AUTOMOTIVE Youth Educational Systems YES The Passport to a Rewarding Automotive Career

ASE CERTIFIED

Modern Automotive Technology Chapter 71

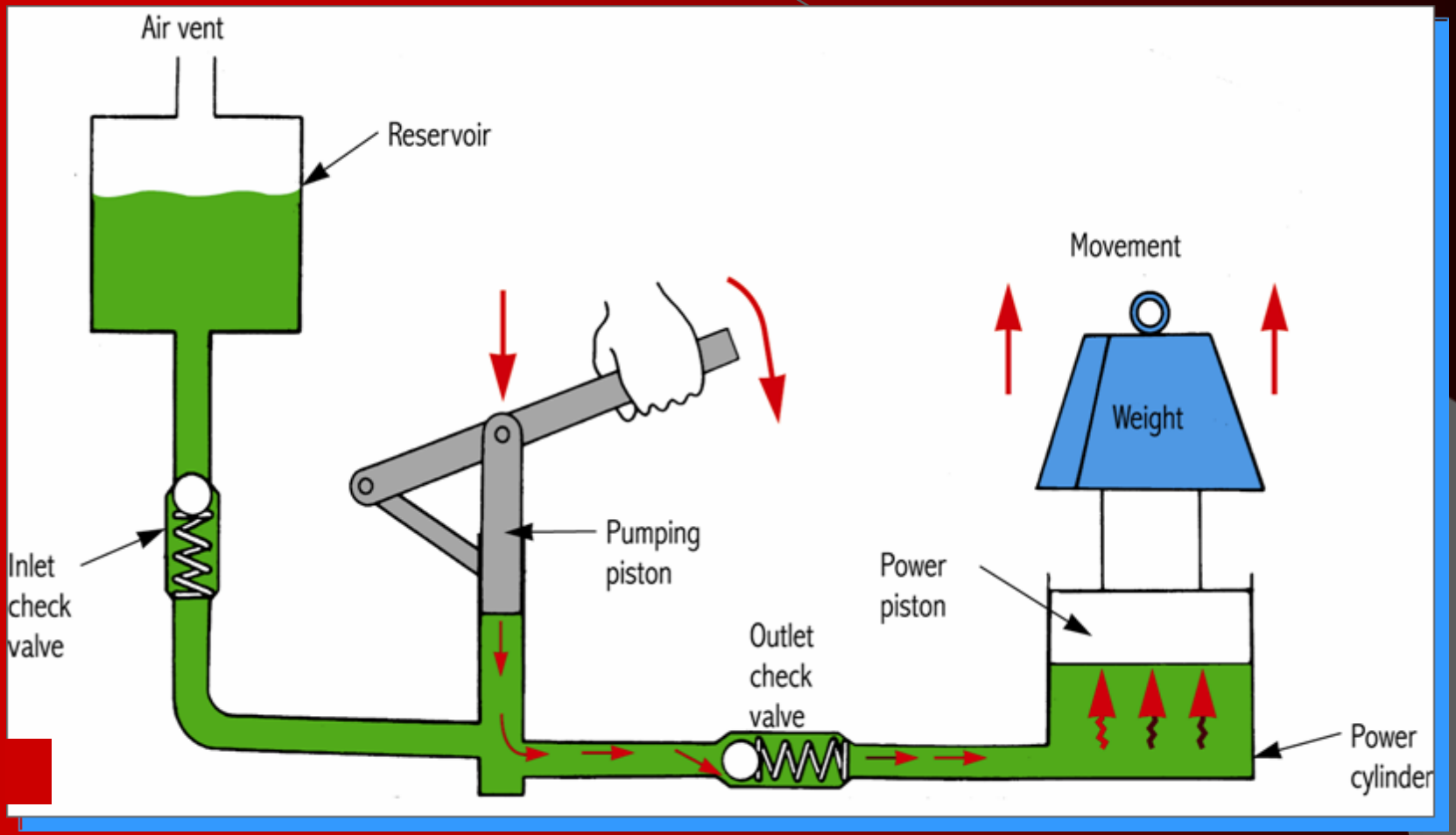
Brake System Fundamentals

North Montco Technical Career Center

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.

Hydraulic System Operation



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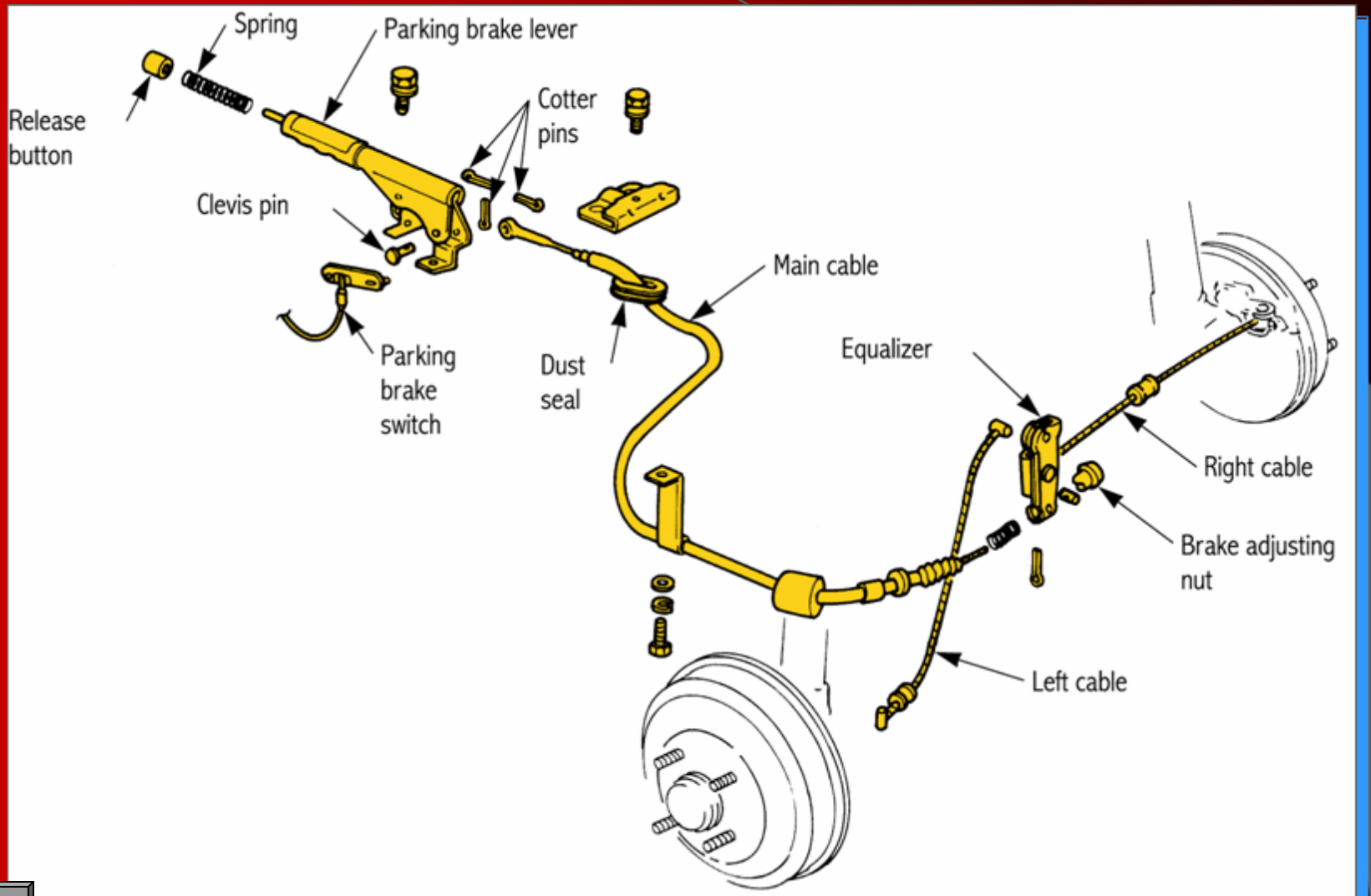
1. The PARKING BRAKE is a mechanical system for applying rear wheel brake assemblies.

