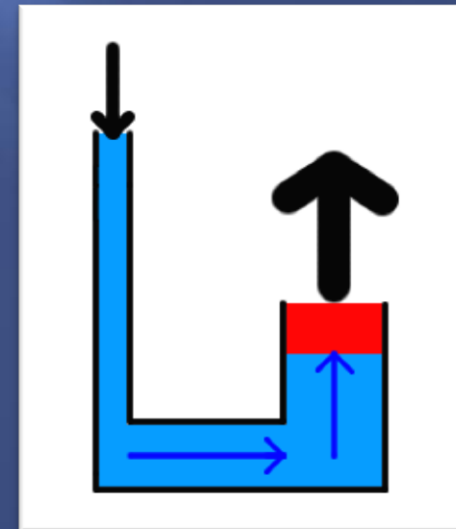
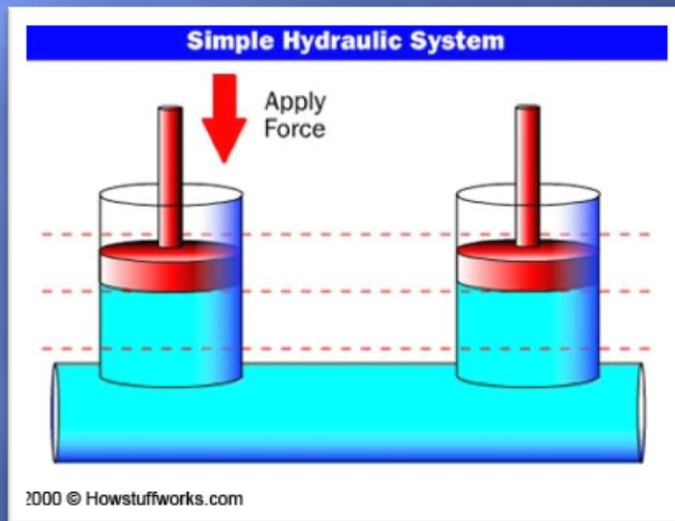


# BASIC IDEA

- Force that is applied at one point is transmitted to another point using an incompressible fluid.
- The fluid is almost always an oil of some sort.
- The force is almost always multiplied in the process.



# GENERAL FEATURES OF HYDRAULIC MACHINE

- Large appetites for hydraulic oil (100 gallons is not uncommon if there are six or eight large hydraulic cylinders used to operate the machine.)
- Large external reservoirs to hold the difference in the volume of oil displaced by the two sides of any cylinder

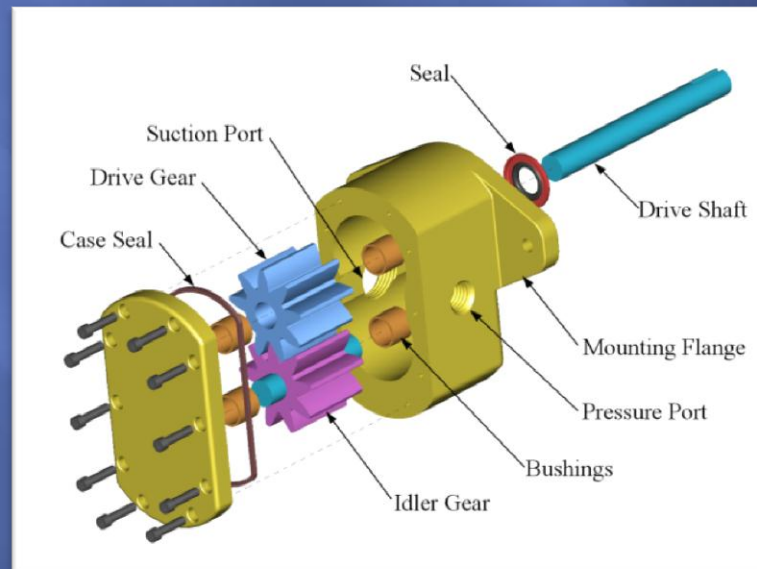
# MAIN ADVANTAGES

- A fundamental feature of hydraulic systems is the ability to apply force or torque multiplication in an easy way, independent of the distance between the input and output.
- There is no need for mechanical gears or levers.
- This can be done either by altering the effective areas in two connected cylinders or the effective displacement (cc/rev) between a pump and motor.

- Another great thing about hydraulic systems is that the pipe connecting the two cylinders can be any length and shape, allowing it to snake through all sorts of things separating the two pistons.
- The pipe can also fork, so that one master cylinder can drive more than one slave cylinder if desired.

