2-Body Abrasion
A wear mechanism that occurs in sliding contacts where a hard surface contacts a softer surface producing a cutting effect.

3-Body Abrasion
A wear mechanism that occurs when hard particles become trapped between two surfaces in sliding contact producing a cutting effect.

Absolute Viscosity
The property of a fluid characterized by resistance to flow and defined as the ratio of shear stress to the rate of shear of a fluid element.

Acid Number
The property that describes the acidity of a lubricating oil, expressed by the mg of KOH required to neutralize the acid in one gram of sample. Increasing acid number is often an indication of oxidation.

Additive
A substance added to lubricating oil to either improve desirable properties, suppress undesirable properties, or impart new properties to the lubricant.

Adhesive Wear
A wear mechanism that occurs under boundary lubrication conditions when surfaces of similar metallurgy contact under high pressure causing them to weld or adhere to one another.

AGMA
American Gear Manufacturer's Association

Air Entrainment
Micro air bubbles suspended in oil.

Air Release Test
A test that indicates a lubricating oil's ability to release entrained air. Air is diffused into the oil sample for a given duration, then, the amount of time required for the entrained air to fall to .2% is recorded.

Aniline Point
The lowest temperature at which oil is completely miscible with an equal volume of analine. The test is used to express the solubility of the oil.

Anti-friction Bearing
A rolling element bearing (ball bearings, cylindrical roller, spherical roller, etc.)

Antioxidant
An additive which inhibits oxidation of the lubricating oil.

Anti-wear Additive
Additives that adhere to machine surfaces, creating a friction and wear reducing film.

API Base Oil Groups
A system of classification that categorizes all base oil types into one of 5 categories.

API Service Category
A system of classification that identifies the performance and specifications required for engine oil.

Ash Content
The amount of incombustible material in a lubricating oil.

ASTM
American Society for Testing Materials

Balanced Charge Agglomeration
A type of separation device that subjects oil to an electric charge causing insoluble material to agglomerate so that it can be filtered from the oil. (Agglomerate = collect or form into a mass or group.)

Base Number
Indicates the reserve alkalinity of an engine oil which is its ability to neutralize acidic, combustion by-products. The value is expressed in mg KOH/gm of sample.

Base Oil
The primary component of a lubricant.
Base Stock is another term for this.

Beta Rating
Indicates the performance of a filter at a given particle size. The Beta rating is the ratio of particles (of a given size) upstream of the filter to the number of particles downstream, or those that escape.

Bleed
Refers to separation of the base oil and thickener is a lubricating grease

Blotter Spot Test
A useful field test that uses a special type of paper to which a drop of oil is applied. The test can be useful for identifying certain contaminants, dispersancy, and oxidation.

Boundary Friction
The force that resists relative motion between two objects whose opposing surfaces are wetted by a lubricant but just barely separated.

Boundary Lubrication
A condition that occurs in sliding contacts when the lubricant film thickness is not sufficient to fully separate the interacting surfaces.

Bright Stock
A high viscosity base oil which has been highly refined producing a clear product.

BS&W Bowl
A bottom, sediment and water bowl is a clear cylindrical reservoir which, when attached to a low port on a reservoir, provides a convenient inspection method for gross water and other contaminants.

By-pass Filtration
Also called kidney loop filtration, is a system that circulates and filters the oil returning it directly to the reservoir. A by-pass system may or may not employ its own pump.

Centipoise
Unit of measure for viscosity.

Centistoke
Unit of measure for kinematic viscosity (mm^2 per second)

Centrifugal Separator
A centrifuge used for separating water from oil.
They work well with lubricants that have good demulsibility.
(Demulsibility = the ability to release water.)

Circulating Lubrication
A lubricant delivery system that uses a pump to distribute oil to the lubricated components.

Coalescer
A special type of filter designed to remove water from oil by causing water droplets to coalesce and sink so that they can be decanted.

Coefficient of Friction
The ratio of the friction force between two bodies to the perpendicular force between them.

Complex Grease Thickener
A metal soap grease thickener which uses both short and long chain fatty acids. Complex thickeners typically out-perform simple soap thickeners.

Compounded Oil
A lubricant with fatty acid lubricity agent. They are typically used in steam cylinders and worm gears.

Consistency
A property of grease that indicates its relative stiffness.