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

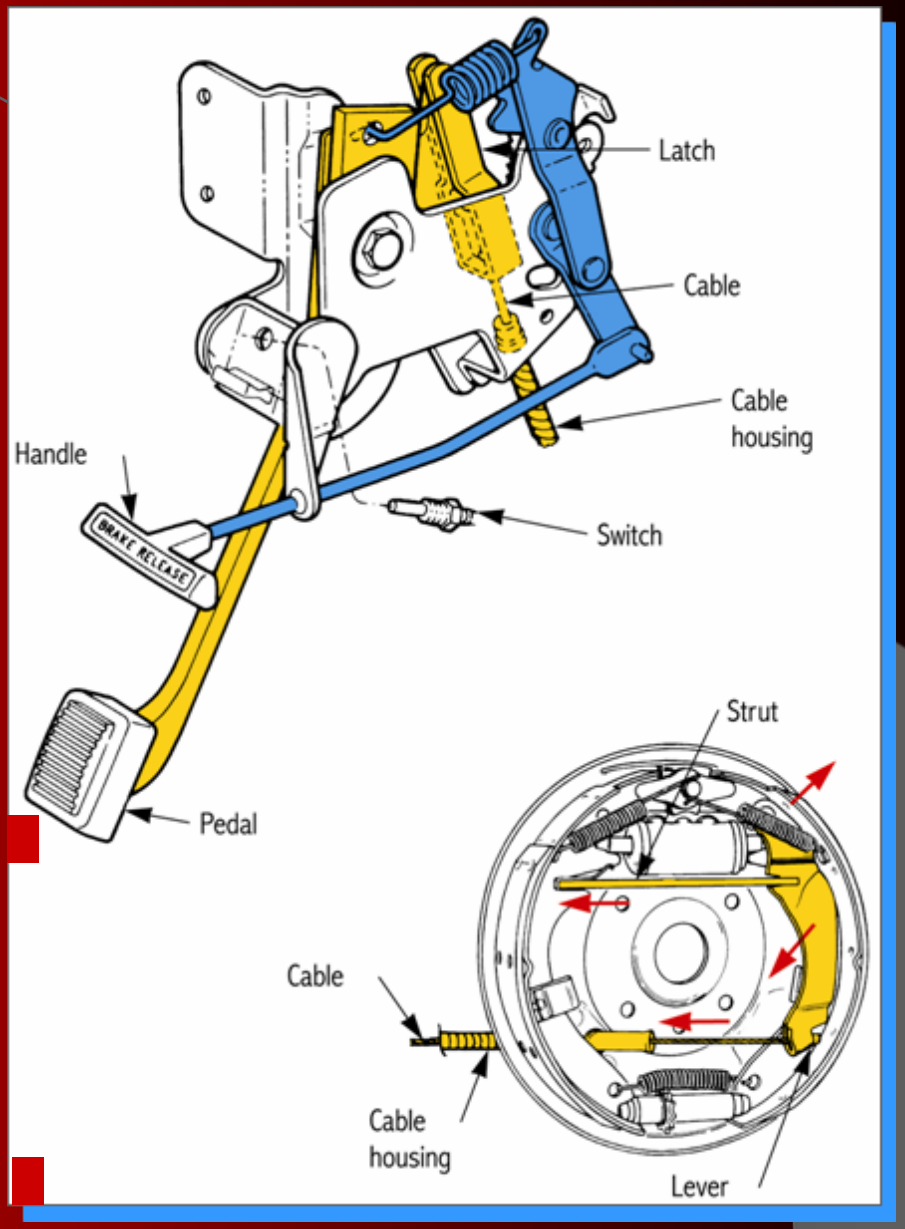
Parking Brake Assembly



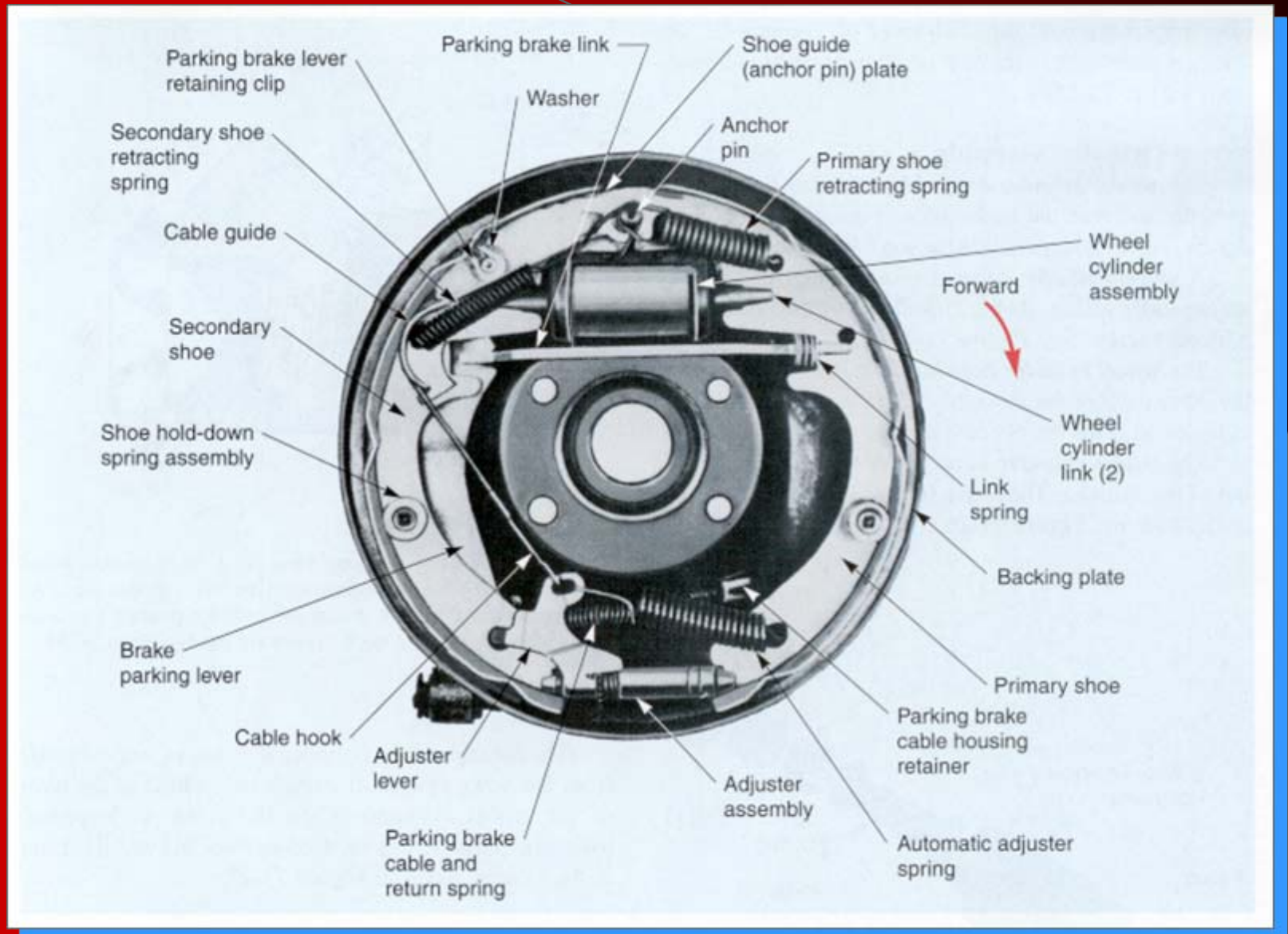
Parking Brake Components

Foot-operated parking brake pedal

Lever pushes the shoes against the drum