# COMPONENTS

- Hydraulic pump
- Control valves
- Actuators
- accumulators
- reservoir
- Tubes, pipes and hoses
- filters

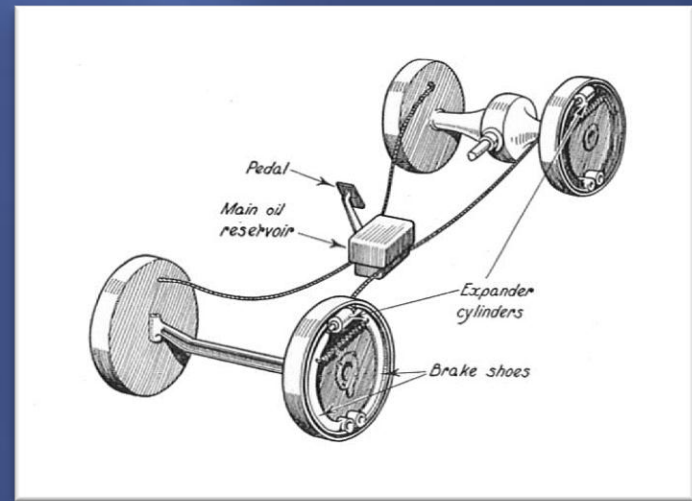
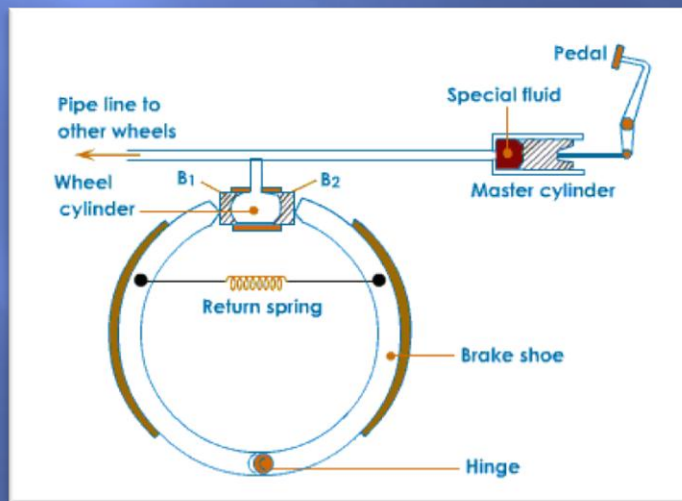
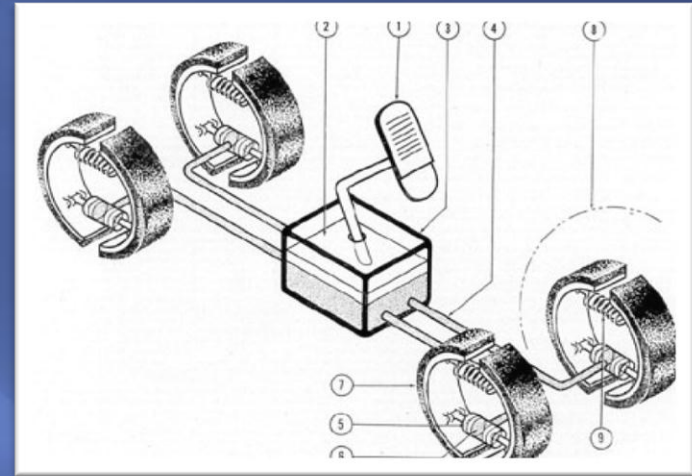
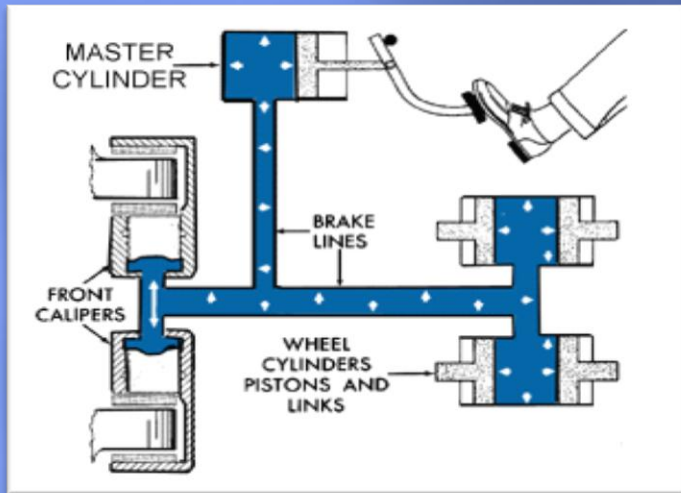


# APPLICATIONS

- In fluid power, hydraulics is used for the generation, control, and transmission of power by the use of pressurized liquids.
- Hydraulic topics range through some part of science and most of engineering modules, and cover concepts such as pipe flow, dam design, fluidics and fluid control circuitry, pumps, turbines, hydropower, computational fluid dynamics, flow measurement, river channel behavior and erosion.



# HYDRAULIC BRAKE SYSTEM





# CRANES