Constant Level Oiler
A device used with small bath lubricated components to maintain the proper oil level by adding makeup oil when necessary.

Contamination
Any foreign substance in a lubricant.

Copper Corrosion Test
A test that indicates the lubricant's ability to prevent corrosion of a copper surface.

Corrosion Inhibitor
An additive that prevents or retards corrosion.

Demulsibility
A lubricant's tendency to separate from water.

Density
Mass per volume.

Desiccant Breather
A filter breather designed to exclude both particles and moisture from air that enters a reservoir.

Detergent
An additive that removes and prevents deposits and also neutralizes acidic by-products.

Dispersant
An additive that encapsulates soot particles to prevent agglomeration and keep them suspended.

Drip Oiler
An all loss applicator that drips oil directly onto a lubricated component. The flow rate is adjusted with a needle valve.

Drop Point
The temperature at which a drop of fluid grease will drip from a funnel. Basically the melting point of grease.

Dry Sump Circulating System
A lubricant distribution system where a pump is used to apply oil directly to lubricated components and it is returned to a separate reservoir.

Elasto-Hydrodynamic Lubrication
A type of lubricating film that takes place in rolling contacts where the oil's viscosity is increased temporarily due to the high contact force causing elastic deformation of the mating surfaces.

Electrostatic Separator
A type of separation device that subjects oil to an electric charge causing insoluble material to cling to a charged plate.

Emulsibility
The tendency of an oil to entrain water.

Emulsion
A mixture of non-dissolved water and oil.

Erosive Wear
A wear mechanism that occurs when hard particles strike machine surfaces.

Extreme Pressure Lubricant
A lubricant designed to work under boundary lubrication conditions, preventing adhesion between contacting surfaces.
(AKA EP Lubricant)

Filter
A device used for separating contamination from oil.

Fire Point
The temperature at which enough oil will vaporize to produce sustained flame when exposed to an ignition source.

Flash Point
The temperature at which enough oil will vaporize to create an ignitable mixture which will "flash" when exposed to an ignition source.

Fluid Friction
The friction that occurs between oil molecules.

Foam Stability Test
A test that indicates an oil's tendency to create stable foam.

Four Ball EP test
A test that uses 4 contacting ball bearings elements to which increasing force is applied. When the elements weld together, the lubricant fails. The test is designed to mimic adhesive wear.

Four Ball Wear Test
A test that uses 4 contacting ball bearing elements to which a constant force is applied. When the test is finished the depth of the wear scar is measured and reported. This test is used for anti-wear lubricants.

Friction
The force which resists motion between two bodies as they move relative to one another.

Full Flow Filtration
Filtration that is in the circulating loop of the lubrication system.

FZG Four Square Test
A test that indicates the film strength of a gear oil.

Grease
A dispersion of a thickening agent in a liquid lubricant.

Hydrodynamic Lubrication
Full fluid lubricating film that occurs in sliding contacts and completely separates mating surfaces.

Hydrolysis
Decomposition of additives or base oils in the presence of water which usually produces acids.

ISO
International Standards Organization

ISO Contamination Code
A standard method for quantifying particle contamination in a lubricating oil. It is expressed with 3 range numbers which indicates the concentration of particles per ml of sample for 4, 6, and 14 micron particles, respectively. (R4/R6/R14)

Kinematic Viscosity
The absolute viscosity of a fluid divided by its specific gravity.
A practical definition is a fluid's resistance to flow. Kinematic viscosity is expressed in centistokes which is a mm^2/second.

Micro Dieseling
A type of thermal degradation that occurs when entrained air bubbles are compressed, causing them to become very hot. This heat essentially burns the oil surrounding the bubbles.

Micron
AKA Micrometer - the millionth part of a meter.
There are 25,400 microns in one inch.

Mineral Oil
A lubricant base stock that is extracted from crude and refined.

Mixed-Film Friction
The type of friction that occurs in sliding contacts when the oil film thickness is just sufficient to separate mating surfaces. Under this condition some surface contact is possible.

Mixed-Film Lubrication
A lubricating film that occurs in sliding contacts when the oil film thickness is just sufficient to separate mating surfaces. Under this condition, some surface contact is possible.

Multi-grade Oil
A VI improved oil that functions as a higher viscosity grade at high temperatures and a lower viscosity grade at low temperatures.

