



Modern Automotive Technology Chapter 66

Tire, Wheel and Wheel Bearing Service



North Montco
Technical Career Center



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





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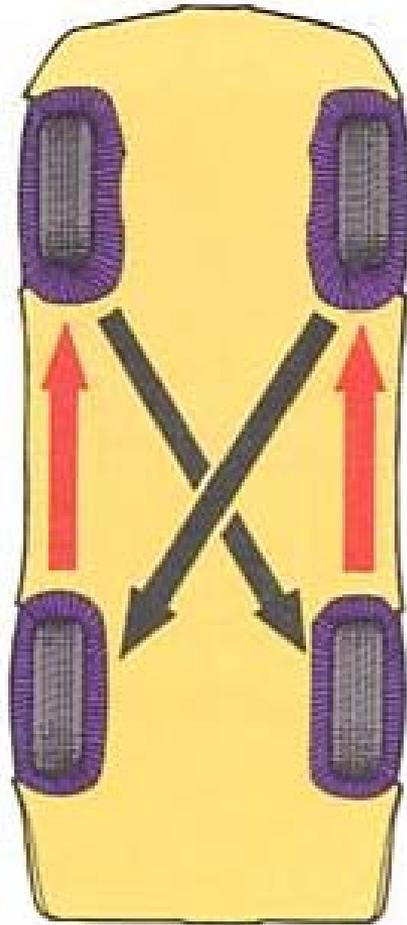
1. To prevent premature failure of any one tire, perform **TIRE ROTATION** to even out tire wear.
2. Also known as road damage, **TIRE IMPACT DAMAGE** includes punctures, cuts, tears, and other physical tire injuries.



