TIRES AND WHEELS

CONTENTS

TIRES

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DESCRIPTION AND OPERATION

TIRES

Tires are designed and engineered for each specific vehicle. They provide the best overall performance for normal operation. The ride and handling characteristics match the vehicle's requirements. With proper care they will give excellent reliability, traction, skid resistance, and tread life.

Driving habits have more effect on tire life than any other factor. Careful drivers will obtain in most cases, much greater mileage than severe use or careless drivers. A few of the driving habits which will shorten the life of any tire are:

- Rapid acceleration
- Severe brake applications
- High speed driving
- Excessive speeds on turns
- Striking curbs and other obstacles

Radial-ply tires are more prone to irregular tread wear. It is important to follow the tire rotation interval shown in the section on Tire Rotation. This will help to achieve a greater tread life.

TIRE IDENTIFICATION

Tire type, size, aspect ratio and speed rating are encoded in the letters and numbers imprinted on the side wall of the tire. Refer to the chart to decipher the tire identification code (Fig. 1).

Performance tires have a speed rating letter after the aspect ratio number. The speed rating is not always printed on the tire sidewall. These ratings are:

- **Q** up to 100 mph
- **S** up to 112 mph
- **T** up to 118 mph
- **U** up to 124 mph
- **H** up to 130 mph
- **V** up to 149 mph
- **Z** more than 149 mph (consult the tire manufacturer for the specific speed rating)

An All Season type tire will have either **M + S, M & S or M–S** (indicating mud and snow traction) imprinted on the side wall.

TIRE CHAINS

Tire snow chains may be used on **certain** models. Refer to the Owner's Manual for more information.

DESCRIPTION AND OPERATION (Continued)

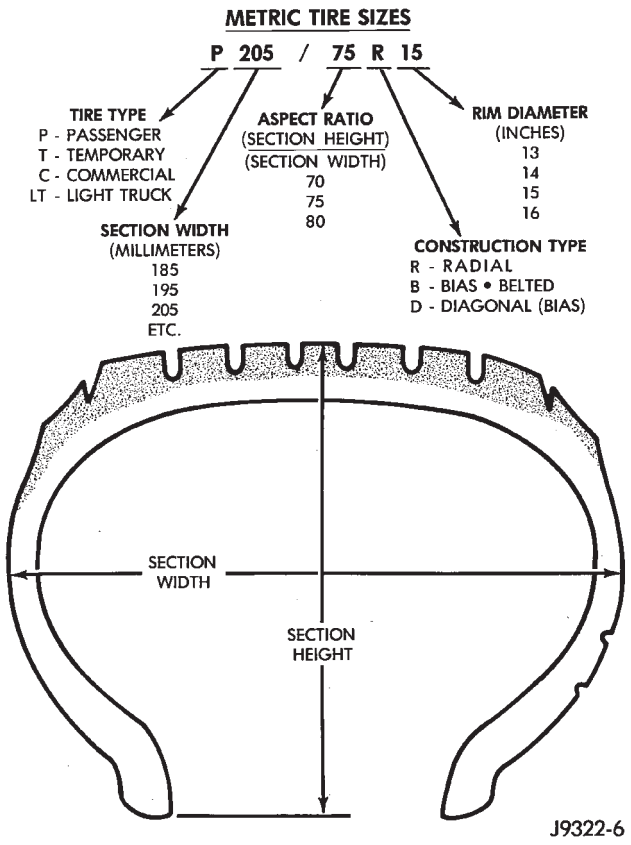

Fig. 1 Tire Identification

RADIAL-PLY TIRES

Radial-ply tires improve handling, tread life and ride quality, and decrease rolling resistance.

Radial-ply tires must always be used in sets of four. Under no circumstances should they be used on the front only. They may be mixed with temporary spare tires when necessary. A maximum speed of 50 MPH is recommended while a temporary spare is in use.

Radial-ply tires have the same load-carrying capacity as other types of tires of the same size. They also use the same recommended inflation pressures.

The use of oversized tires, either in the front or rear of the vehicle, can cause vehicle drive train failure. This could also cause inaccurate wheel speed signals when the vehicle is equipped with Anti-Lock Brakes.

The use of tires from different manufactures on the same vehicle is NOT recommended. The proper tire pressure should be maintained on all four tires. For proper tire pressure refer to the Tire Inflation Pressure Chart provided with the vehicle.

SPARE TIRE–TEMPORARY

The temporary spare tire is designed for emergency use only. The original tire should be repaired or replaced at the first opportunity and reinstall. Do not exceed speeds of 50 MPH. Refer to Owner's Manual for complete details.

TIRE INFLATION PRESSURES

CAUTION: Models 2500 and 3500 now use a high pressure snap-in tire valve. Do not substitute with other tire valves. The Tire and Rim industry designations are TR413 for low pressure and 600HP for high pressure.

Under inflation (Fig. 2) causes rapid shoulder wear and tire flexing.

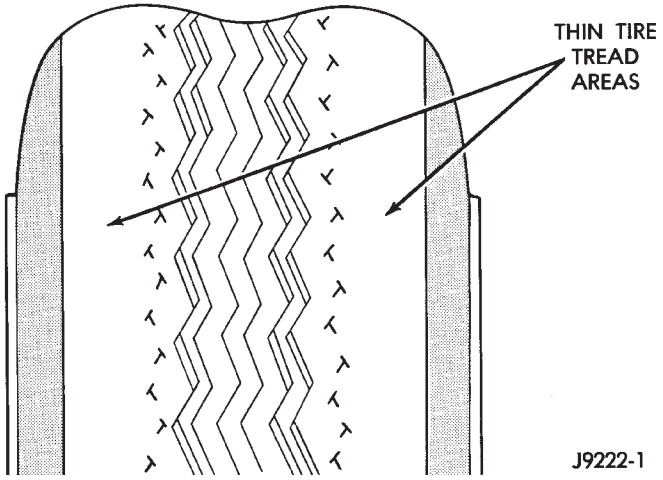

Fig. 2 Under Inflation Wear

Over inflation (Fig. 3) causes rapid center wear and loss of the tire's ability to cushion shocks.

