

A Glossary of 864 Valve Terms



Jordan Valve, a division of Richards Industries
3170 Wasson Road • Cincinnati, OH 45209
513.533.5600 • 800.543.7311 • 513.871.0105 (f)
info@richardsind.com • www.jordanvalve.com

A

ABSOLUTE PRESSURE: The total pressure measured from absolute zero, i.e., from an absolute vacuum. It equals the sum of gauge pressure and atmospheric pressure corresponding to the barometer (expressed in pounds per square inch).

ABSOLUTE TEMPERATURE: Temperature measured from absolute zero, a point of temperature, theoretically equal to minus 273.18° C or minus 459.72° F; the hypothetical point at which a substance would have no molecular motion and no heat.

ABSOLUTE ZERO: Zero point on the absolute temperature scale; a point of total absence of heat. Equivalent to minus 459.72° F or minus 273.18° C.

ACCUMULATOR: A container in which fluid or gas is stored under pressure as a source of power.

ACCUMULATOR, HYDROPNEUMATIC: An accumulator in which compressed gas applies force to the stored liquid.

ACCUMULATOR, HYDROPNEUMATIC, DIAPHRAGM: A hydropneumatic accumulator in which the liquid and gas are separated by a flexible diaphragm.

ACCUMULATOR, HYDROPNEUMATIC, NONSEPARATED: A hydropneumatic accumulator in which the compressed gas operates directly on liquid within the pressure chamber.

ACCUMULATOR, HYDROPNEUMATIC, PISTON: A hydropneumatic accumulator in which the liquid and gas are separated by a floating piston.

ACCUMULATOR, HYDROPNEUMATIC, SPRING: A hydropneumatic accumulator in which springs apply force to the stored fluid.

ACCURACY: An expression used to denote the exact reliability of a measuring instrument to show the true value or true amount of the measured element. ACCURACY is usually expressed as a percentage of the full scale reading of the instruments.

ACCURACY OF REGULATION: (Also called DROOP) The amount by which the controlled variable pressure deviates from the set value at minimum controllable flow when the flow through the regulator is gradually increased from the minimum controllable flow to the rated capacity.

ACME THREAD: A type of screw thread which is neither square nor "V" but is a "hybrid" of the two. The included angle of space is 29° as compared to 60° of U.S. Thread.

ACTION: In the automatic control field "Action" refers specifically to control action, i.e., that which is done to regulate the controlling element in a process or operation. This action ranges from the simple "on and off" movements to not so familiar derivative and rate types.

ACTIVATION: Another term for diaphragm actuator or pressure operated spring or pressure opposed diaphragm assembly for positioning the actuator stem in relation to the operating pressure or pressures.

ACTUATOR: (Also OPERATOR or TOP WORKS) That portion of a regulating valve which converts mechanical fluid, thermal energy or electrical energy into mechanical motion to open or close the valve seats.

ACTUATOR SPRING: Spring which is located in the upper housing of a diaphragm actuator and provides resistance to the diaphragm movement.

ACTUATOR STEM: A rod extended from the diaphragm plate, permitting convenient external connection.

ACTUATOR TRAVEL CHARACTERISTIC: The relation between percent of rated travel and the operator or actuator pressure. This may be stated as an inherent or installed characteristic.

ADJUSTABLE RESISTANCE: A resistance that can be mechanically increased or decreased. Also called **VARIABLE RESISTANCE**.

ADJUSTABLE SCREW: A screw used to regulate the compression of a valve spring.

ADJUSTING SCREW CAP: A protective enclosure for the adjusting screw.

ADJUSTING SPRING: Another term for actuator spring.

AIR BREATHER: A device permitting air movement between atmosphere and the component in which the device is installed.

AIR, COMPRESSED: Air at any pressure greater than atmospheric pressure.

AIR-CORE SOLENOID: A solenoid which has a hollow core instead of a solid core.

AIR, FREE: Air which is not contained and which is subject only to atmospheric conditions.

AIR MOTOR: 1. A motor driven by compressed air.
2. Another term for a diaphragm actuator.

AIR-OPERATED CONTROLLER: A device which measures a variable and converts the measuring signal to air pressure which operates a valve or other control device.

AIR RANGE: Another term for **OPERATING PRESSURE SPAN**.

