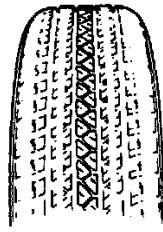
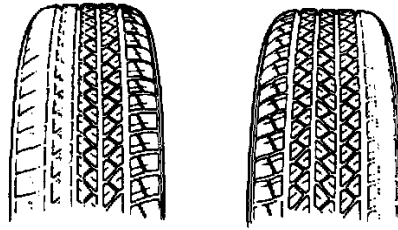


Tires: Testing and Inspection

IRREGULAR AND/OR PREMATURE WEAR



- Hard Cornering
- Under Inflation
- Lack of Rotation



- Incorrect Wheel Alignment
- Tire Construction not Uniform
- Wheel Heavy Acceleration

Irregular and premature wear has many causes. Some of them are: incorrect inflation pressures, lack of tire rotation, driving habits, improper alignment.

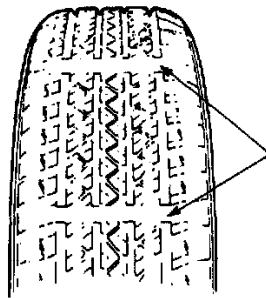
If the following conditions are noted, rotation is necessary:

1. Front tire wear is different from rear.
2. Uneven wear exists across the tread of any tire.
3. Front tire wear is unequal between the right and left.
4. Rear tire wear is unequal between the right and left.
5. There is cupping, flat spotting, etc.

A wheel alignment check is necessary if following conditions are noted:

1. Front tire wear is unequal between the right and left.
2. Wear is uneven across the tread of any front tire.
3. Front tire treads have scuffed appearance with "feather" edges on one side of tread ribs or blocks.

WEAR INDICATORS

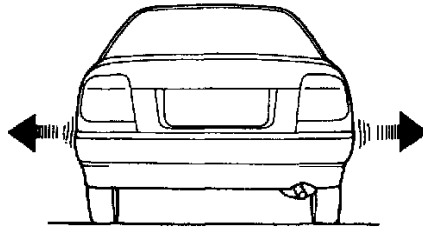


Original equipment tires have built-in tread wear indicators to show when they need replacement.

These indicators will appear as 12 mm (0.47 inch) wide bends when the tire tread depth becomes 1.6 mm (0.063 inch) .

When the indicators appear in 3 or more grooves at 6 locations, tire replacement is recommended.

RADIAL TIRE WADDLE



Waddle is side to side movement at the front and/or rear of the vehicle. It is caused by the steel belt not being straight within the tire. It is most noticeable at a low speed, 5 to 30 mph.

It is possible to locate the faulty tire by road testing the vehicle. If it is on the rear, the rear end of the vehicle shakes from side to side or "waddles". To the driver in his seat, it feels as though someone is pushing on the side of vehicle.

If the faulty tire is on the front, waddling is more visual. The front sheet metal appears to be moving back and forth and the driver feels as though he is at the pivot point in vehicle.

Waddle can be quickly diagnosed by using Tire Problem Detector (TPD) and following the equipment manufacturer's recommendations.

If TPD is not available, an alternative method of substituting known good tire/wheel assemblies can be used as follows, although it takes a longer time.

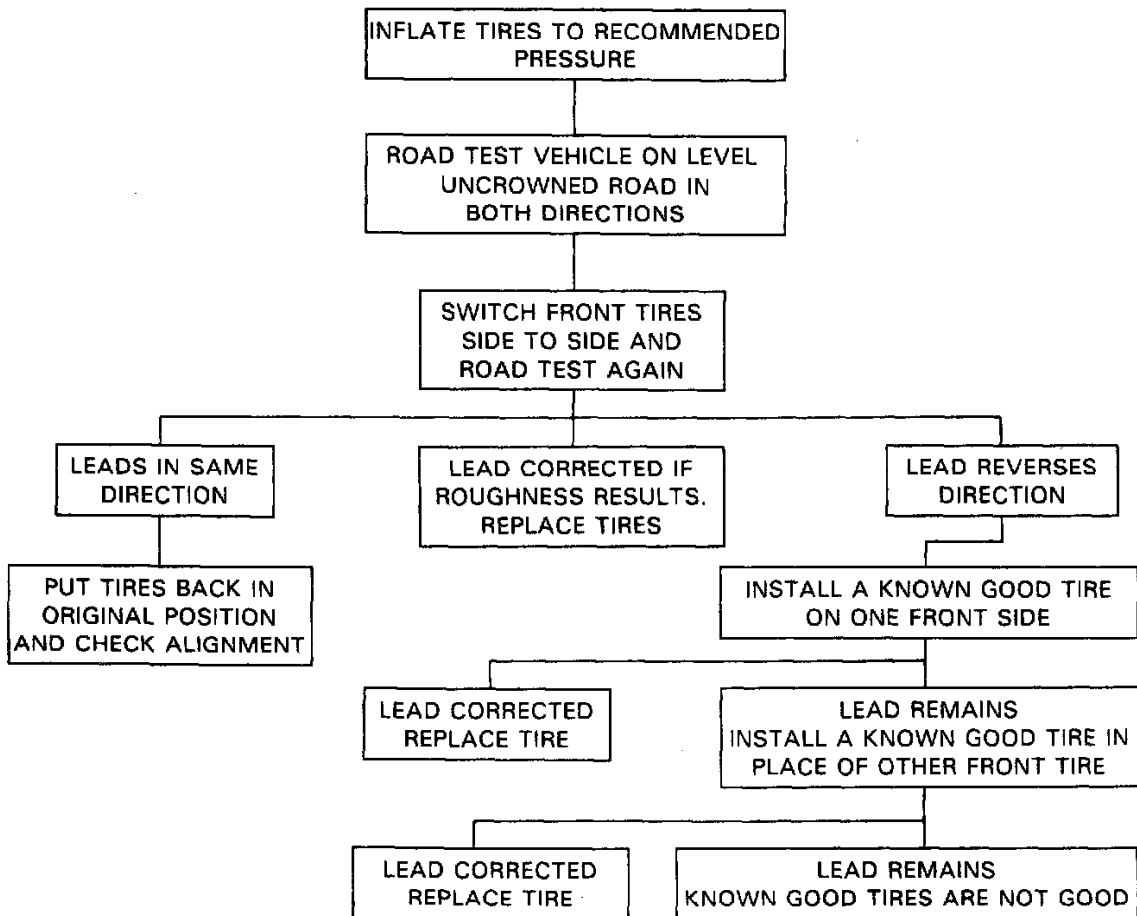
1. Ride vehicle to determine whether the front or rear waddles.
2. Install tires and wheels that are known to be good (on similar vehicle) in place of those on waddling end of vehicle. If waddling end cannot be identified, substitute rear ones.
3. Road test again. If improvement is noted, reinstall originals one at a time till waddle causal tire is found. If no improvement is noted, install known good tires in place of all four. Then reinstall originals in the same manner as above.