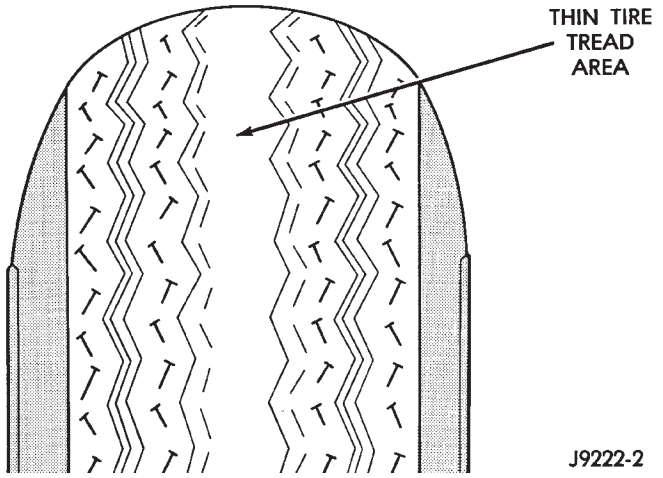

Fig. 3 Over Inflation Wear

Improper inflation can cause;

- Uneven wear patterns
- Reduced tread life
- Reduced fuel economy
- Unsatisfactory ride
- Cause the vehicle to drift

DESCRIPTION AND OPERATION (Continued)

Refer to the Tire Inflation Pressure brochure for information regarding proper tire inflation. This information is provided with the Owner's Manual.

This pressure has been carefully selected to provide for safe vehicle operation. Tire pressure should be checked **cold** once a month. Tire pressure decreases when the outside temperature drops.

Inflation pressures specified on the placards are always **cold inflation pressure**. Cold inflation pressure is obtained after the vehicle has not been operated for at least 3 hours. Tire inflation pressures may increase from 2 to 6 pounds per square inch (psi) during operation. **Do not** reduce this normal pressure build-up.

Vehicles loaded to the maximum capacity should not be driven at continuous speeds above 75 mph (120 km/h).

WARNING: OVER OR UNDER INFLATED TIRES CAN AFFECT VEHICLE HANDLING AND MAY RESULT IN LOSS OF VEHICLE CONTROL.

TIRE PRESSURE FOR HIGH SPEED OPERATION

Chrysler Corporation advocates driving at safe speeds within posted speed limits. Where speed limits allow the vehicle to be driven at high speeds, correct tire inflation pressure is very important. For speeds up to and including 120 km/h (75 mph), tires must be inflated to the pressures shown on the tire placard. For continuous speeds in excess of 120 km/h (75 mph), tires must be inflated to the maximum pressure specified on the tire sidewall.

Vehicles loaded to the maximum capacity should not be driven at continuous speeds above 75 mph (120 km/h).

For emergency vehicles that are driven at speeds over 90 mph (144 km/h), special high speed tires must be used. Consult tire manufacturer for correct inflation pressure recommendations.

REPLACEMENT TIRES

The original equipment tires provide a proper balance of many characteristics such as:

- Ride
- Noise
- Handling
- Durability
- Tread life
- Traction
- Rolling resistance
- Speed capability

It is recommend that tires equivalent to the original equipment tires be used when replacement is needed.

Failure to use equivalent replacement tires may adversely affect the safety and handling of the vehicle.

The use of oversize tires not listed in the specification charts may cause interference with vehicle components. Under extremes of suspension and steering travel, interference with vehicle components may cause tire damage.

WARNING: FAILURE TO EQUIP THE VEHICLE WITH TIRES HAVING ADEQUATE SPEED CAPABILITY CAN RESULT IN SUDDEN TIRE FAILURE.

DIAGNOSIS AND TESTING

PRESSURE GAUGES

A quality air pressure gauge is recommended to check tire pressure. After checking the air pressure, replace valve cap finger tight.

TREAD WEAR INDICATORS

Tread wear indicators are molded into the bottom of the tread grooves. When tread depth is 1.6 mm (1/16 in.), the tread wear indicators will appear as a 13 mm (1/2 in.) band (Fig. 4).

Tire replacement is necessary when indicators appear in two or more grooves or if localized balding occurs.

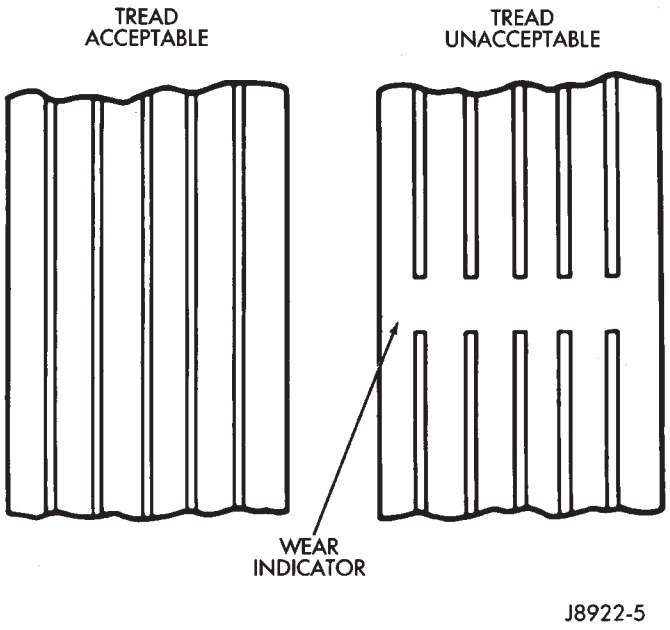

Fig. 4 Tread Wear Indicators

TIRE WEAR PATTERNS

Under inflation will cause wear on the shoulders of tire. Over inflation will cause wear at the center of tire.