AIR, STANDARD: Air having a temperature of 68° F, a relative humidity of 36% and under pressure of 14.70 p.s.i.a. The gas industry usually considers 60° F as the temperature of standard air.

AIR-TO-CLOSE ACTION: See NORMALLY OPEN.

AIR-TO-OPEN ACTION: See NORMALLY CLOSED.

AMBIENT TEMPERATURE: The prevailing temperature in the immediate vicinity or the temperature of the medium surrounding an object.

AMERICAN STANDARD PIPE THREAD: A type of screw thread commonly used on pipe and fittings to assure a tight seal.

ANGLE VALVE: A variant of the globe valve design, having pipe openings at right angles to each other. Usually one opening on the horizontal plane and one on the vertical plane.

ANILINE POINT: The lowest temperature at which a liquid can be completely bled with an equal amount of freshly distilled aniline.

A.S.M.E. BOILER CODE: Standard Specifications issued by the American Society of Mechanical Engineers for the construction of boilers.

A.S.T.M. STANDARDS: Standards issued by the American Society of Testing Materials for material specifications.

ATMOSPHERIC PRESSURE: The pressure exerted in every direction upon a body by the atmosphere, equivalent to 14.7 pounds per square inch at sea level.

AUTOMATIC CONTROL: The attainment or retainment of a valve action through self operated or self actuated means, not requiring manual adjustment.

AUTOMATIC CONTROLLER: A device or instrument used for measuring and regulating.

AUTOMATIC REGULATOR: See AUTOMATIC CONTROLLER. Sometimes refers to a self-operated regulating valve.

AUTOMATIC RESET: That function of a control in instrument which automatically recognizes the magnitude of deviation from the control index, the duration of the deviation and changes the valve position to compensate for it.

AUTOMATIC RESET RESPONSE: The response of a controller output change rate which is proportional to the deviation of the controlled variable.

AUTOMATIC STOP CHECK VALVE: A combination and shut off valve designed primarily for use on multiple boiler installations.

AVERAGE POSITION ACTION: An action in which there is a predetermined relation between value of the controlled variable and the time-average position of a final control element which is moved periodically from one of two fixed positions to the other.

This controller action is similar to two position action in which a percentage "time on" of the final control element is dependent upon the value of the controlled variable. The percentage "time on" may have either a fixed or infinite number of values to correspond to any one of the other positioning controller actions.

AVERAGE CONTROL SYSTEM: A type of system which purposely permits variations of the control variable which are larger than required by the system dynamics.

B

BACK CONNECTED: Description of a device on which connections are normally made to the rear.

BACK PRESSURE: 1. Pressure on the upstream side of valve seats. 2. A pressure surge in a downstream piping system 3. Air pressure in a pipe which exceeds atmospheric pressure.

BAFFLE PLATE: A tray or partition placed in process equipment to direct or change the direction of flow.

BALL CHECK VALVES: A valve used to stop the flow of media in one direction while allowing flow in an opposite direction. The closure member used is spherical or ball shaped.

BALL VALVE: A quick opening valve providing very tight shutoff. The name derived from its spherical shaped gate.

BAND: A raised collar for reinforcing the ends of certain screwed fittings. (Also see PROPORTIONAL BAND).

BATCH PROCESS: A process in which the flow of both the control agent and the controlled medium is intermittent or gradually changes over a wide range. A process of relatively small magnitude or time expanse as compared to a continuous process.

BATCH PROCESS CONTROL: A process in which materials or work remain stationary while being treated.

BELLOWS SEAL: A method of sealing the valve stem in which the ends of the sealing material are fastened to the bonnet and to the stem and expands and contracts with the stem travel.

BELLOWS SEAL VALVE: A valve which has a bellows in the body neck for initial sealing rather than the use of packing although packing is used for secondary sealing.

BERNOULLI'S LAW: If no work is done on or by a flowing frictionless liquid, its energy due to pressure and velocity will remain constant at all points along the stream line.

BLEEDER: A device for removing pressurized fluid.

BLEEDER, AIR: A small valve used for removal of air.

BLIND FLANGE: Another term for bottom flange. Also, a solid plate like fitting that seals the end of a flanged end pipeline.