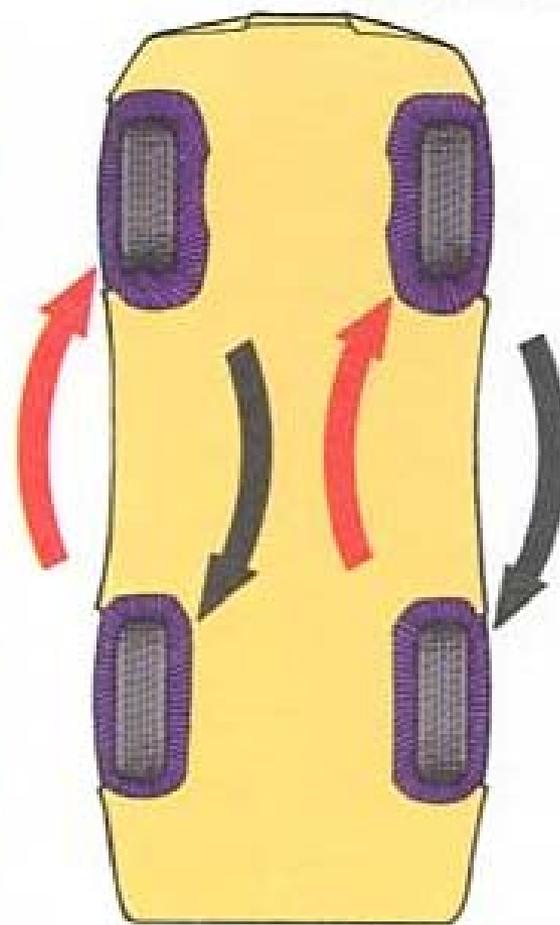


Tire Rotation

Rear-wheel drive cars



Front wheel drive cars





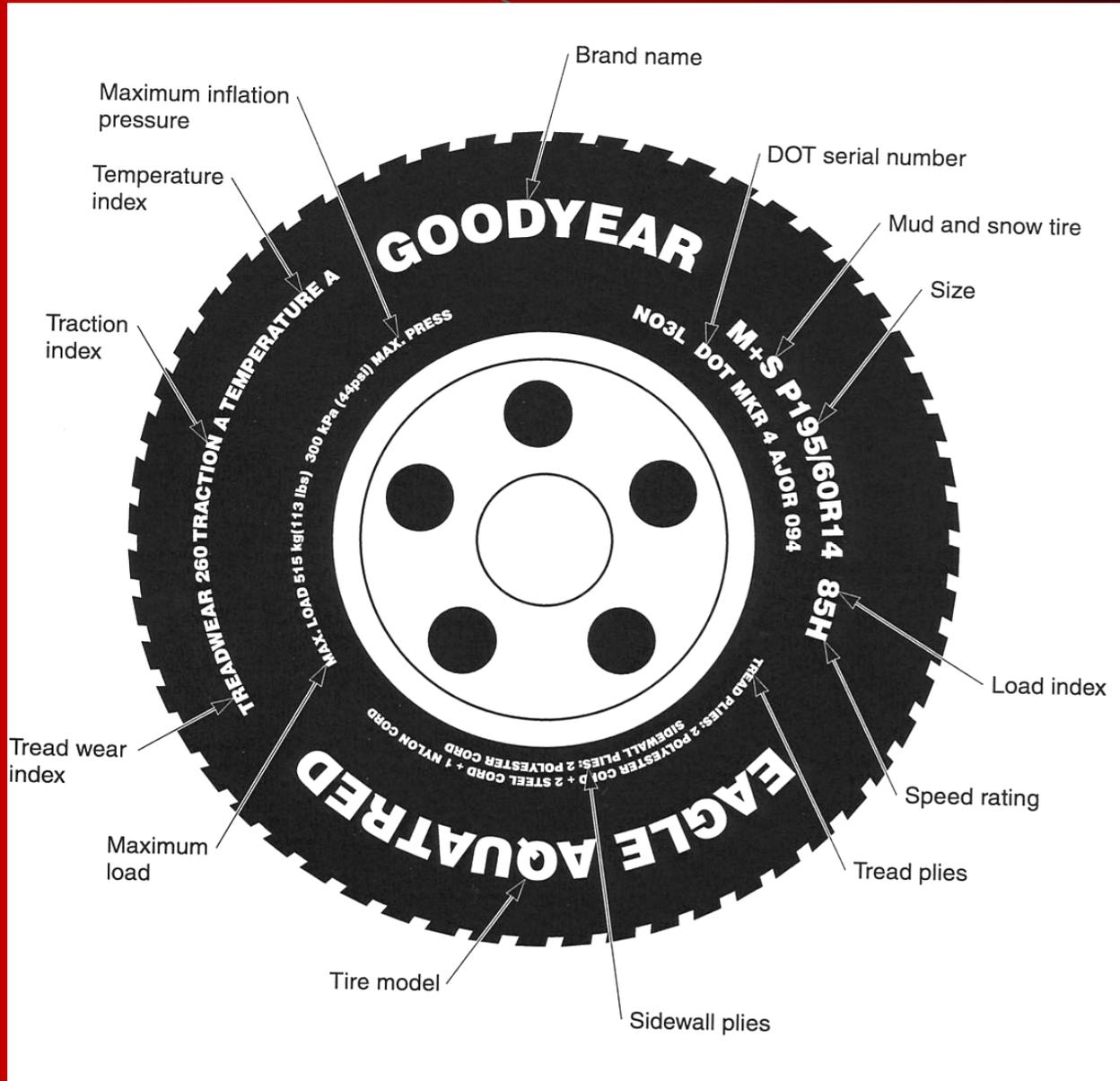
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3. When the center area of the tread is worn, **TIRE OVERINFLATION** is often the cause.
4. A wheel assembly is balanced by adding **WHEEL WEIGHTS** on the wheel opposite the heavy area.





