

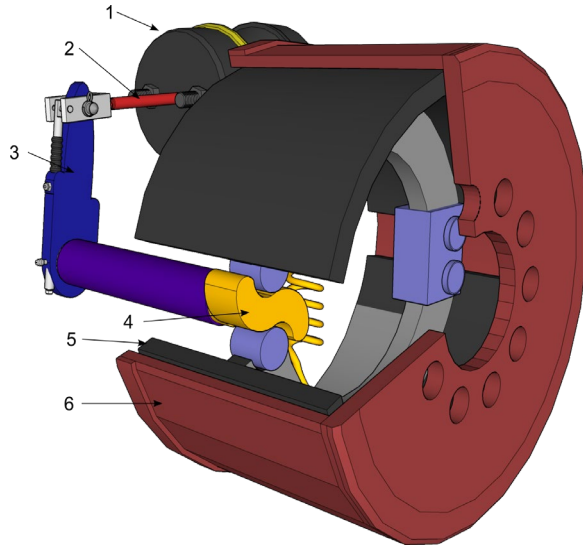


Competency 2

Brake System 2

Lesson Objective:

- Choose means to optimize the performance of the braking system.



Brake Drum Classification:

1

2

3

4

5

6

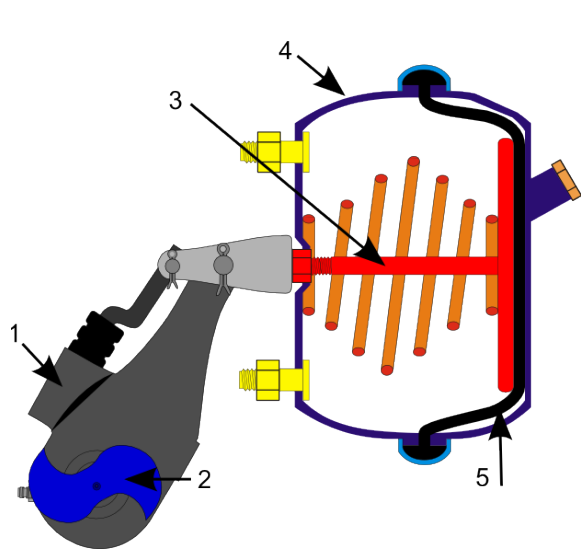
Operation:

When the driver wants to slow down or stop his vehicle, he must dissipate the kinetic energy stored in the vehicle. It is through the process of friction that this action is accomplished.

In the case of brake drums, pressure is applied to the brake linings which rub against the inside of the drum. Since the drum is in direct contact with the vehicle wheel, vehicle deceleration will occur

The oldest form of brake systems found in automobiles is brake drums.

Particularities:



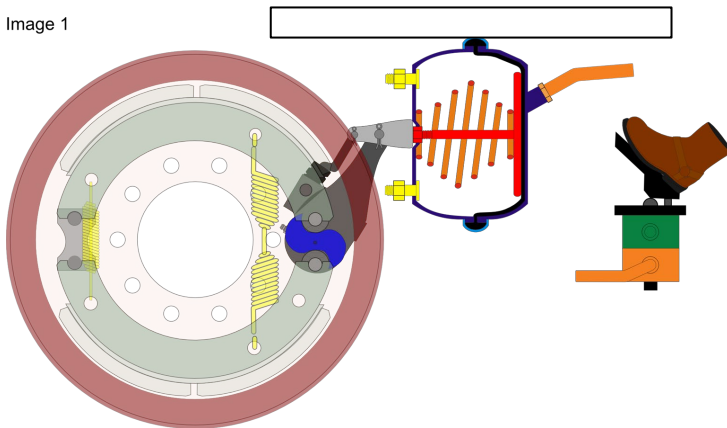
**Single Brake Actuator (Booster)
Classification:**

1
[]
2
[]
3
[]
4
[]
5
[]



(2.4.2)