BLOW-OFF SYSTEM: A piping system used for blowing scale, sediment, etc, from boilers, tanks or receivers. Also called "blow-down."

BLOW-OFF VALVE: A valve designed specifically for blow-off service and used in blow-off lines. Also, called "blowdown valve".

BODY HEAD: Another term for BONNET ASSEMBLY:

BOLTED BONNET: A bonnet which is connected to the body neck flange by bolts.

BOLTED GLAND: A device which compresses the stuffing or packing in a stuffing box and in which pressure is derived by tightening bolts and nuts.

BOLTED STUFFING BOX: Another term for PACKING BOX ASSEMBLY or BOLTED GLAND.

BONNET: That part of a valve which connects the valve actuator to the valve body; may also contain the stem packing in some valves.

BONNET ASSEMBLY: Consists of bonnet as defined above plus valve actuator.

BONNETLESS: Another term that is used frequently for pressure seal bonnet.

BONNET PACKING: The material which is used around the stem and within the bonnet to prevent leaks.

BOTTOM BONNET: Another term for BOTTOM FLANGE.

BOTTOM CAP: Another term for BOTTOM FLANGE.

BOTTOM COVER: Another term for BOTTOM FLANGE.
BOTTOM FLANGE: 1. A plate covering a opening in the bottom of the valve body. 2. The flange for a bottom line connection on a three way valve. (The bottom flange may include a guide bushing in a two way valve or a seat ring in a three way valve.

BOTTOM PLATE: Another term for BOTTOM FLANGE.

BOYLE'S LAW: The absolute pressure of a confined body of gas that varies inversely as the volume, on the condition that the temperature remains constant.

BRASS TO IRON: The designation a brass disc and an iron seat, or vice versa, in a valve.

BRAZING ENDS: The ends of a valve which are prepared for silver brazing.

BREECHLOCK: Another term for PRESSURE SEAL VALVE.

BRONZE TRIM OR BRONZE MOUNTED: An indication that certain inside parts of the valves known as trim materials (stem, disc, seat rings, etc.) are made of brass or bronze.

B.T.U.: Abbreviation for British Thermal Unit. The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

BUBBLE TIGHT: The description of a valve seat that, when closed, prohibits the leakage of visible bubbles.

BURST PRESSURE: That pressure which can be slowly applied to the valve at room temperature for 30 seconds without causing rupture.

BUSHING: A fitting used to reduce the size of an opening.

BUTT WELD ENDS: Lips are formed on the ends of the valve to exactly butt against connecting pipe in the system. These lip ends of both pipe and valve are machined, forming an inside groove to accommodate a backup ring for welding.

BUTTERFLY VALVE: A valve deriving its name from the wing like action of the disc which operates at right angles to the flow. The primary advantage is a seating surface which is not critical. The disc impinges against the resilient liner with low operating torque.

BY-PASS: An auxiliary loop in a pipeline, usually for diverting flow around a valve, or other piece of equipment.

BY-PASS VALVE: A valve used to divert the flow around or past the part of the system through which it normally passes.

C

CAP: A device used to close the ports through which the flow normally passes.

CAPACITANCE: Is a change in quantity contained per unit of change in some reference variable. It can be measured in units of quantity, divided by the referenced variable. In electricity that property of a condenser which determines how much charge can be stored in it for a given potential difference across its terminals.

CAPACITOR: An electrical device used to reduce arcing at contact points, to neutralize the effects of inductance, and to obtain pulses of electric current. In electricity, a condenser.

CAPACITY: The maximum or minimum flows obtainable under given conditions of media, temperature, pressure, velocity, etc.

CASCADE CONTROL: An automatic control system in which several control devices feed into one another consecutively.

CASCADE CONTROL LOOPS: A number of control devices or systems feeding into one another, each performing a control function. One or more loops can depend upon and control from the performance of other loops.

CAVITATION: A localized gaseous condition that is found within a liquid stream.

CHAINWHEEL OPERATED VALVE: A valve which is operated by a chain driven wheel which opens and closes the valve seats.

CHANNEL: That through which anything flows.

CHARLES' LAW: The volume of a fixed mass of gas varies directly with absolute temperature, provided the pressure remains constant.

CHECK VALVE: A valve which automatically stops back flow when the fluid in the line reverses.