DIAGNOSIS AND TESTING (Continued)

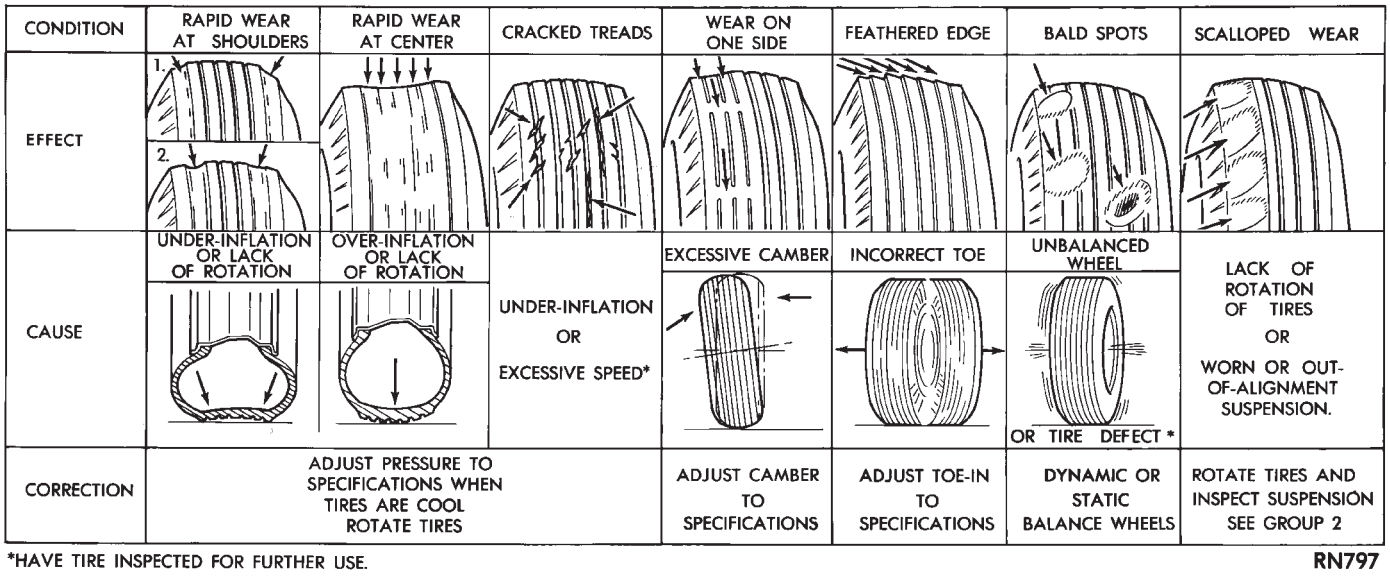

Fig. 5 Tire Wear Patterns

Excessive camber causes the tire to run at an angle to the road. One side of tread is then worn more than the other (Fig. 5).

Excessive toe-in or toe-out causes wear on the tread edges and a feathered effect across the tread (Fig. 5).

TIRE NOISE OR VIBRATION

Radial-ply tires are sensitive to force impulses caused by improper mounting, vibration, wheel defects, or possibly tire imbalance.

To find out if tires are causing the noise or vibration, drive the vehicle over a smooth road at varying speeds. Note the noise level during acceleration and deceleration. The engine, differential and exhaust noises will change as speed varies, while the tire noise will usually remain constant.

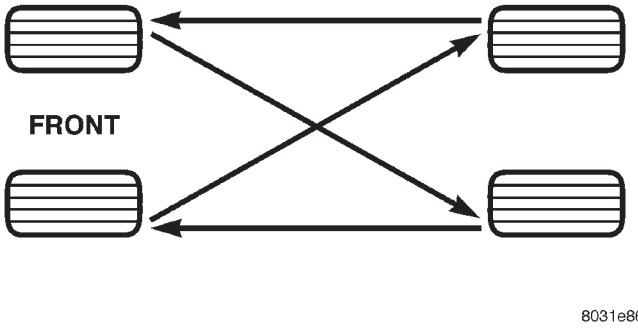

Fig. 6 Tire Rotation Pattern

SERVICE PROCEDURES

ROTATION

Tires on the front and rear axles operate at different loads and perform different steering, driving, and braking functions. For these reasons, the tires wear at unequal rates. They may also develop irregular wear patterns. These effects can be reduced by rotating the tires according to the maintenance schedule in the Owners Manual. This will improve tread life, traction and maintain a smooth quiet ride.

The recommended method of tire rotation is (Fig. 6). Other methods can be used, but may not provide the same tire longevity benefits.

Dual wheel vehicles require a different tire rotation pattern. Refer to (Fig. 7) for the proper tire rotation with dual wheels.

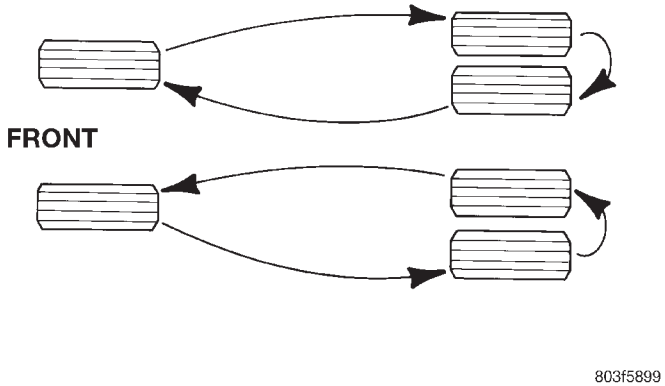

Fig. 7 Dual Wheel Tire Rotation Pattern

SERVICE PROCEDURES (Continued)

MATCH MOUNTING

Wheels and tires are match mounted at the factory. This means that the high spot of the tire is matched to the low spot on the wheel rim. Each are marked with a bright colored temporary label on the outboard surface for alignment. The wheel is also marked permanently on the inside of the rim in the tire well. This permanent mark may be a paint dot or line, a permanent label or a stamped impression such as an X. An optional location mark is a small spherical indentation on the vertical face of the outboard flange on some non styled base steel wheels. The tire must be removed to locate the permanent mark on the inside of the wheel.

Before dismounting a tire from its wheel, a reference mark should be placed on the tire at the valve stem location. This reference will ensure that it is remounted in the original position on the wheel.

(1) Remove the tire and wheel assembly from the vehicle and mount on a service dynamic balance machine.

(2) Measure the total runout on the center of the tire tread rib with a dial indicator. Record the indicator reading. Mark the tire to indicate the high spot. Place a mark on the tire at the valve stem location (Fig. 8).

