equal distribution of the weight of the wheel and tire around the spindle, in such a manner that the wheel assembly has no tendency to rotate by itself, regardless of its position. A wheel that has a heavy spot is statically out of balance, resulting in a "hopping" or bouncing action.

A wheel and tire, to be in dynamic balance, must first be in static balance and also be in balance from side to side when the wheel is at right angles to the axis of rotation. A wheel not in dynamic balance tends to wobble or shimmy.

Correction for static unbalance is made by first finding the location of the heavy spot, then adding sufficient weight to counterbalance it at a location opposite the heavy section. (Follow the equipment manufacturers recommendations. The total weight to be added, should be divided in half and the weights placed on the inside and outside rim edges).

FRONT WHEEL BEARINGS

Removal

(1) Raise the car so that the front wheels are free of the floor.

(2) Remove the wheel cover, grease cap, cotter pin, nut lock and the bearing adjusting nut.

(3) Remove the thrust washer and outer bearing.

(4) Slide the wheel, hub and drum assembly off the spindle.

(5) Drive out the inner oil seal and remove the bearing cone.

Cleaning And Inspection

(1) Clean the hub and drum assembly and the bearings in kerosene, mineral spirits or other similar cleaning fluids. **Do not dry the bearings by air spinning.**

(2) Examine the bearing cups for pits, brinell marks or other imperfections. If cups are damaged, remove them from the hub with a soft steel drift positioned in the slots in the hub.

(3) Bearing cup areas in the hub should be smooth, without scored or raised metal which could keep the cups from seating against the shoulders in the hub.

(4) The cones and rollers should have smooth, unbroken surfaces without brinell marks. The ends of the rollers and both cone flanges should also be smooth and free from chipping or other damage.

Installation

(1) If the bearing cups were removed, start the new cups into the hub evenly, driving them flush with the hub using a soft steel block and hammer. Seat the cups against the shoulders in the hub, using a soft steel drift and hammer.

(2) Fill the hub cavity (Fig. 3) with recommended wheel bearing lubricant. Lubricant should cover all surfaces of the hub and outer grease cup to minimize condensation and grease travel out of the bearings. **Do Not Overfill.**

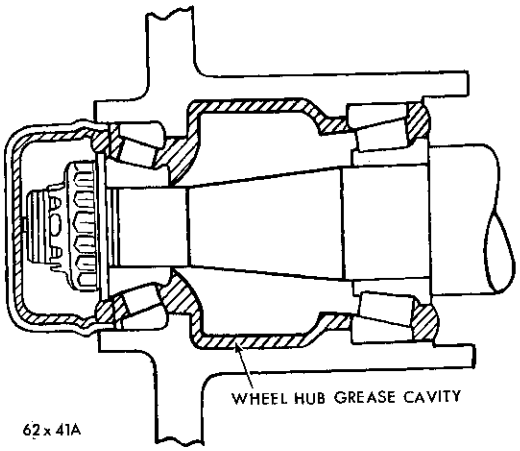

Fig. 3—Wheel Hub Grease Cavity

(3) Force lubricant between bearing cone rollers or repack with a suitable "Bearing Packer."

(4) Install the inner cone and a new seal with lip of seal facing inward. Using Tool C-3893, drive the seal flush with the end of the hub. The seal flange may be damaged if the tool is not used.

(5) Clean the spindle and install the wheel, tire and drum assembly.

(6) Install the outer bearing cone, thrust washer and adjusting nut.

Adjustment

(1) Tighten the wheel bearing adjusting nut to 90 inch-pounds while rotating the wheel.

(2) Position the nut lock (Fig. 4) on the nut with

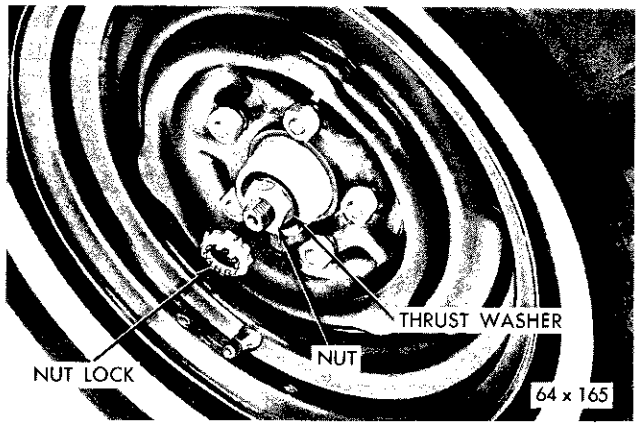

Fig. 4—Front Wheel Bearing Adjustment

one pair of slots in line with the cotter pin hole.