CIRCUIT: The directed route taken by a flow from one point to another.

CIRCUIT BREAKER: A switch, usually automatic, which opens to stop the flow of current.

CIRCUIT, PILOT: A secondary circuit used to control a main circuit or device in the main circuit.

CIRCUIT, PRESSURE CONTROL: Any circuit whose main purpose is to adjust or regulate pressure in the system or any branch of the system.

CIRCUIT, REGENERATIVE: A circuit in which pressurized media discharged from a component is returned to the system to reduce power input requirements.

CIRCUIT, SAFETY: A circuit which prevents accidental operation, protects against overloads, or otherwise assures safe operation.

CIRCUIT, SEQUENCE: A circuit which establishes the order in which two or more phases of a circuit occur.

CIRCUIT, SERVO: A circuit which is controlled by automatic feed back; i.e., the output of the system is sensed or measured and is compared with the input signal. The difference between the actual output and the input controls the circuit.

CIRCUIT, SPEED CONTROL: Any circuit where components are arranged to regulate speed of operation.

CIRCUIT, SYNCHRONIZING: A circuit in which multiple operations are controlled to occur at the same time, or at a predetermined differential of time.

CIRCUIT, UNLOADING: A circuit in which flow or pressure is relieved whenever delivery to the system is not required.

CLAMP GATE VALVE: A gate valve whose body and bonnet are held together by a "U" bolt clamp.

CLAMP TYPE BONNET: See CLAMP GATE VALVE.

CLOSED CIRCUIT: A circuit through which the flow makes a complete journey and returns to its origin.

CLOSED LOOP: A family of automatic control units linked together with the process to form a chain. The effects of control action are constantly measured so that if the process deviates beyond the desired limits, the control units react to bring it back into line.

CLOSURE MEMBER: Another term for wedge, gate disc, etc.

COCK: An original form of valve having a hole in a tapered plug which is rotated to provide passageway for fluid.

COEFFICIENT OF EXPANSION: The increase in unit length, area, or volume for 1° rise in temperature.

COEFFICIENT OF FLOW: See FLOW COEFFICIENT

COMPOSITION DISC: A non-metallic valve seat material made of several elements.

COMPRESSOR: A mechanical device for increasing the pressure of air or gas.

COMPRESSOR, MULTIPLE STAGE: A compressor having two or more compressive steps in which the discharge from each supplies the next in series.

COMPRESSOR, SINGLE STAGE: A compressor having only one compressive step between inlet and outlet.

COMPUTER: An electronic machine which, by means of stored instructions and information, performs rapid calculations or compiles, correlates, and selects data.

CONDENSATE: (With reference to this industry) Usually refers to water which has condensed from steam.

CONDUIT: A pipe or channel for conveying media.

CONTAMINATOR: That which contaminates or spoils the nature of another thing.

CONTINUOUS PROCESS: A process in which the flow of the controlled media is continuous and fluctuates over a narrow range. The opposite of "batch process."

CONTINUOUS-PROCESS CONTROL: That process in which materials flow more or less continuously through a plant while being treated.

CONTINUITY EQUATION: The mass rate of flow into any fixed space is equal to the mass flow rate out.

CONTROL: A device used to regulate the function of a component or system. See CONTROLLER.

CONTROL AGENT: That process, energy, or material, of which the manipulated variable is a condition or characteristic.

CONTROL, CYLINDER: A control in which a fluid cylinder is the actuating device.

CONTROL FLOW: The flow through the valve control ports, expressed in G.P.M. Control flow is referred to as no-load pressure flow when there is zero load pressure drop; load flow when there is pressure drop.

CONTROL, HYDRAULIC: A control actuated by a liquid.

CONTROL, LIQUID-LEVEL: A device which controls the liquid level in a tank or container.

CONTROL LOOP: A control made up of a number of devices acting as individual transfer systems which are joined to form a network.

CONTROL, MANUAL: A control actuated by hand.

CONTROL, MECHANICAL: A control actuated by linkages, gears, cams or other mechanical elements.

CONTROL MEDIUM: The type of energy which is used to vary the conditions of the process.

CONTROL, PNEUMATIC: A control actuated by air or other gas pressure.

CONTROL POINT: That value of controlled variable which is ideal and maintained by an automatic controller.

