SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB202 – AUTOMOTIVE SYSTEMS

II YEAR / III SEMESTER

Unit 5 – Braking System

Topic : Drum Brake

DRUM BRAKE

- A drum brake is a type of mechanical braking system commonly used in vehicles to slow down or stop their motion.
- This braking mechanism operates through the interaction of friction between brake shoes and the inner surface of a drum-like component attached to the wheel.
- Drum brakes have a long history and are still found in various automotive applications, though they have become less common in newer vehicles due to the emergence of more advanced disc brake systems.

COMPONENTS

- **Brake Drum:**
  - This is a cylindrical drum-shaped component that is attached to the wheel.
  - When the brake is applied, the brake shoes press against the inner surface of the drum, creating friction and slowing down the rotation of the wheel.
- **Brake Shoes:**
  - These are curved metal plates with friction material (usually brake lining or brake pads) attached to the outer surface.
  - The brake shoes are positioned inside the brake drum.
  - When the brake pedal is pressed, hydraulic pressure or mechanical force causes the brake shoes to move outward and press against the inner surface of the drum.

COMPONENTS

- **Wheel Cylinder:**
  - In hydraulic drum brake systems, the wheel cylinder is responsible for pushing the brake shoes against the drum.
  - When hydraulic pressure is applied, the wheel cylinder's pistons extend, forcing the brake shoes into contact with the drum.
- **Brake Springs:**
  - Springs are used to retract the brake shoes away from the drum when the brake pedal is released.
  - This retraction is essential to prevent constant contact and excessive wear.

WORKING

- When you press the brake pedal in your vehicle, it activates the brake master cylinder.
- The brake master cylinder is connected to the brake pedal and contains hydraulic fluid.
- The brake master cylinder pressurizes the hydraulic fluid in response to the brake pedal input.
- This pressurized hydraulic fluid is then transmitted through brake lines or hoses to the wheel cylinders
- At each wheel, the hydraulic fluid enters the wheel cylinder.