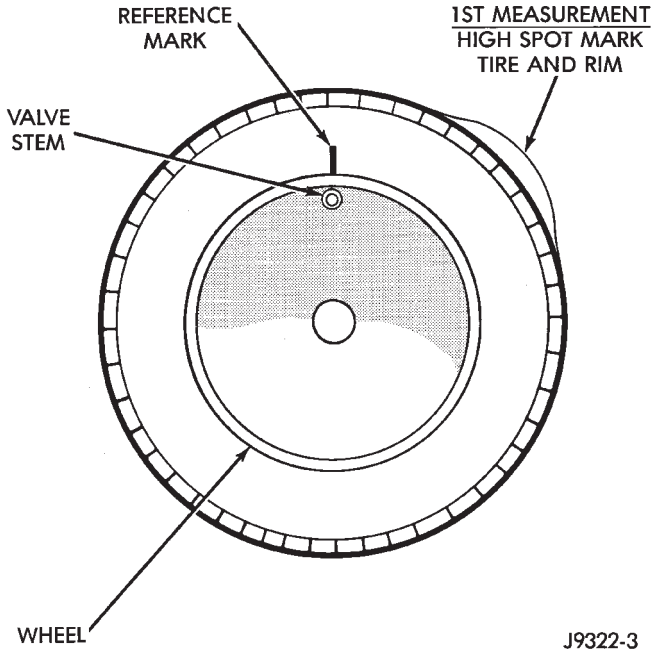

Fig. 8 First Measurement On Tire

(3) Break down the tire and remount it 180 degrees on the rim (Fig. 9).

(4) Measure the total indicator runout again. Mark the tire to indicate the high spot.

(5) If runout is still excessive, the following procedures must be done.

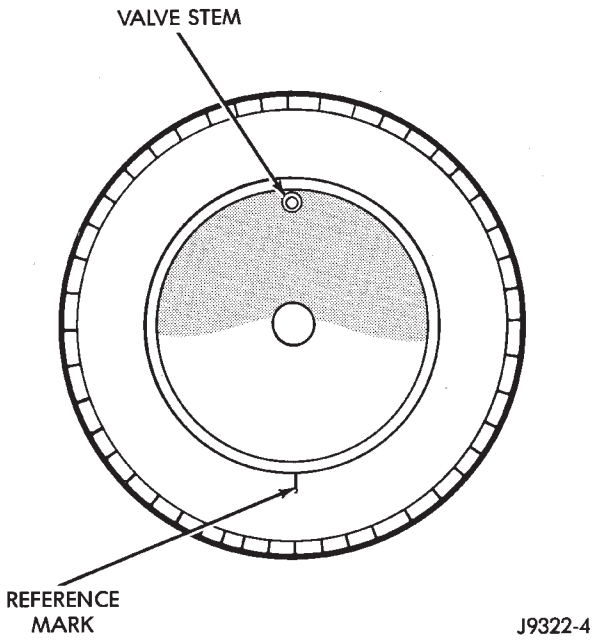

Fig. 9 Remount Tire 180 Degrees

- If the high spot is within 101.6 mm (4.0 in.) of the first spot and is still excessive, replace the tire.
- If the high spot is within 101.6 mm (4.0 in.) of the first spot on the wheel, the wheel may be out of specifications. Refer to Wheel and Tire Runout.
- If the high spot is NOT within 101.6 mm (4.0 in.) of either high spot, draw an arrow on the tread from second high spot to first. Break down the tire and remount it 90 degrees on rim in that direction (Fig. 10). This procedure will normally reduce the runout to an acceptable amount.

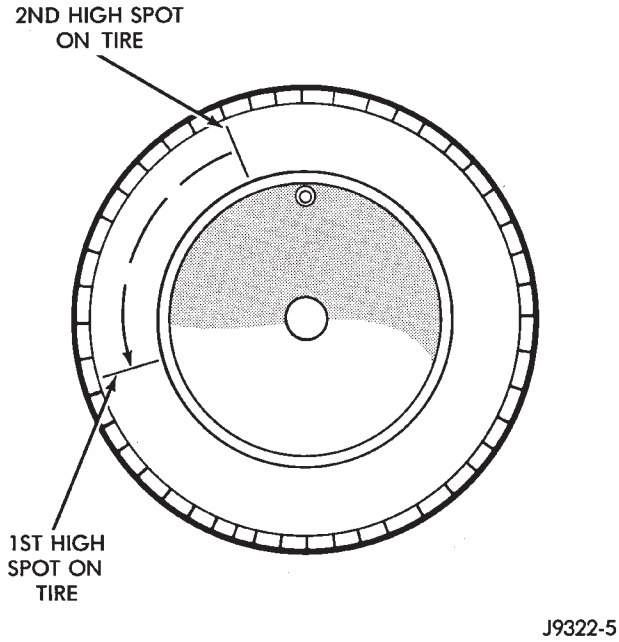

Fig. 10 Remount Tire 90 Degrees In Direction of Arrow

SERVICE PROCEDURES (Continued)

REPAIRING LEAKS

For proper repairing, a radial tire must be removed from the wheel. Repairs should only be made if the defect, or puncture, is in the tread area (Fig. 11). The tire should be replaced if the puncture is located in the sidewall.

Deflate tire completely before removing the tire from the wheel. Use lubrication such as a mild soap solution when dismounting or mounting tire. Use tools free of burrs or sharp edges which could damage the tire or wheel rim.

Before mounting tire on wheel, make sure all rust is removed from the rim bead and repaint if necessary.

Install wheel on vehicle, and tighten to proper torque specification.