Naphthenic Oil
Base oils used primarily in refrigeration oils due to their low pour point.

Nitration
The result of oil burning in an oxygen poor environment. Nitration in the oil often indicates thermal degradation.

NLGI
National Lubricating Grease Institute

NLGI Grade
Specifies the consistency of a grease.

Oil Mist (pure)
A lubricant delivery system that generates a very fine mist which is transported to reclassifiers when it is condensed and applied directly to elements bearings. Benefits of this type of system include: lower temperatures, increased efficiency, and excellent contamination control.

Oil Mist (purge)
A mist system that supplies oil to a bath lubricated bearing that is equipped with a constant level device. The primary benefit of this system is contamination control.

Oil Ring
Often used with bath lubricated journal bearings, the oil ring rides on the journal and helps to distribute oil from the sump.

Operating Viscosity
The actual viscosity of a lubricating oil at operating temperature.

Oxidation
A chemical reaction between anything and oxygen. Base Oil and some additives are prone to oxidation.

Oxidation Inhibitors
Additives that are designed to prevent or reduce oxidation of the base oil.

Oxidation Stability
A lubricants ability to resist oxidizing.

Panel Coker Test
A test that measures the amount of deposits left on a hot panel when oil is splashed onto it. Indicates thermal stability and deposit forming tendency.

Paraffinic Oil
A type of base oil made up of branched-chain hydrocarbons that offer good overall performance properties.

Parallel Distribution
A type of automatic grease application system where each applicator operates independently from the others.

Particle Scrubbing
An additive loss mechanism where additives adhere to particles in the oil where they are effectively removed from service.

Penetration Number
A unit of measure used to represent the consistency of a grease when tested in a cone pentameter. 1 penetration number = 0.1 mm

Polyalkylene Glycol
A type of synthetic base stock that offers excellent performance including better lubricity than other base stocks. PAG is often used in compressor lubricants.

Polyalphaolephin
Also called PAO or SHC (synthetic hydrocarbon) is the most common type of synthetic base stock exhibiting excellent performance in most categories.

Polyurea
A type of non-soap grease thickener which has excellent performance in electric motor applications.

Pour Point
The lowest temperature at which a lubricating oil will flow.

Predictive Maintenance
A maintenance strategy that utilizes condition monitoring tools to identify incipient failures allowing for planned corrective action thereby minimizing the impact of failure on operations.

Pressure/Viscosity Coefficient
The property of a base oil that describes how its viscosity changes with pressure.

Preventative Maintenance
A maintenance strategy that utilizes periodic maintenance actions (such as an oil change) to prevent failure of a machine.

Proactive Maintenance
A maintenance strategy that utilizes condition monitoring tools to identify root causes of machine failures so that they may be eliminated thereby extending the life of machine components.

R&O
A lightly additized rust and oxidation inhibited oil that contains no AW or EP additives.

Reactive Maintenance
Also called breakdown maintenance or "run to failure" is a maintenance strategy that employs no condition monitoring or schedule maintenance activities.

Rest Prevention test
A test that indicates an oil's ability to prevent rust on a ferrous surface.

Roll Stability
Indicates a grease's ability to maintain consistency when subjected to rolling stresses.

Rolling Friction
The type of friction that occurs in rolling contacts.

RPVOT
(rotating pressure vessel oxidation test) A test that indicates the oxidative stability of a lubricating oil. RPVOT is a useful test to determine the RUL (remaining useful life) of an in service lubricant.

SAE
Society of Automotive Engineers

Saybolt Universal Second
Also called SUS or SSU is unit of saybolt universal viscosity which expresses the time in seconds required for a volume of fluid to flow through an orifice of given dimensions.

Semi-fluid Grease
A soft grease with a small amount of thickener which will flow at room temperature. Includes NLGI grades 000, 00, and 0.

Series Distribution
A type of automatic grease application system where each applicator operates in series or in a progressive fashion.

Shear Stability Test
Indicates a grease's ability to maintain consistency when subjected to shearing stresses.

Sliding Friction
The type of friction that occurs in sliding contacts when no lubricating film is present.

Specific Gravity
A dimensionless property that relates the density of a substance to that of water. The ratio of a fluid's density to that of water. The specific gravity of water = 1.0

Synthetic Lubricant
A finished lubricant that uses a synthetic base stock.