Drum Brake Assembly



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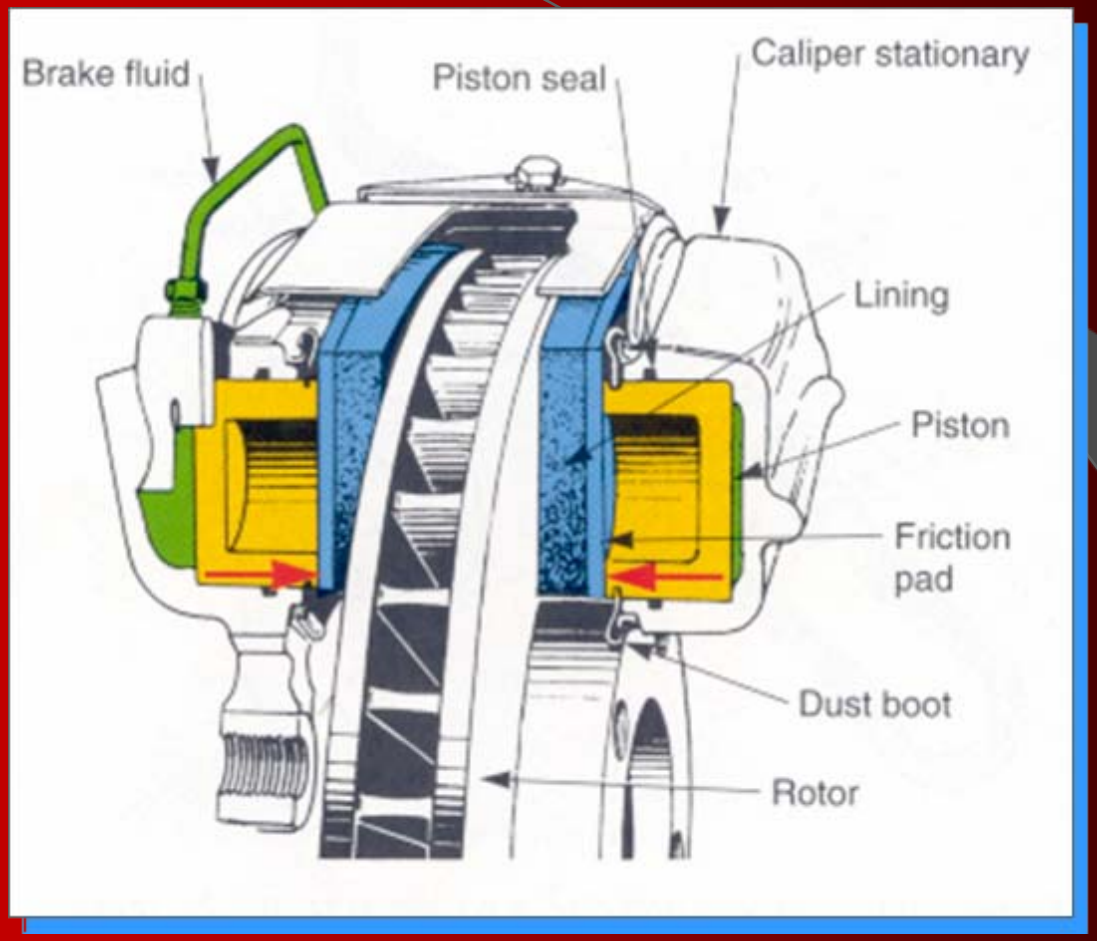
3. BRAKE PADS are friction members pushed against rotor by action of the master cylinder, caliper cylinder, and piston.