Tire Sidewall Markings



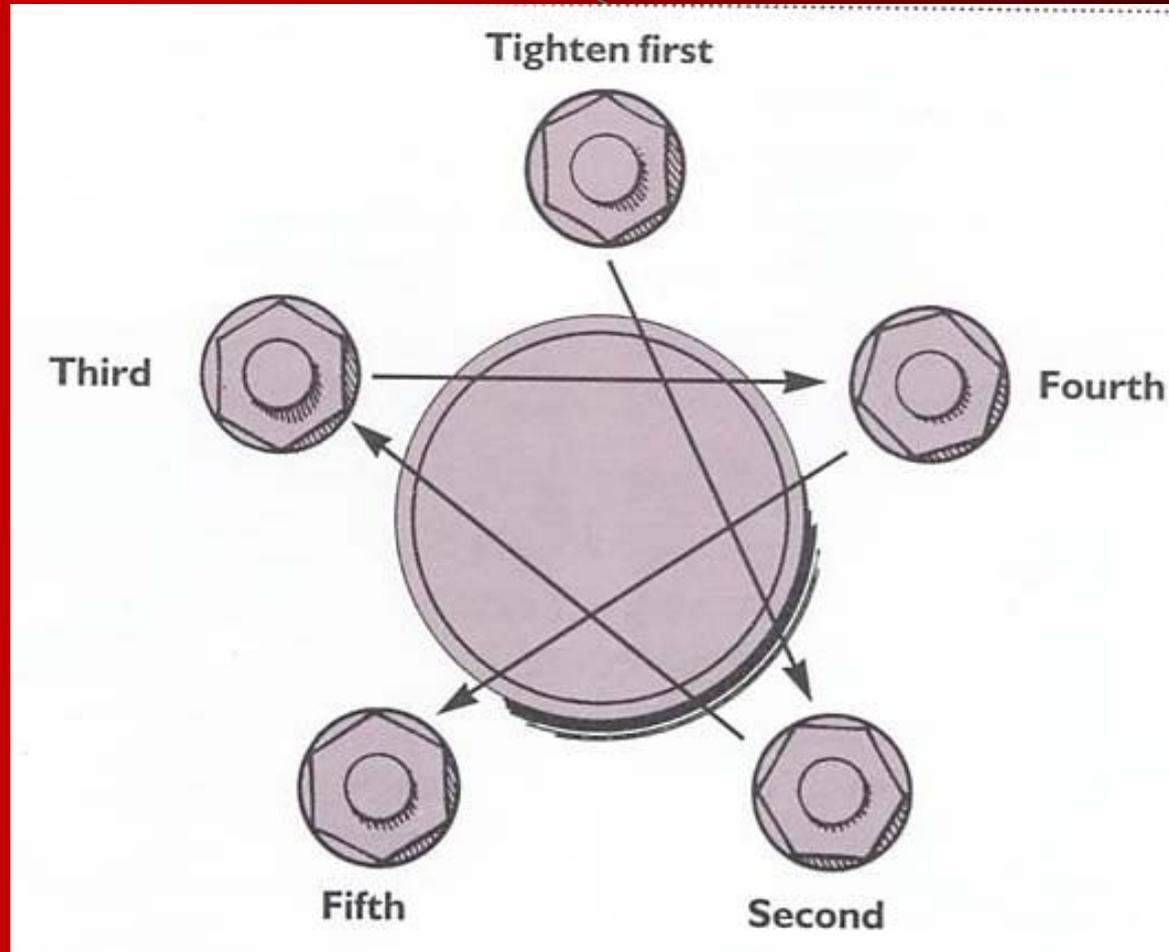


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5. LATERAL RUNOUT is side-to-side movement.
6. The TIRE WEAR PATTERN can usually be studied to determine the cause of the abnormal wear.



Lug Nut Tightening Sequence



Tighten Lugs Nuts In A “STAR PATTERN”





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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.