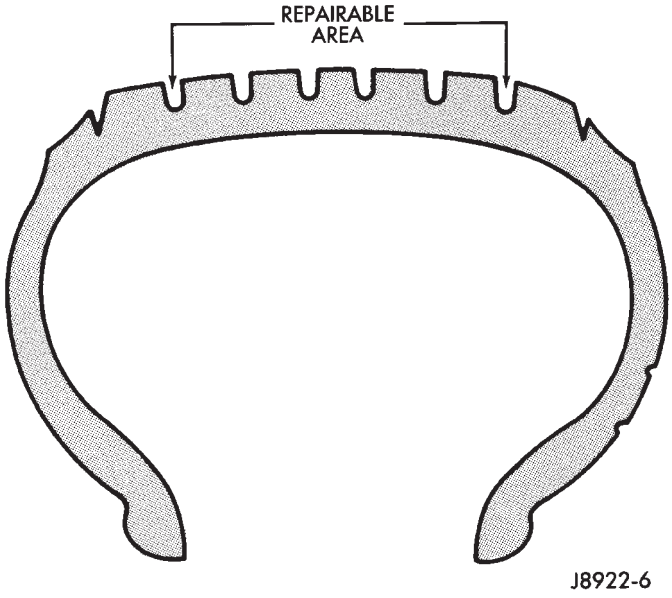

Fig. 11 Tire Repair Area

CLEANING AND INSPECTION

CLEANING TIRES

Remove protective coating on tires before delivery of vehicle. This coating may cause deterioration of tires.

To remove the protective coating applying warm water and let it soak for a few minutes. Then scrub the coating away with a soft bristle brush. Steam cleaning may also be used to remove the coating.

NOTE: DO NOT use gasoline, mineral oil, oil-based solvent or wire brush for cleaning.

SPECIFICATIONS

TIRE REVOLUTIONS PER MILE

TIRE SIZE	SUPPLIER	REVOLUTIONS PER MILE
P225/75/R16 XL	GOODYEAR	716 rpm
P245/75R16	GOODYEAR	689 rpm
P245/75R16	MICHELIN	691 rpm
P265/75R16	GOODYEAR	660 rpm
P275/60R17	GOODYEAR	693 rpm
LT245/75R16 E	GOODYEAR	683 rpm
LT245/75R16 E	MICHELIN	678 rpm
LT215/85R16 E	MICHELIN	687 rpm
LT215/85R16 E M/S	MICHELIN	683 rpm

WHEELS

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DESCRIPTION AND OPERATION

WHEELS INFORMATION

Original equipment wheels are designed for the specified Maximum Vehicle Capacity.

All models use steel or cast aluminum drop center wheels. The safety rim wheel (Fig. 1) has raised sections between the rim flanges and the rim well.

Initial inflation of the tire forces the bead over these raised sections. In case of tire failure, the raised sections hold the tire in position on the wheel until the vehicle can be brought to a safe stop.

Cast aluminum wheels require special balance weights and alignment equipment.

Ram Truck Models equipped with dual rear wheels have eight-stud hole rear wheels. The wheels have a flat mounting surface (Fig. 2). The slots in the wheel must be aligned to provide access to the valve stem (Fig. 3).

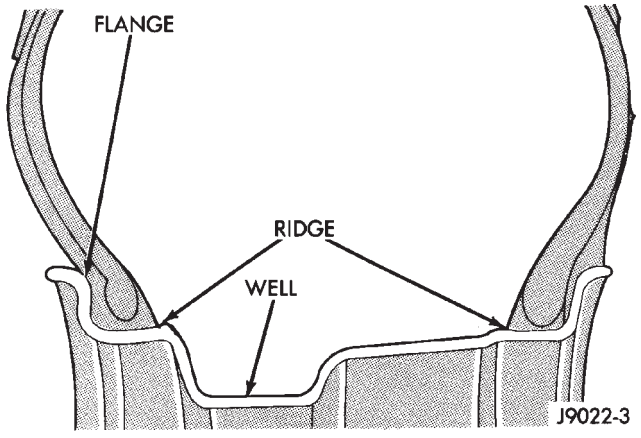

Fig. 1 Safety Rim

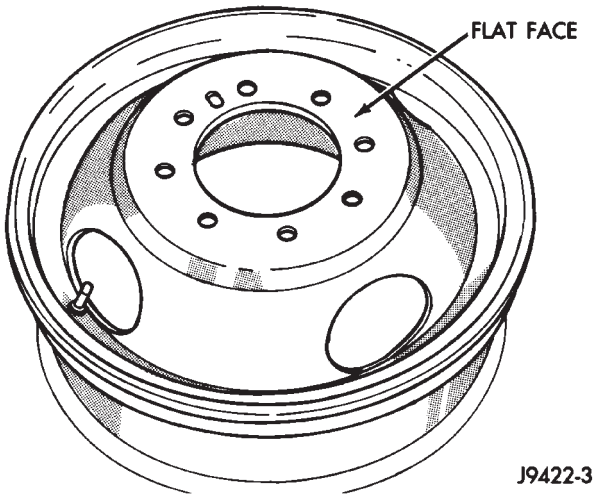

Fig. 2 Flat Face Wheel

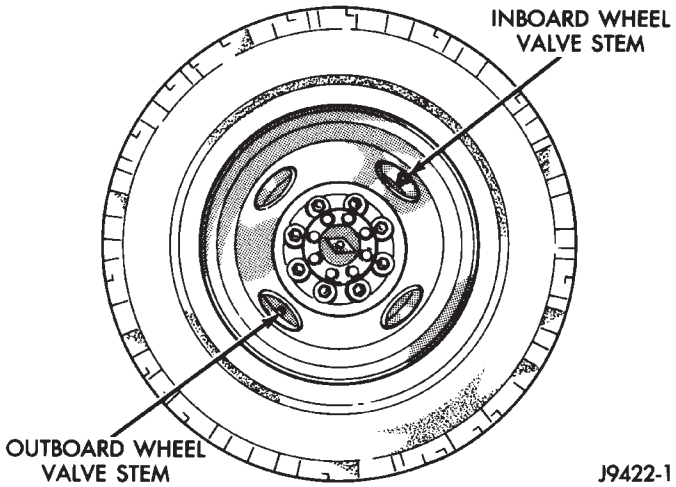

Fig. 3 Dual Rear Wheels

DIAGNOSIS AND TESTING

WHEEL INSPECTION

Inspect wheels for:

- Excessive run out
- Dents or cracks
- Damaged wheel lug nut holes
- Air Leaks from any area or surface of the rim

NOTE: Do not attempt to repair a wheel by hammering, heating or welding.