(3) Back off adjusting and nut lock assembly one slot and install the cotter pin. The resulting adjustment should be zero (no preload) to .003 inch end play.

(4) Clean the grease cap, coat the inside with wheel bearing lubricant (do not fill) and install the cap.

(5) Install the wheel covers and lower the car to the floor.

WHEEL COVERS

To avoid damaging the wheel covers during removal and installation, care should be used to be sure the

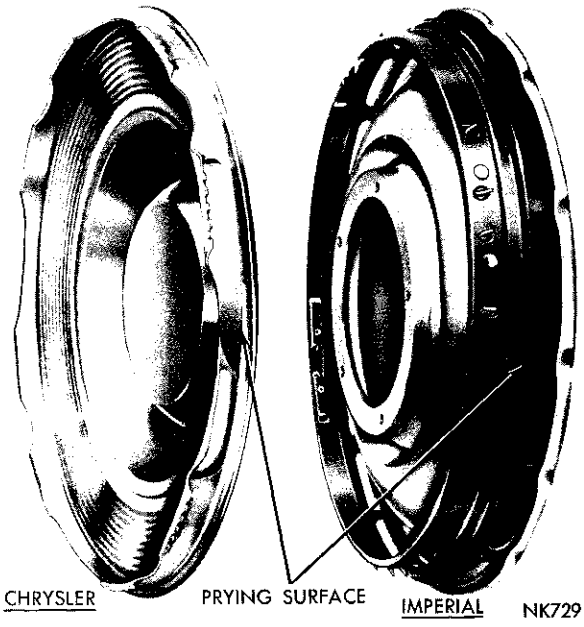

Fig. 5—Wheel Cover Attachment (Imperial)

forces are applied to the correct areas (Fig. 5). The covers are structurally stronger at the outer circumference to withstand the force required for removal and installation. Use a rubber end mallet when installing the covers.

TIRES

Care of Tires

Protective, water soluble coating is applied to the white sidewalls of tires at the factory. Wash the sidewalls with water **only**, to remove this coating. **DO NOT USE GASOLINE OR OTHER SOLVENTS. DO NOT USE A WIRE BRUSH.**

After the car is in service, the whitewalls should be cleaned with soap or non-abrasive cleaners and (if necessary) a soft bristle brush.

Adjust tire pressures regularly, including the spare when the tires are cool or cold. Inflate to specified pressures. Inspect the tires for damage and embedded foreign matter at the same time.

Tire Rotation

With the increased road speeds and faster cornering abnormal tire wear may exist on certain wheels. By rotating tires regularly, tire life will be lengthened. The wheels and tires should be rotated at the recommended intervals and in the recommended sequence (Fig. 6).

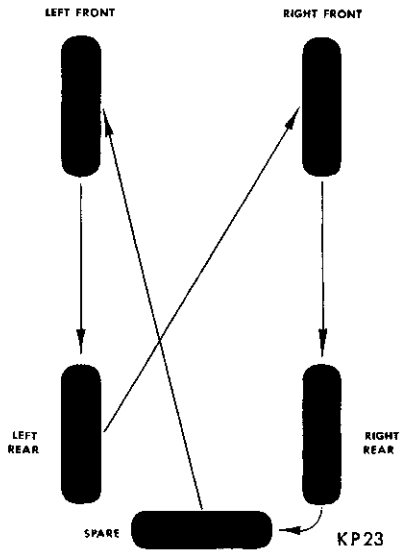

Fig. 6—Tire Rotation

Repairing Leaks

Leaks, between the tire and wheel, require the removal of the tire. Leaks in the tire can often be repaired without removing the tire. Always follow the equipment manufacturers recommendations.

Any tools used for dismounting and mounting tires must be smooth, free from sharp edges or projections which could damage the tire.

The car jack can also be used to remove the tire bead from the seat (Fig. 7). The tire must be completely deflated before the beads are removed from the seats.