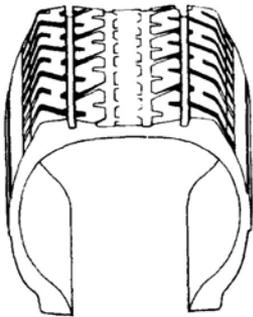
Tire Wear Patterns



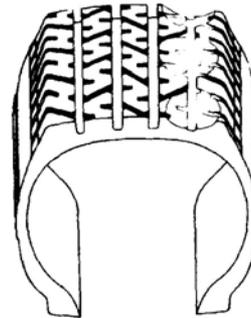
A-Feathering. This is caused by erratic scrubbing against road when tire is in need of toe-in or toe-out alignment correction.



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.



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.



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



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.





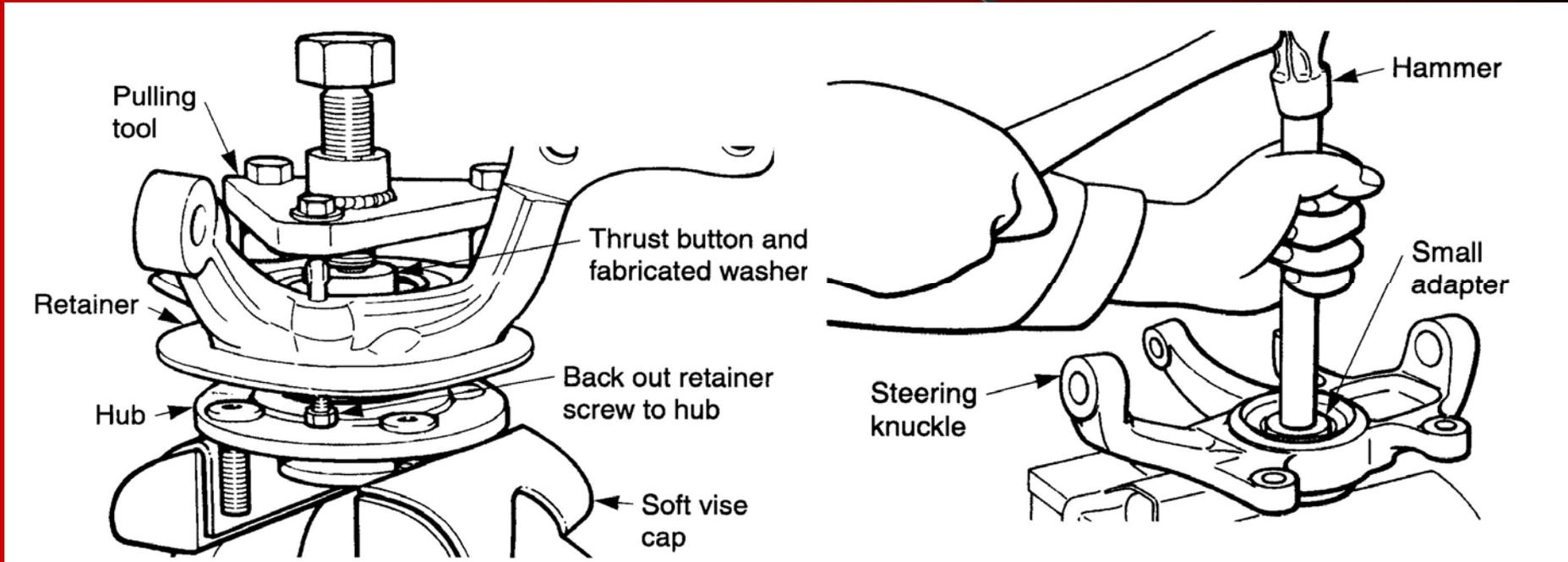
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9. A very common and destructive problem that wears the outer corners of a tire tread is a result of TIRE UNDERINFLATION.
10. DYNAMIC IMBALANCE causes tires to vibrate up and down and from side to side.