Image 1

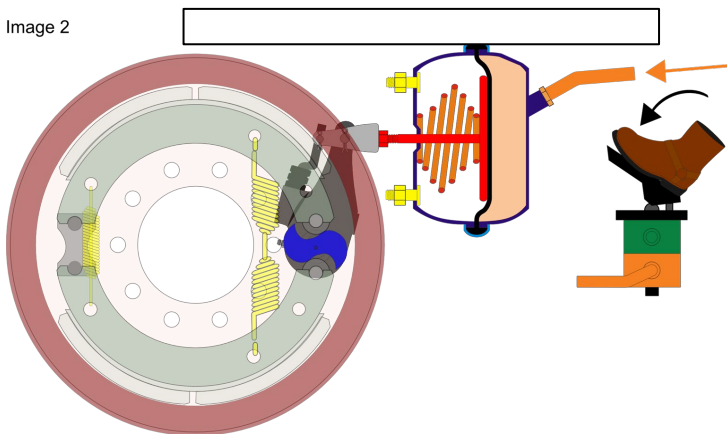


Operation of the pneumatic brake system:

When the driver presses the brake pedal, he chooses to open a valve that lets air pressure through. The harder you press the pedal the more air pressure it lets through.

The compressed air is then located to the brake actuators (Boosters) via the air lines.

Image 2

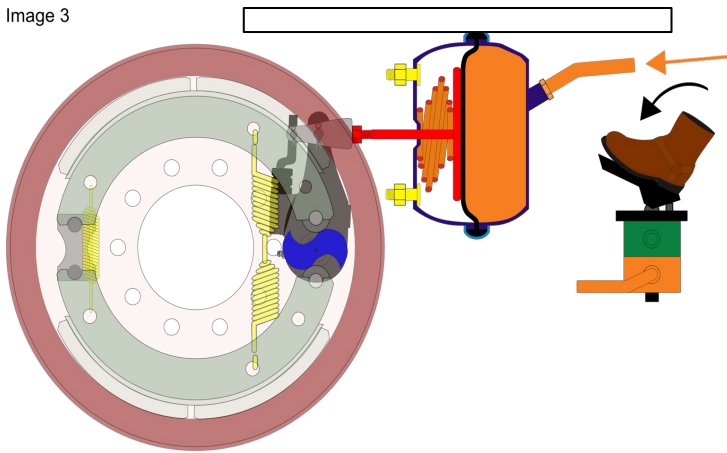


The compressed air puts pressure on the membrane (diaphragm) contained in the brake actuator (booster)



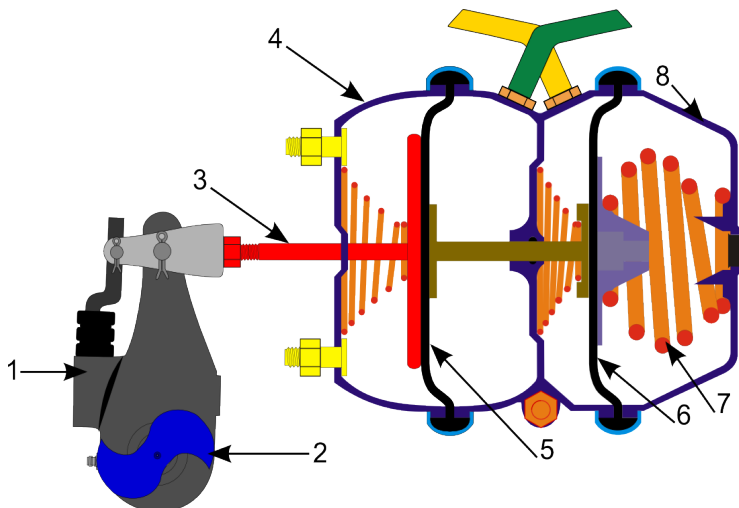
(2.4.2)

Image 3



The higher the air pressure, the more load the diaphragm exerts on the push rod, which in turn exerts pressure on the adjustable lever (slack adjuster). The adjustable lever (slack adjuster) imposes a rotational force on the “S” Camshaft. It is the action of this rotation that acts on the brake shoes and causes the brakes to apply.