RADIAL TIRE LEAD

"Lead" is the deviation of the vehicle from a straight path on a level road even with no pressure on the steering wheel. Lead is usually caused by:

1. Incorrect alignment.
2. Uneven brake adjustment.
3. Tire construction.

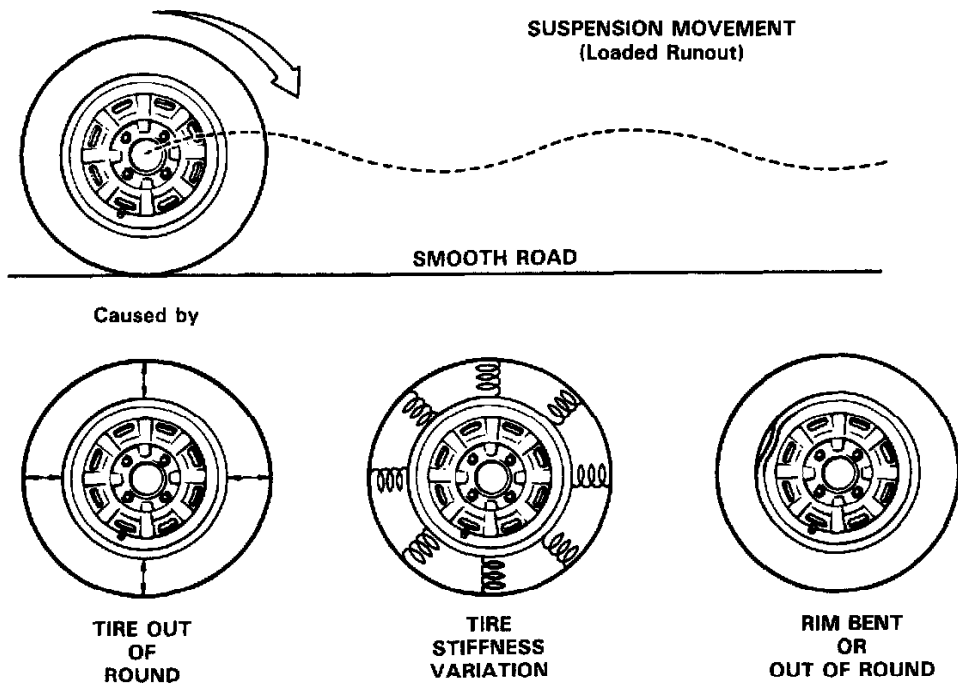
The way in which a tire is built can produce lead in a vehicle. An example of this is placement of the belt. Off center belts on radial tires can cause the tire to develop a side force while rolling straight down the road. If one side of the tire has a little larger diameter than the other, the tire will tend to roll to one side. This will develop a side force which can produce vehicle lead.



The procedure in figure shown (Lead Diagnosis) should be used to make sure that front alignment is not mistaken for tire lead.

1. Part of the lead diagnosis procedure is different from the proper tire rotation pattern currently in the owner and service procedures. If a medium to high mileage tire is moved to the other side of the vehicle, be sure to check that ride roughness has not developed.
2. Rear tires will not cause lead.

VIBRATION



Wheel unbalance causes most of the highway speed vibration problems. If a vibration remains after dynamic balancing, its possible causes are as follows:

1. Tire runout.
2. Wheel runout.
3. Tire stiffness variation.

Measuring tire and/or wheel free runout will uncover only part of the problem. All three causes, known as loaded lateral runout, must be checked by using a Tire Problem Detector (TPD) . If TPD is not available, alternative method of substituting known good tire and wheel assemblies on the problem vehicle can be used, although it takes a longer time.