Hub and Bearing Service



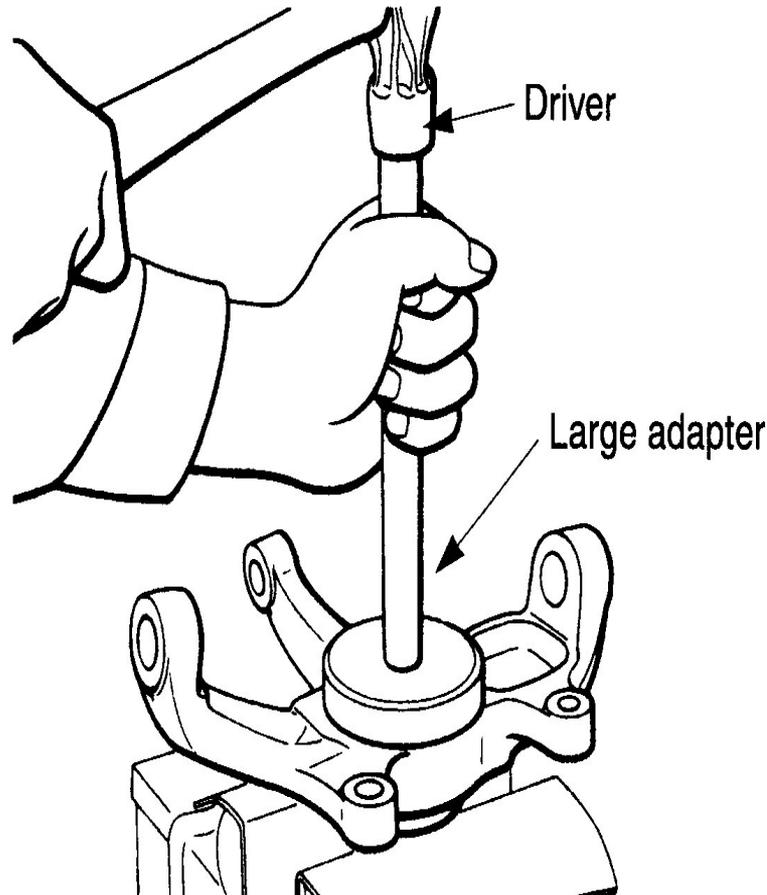
Removing Hub

Removing Old Bearings

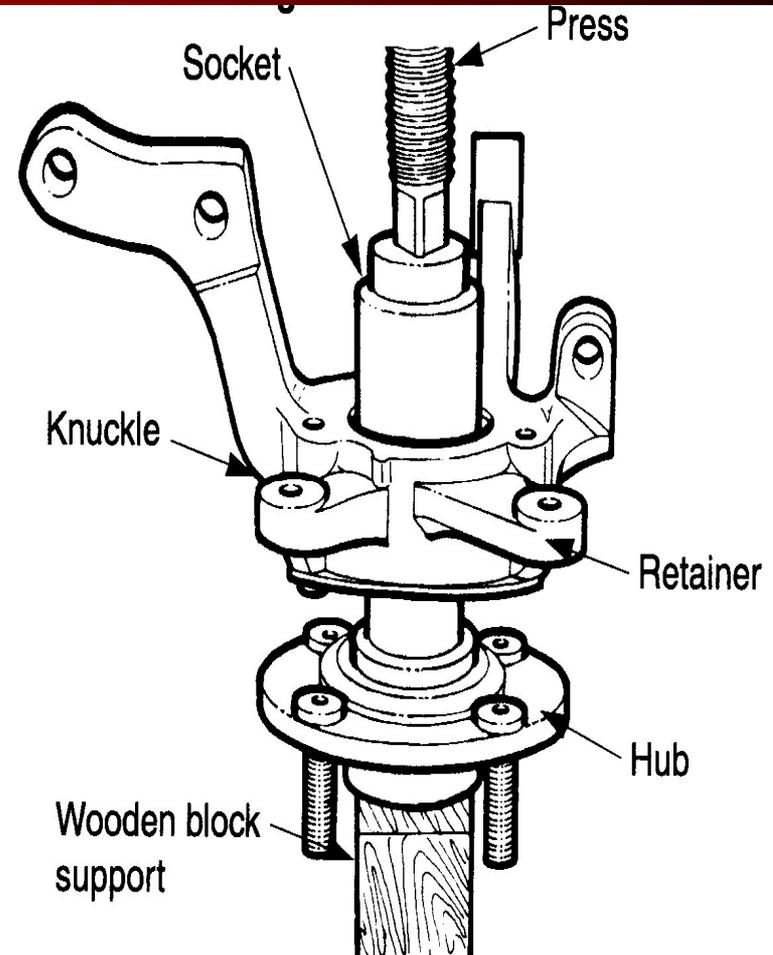




Hub and Bearing Service



Installing New Bearings

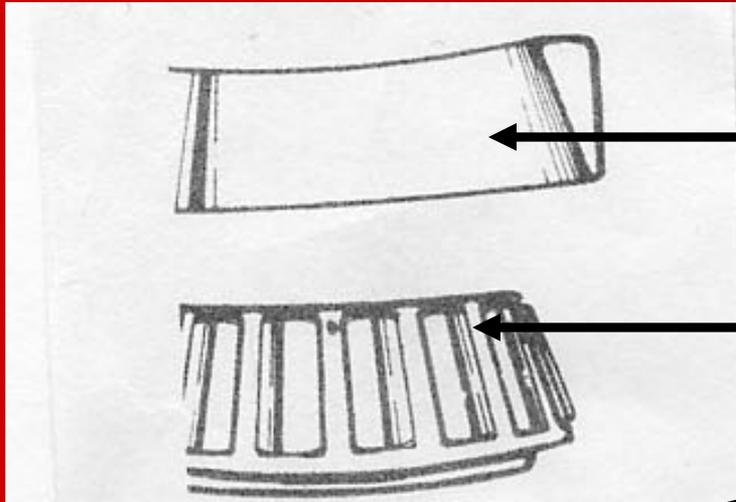
