23ME704: Automobile Engineering

Unit - IV

Brakes & Steering System

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A **brake** is a mechanical device that inhibits motion by absorbing energy from a moving system] It is used for slowing or stopping a moving vehicle, wheel, axle, or to prevent its motion, most often accomplished by means of friction

Types of Brakes

DRUM BRAKE

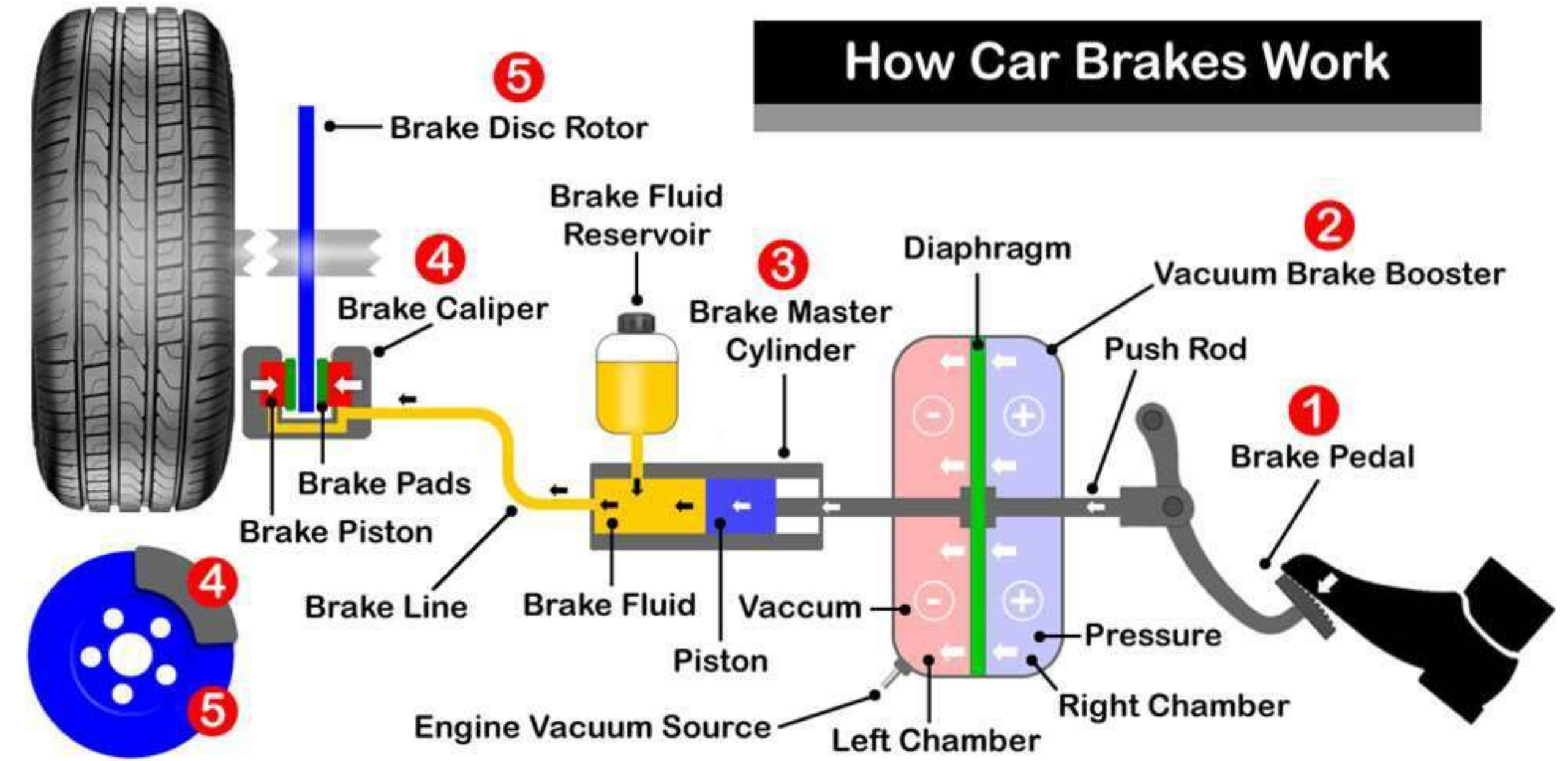
DISC BRAKE

ELECTRIC BRAKE

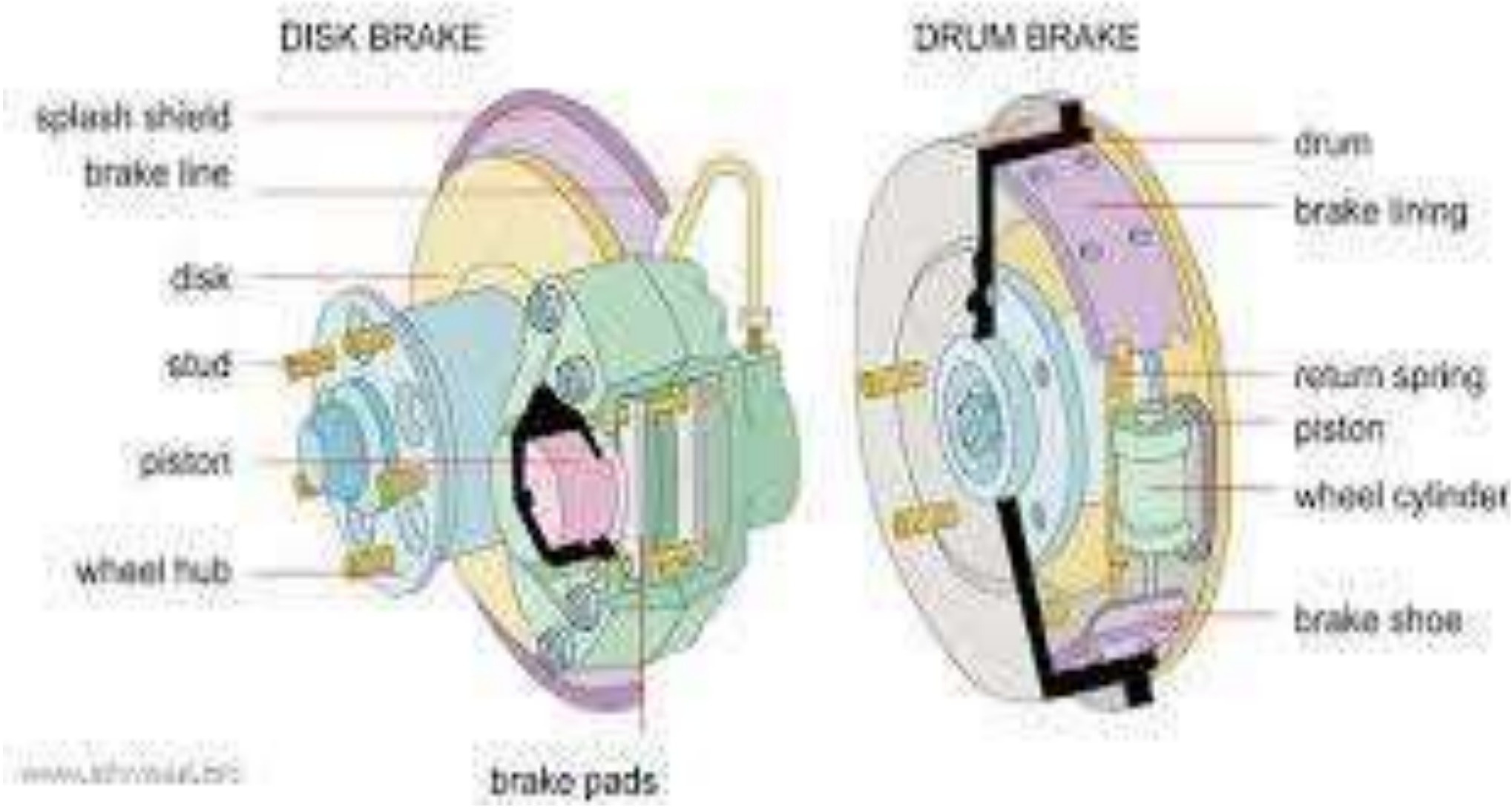
AIR BRAKE

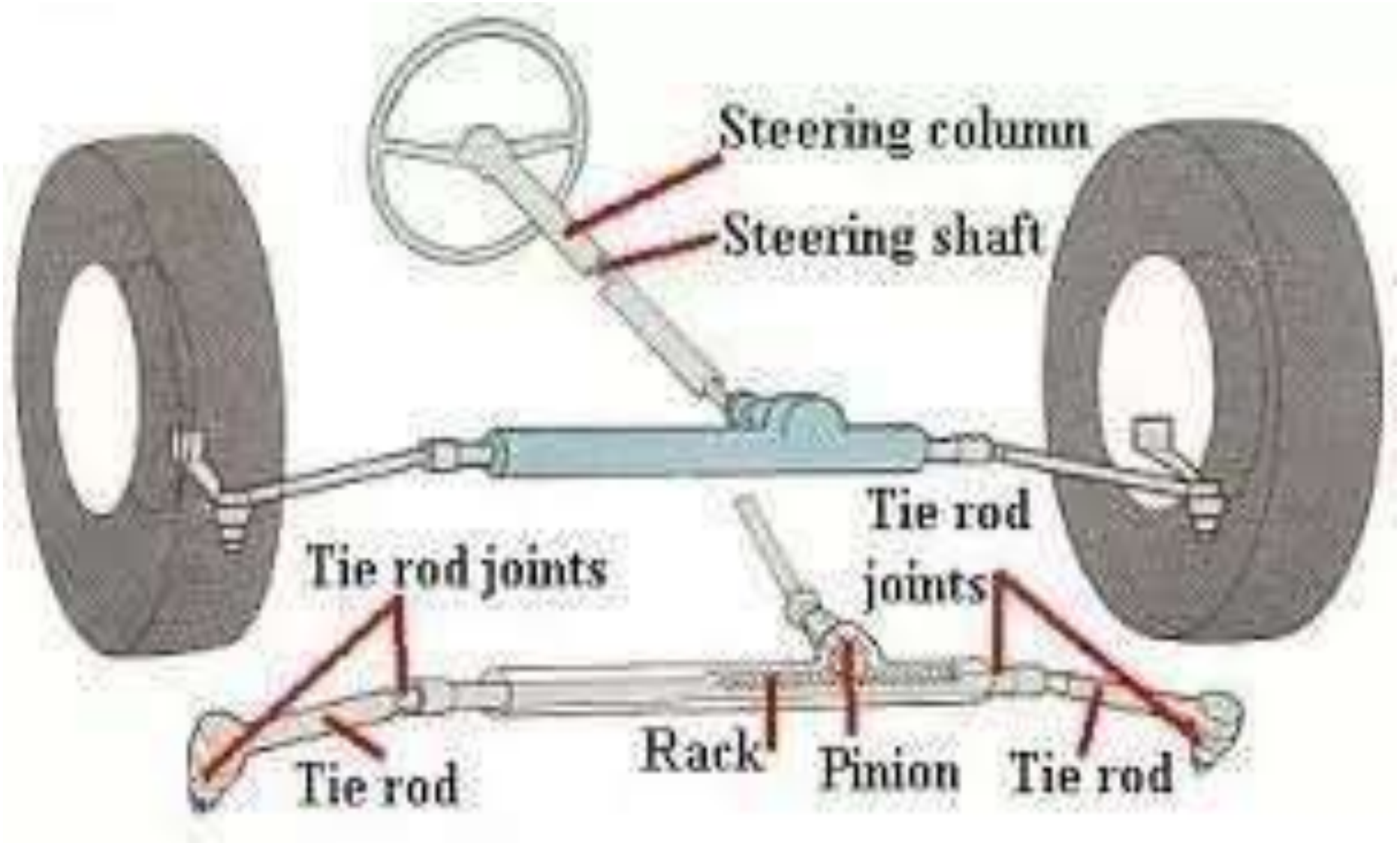
HYDRAULIC BRAKE

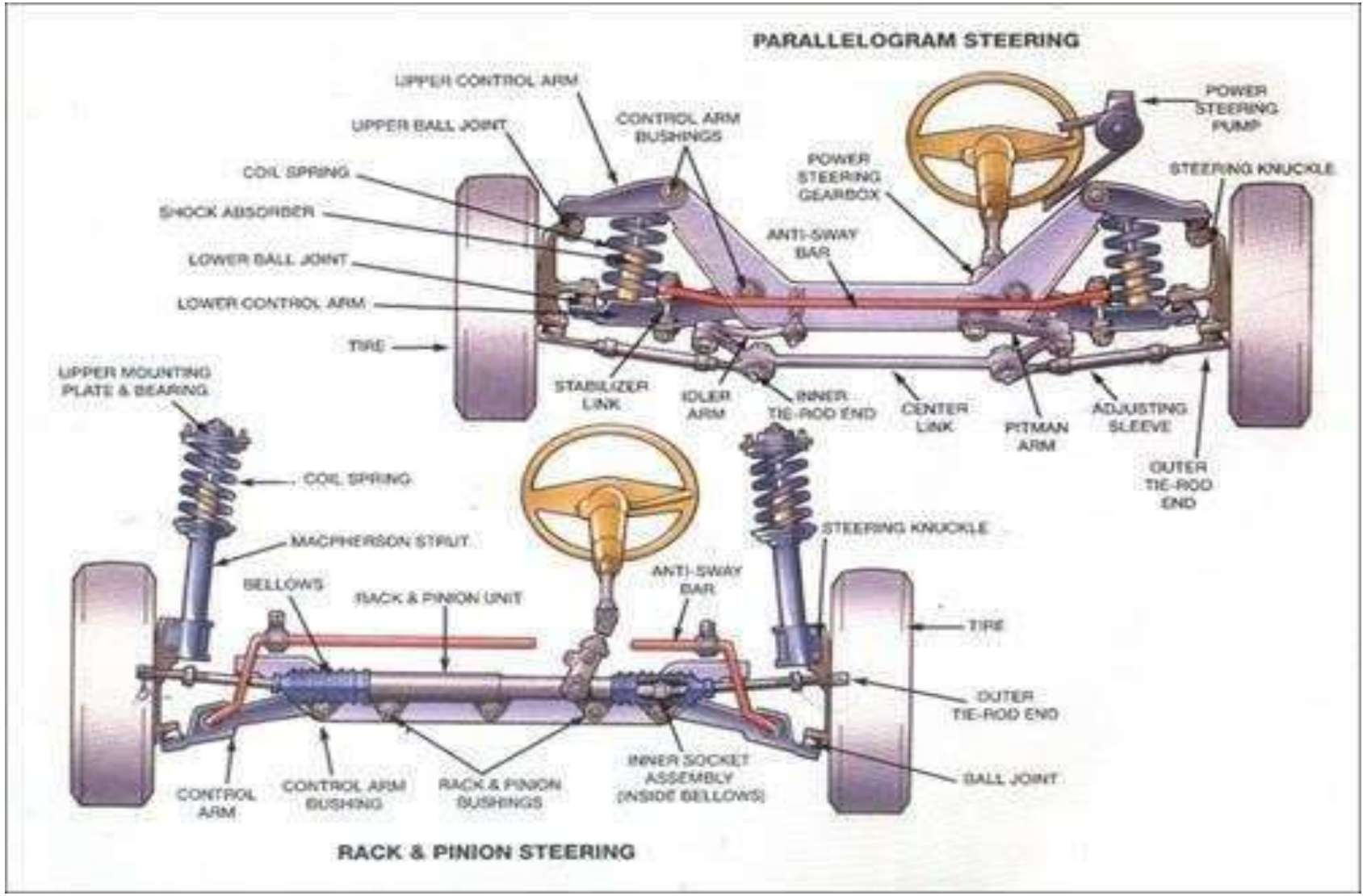
ELECTROMAGNETIC BRAKE


How Car Brakes Work
5
Brake Disc Rotor
Brake Fluid Reservoir
4
Brake Caliper
3
Brake Master Cylinder
Diaphragm
2
Vacuum Brake Booster
Push Rod
1
Brake Pedal
Brake Pads
Brake Piston