CONTROL, PRESSURE COMPENSATED: A control in which a pressure signal operates a compensating device.

CONTROL RESPONSE: The characteristic output pattern that is produced by a controller and is the result of a change in a controlled variable.

CONTROL, SERVO: A control actuated by a feedback system which compares the output with the reference signal and makes corrections to reduce the difference.

CONTROL SIGNAL: The energy applied to a device to make corrective changes.

CONTROL SYSTEM: All of the components required for the automatic control of a process variable.

CONTROL VALVE: A valve which regulates the flow or pressure of a medium which affects a controlled process. Control valves are operated by remote signals from independent devices using any of a number of control media such as pneumatic, electric, electro-hydraulic.

CONTROLLED MEDIUM: That process, energy, or material, in which a variable is controlled.

CONTROLLED VARIABLE: A quantity or condition which is measured and controlled by an automatic controller.

CONTROLLER: See CONTROL. A control signal actuated instrument for controlling process variables. Signals may be pneumatic, electric, electro-hydraulic and others.

CONTROLLER LAG: The delay in correcting a change in a controlled variable because of the delay in signal transmission.

CONTROLLER RESPONSE: The action obtained from a controller as the result of a change in the controlled variable.

CONTROLLING MEANS: An automatic control device which makes a corrective action.

COOLER: A heat exchanger which removes heat from a fluid or gas.

COOLER, AFTERCOOLER: A device which cools a gas after it has been compressed.

COOLER, INTERCOOLER: A device which cools a gas between the compressive steps of a multiple stage compressor.

COOLER, PRECOOLER: A device which cools a gas before it is compressed.

CORRECTIVE ACTION: A change in the flow of the control agent initiated by the controlling means of an automatic controller.

CORROSION: Effect of deterioration of materials because of chemical action.

COUPLING: A straight connector for fluid or gas lines.

COUPLING, DISCONNECT: A coupling which can quickly connect or disconnect fluid lines.

CROSS: A fitting with four openings.

CRYOGENICS: The science which deals with the production of very low temperature and its effect on properties of matter.

Cv: See FLOW COEFFICIENT.

CYCLE: A set of events recurring in the same sequence.

CYCLE, AUTOMATIC: A cycle of operation which is repeated indefinitely until stopped.

CYCLE, MANUAL: A cycle which is hand started and controlled through all phases.

CYCLE, SEMI-AUTOMATIC: A cycle which is started upon a given signal, proceeds through a predetermined sequence and stops with all elements in their initial position.

CYLINDER: A device which converts fluid power into linear mechanical force and motion. This usually consists of movable elements such as a piston and piston rod, plunger or ram, operating within a cylindrical bore.

CYLINDER PORT: That port through which valve action is made common with either the inlet or exhaust ports in multi-action valves.

CYLINDERS: (SINGLE AND DOUBLE ACTING) A single acting cylinder is one in which the fluid can be applied to the movable element in only one direction. A double acting cylinder is one in which fluid force can be applied to the movable element in either direction.

D

DAMPEN: To check or reduce; to deaden vibration.

DARCY'S FORMULA: A formula used to determine the pressure drop caused by flow friction through a pipe.

DASHPOT: A mechanical damping device consisting of a piston connected to the part to be damped and arranged in a cylinder filled with oil. The vibration is absorbed by the viscosity of the oil.

DATA (IDENTIFICATION) PLATES: Plates which identify the valve type, pressure ratings, size, etc.

DEAD BAND: A specific range of values in which the incoming signal can be altered without changing the outgoing response; Also known as "dead zone".

DEAD END SHUT OFF (LOCK UP): A no-flow condition in a valve; where conditions require more specific indication of shut off leakage, it may be measured in terms of change in controlled variable (p.s.i., inches, degrees, etc.) per unit of time when discharging into a specified confined volume.

DEAD-TIGHT: A term meaning non-leaking.

DEAD TIME: Any definite delay between two related actions. It is measured in units of time. Also known as process lag.

DEAD ZONE: A range of measured values or variable in which an instrument cannot detect or initiate corrections.

DEMAND SIDE OF PROCESS: That part of the process being controlled.