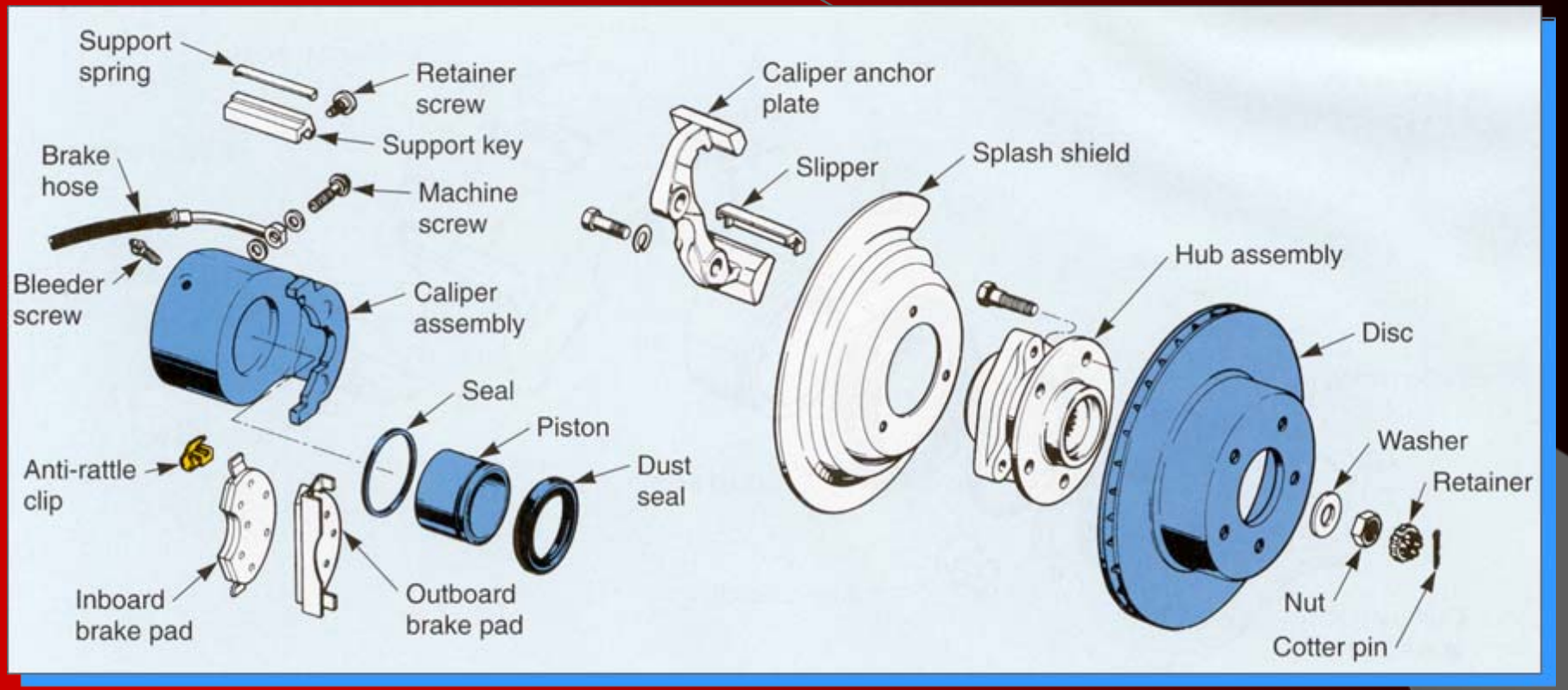
4. Disc brake ROTORS are metal discs that uses friction from brake pads to stop or slow wheel rotation.

Fixed Caliper



Caliper remains stationary as pistons on each side clamp the rotor

Disc Brake Assembly



This rotor is vented to increase cooling

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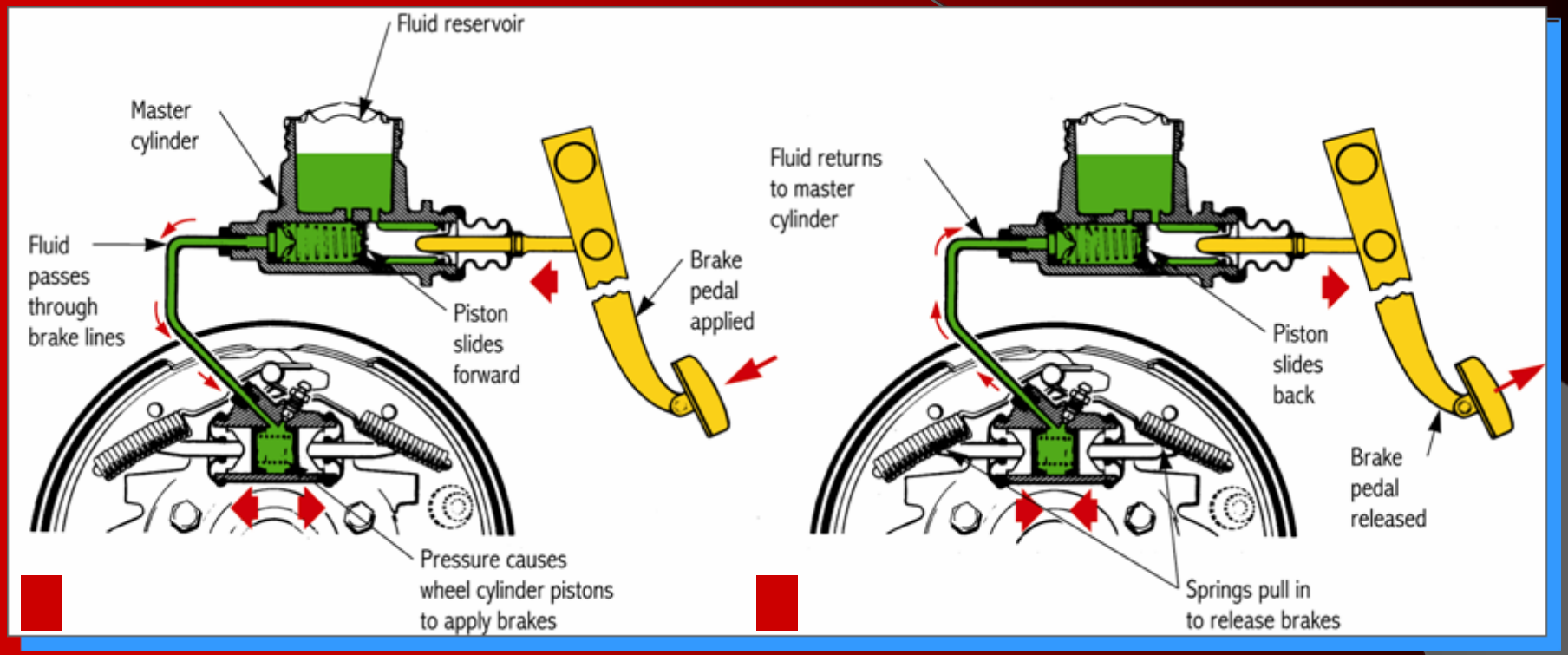
5. The MASTER CYLINDER is a hydraulic piston pump that develops pressure for brake system.