Brake Line
Brake Fluid
Piston
Vaccum
Pressure
Right Chamber
Engine Vacuum Source
Left Chamber
4
5

TYPES OF BRAKES




Steering column
Steering shaft
Tie rod joints
Tie rod
joints
Tie rod
Rack
Pinion
Tie rod


PARALLELOGRAM STEERING
UPPER CONTROL ARM
UPPER BALL JOINT
CONTROL ARM BUSHINGS
COIL SPRING
SHOCK ABSORBER
LOWER BALL JOINT
LOWER CONTROL ARM
TIRE
POWER STEERING PUMP
POWER STEERING GEARBOX
STEERING KNUCKLE
ANTI-SWAY BAR
STABILIZER LINK
IDLER ARM
INNER TIE-ROD END
CENTER LINK
PITMAN ARM
ADJUSTING SLEEVE
OUTER TIE-ROD END
UPPER MOUNTING PLATE & BEARING
COIL SPRING
MACPHERSON STRUT
BELLOWS
RACK & PINION UNIT
ANTI-SWAY BAR
STEERING KNUCKLE
TIRE
OUTER TIE-ROD END
BALL JOINT
CONTROL ARM
CONTROL ARM BUSHING
RACK & PINION BUSHINGS
INNER SOCKET ASSEMBLY (INSIDE BELLOWS)
RACK & PINION STEERING