If a wheel is damaged an original equipment replacement wheel should be used. When obtaining replacement wheels, they should be equivalent in load carrying capacity. The diameter, width, offset, pilot hole and bolt circle of the wheel should be the same as the original wheel.

WARNING: FAILURE TO USE EQUIVALENT REPLACEMENT WHEELS MAY ADVERSELY AFFECT THE SAFETY AND HANDLING OF THE VEHICLE. USED WHEELS ARE NOT RECOMMENDED. THE SERVICE HISTORY OF THE WHEEL MAY HAVE INCLUDED SEVERE TREATMENT OR VERY HIGH MILEAGE. THE RIM COULD FAIL WITHOUT WARNING.

TIRE AND WHEEL RUNOUT

Radial runout is the difference between the high and low points on the tire or wheel (Fig. 4).

Lateral runout is the **wobble** of the tire or wheel.

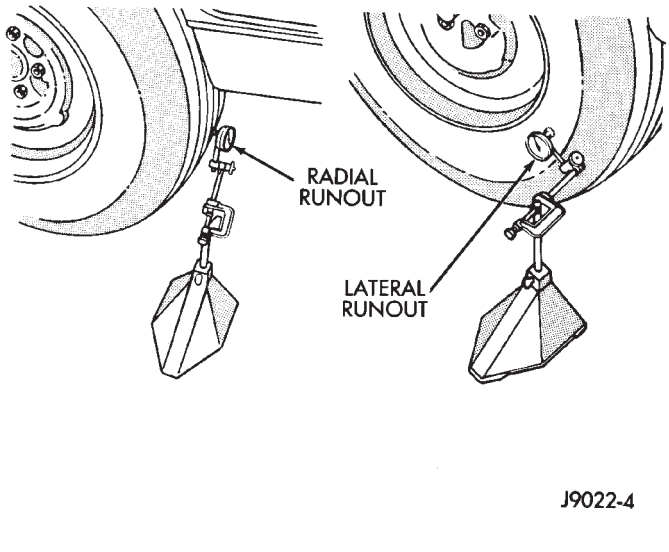

Fig. 4 Checking Tire/Wheel/Hub Runout

Radial runout of more than 1.5 mm (.060 inch) measured at the center line of the tread may cause the vehicle to shake.

Lateral runout of more than 2.0 mm (.080 inch) measured near the shoulder of the tire may cause the vehicle to shake.

Sometimes radial runout can be reduced. Relocate the wheel and tire assembly on the mounting studs (See Method 1). If this does not reduce runout to an acceptable level, the tire can be rotated on the wheel. (See Method 2).

METHOD 1 (RELOCATE WHEEL ON HUB)

(1) Drive vehicle a short distance to eliminate tire flat spotting from a parked position.

(2) Check wheel bearings and adjust if adjustable or replace if necessary.

(3) Check the wheel mounting surface.

(4) Relocate wheel on the mounting, two studs over from the original position.

(5) Tighten wheel nuts until all are properly torqued, to eliminate brake distortion.

(6) Check radial runout. If still excessive, mark tire sidewall, wheel, and stud at point of maximum runout and proceed to Method 2.

METHOD 2 (RELOCATE TIRE ON WHEEL)

NOTE: Rotating the tire on wheel is particularly effective when there is runout in both tire and wheel.

(1) Remove tire from wheel and mount wheel on service dynamic balance machine.

(2) Check wheel radial runout (Fig. 5) and lateral runout (Fig. 6).

- STEEL WHEELS: Radial runout 0.040 in., Lateral runout 0.045 in. (maximum)
- ALUMINUM WHEELS: Radial runout 0.030 in., Lateral runout 0.035 in. (maximum)

(3) If point of greatest wheel lateral runout is near original chalk mark, remount tire 180 degrees. Recheck runout, Refer to match mounting procedure.

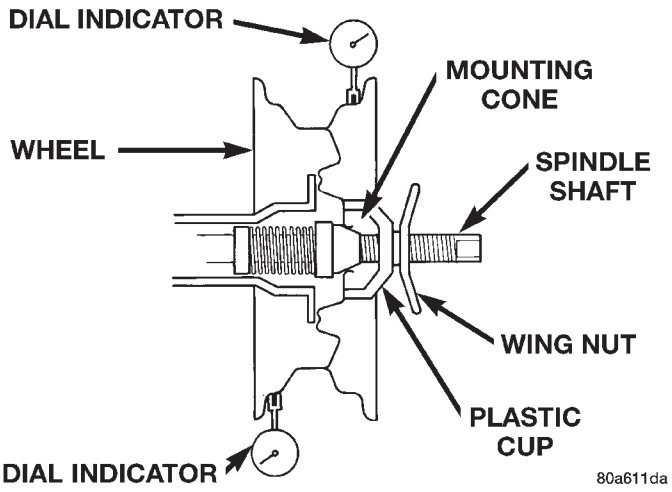

Fig. 5 Radial Runout

DIAGNOSIS AND TESTING (Continued)

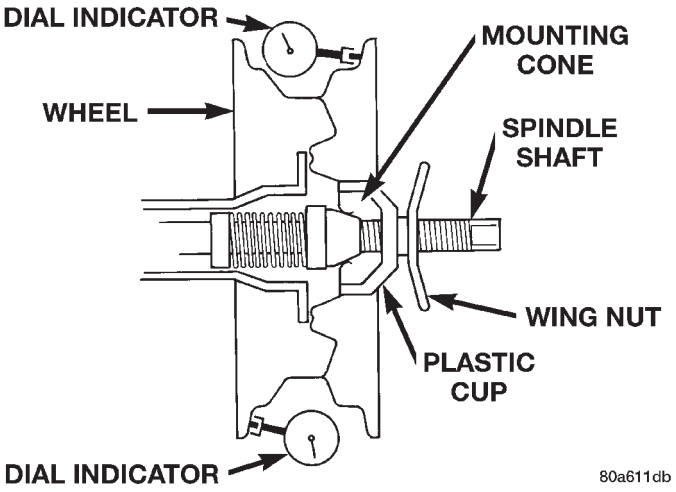

Fig. 6 Lateral Runout

SERVICE PROCEDURES

WHEEL INSTALLATION

CAUTION: Models equipped with chrome plated wheels are not supplied with chrome plated lug nuts. Under no circumstances are chrome plated lug nuts to be used, use only the factory specified lug nuts.