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

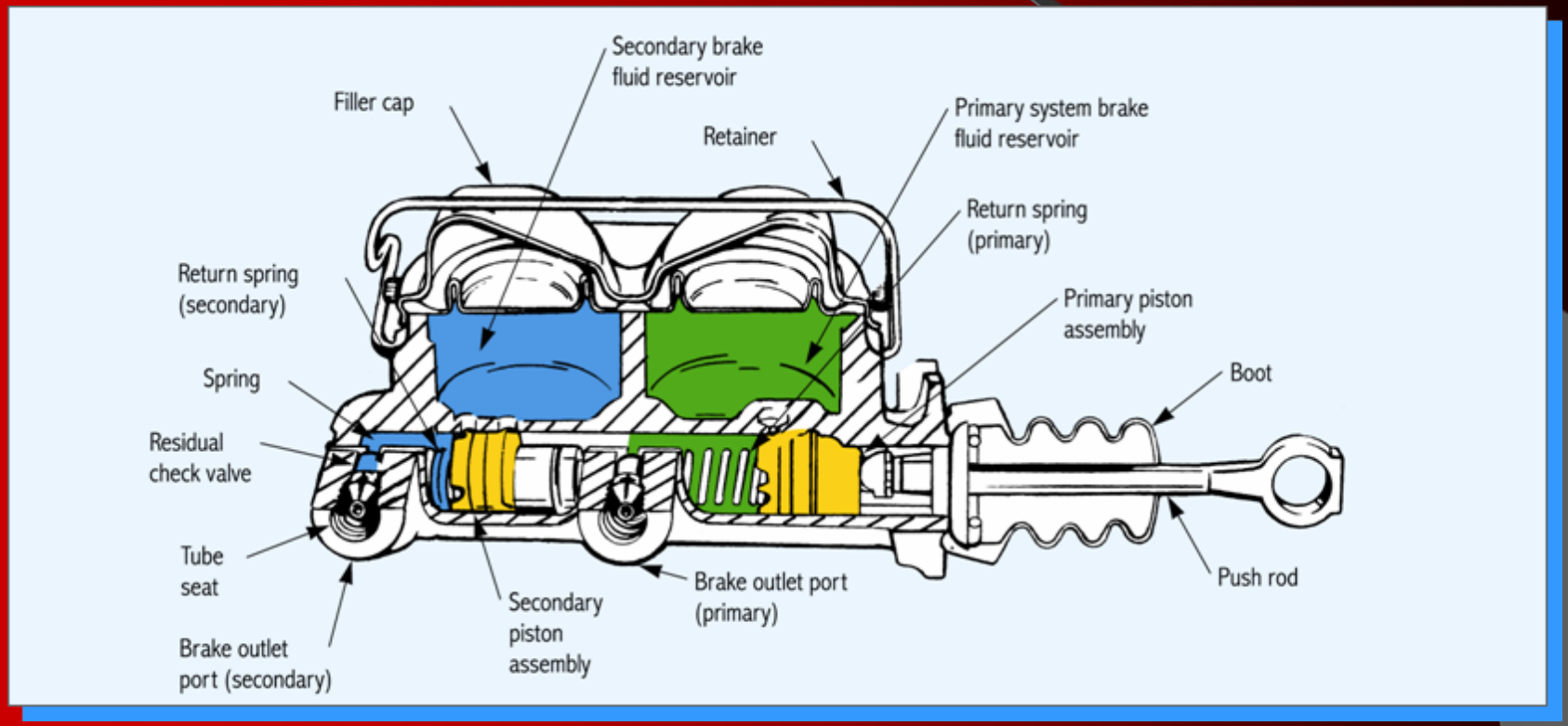
Master Cylinder



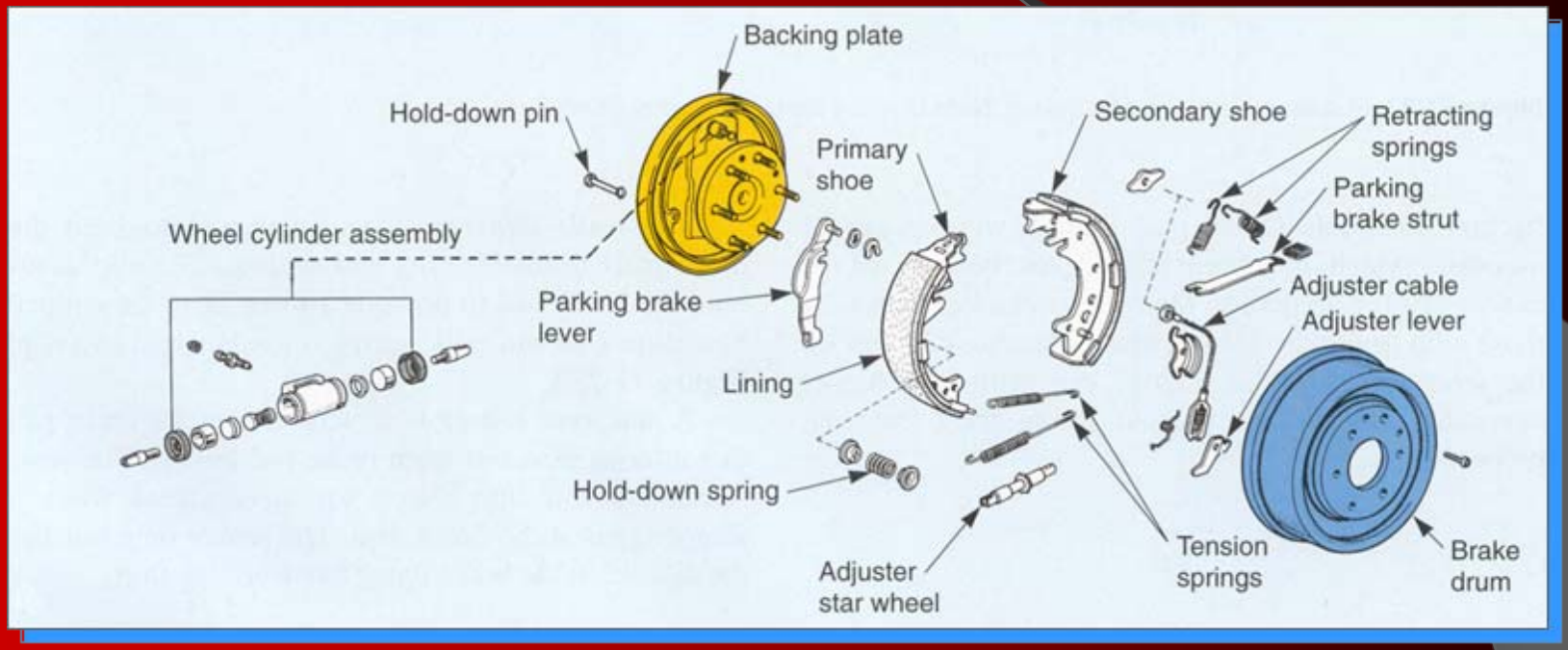
Brakes applied

Brakes released

Dual Master Cylinder



Drum Brake Assembly