DERIVATIVE ACTION: A control operation in which the speed of the correction is made in proportion to the speed of the deviation from the desired limits.

DERIVATIVE CONTROLLER ACTION: An action in which there is a predetermined relation between a derivative function of the controlled variable and the position of the final control element.

DERIVATIVE RESPONSE: The same as RATE RESPONSE.

DESIRED VALUE: That value of the control variable which is to be maintained.

DEVIATION: The difference at any given time between the control point and the set point.

DEWAR FLASK: A double walled glass flask used for storing liquid air. The space between the walls is exhausted to a very high vacuum to minimize transfer of heat.

DEWPOINT: The central temperature of a gas or liquid at which condensation or evaporation occurs.

DIAGRAM, PRESSURE-TIME: A graphical presentation of pressure plotted against time.

DIAPHRAGM: A flexible disc used to separate the control medium from the controlled medium and which actuates the valve stem.

DIAPHRAGM ACTUATOR: A valve operator in which pressure is exerted on a diaphragm to position the valve stem.

DIAPHRAGM ASSEMBLY: Another term for DIAPHRAGM ACTUATOR.

DIAPHRAGM BUTTON: Another term for DIAPHRAGM PLATE.

DIAPHRAGM CASE: A housing, which contains the diaphragm and establishes one or more pressure chambers. Also, known as diaphragm cover and base.

DIAPHRAGM CONTROL VALVE: A control valve that is actuated by diaphragm, or one having a Spring-Diaphragm actuator.

DIAPHRAGM COVER: Another term for DIAPHRAGM CASE.

DIAPHRAGM DISC: Another term for DIAPHRAGM PLATE.

DIAPHRAGM HEAD: Another term for DIAPHRAGM PLATE.

DIAPHRAGM HOUSING: Another term for DIAPHRAGM CASE.

DIAPHRAGM, METAL: A diaphragm made of metal rather than a composition material, usually phosphor-bronze alloy or stainless steel.

DIAPHRAGM MOTOR: A diaphragm actuator consisting of case, diaphragm, plate, spring, stem extension, yoke, spring adjustor, spring seat, travel indicator, travel indicator scale, and hand wheel operator.

DIAPHRAGM MOTOR OPERATOR: Same as DIAPHRAGM ACTUATOR.

DIAPHRAGM MOTOR VALVE: See DIAPHRAGM CONTROL VALVE.

DIAPHRAGM OPERATED VALVES: Any valve which is operated by a diaphragm, but usually refers to a diaphragm control valve.

DIAPHRAGM PLATE: A plate used with the diaphragm for the purpose of support and transmitting force to the actuator stem.

DIAPHRAGM PRESSURE SPAN: The difference between the high and low values of the diaphragm pressure range.

DIAPHRAGM ROD: Same as ACTUATOR STEM.

DIAPHRAGM, SLACK: A diaphragm of synthetic material having a fabric layer. The convolution is molded into the material or sufficient slack is provided so that the convolution is formed by the pressure loading.

DIAPHRAGM TOP: Another term for DIAPHRAGM ACTUATOR.

DIFFERENTIAL: The differences between two target values, one of which is the high value of conditions, the other being the low value of conditions.

DIFFERENTIAL GAP ACTION: A controller action wherein the output pressure of the controller remains at maximum (20 psi standard) or minimum (0 psi) until the controlled measurement crosses a band or gap, causing the output pressure to reverse. The measured variable must then span the gap in the opposite direction before the output signal is restored to the original condition.

DIRECT-ACTING CONTROLLER: A controller in which increase of the controlled variable causes increase of output pressure.

E

DIRECT-ACTING INSTRUMENT: An instrument which increases the air pressure to a controlled device as the instrument measured quantity increases.

DIRECT-ACTING VALVE: A normally open valve requiring air pressure to close it.

DISC: That part of a valve which actually closes off the flow.

DISCRETE UNITS: Distinct or individual units.

DISTANCE VELOCITY LAG: The delay in change of a measured value of a variable medium caused by the distance between the measuring points and controlling points.

DOUBLE DISC: A two piece disc used in the gate valve. Upon contact with the seating faces in the valve the wedges between the disc faces force them against the body seats to shut off the flow.

DOUBLE PORTED VALVE: A valve having two part to overcome line pressure unbalance.