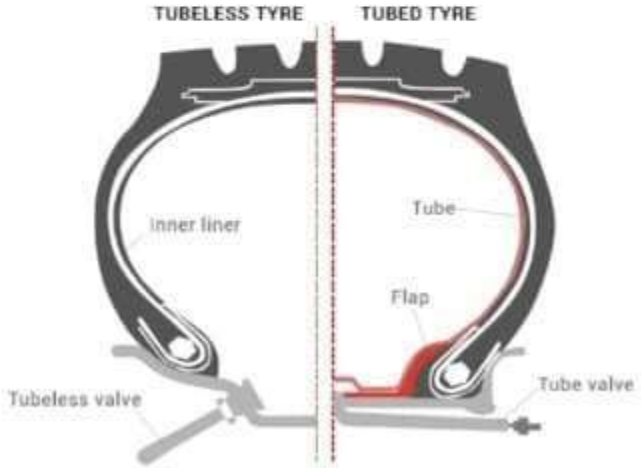
Tube Tyre

Tubeless Tyre

Cross Ply Tyre

Radial Ply Tyre

Bias Ply Tyre



Hydraulic Type

Friction Type

Single Acting

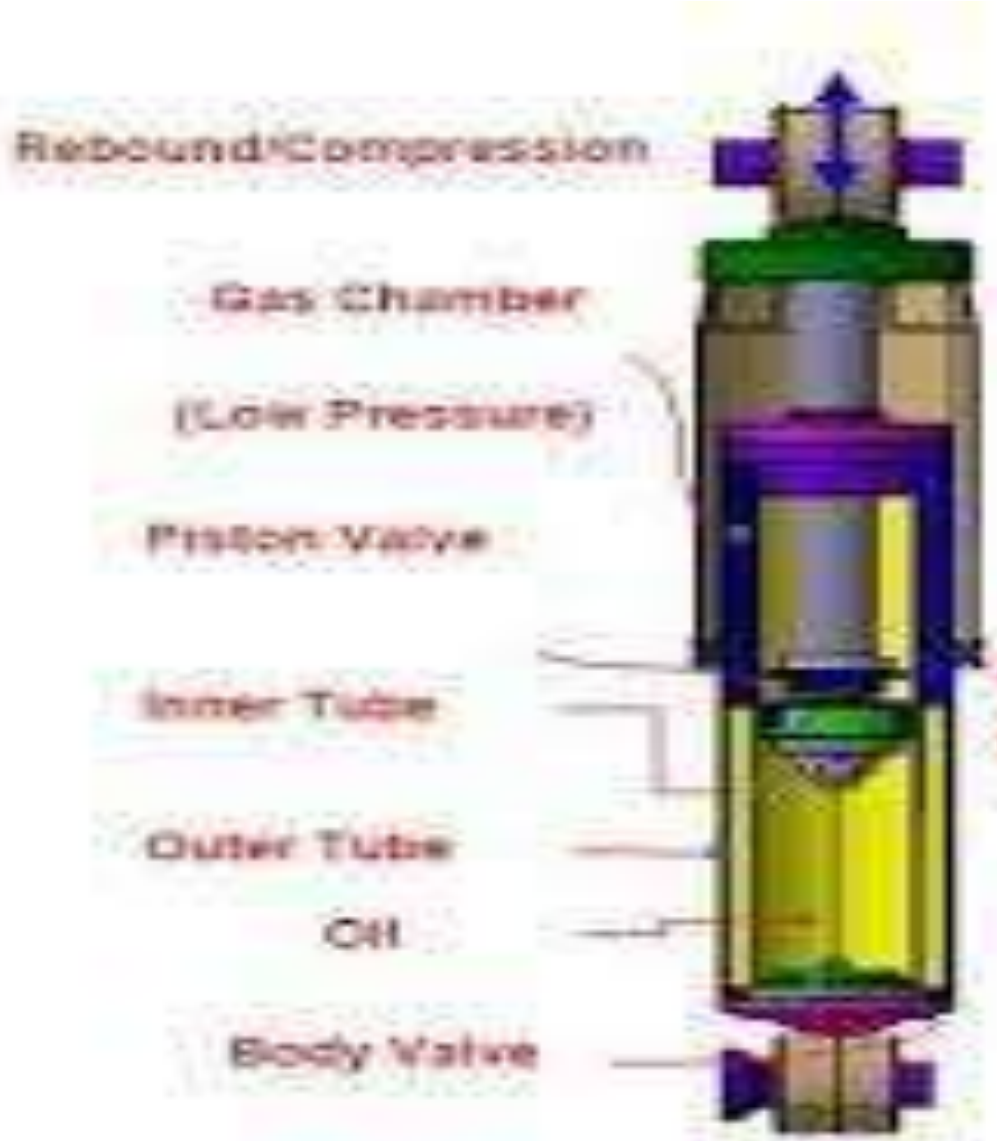
Lever Type

Double Acting

Telescopic Type

Types of Shock Absorber

Twin Tube Shock Absorber



- Consist of an inner and outer tube:
  Gas charged in outer tube
  (Gas filling pressure: 3 bar)
- Rebound damping force produced by piston valve
- Compression damping force produced by body valve