Learning Objectives

- Explain the hydraulic and mechanical principles of a brake system.
- Identify the major parts of an automotive brake system.
- Define the basic functions of the major parts of a brake system.
- Compare drum and disc brakes.
- Describe the operation of parking brakes.
- Explain the operation of power brakes.
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1. The PARKING BRAKE is a mechanical system for applying rear wheel brake assemblies.

2. BRAKE SHOES are friction units pushed by action of the wheel cylinder assembly.
Parking Brake Assembly

- Parking brake lever
- Cotter pins
- Parking brake switch
- Dust seal
- Main cable
- Equalizer
- Right cable
- Brake adjusting nut
- Left cable
- Release button
- Clevis pin
Parking Brake Components

Foot-operated parking brake pedal

Lever pushes the shoes against the drum
Drum Brake Assembly

- Parking brake lever retaining clip
- Secondary shoe retracting spring
- Cable guide
- Secondary shoe
- Shoe hold-down spring assembly
- Brake parking lever
- Cable hook
- Parking brake cable and return spring
- Parking brake link
- Washer
- Anchor pin
- Primary shoe retracting spring
- Wheel cylinder assembly
- Wheel cylinder link (2)
- Link spring
- Backing plate
- Primary shoe
- Parking brake cable housing retainer
- Automatic adjuster spring
- Adjuster lever
- Adjuster assembly
3. BRAKE PADS are friction members pushed against rotor by action of the master cylinder, caliper cylinder, and piston.

4. Disc brake ROTORS are metal discs that uses friction from brake pads to stop or slow wheel rotation.
Fixed Caliper

Caliper remains stationary as pistons on each side clamp the rotor.
Disc Brake Assembly

This rotor is vented to increase cooling
5. The MASTER CYLINDER is a hydraulic piston pump that develops pressure for brake system.

6. The SECONDARY BRAKE SHOE has a larger lining surface area than the primary brake shoe.
Master Cylinder

Brakes applied
- Fluid passes through brake lines
- Piston slides forward
- Pressure causes wheel cylinder pistons to apply brakes

Brakes released
- Fluid returns to master cylinder
- Piston slides back
- Springs pull in to release brakes
Dual Master Cylinder

- Secondary brake fluid reservoir
- Retainer
- Primary system brake fluid reservoir
- Return spring (primary)
- Primary piston assembly
- Boot
- Push rod
- Filler cap
- Spring
- Residual check valve
- Tube seat
- Brake outlet port (secondary)
- Secondary piston assembly
- Brake outlet port (primary)
Large drum surrounds the brake shoes and the hydraulic wheel cylinder
7. The CALIBER holds the cylinder, piston, and brake pads.

8. The BRAKE BOOSTER is a Vacuum- or power steering–operated device that assists brake pedal application.
Hydraulic Booster

- Power steering pump
- Power steering gear
- Brake master cylinder
- Power unit

Legend:
- Green: Fluid pressure line
- Yellow: Fluid return line
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9. The PRIMARY BRAKE SHOE as a slightly shorter lining than the secondary lining.

10. The BRAKE DRUM rubs against brake shoes to stop wheel rotation and vehicle movement.
Brake Shoe Energization

Self-Energizing Action. Primary shoe is self-energized

Servo Action. Less wheel cylinder hydraulic pressure is needed to apply the brakes
Drum and Disc Brakes

Disc brakes: Friction material on the brake disc or rotor.

Drum brakes: Friction material on the brake drum.
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