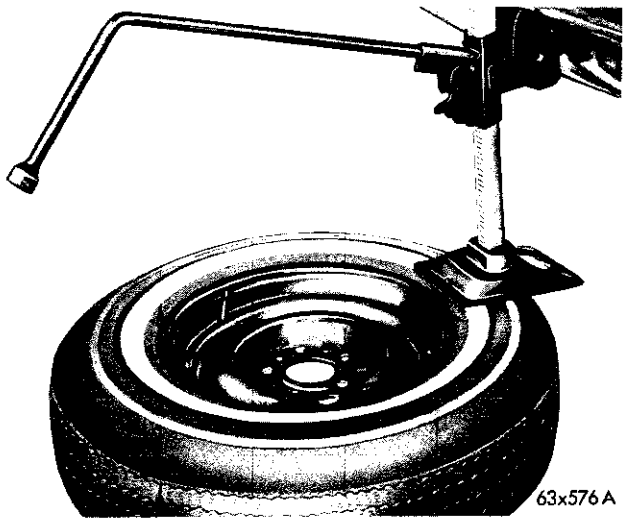

Fig. 7—Removing Tire with Car Jack

When installing the tire, make sure all rust scale is removed from the wheel inside rim and all roughness has been removed from the butt weld in the tire contact area. A mild soap solution applied to both tire bead surfaces will aid in installation. Either a commercial type bead expander or a rope tourniquet (Fig. 8) can be used to seat the tire beads. Illustration will show area force should be applied against during removal.

Tire Wear Patterns

For the various tire wear patterns, refer to Figures 9 through 11.

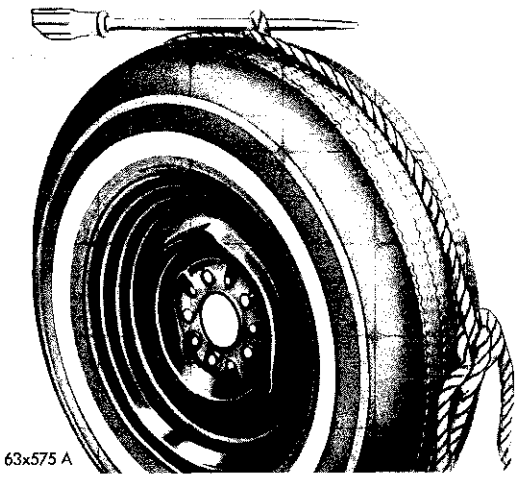

Fig. 8—Expanding Tire Beads

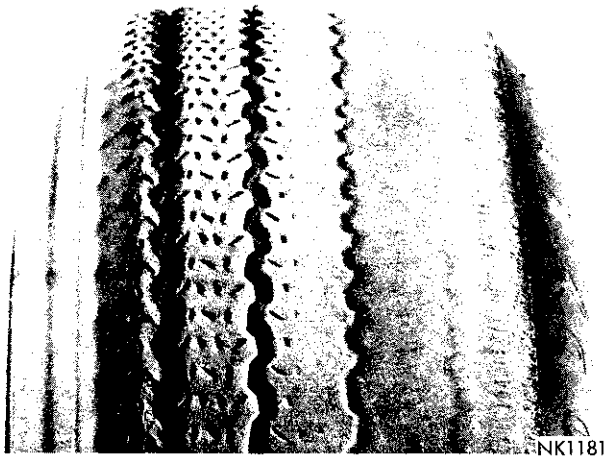

Fig. 9—Camber Wear

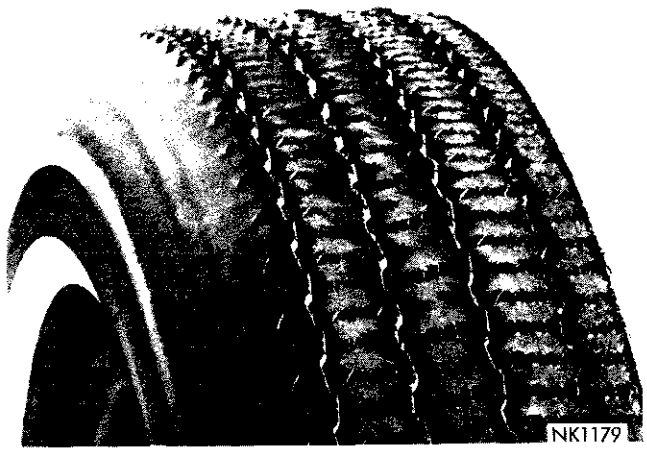

Fig. 10—Toe Wear

Fig. 11—Spotty Wear