**Dual Brake Actuator (Booster)
Classification:**



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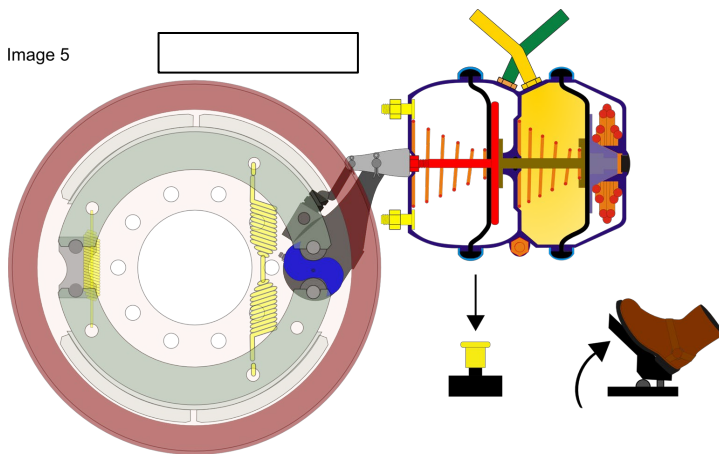
- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____
- 8 _____

Operation:

The parking brake (Emergency) is a mechanical brake, not a pneumatic one. It is by the action of a powerful spring that the application of the brakes is exerted.

The spring relies on the floating rod which rests on the push rod that applies the brakes.

Image 5

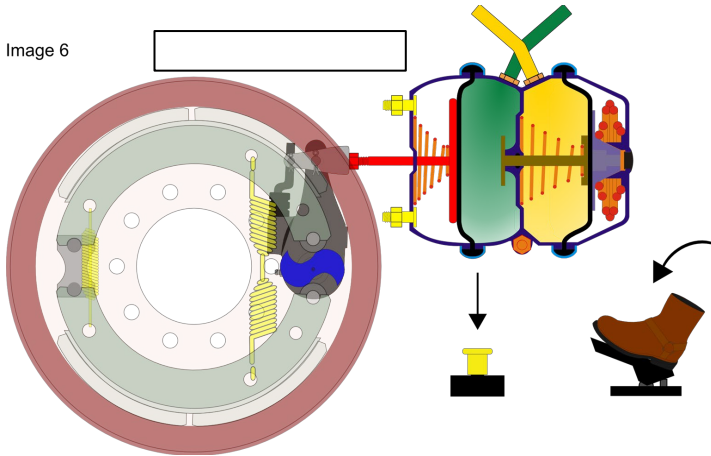


By pushing the yellow button, air enters the cylinder and pushes on the diaphragm, compressing the parking brake spring and the brakes become released.



(2.4.2)

Image 6

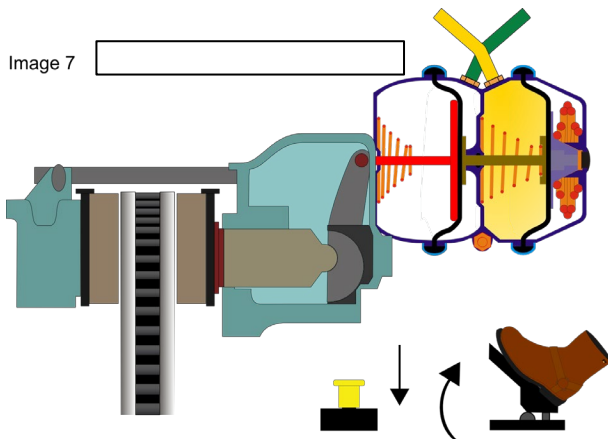


This image shows that the parking brake spring is compressed by the air pressure coming from the parking brakes yellow button and the service brake is applied by the air pressure coming from the brake pedal.

Disc Brakes:

On a vehicle equipped with pneumatic disc brakes, the role of the brake actuator (Booster) remains the same as that of brake drums. Note however, the disc brake actuator is mounted parallel to the axle rather than transverse.