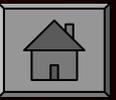


Installing Hub





Wheel Bearing Wear

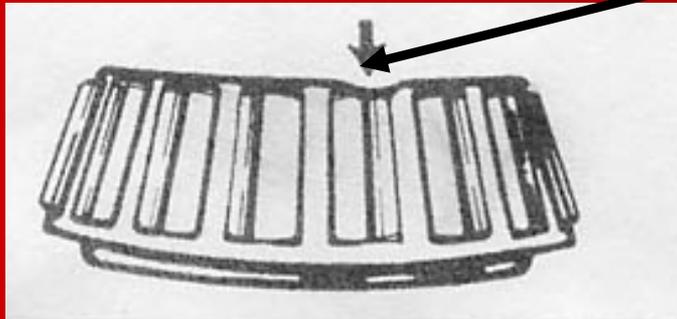


Bearing Race

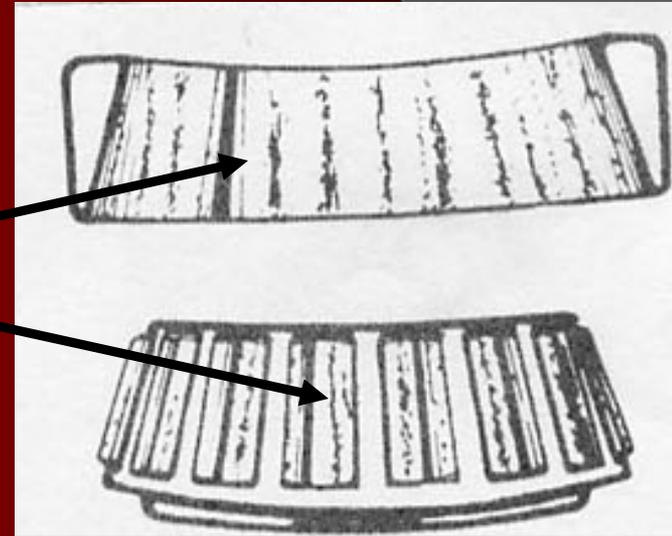
A good Wheel Bearing.