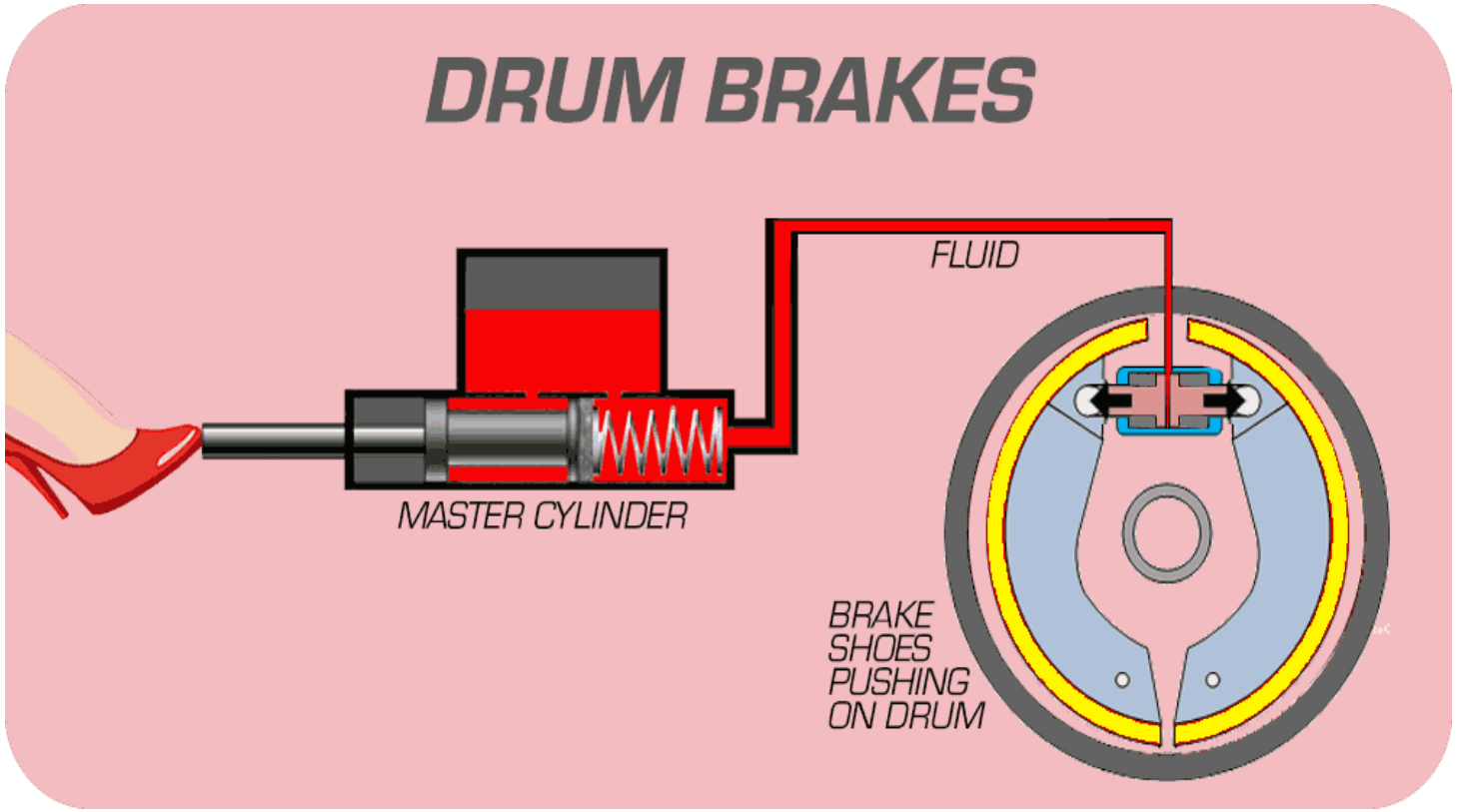
WORKING

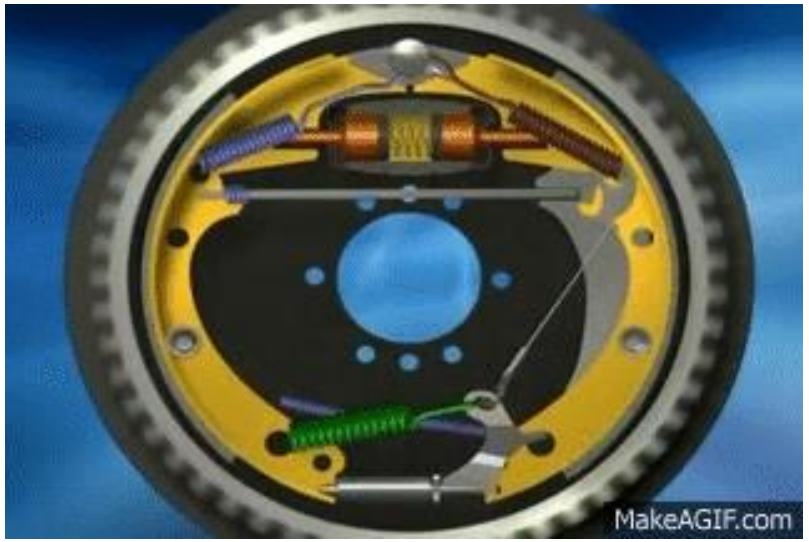
- The wheel cylinder is a component located within the drum brake assembly.
- The wheel cylinder has pistons that extend when pressurized by the hydraulic fluid.
- As the pistons extend, they push against the brake shoes.
- The brake shoes are located inside the drum, which is attached to the wheel.
- As the brake shoes are pushed outward by the wheel cylinder, they come into contac with the inner surface of the drum.
- The friction material on the brake shoes makes contact with the rotating drum.