Large drum surrounds the brake shoes and the hydraulic wheel cylinder

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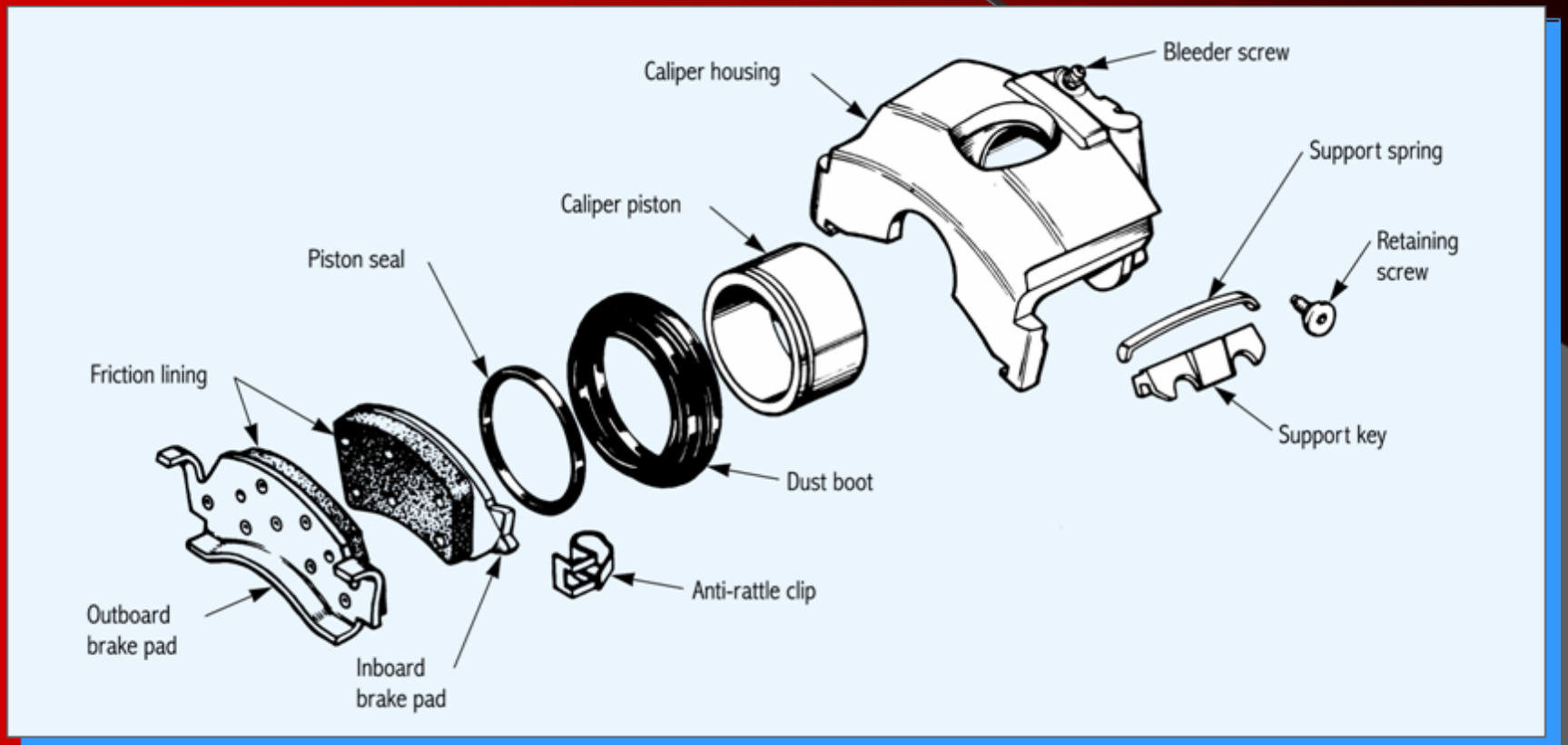
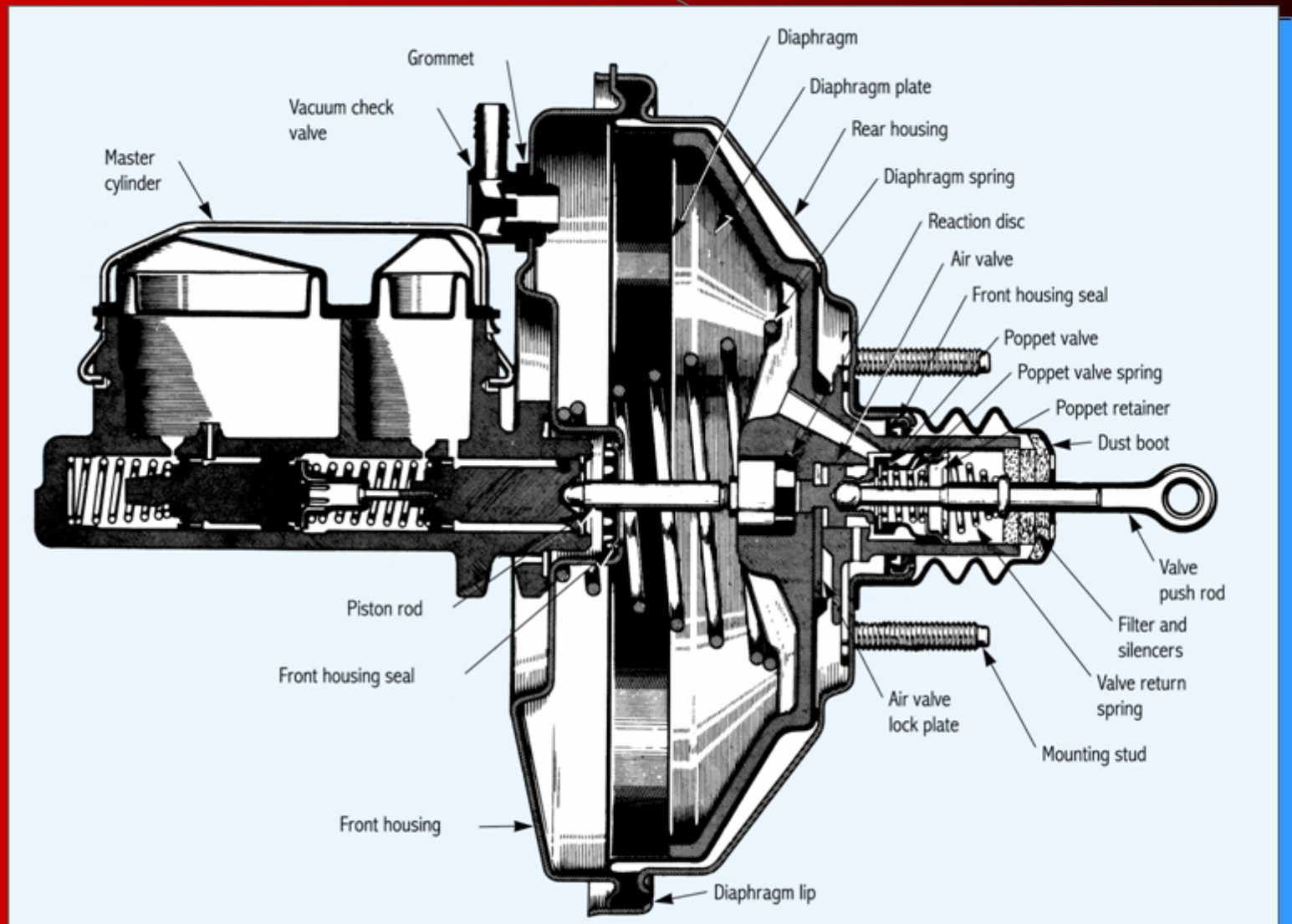
7. The CALIBER holds the cylinder, piston, and brake pads.