Thermal Stability
A lubricant's ability to resist thermal degradation when exposed to high temperatures.

Thixotropy
A property of a grease to become soft when subjected to mechanical stress, then return to its original consistency when left to rest.

Timken Test
A test that indicates the film strength of an EP lubricant.

Turbine Oil Stability Test
A test that indicates the oxidative stability of a lubricating oil.

Vacuum Dehydrator
A type of separation technology that utilizes vacuum distillation to remove water from lubricating oil. Vacuum dehydration is capable of getting oil very dry, often to less than 20ppm.

Viscosity Index
A dimensionless property that describes the rate of change of viscosity with respect to change in temperature.

Viscosity Index Improver
An additive that increases the VI of a lubricant at higher temperatures. This additive becomes active as temperature increase causing the molecules to change shape and expand.

Water spray Off
A test that indicates a grease's ability to resist removal from a direct water spray.

Water Washing
An additive loss mechanism where additives adhere to emulsified water droplets in the oil where they are effectively removed from service.

Water Washout
A test that indicates a grease's ability to resist removal from an indirect water spray.

Wet Sump Circulating System
A circulating lubrication system where the oil reservoir is maintained in the lubricated component such as an engine.

Wheel Bearing Leakage
A test that indicates a grease's ability to stay in place in a wheel bearing apparatus where it is subjected to centrifugal force.

Wick Oiler
A type of all-loss oil applicator where oil drips through a wick and is applied directly to a lubricated component. The flow is adjusted by changing the length of the exposed wick.

Worked Penetration
The penetration number of a grease in a cone penetrometer after being subject to 60 strokes in a grease worker.
==========
Belt Tension Gauge
tool used to measure the tightness, or tension, of different vehicle belts after installation.

Bleed Valve
sometimes provided to help remove trapped air when refilling the cooling system.

Block and Head Tester
test tool that determines if combustion gases are present in engine coolant. It is also called a block tester or combustion leak tester.

Combustion Leak Test
test that checks for the presence of combustion gases in engine coolant.

Coolant Flushing Machine
automatically drains, flushes, and refills, a car's engine cooling system.

Coolant Stregth
a measure of the concentration of antifreeze compared to the concentration of water. this ratio determines the freeze-up protection of the coolant.

Coolant Test Strips
product used to check coolant strength and pH level.

Coolant Voltage Test
test using a digital multimeter to measure voltage generated by antifreeze. this indicates the general age and condition of the antifreeze solution.

Cooling System Bleed Screw
screw provided to allow for removal of trapped air when refilling the cooling system.

Cooling System Diagnosis Chart
vehicle service manual chart showing which tests and repairs are needed for different cooling system problems, and their proper sequence.

Cooling System Hydrometer
tool used to measure the freezing point of the cooling system antifreeze solution. a coolant sample is pulled up into the clear scaled measuring reservoir and graded based on freezing point.

Cooling System Pressure Test
test that uses low air pressure forced into a sealed vehicle liquid-cooling system to locate leaks.

Expansion Freeze Plug
type of freeze plug available for tight quarters. an expansion freeze plug is placed into an engine hole and a screw is tightened on the plug, allowing it to expand and lock in the hole.

Flushing
process that drains old fluid from a vehicle system. a cleaning chemical is then sometimes run through the system before new fluid is added.

Freeze Plug
a stamped metal disc pressed or screwed in the holes where the engine core was removed from the casting. the plug allows for expansion if coolant should freeze, preventing a cracked casting. it is also called a core plug.

Gauge Tester
variable resistor test tool used to check gauge and sending unit operation.

Hot Spot
area in an engine suffering from an abnormal buildup of combustion heat.

Internal Engine Leak
engine problem that can be represented by oil in a coolant reservoir tank.

Overcooling
cooling system problem that occurs when an engine fails to reach full operating temperature; causing poor or sluggish engine performance.

Overheating
cooling system problem that occurs when an engine operating temperature is too high, warning light is on, temperature gauge shows hot, or coolant and steam blow out of the overflow.

Pressure Tester
hand-operated air pump used to pressurize the cooling system for leak detection.

Radiator Cap Pressure Test
test that measures the cap opening pressure and checks the condition of the sealing washer.

