

Glossary of Hydraulic Terms

Accumulator: A device for storing hydraulic energy.

Actuator: A device that converts hydraulic energy into mechanical energy. (e.g., cylinders, motors.)

Aeration: Air in the fluid.

Cant: The leaning or tilt of an object, especially sideways.

Cavitation: Air bubbles or pockets created in hydraulic lines and components by the turbulent flow of hydraulic fluid.

Cylinder: An actuator that converts hydraulic energy into linear or rotary mechanical energy. (NOTE: Rotary cylinders usually rotate less than one full revolution.)

Displacement: The volume of fluid is transferred from the pump inlet to the outlet during one revolution of the pump. Displacement is expressed in cubic inches per revolution.

Energy: The capacity for doing work.

Filter: A device that removes contaminants from the hydraulic fluid and is rated in microns.

Flash Point: The lowest temperature at which vapors from a volatile liquid will ignite.

Force: A push or pull that is exerted on an object in order to change its position or direction of movement.

Fluidity: Fluidity is the ability of the fluid to take the shape of the container it is in.

Horsepower: 1 Horsepower = 33,000 foot-pounds/one minute or 1 Horsepower = 550 foot-pounds/one second

Hydraulics: The study of fluids in motion or at rest.

Hydrodynamics: Devices or systems that use the impact or kinetic energy in the liquid to transmit power.

Hydrostatics: Devices or systems that use force applied to a confined fluid. Pressure is distributed over the area exposed to the fluid and is expressed in force per unit area (PSI).

Incompressible Fluid: A fluid which is not reduced in volume by an increase in pressure.

Laminar Flow (Streamline): The smooth and efficient flow of hydraulic fluid through hydraulic lines and components.

Line: A tube, pipe or hose for conducting a fluid.

Liquid: A fluid that is relatively incompressible. (NOTE: A gas is a fluid which is very compressible).

Mass: Represents the amount of matter in an object, and its inertia or resistance to movement.

Micron: A measure of size equal to one millionth of a meter, or approximately 0.000039 inch. Micron size is often used to describe the size of particles that a filter will remove from the fluid. For example, a 20 micron absolute filter is said to remove all particles greater than 20 microns.

Motor: An actuator that converts hydraulic energy into rotary mechanical energy.

Non-positive displacement pump: A pump in which the inlet and outlet are hydraulically connected, so that the fluid can re-circulate in the pump when pressure builds.

Pascals law: Pressure in an enclosed container is transmitted equally and undiminished to all parts of the container and acts at right angles to the enclosing walls.

Positive displacement pump: A pump that has the inlet sealed from the outlet.

Power: An amount of work (foot-pounds) done in a given amount of time (seconds or minutes).

Pressure The force exerted over a surface divided by its area.

Pump A device that creates the flow of hydraulic fluid. (NOTE: A pump converts mechanical energy into hydraulic energy.)

Radial piston pump: Where the pistons are set perpendicular to the pump's center, like sun rays.

Reciprocating motion: The movement of hydraulic fluid back and forth in cylinder bores through the use of pistons.

Reservoir: A container for keeping a supply of working fluid in a hydraulic system.

Specific gravity: The density or mass of a liquid. The specific gravity (SG) of a liquid is also its weight as compared to the weight of water in the same amount and at the same temperature.

Thermal expansion: The dimensional changes in increased volume exhibited by solids, liquids, and gases for changes in temperature while pressure is held constant.

Valve: A device that controls either pressure of fluid, direction of fluid flow, or rate of flow.

Viscosity: A measure of the fluid's resistance to flow.

Weight: A result of the gravitational force or pull on the object.

Work: Takes place when a force (in pounds) is moved through a distance (in feet).