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

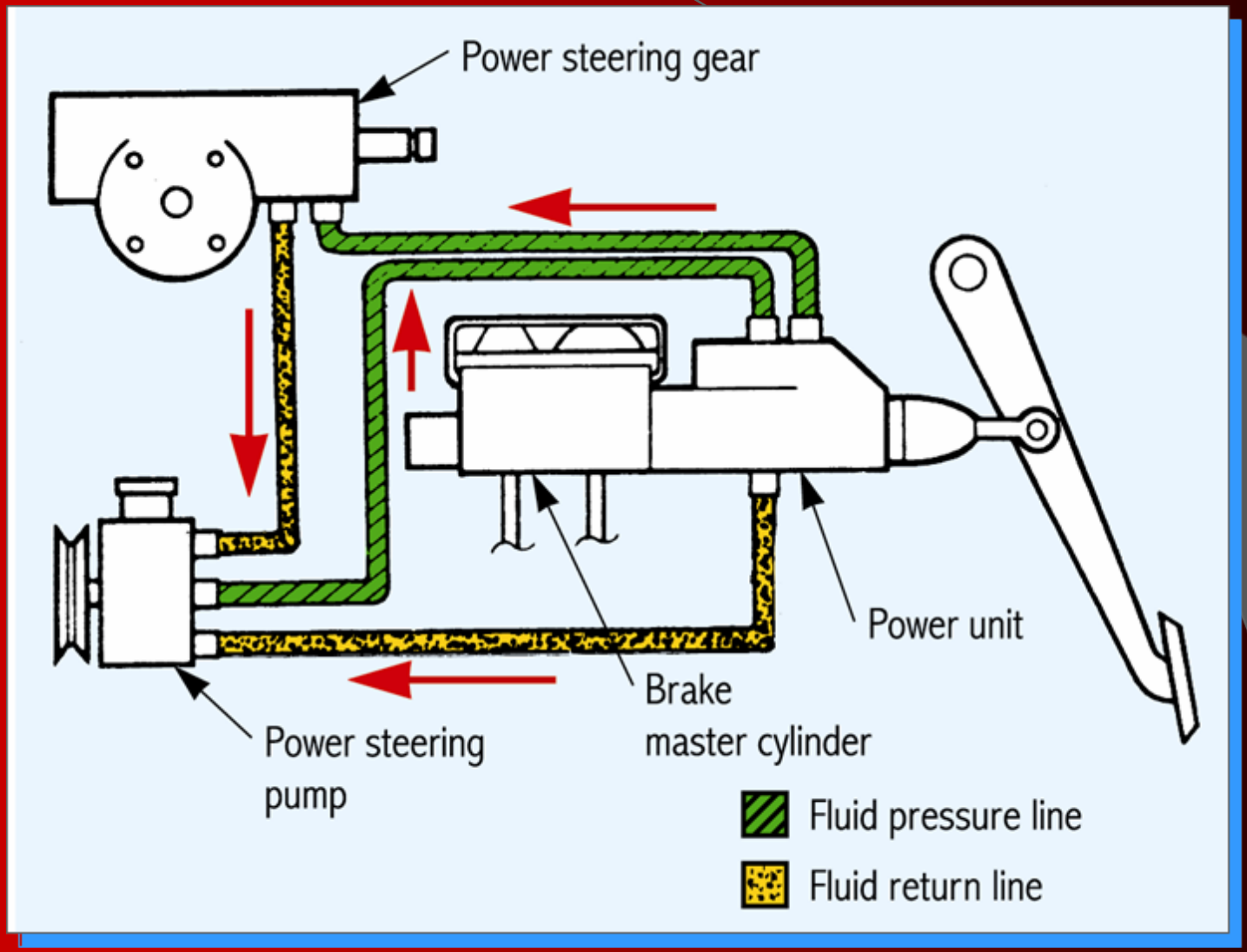
Brake Caliper Assembly



Vacuum Brake Booster



Hydraulic Booster



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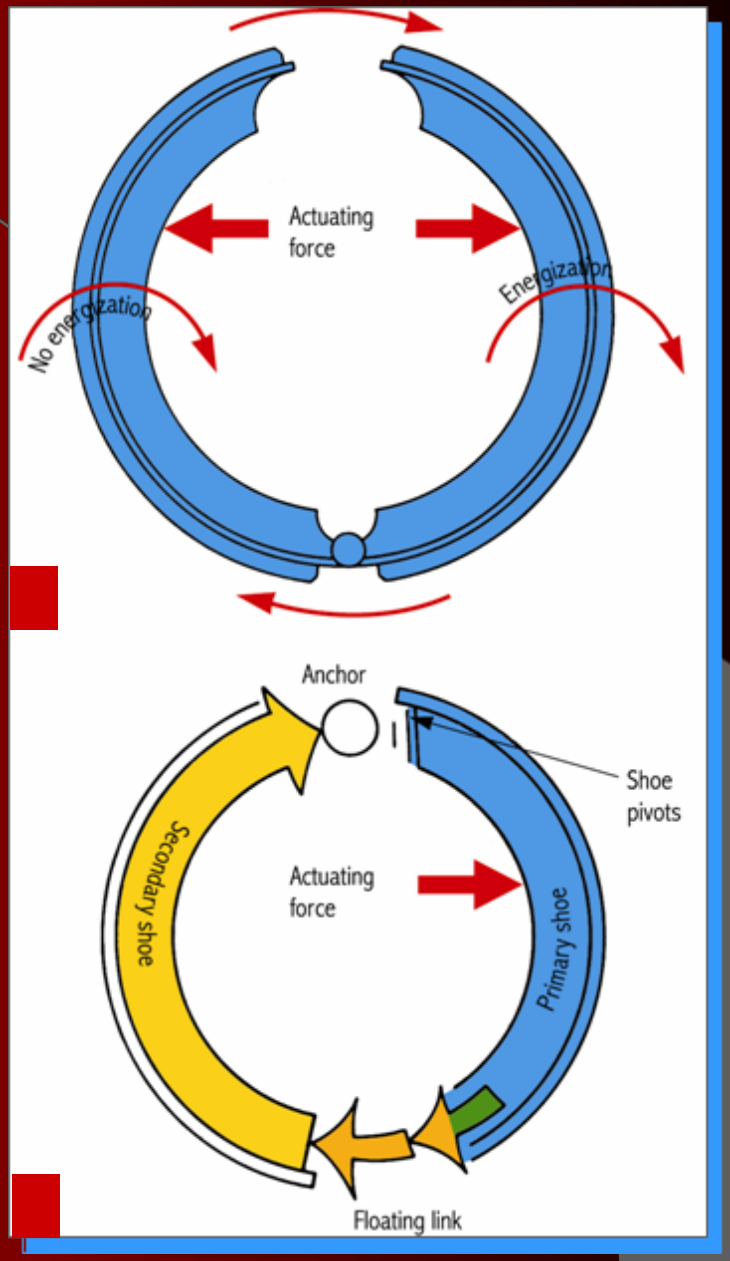