Refractometer
handheld type of coolant strength measuring device in which a drop of coolant is placed on a scaled measuring window and then examined through an eye piece.

Thermostat Housing
a pot metal, aluminum, or plastic enclosure that holds a thermostat on an engine.

Thermostat Housing Seal
used instead of a gasket with some engine designs.

Stehoscope
tool used to listen for worn, noisy water pump bearings.

==========
Centrifugal pump:
A non-positive displacement pump that moves a varying amount of fluid with each rotation using an impeller blade.

Conditioning:
The process of removing contaminants, such as dirt and moisture from hydraulic fluid and air.

Desiccant:
A very dry substance used in filters which is designed to attract moisture.

Direction Control Device:
Devices used to start, stop, or reverse fluid flow without causing a significant change in pressure or flow rate.

Filter:
A conditioning device that removes very small pieces of debris and is typically made of some porous medium, such as a paper, felt, or very fine wire mesh.

Flow control device:
A control device that alters the volume or flow rate of the fluid.

Flow indicator:
A device used to test flow rates from pumps and at the inlet and outlets ports of actuators.

Fluid Motor:
A type of motor that converts the force of a moving fluid into rotary motion through the use of vanes, gears, or pistons.
Fluid Power System:
A power system that uses air or liquid, or a combination of both, to transfer power.

Force:
Any factor that tends to produce or modify the motion of an object; normally expressed in units of weight.

FRL unit:
A conditioning device used in many pneumatic systems that combines the air filter, regulator, and lubricator components.

Heat exchanger:
A device that cools the fluid in a hydraulic system to maintain a constant fluid temperature.

Inertia:
The resistance of an object to be moved.

Lubricator:
A conditioning device used in pneumatic systems that adds a small quantity of oil to the air after it leaves the regulator.

Metering:
Controlling the rate of fluid flow.

Non-positive displacement pump:
A type of fluid pump that moves fluid with each rotation of the impeller blades. The amount of fluid that passes through the pump with each rotation varies.

Pascal's Law:
A principle of fluid properties that states when pressure is applied to a confined fluid, the pressure is transmitted, undiminished, throughout the fluid. Additionally, this pressure acts on all surfaces of the container, at right angles to those surfaces. Discovered by Blaise Pascal.
Positive displacement pump:
A type of fluid pump that moves a definite amount of fluid through the pump during each revolution.

Power:
A measurement that considers the amount of work accomplished in relation to the amount of time taken to perform the work.

Pressure:
The amount of force applied to a specific area; often expressed in pounds per square inch (lb./in^2 or psi) or as newtons per square meter (N/m^2).

Pressure indicator:
A device that monitors the fluid pressure within a hydraulic system.

Pressure regulator valve:
A type of valve that allows the air pressure in a pneumatic system to be adjusted to a specific level.

Pressure relief valve:
A type of valve that controls the pressure in a system. In a hydraulic system, the pressure relief valve allows fluid flow back into the reservoir when the pressure rises to a dangerous level. In a pneumatic system, pressure relief valves release excess air in the system into the atmosphere.

Prime mover:
The component of a power system that provides the initial power for movement in the system.

Reciprocating pump:
A type of positive displacement pump that uses the reciprocating action of a moving piston to move fluid in an out of a chamber.

Resistance:
Friction that forms in a fluid system and causes a decrease of power from the input to the output.

Rotary gear pump:
A type of positive displacement pump that uses rotary motion to produce pumping action.

Rotary vane pump:
A type of positive displacement pump that uses a series of sliding vanes to move fluids.

Strainer:
An inline device that captures large particles of foreign matter within hydraulic systems.

Turbulence:
Describes how fluid moves through a fluid power system. Conditions such as size and smoothness of internal surfaces, temperature of the fluid, and the location and number of valves and fittings may cause irregular flow characteristics.

Weight:
The gravitational force exerted on a body by the earth; expressed in pounds(lb.) in the U.S. customary measurement system and in newtons (N) in the metric system.

==========

Absolute Pressurehe
total pressure exerted on a system, including atmospheric pressure.

Atmospheric Pressure
The pressure exerted by the weight of the atmosphere above the point of measurement.

Boyle's Law
The volume of a gas at constant temperature varies inversely with the pressure exerted on it.