CAUTION: All 8800 GVW 4x4 vehicles have a factory install spacer behind the right front wheel.

The wheel studs and nuts are designed for specific applications. Do not use replacement parts of lesser quality or a substitute design.

The 3500 use a two piece flat face nut (Fig. 7).

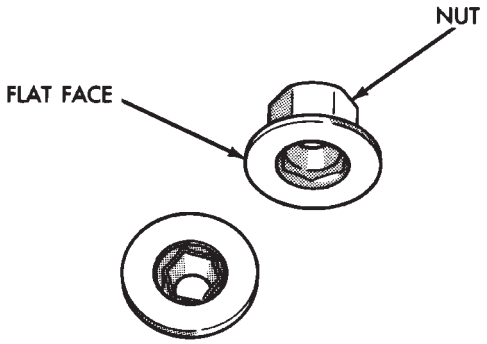

Fig. 7 Two Piece Lug Nut

All aluminum and some steel wheels have wheel stud nuts which feature an enlarged nose. This enlarged nose is necessary to ensure proper retention of the aluminum wheels.

Before installing the wheel, be sure to remove any build up of corrosion on the wheel mounting surfaces. Ensure wheels are installed with good metal-to-metal contact. Improper installation could cause loosening of wheel nuts. This could affect the safety and handling of your vehicle.

To install the 5 stud wheel, first position it properly on the mounting surface. All wheel nuts should then be tightened just snug. Gradually tighten them in sequence to specified torque (Fig. 8). **Never use oil or grease on studs.**

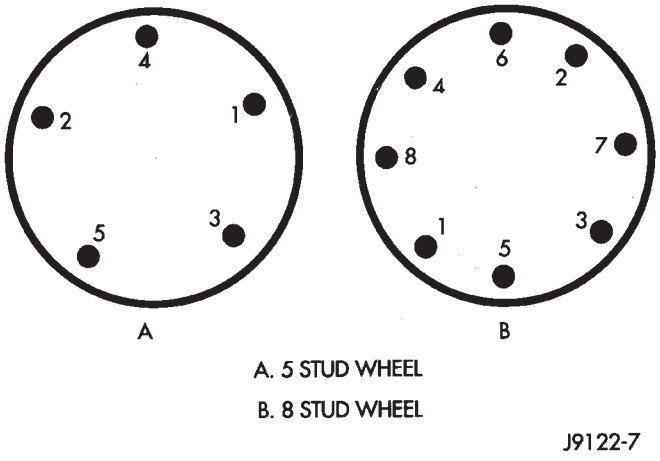

Fig. 8 Lug Nut Tightening Pattern

DUAL REAR WHEEL INSTALLATION

Dual rear wheels use a special heavy duty lug nut wrench. It is recommended to remove and install dual rear wheels only when the proper wrench is available. The wrench is also use to remove wheel center caps for more information refer to Owner's Manual.

The tires on both wheels must be completely raised off the ground when tightening the lug nuts. This will ensure correct wheel centering and maximum wheel clamping.

A two piece flat face lug nut with right-hand threads is used for retaining the wheels on the hubs (Fig. 7).

The dual rear wheel lug nuts should be tightened according to the following procedure:

- Place two drops of oil to the interface of the nut/washer (Fig. 9) before installing on the wheel stud.

NOTE: Do not use more then two drops of oil on the nut/washer, since the center caps attach in this area.

SERVICE PROCEDURES (Continued)

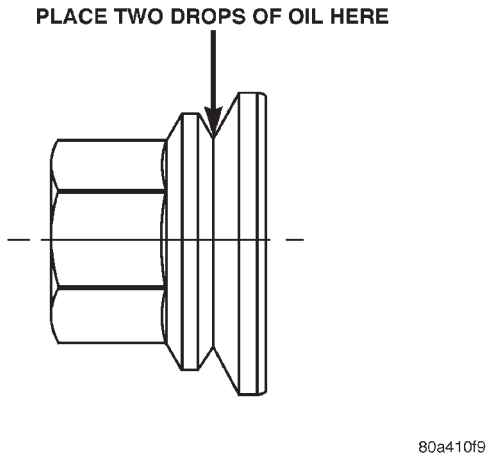

Fig. 9 Oil Location

- Tighten the wheel lug nuts in the numbered sequential pattern until they are snug tight. Then tighten lug nut to specified torque following same number sequence (Fig. 8).
- Tighten lug nuts in same numbered sequence a second time to the specified torque. This will ensure that the wheels are thoroughly mated.
- Check lug nut specified torque after 100 miles (160 kilometers). Also after 500 miles (800 kilometers) of vehicle operation.

NOTE: Wheel lug nuts should be tightened to specified torque at every maintenance interval thereafter.

TIRE AND WHEEL BALANCE

It is recommended that a two plane service dynamic balancer be used when a tire and wheel assembly require balancing. Refer to balancer operation instructions for proper cone mounting procedures. Typically use front cone mounting method for steel wheels. For aluminum wheel use back cone mounting method without cone spring.

NOTE: Static should be used only when a two plane balancer is not available.

NOTE: Cast aluminum and forged aluminum wheels require coated balance weights and special alignment equipment.

Wheel balancing can be accomplished with either on or off vehicle equipment. When using on-vehicle balancing equipment, remove the opposite wheel/tire. Off-vehicle balancing is recommended.

For static balancing, find location of heavy spot causing the imbalance. Counter balance wheel directly opposite the heavy spot. Determine weight required to counter balance the area of imbalance. Place half of this weight on the **inner** rim flange and the other half on the **outer** rim flange (Fig. 10).

For dynamic balancing, the balancing equipment is designed to locate the amount of weight to be applied to both the inner and outer rim flange (Fig. 11).