WORKING

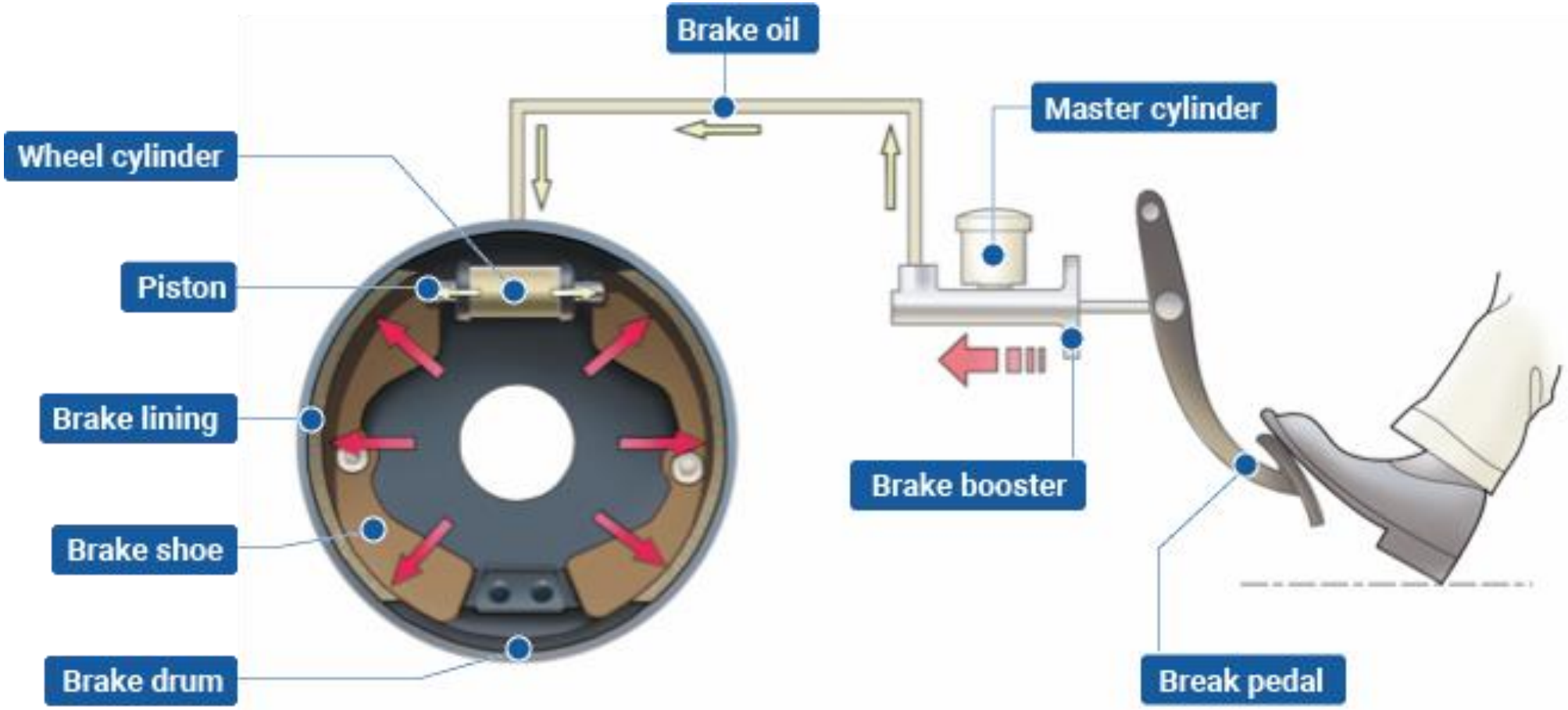
- This friction generates a braking force that opposes the rotation of the drum and, consequently, the wheel.
- The braking force applied by the brake shoes slows down the rotation of the drum and, by extension, the wheel.
- When you release the brake pedal, the hydraulic pressure in the wheel cylinder decreases.
- Return springs pull the brake shoes away from the drum, preventing continuous friction and allowing the wheel to rotate freely.

DRUM BRAKE


DRUM BRAKES
FLUID
MASTER CYLINDER
BRAKE SHOES PUSHING ON DRUM


MakeAGIF.com

DRUM BRAKE


Brake oil
Master cylinder
Wheel cylinder
Piston
Brake lining
Brake booster
Brake shoe
Brake drum
Break pedal

ADVANTAGES

- Drum brakes have simplicity in design and components
- It has cost-effective manufacturing
- The maintenance demands for drum brakes are minimal
- These brakes have extended longevity
- Smooth braking engagement
- Drum brakes have a consistent performance

DISADVANTAGES

- Drum brakes don't stop as quickly as disc brakes.
- They can become less effective after being used for a while.
- The brake lining in some drum brakes contains harmful asbestos fibres.
- Drum brakes might not work well in wet conditions.
- Without asbestos linings, they can suddenly grab due to moisture.

THANK YOU !!!