9. The PRIMARY BRAKE SHOE as a slightly shorter lining than the secondary linin

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

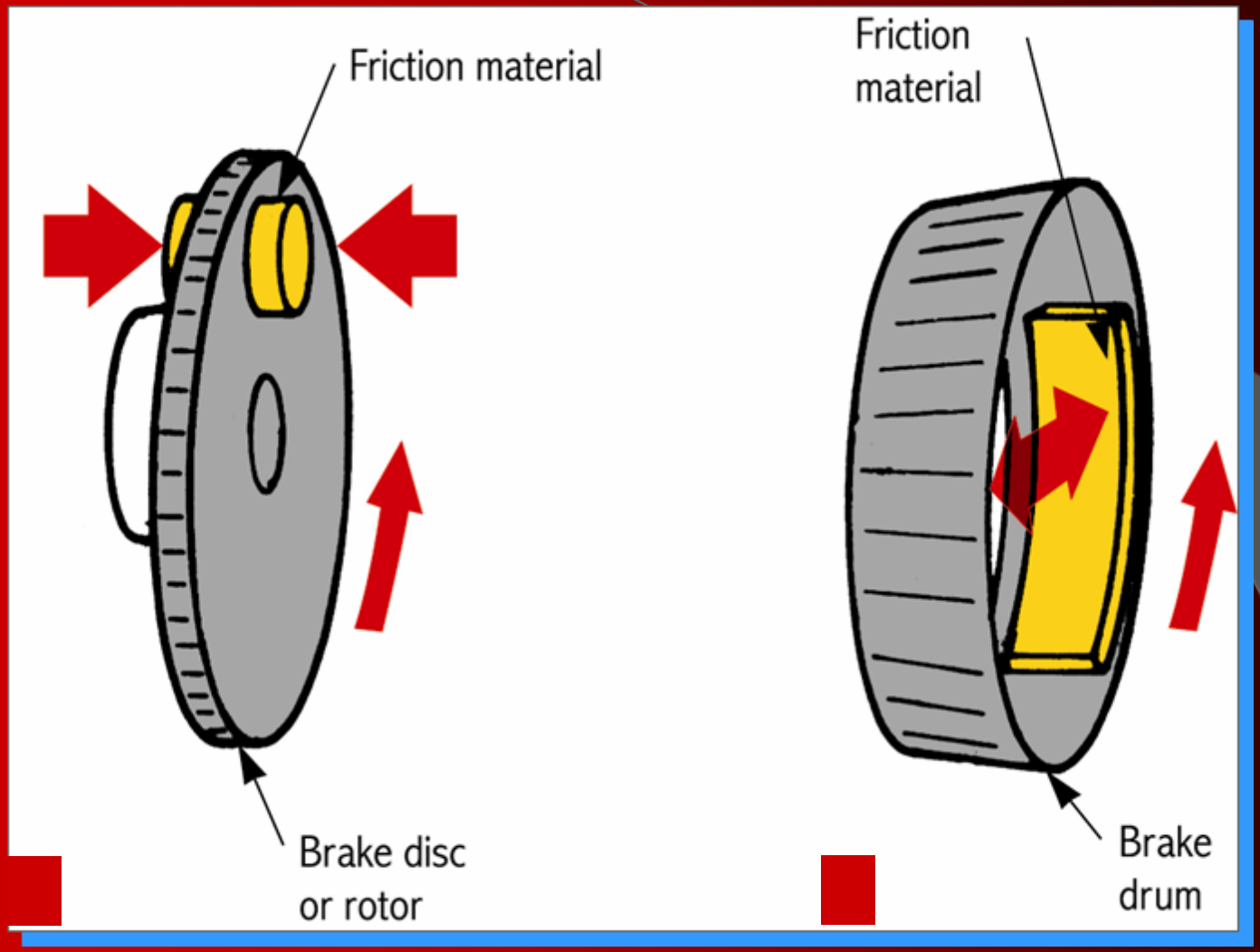
Brake Shoe Energization

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 Drum brakes

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