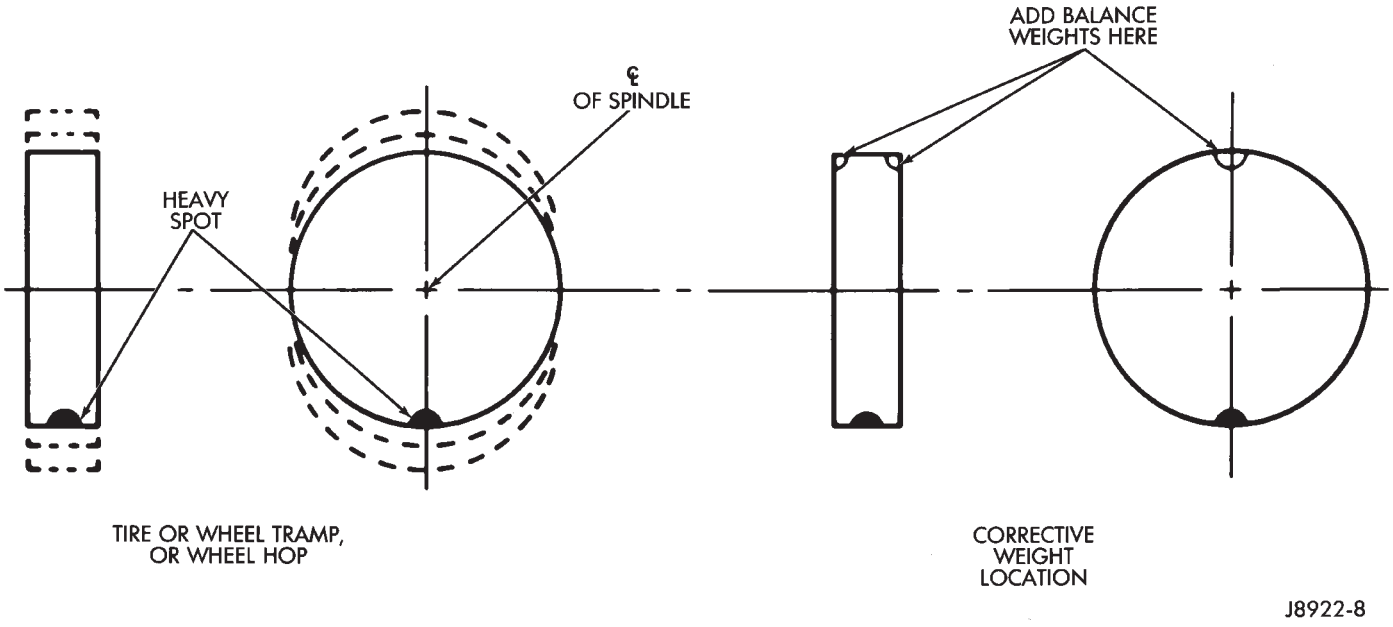

Fig. 10 Static Unbalance & Balance

SERVICE PROCEDURES (Continued)

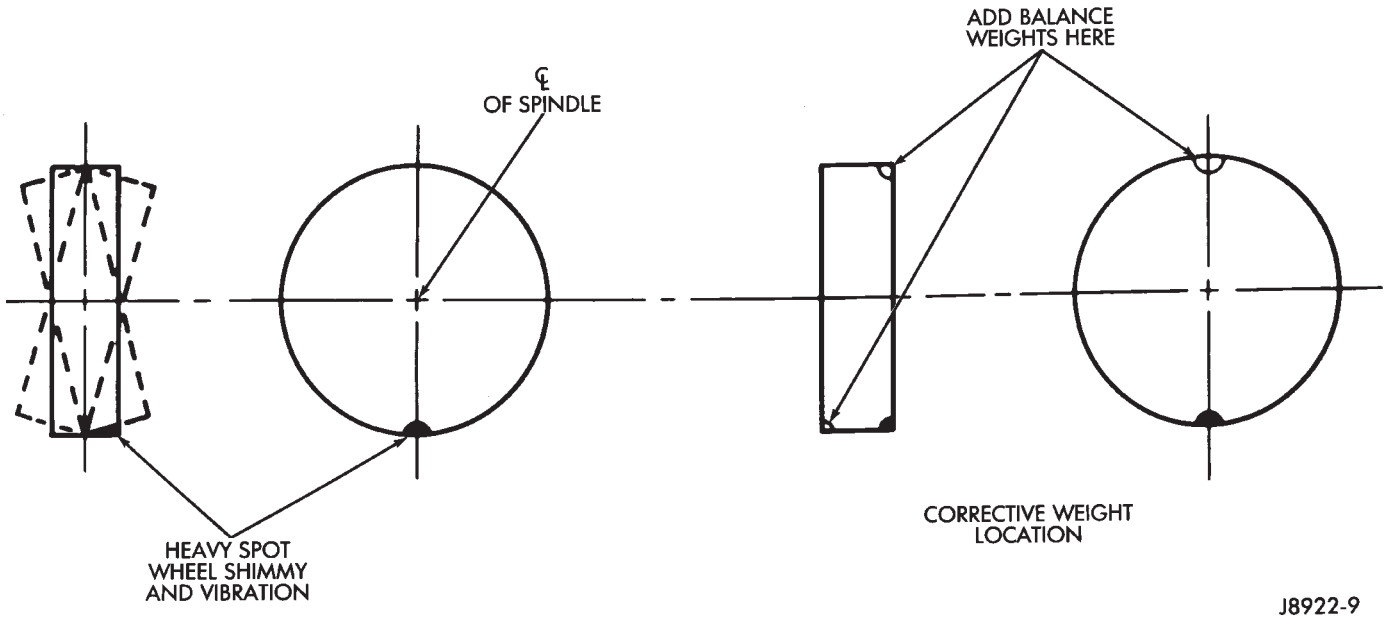

Fig. 11 Dynamic Unbalance & Balance

SPECIFICATIONS

TORQUE CHART

DESCRIPTION	TORQUE
Lug Nut	
BR1500 (5 Stud Wheel)	130 N·m (95 ft. lbs.)
BR2500 (8 Stud Wheel)	180 N·m (135 ft. lbs.)
BR3500 (8 Stud Dual Wheel)	195 N·m (145 ft. lbs.)