Charles' Law
States that the volume of a confined gas is proportional to its temperature, provided its pressure remains constant.

Check Valve
A valve that allows flow in one direction but prevents flow in the opposite direction.

Compressor
An air pump that compresses air into a receiver tank.

Crank
A part of an axle or shaft bent out at right angles, for converting reciprocal to circular motion and vice versa.

Cylinder
A device used to convert fluid power into mechanical power in the form of linear motion.

Directional-Control Valve
Used to control which path fluid takes in a circuit.

Double-Acting Cylinder
A cylinder that can act under pressure in both directions (extend and retract) to move a load.

Filter
A device used to remove contamination from a fluid.

Flow Meter
A device used to measure flow rate.

Flow Rate
The volume of fluid that moves through a system in a given period of time.

Flow Velocity
The distance the fluid travels through a system in a given period of time.

Flow Control Valve
Used to start and stop flow in a circuit.

Fluid Power
The use of a fluid (liquid or gas) to transmit power from one location to another.

Gay-Lussac's Law
The absolute pressure of a confined gas is proportional to its temperature, provided its volume stays constant.

Hydraulics
The use of a liquid flowing under pressure to transmit power from one location to another.

Lubricator
A device used to spray an oil mist into the stream of a pneumatic system.

Pascal's Law
Pressure exerted by a confined fluid acts undiminished equally in all directions.

Piston
A sliding piece moved by or moving against fluid pressure which usually consists of a short cylindrical body fitting within a cylindrical chamber or vessel along which it moves back and forth.

Pneumatics
The use of gas flowing under pressure to transmit power from one location to another.

Pressure
The force per unit area exerted by a fluid against a surface.

Pressure Regulator
A type of pneumatic pressure control valve that controls the maximum pressure in a branch of a circuit.

Pressure Relief Valve
A type of pressure control valve that limits the maximum pressure in a hydraulic or pneumatic circuit.

Pump
A device used to create flow in a hydraulic system.

Receiver Tank
A device that holds the compressed air in a pneumatic system.

Reservoir
The tank that holds the fluid in a hydraulic system.

Single-Acting Cylinder
A cylinder that acts under pressure in one direction only and returns automatically when the pressure is released.

Solenoid
A switching device that uses the magnetic field generated by an electrical current for actuation.

Transmission Lines
Used to transport fluid in a circuit.

Valve
Any device that controls, either automatically or manually, the flow of a fluid.

Viscosity
A measure of a fluid's thickness or resistance to flow.
Volume
The amount or quantity of something.
==========

absolute pressure (pabs)
The total pressure exerted on a system, including atmospheric pressure; identified as psia.

absolute temperature
Temperature that is measured or calculated on scale (such as the Kelvin scale) that is based on a hypothetical absolute zero temperature at which matter is devoid of all thermal energy.

actuator
(1) A device that transfers electrical, pneumatic, or hydraulic energy into mechanical energy that moves or displaces something.
(2) A device that converts fluid pressure into mechanical motion for the purpose of moving a load.

air compressor
A type of mechanical device that is used to generate air pressure in a pneumatic circuit.

area (A)
A measure of the two-dimensional space that is enclosed by a shape.

atmospheric pressure (patm)
The pressure that is exerted by the weight of the atmosphere above the point of measurement; standard atmospheric pressure is 14.7 psia at sea level.

Bernoulli's principle
The velocity of a fluid increases as the pressure exerted by that fluid decreases.

Boyle's law
The absolute pressure of a confined gas is inversely proportional to its volume, provided its temperature remains constant.

Charles' law
The volume of a confined gas is proportional to its absolute temperature, provided its pressure remains constant.

check valve
A type of one-way valve that allows fluid to flow in one direction only.
directional control valve (DCV)
Any device that is controlled by an operator for the purpose of changing the path that a fluid takes through a circuit.

double-acting cylinder
A common type of linear actuator that is controlled by fluid pressure in both directions (extends and retracts).

filter
A fluid-conditioning device that is used to remove particulate matter that can damage the inner workings of moving components within a fluid.

fixed-displacement pump
A type of hydraulic pump that generates a constant flow rate.

flow control valve
A type of valve that is used to control the volume of fluid as it flows in one direction only; often used to control the speed of an actuator.

flow meter
A device used to measure the flow rate of a fluid.

flow rate (Q)
The volume of fluid that moves past a given point in a system per unit time.

flow velocity
The ratio between the distance that a drop of fluid travels and the amount of time that it takes to travel that distance.

fluid mechanics
The study of the properties of gases and liquids that are at rest or in motion.

fluid power
The use of a confined fluid flowing under pressure to transmit power from one location to another.

gauge pressure (pgauge)
The pressure value that is identified by a pressure gauge that is attached to a fluid system; identified as psig.