No abnormal wear indicators

Bent Cage due to improper handling

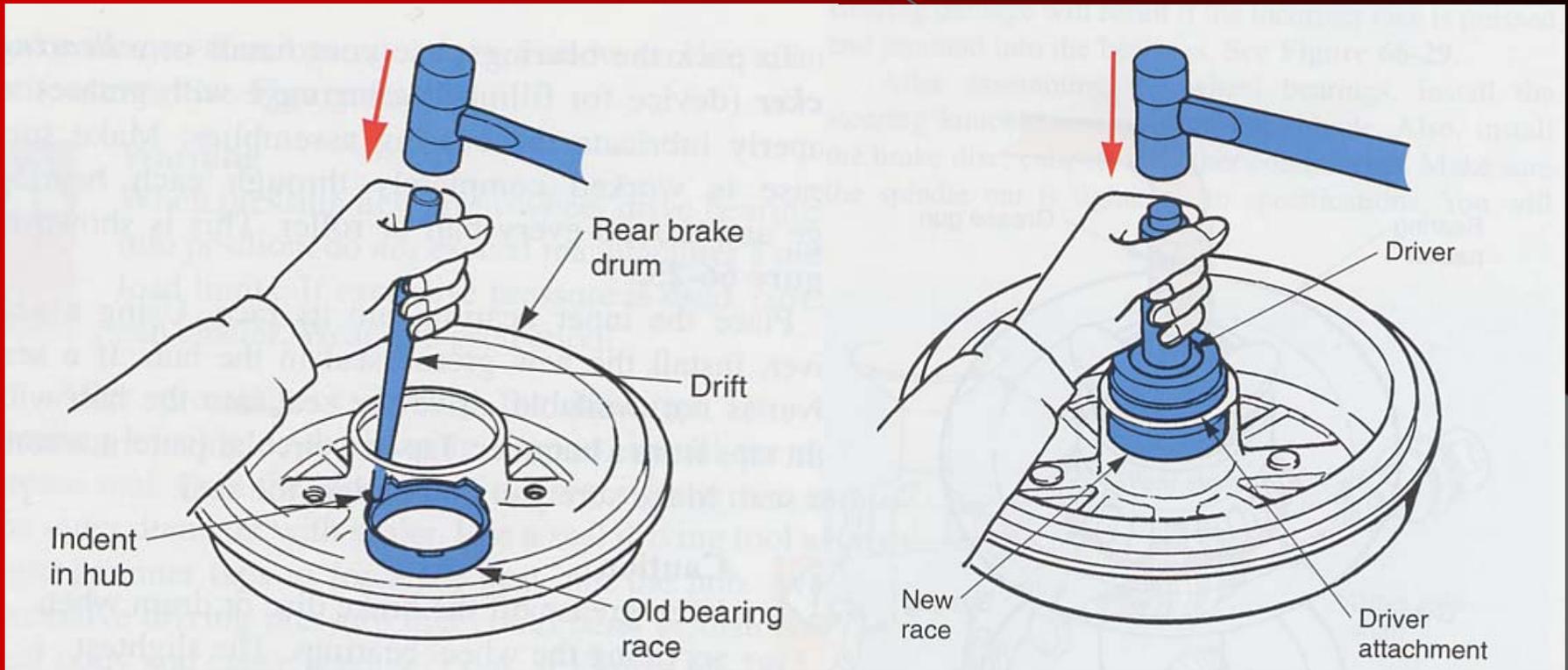


Galling and Abrasive Step Wear.
Caused by overheating, lack of lubrication, improper load or improper installation (preload).





Wheel Bearing Service



Removing Bearing Race

Installing Bearing Race





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