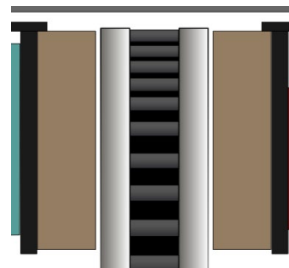
Image 7



Operation:

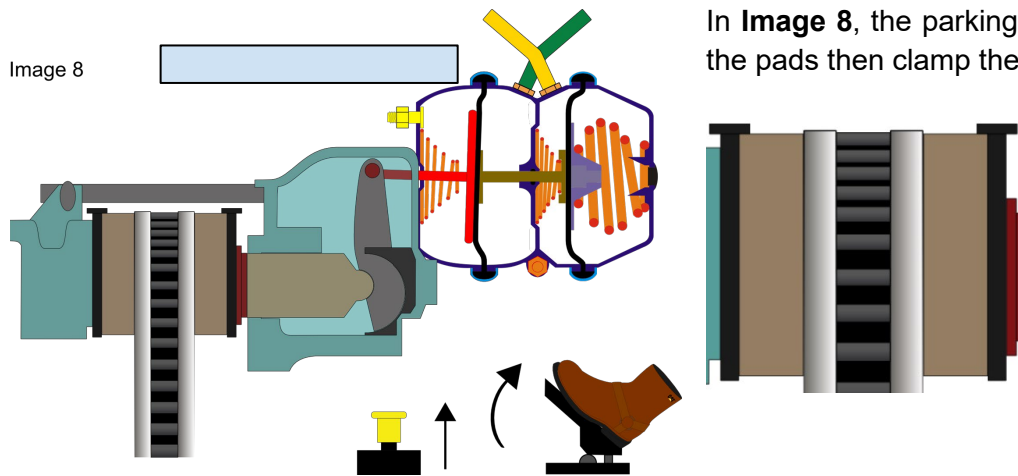
As for disc brakes, it is by squeezing the pads on each side of the disc that friction occurs and therefore slows down the vehicle.

In **Image 7**, you can see that the parking brake is released. There is free play between the pads and the disc.



(2.4.2)

Image 8

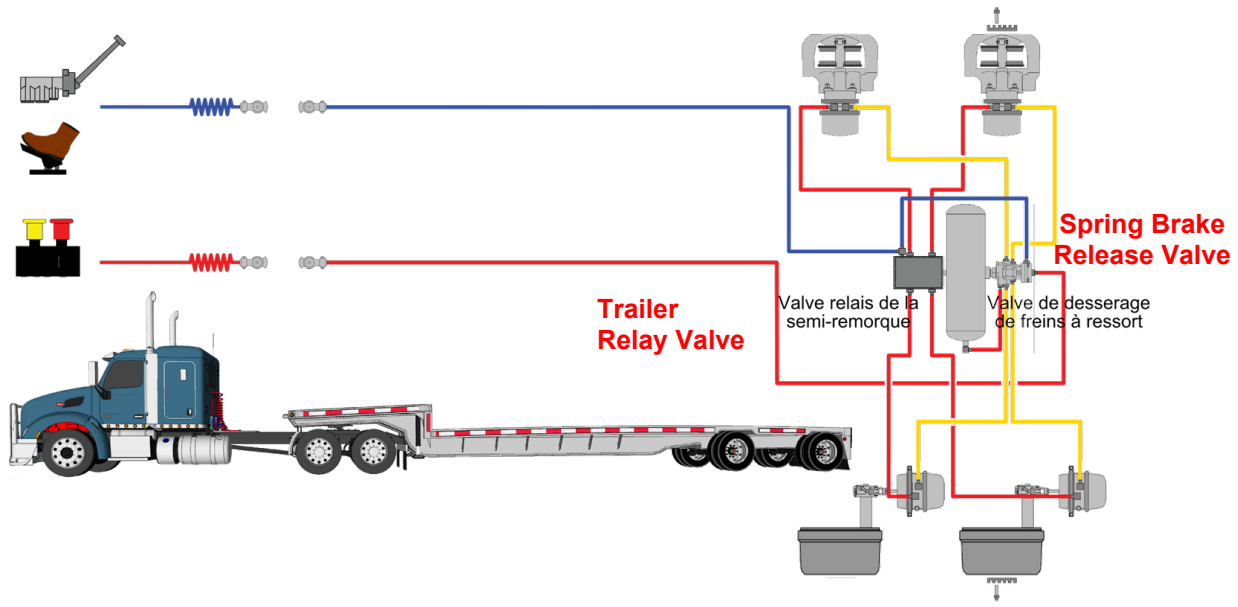


In **Image 8**, the parking brake is **applied**; the pads then clamp the disc.

