Modern Automotive Technology
Chapter 66

Tire, Wheel and Wheel Bearing Service
Learning Objectives

- Diagnose common tire, wheel and wheel bearing problems
- Describe inflation and rotation procedures
- Measure tire and wheel run out
- Explain static and dynamic wheel balancing
- Explain wheel bearing service
- Demonstrate all safety rules and regulations while servicing tires and wheels
Chapter 66

1. To prevent premature failure of any one tire, perform TIRE ROTATION to even out tire wear.

2. Also known as road damage, TIRE IMPACT DAMAGE includes punctures, cuts, tears, and other physical tire injuries.
Tire Rotation

Rear-wheel drive cars

Front wheel drive cars
3. When the center area of the tread is worn, TIRE OVERINFLATION is often the cause.

4. A wheel assembly is balanced by adding WHEEL WEIGHTS on the wheel opposite the heavy area.
5. LATERAL RUNOUT is side-to-side movement.

6. The TIRE WEAR PATTERN can usually be studied to determine the cause of the abnormal wear.
Lug Nut Tightening Sequence

Tighten Lugs Nuts In A “STAR PATTER”
7. A difference in diameter from the center axis of rotation will cause RADIAL RUNOUT.

8. STATIC RUNOUT is also known as wheel tramp or hop, and causes the tire to vibrate up and down.
**Tire Wear Patterns**

**A—Feathering.** This is caused by erratic scrubbing against road when tire is in need of toe-in or toe-out alignment correction.

**B—Overinflation.** Overinflation can cause fast centerline wear in bias and bias belted tires. In this case, center ribs get more contact with road than they should and wear much faster than outer ribs.

**C—Underinflation.** When a tire is underinflated, most of its contact with road is on outer tread rib, or shoulder, causing faster wear here than in middle. Be sure to check tire's air pressure.

**D—One-side wear.** Here's another type of alignment problem—excessive camber, which means tire is leaning too much to inside or outside of tread, and placing all work on one side of tire.

**E—Cupping.** This means the car may need wheels balanced, or possibly new shock absorbers or ball joints, or both.
Chapter 66

9. A very common and destructive problem that wears the outer corners of a tire tread is a result of **TIRE UNDERINFLATION**.

10. **DYNAMIC IMBALANCE** causes tires to vibrate up and down and from side to side.
Hub and Bearing Service

Removing Hub

- Pulling tool
- Retainer
- Hub
- Thrust button and fabricated washer
- Back out retainer screw to hub
- Soft vise cap

Removing Old Bearings

- Hammer
- Small adapter
- Steering knuckle
Hub and Bearing Service

Installing New Bearings

Installing Hub

Driver
Large adapter
Socket
Press
Knuckle
Retainer
Hub
Wooden block support
Wheel Bearing Wear

A good Wheel Bearing. No abnormal wear indicators.

Bent Cage due to improper handling.

Galling and Abrasive Step Wear. Caused by overheating, lack of lubrication, improper load or improper installation (preload).
Wheel Bearing Service

Removing Bearing Race

Installing Bearing Race
Learning Objectives

- Diagnose common tire, wheel and wheel bearing problems
- Describe inflation and rotation procedures
- Measure tire and wheel run out
- Explain static and dynamic wheel balancing
- Explain wheel bearing service
- Demonstrate all safety rules and regulations while servicing tires and wheels