Gay-Lussac's law
The absolute pressure of a confined gas is proportional to its absolute temperature, provided its volume remains constant.

hydraulic amplification of force
The amplification of an input force that results when dissimilar size pistons are connected together in a closed hydraulic system; the process of generating a large output force from a small input force in a hydraulic system.

hydraulics
The physical science and technologies associated with liquids that are at rest or flowing under pressure.

hydrodynamics
The study of fluids that are in a state of motion.

hydrostatics
The study of the properties of fluids that are in a state of static equilibrium (at rest).

laminar flow
Fluid flow that is characterized as smooth and steady.

lubricator
A device that mixes tiny drops of oil with compressed air for the purpose of lubricating the components in a pneumatic circuit.

mechanics
The study of motion, forces, and the effects of forces on objects.

Pascal's law
Pressure exerted on a confined fluid is transmitted equally and perpendicular to all of the interior surfaces of the fluid's container.

Perfect Gas Laws
The mathematical relationships between a gas's volume, absolute pressure, and absolute temperature within a closed system, which are defined when one of the three variables is kept constant; consisting of Charles' Law, Gay-Lussac's Law, and Boyle's Law.

pilot line
A transmission line that is used to transport pressurized fluid for the purpose of controlling a valve.

piston
A solid cylindrical component within an actuator that moves under the influence of fluid pressure; also the component within an air compressor that is used to compress and move air in a pneumatic circuit.

pneumatics
The physical science and technologies associated with the mechanics of pressurized gases.

power density
Power per unit volume.

pressure (p)
A type of load that occurs when a force is distributed perpendicular to the surface of an object.

pressure regulator
A device that is used to manually adjust and control the pressure of the compressed air in a pneumatic system.

pressure release valve
A type of safety valve that will vent fluid back to the reservoir in a hydraulic circuit to protect the pump and other components from damage resulting from excess pressure.

prime mover
A device, such as an electric motor or an internal combustion engine, that is used to power a hydraulic pump or an air compressor.

pump
A device that is used to introduce flow or pressure into a fluid system.

receiver tank
A device that holds compressed air in a pneumatic system.

reservoir
A holding tank for nonpressurized hydraulic fluid that helps protect the fluid from outside contamination; also serves as a heat exchanger.

schematic symbol
A simplified graphic representation of an electrical, a mechanical, or a fluid power system component.

shutoff valve
A simple two-way valve that is used to turn all or part of a fluid power system on or off.

shuttle valve
A type of fluid valve that is used when the control of an actuator must be shared between two independently operated directional control Valves.

single-acting cylinder
A common type of linear actuator that is controlled by fluid pressure in one direction only; a return stroke occurs automatically.

solenoid
An electromechanical device that uses the principles of electromagnetism to control the motion of an actuator.

standard
A reference developed by an authority or through general consent and used as a basis for comparison and verification.

T-connector
A fluid power component that is used to join three separate transmission lines in a pneumatic or hydraulic system.

transmission line
A pipe or tube that serves as a connection between two fluid power components.

turbulent flow
Fluid flow that exhibits random fluctuations in speed, direction, and pressure.

vacuum generator
A pneumatic device that incorporates a Venturi tube to generate suction by accelerating the flow of compressed air.

valve
Any device that is used to control the flow of fluid.

variable-displacement pump
A type of hydraulic pump that allows the user to increase or decrease the fluid flow rate.

Venturi effect
The reduction in fluid pressure that occurs as a fluid flows through the constricted section of a pipe.

viscosity
A measure of a fluid's thickness or resistance to flow.

volume
The amount of space occupied by a three-dimensional object or enclosed within a container.

working line
A transmission line that is used to transport fluid to and from an actuator or any other device that performs work in a fluid power system.