Particularities:



(2.4.2)



When the red button is pushed, the semi-trailer is supplied with air. When there is sufficient pressure, the parking brakes are released. The air supply to the semi-trailer is provided by the red hose.

When the service brake is applied, either by the brake pedal or by the hand lever (Bendix), air pressure passes through the blue hose and will control the desired brake application pressure.

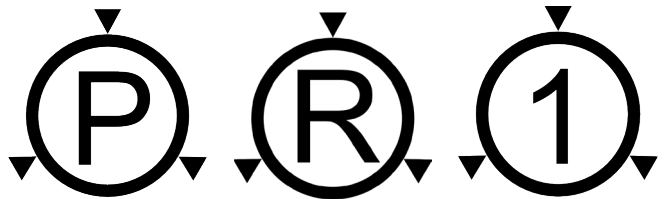


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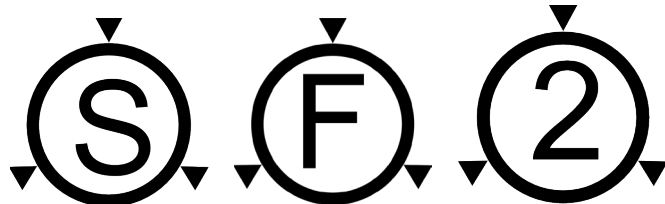
Pictograms associated with the braking systems:

The pictogram shows arrows in opposition of the circle to represent pressure.

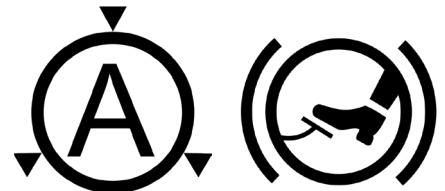
For the pneumatic system, the **primary** circuit is identified by the letter **P** or by the number **1** and **R** "Rear" (on older vehicles only). The **green** color represents the primary circuit.



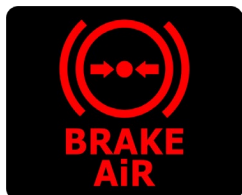
The **secondary** circuit is identified by the letter **S** or by the number **2** and **F** "Front" (on older vehicles only). The **red** color represents the secondary circuit.



As an option, some trucks may be equipped with a gauge that indicates the brake application pressure. The following pictograms accompany these dials.



Danger and warning lights:





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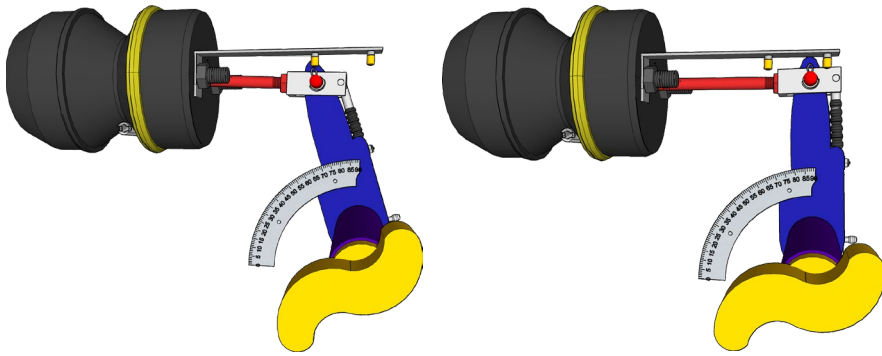
The Gauges:



Checking the brake adjustment:



(2.4.2)



Slack adjustment procedure for vehicles equipped with brake drums:



(2.4.2)



(2.4.2)