DOUBLE WEDGE: Used in gate valves. Similar to double disc in that the last downward turn of the stem spreads the split wedges and each seals independently.

DRAINAGE FITTING: Type of fitting used for draining fluid from pipes.

DRIFT: Sustained deviation in a corresponding controller. Drift results from the predetermined relation between values and the controlled variable and positions of the final control element. Also, known as wander.

DROOP: (also called ACCURACY OF REGULATION) The amount by which the controlled variable pressure, temperature, liquid level, or differential pressure deviates from the set value at minimum controllable flow when the flow through the regulator is gradually increased from the minimum controllable flow to the rated capacity.

DROP TIGHT: A term signifying that a valve shall not pass water or air droplets when it is closed.

DRY BULB TEMPERATURE: The temperature of air as measured by an ordinary thermometer.

DUPLEX DESIGN ACTUATOR: An actuator having an adjustable operating force and operating on a differential air signal.

DYNAMIC UNBALANCE: The net force produced on the valve plug at any stated open position by the fluid forces acting upon it.

ECCENTRIC BALL VALVE: Essentially the same as a ball valve except that it needs no lubricant or resilient liner to get tight closure in a metal to metal seat arrangement.

ELBOW: Fitting used for making a turn in direction of the pipeline. Also known as an Ell.

ELECTRIC MOTOR ACTUATOR: A valve operator having a gear motor as its principal component.

ELECTRO-PNEUMATIC ACTUATOR: A valve operator with an electrical control system that transduces the electrical signal of the controller into a pneumatic input variable to the diaphragm housing.

END CONNECTION: A reference to the method of connecting the parts of a piping system, i.e., threaded, flanged, butt weld, socket weld, etc.

END POINT CONTROL: Quality control through continuous, automatic analysis. Automatic changes correct for and deviation from desired standards.

EQUAL PERCENTAGE FLOW CHARACTERISTIC: Same as PERCENTAGE FLOW CHARACTERISTIC.

EQUAL PERCENTAGE PLUG: A valve plug contoured to deliver the EQUAL PERCENTAGE FLOW CHARACTERISTIC.

EQUILIBRIUM: A state of balance.

ERROR: The difference between the instantaneous value and the desired value of the controlled variable.

EXCITATION: The supply of an input signal which yields to a related output.

EXHAUST PORT: That port which is connected directly to the downstream pressure of a fluid system or to atmosphere.

EXHAUST VALVE: The valve of an engine which provides an outlet for the spent gas or steam.

EXPANSION JOINT: A pressure-tight device which permits expansion or contraction of pipelines.

EXTRA HEAVY: Description of piping material, usually cast iron, suitable for working pressures up to 250 lbs.

F

FACE-TO-FACE DIMENSIONS: The dimensions from the face of the inlet port to the face of the outlet port of a valve or fitting.

FACING: The finish of the contact surface of flanged end piping materials.

FEEDBACK: Part of a closed loop system which brings back information about the condition under control for comparison to the target value.

FEEDBACK CONTROLLER: A mechanism which measures the value of the controlled variable, accepts the value of command and as the result of comparison, manipulates a controlled system in order to maintain an established relationship between the controlled variable and the command.

FEEDBACK CONTROL SYSTEM: The control system which tends to maintain a prescribed relationship of one system variable to another by comparing functions of these variables and using the difference as a means of control.

FEEDBACK SIGNAL: The signal responsible to the value of the control variable. This signal is returned to the input of the system and compared with the reference signal to obtain an actuated signal which returns the controlled variable to the desired value.

FEMALE THREAD: Internal thread in pipe fittings, valves, etc. for making screwed connections.

FILTER: A device through which fluid is passed to separate contaminants from it.

FILTER ELEMENT: A porous device which performs the process of filtration. It is usually replaceable.

FILTER MEDIA: The porous materials which perform the process of filtration.

FINAL CONTROL ELEMENT: The device in a control system that actually varies the control agent; i.e., a control valve.

FIRE HYDRANT VALVE: A valve that when closed, drains at an underground level to prevent freezing.

FITTING: The connector or closure for fluid lines and passages.

FITTING, COMPRESSION: A fitting which seals and grips by manual adjustable deformation.

FITTING, FLANGE: A fitting which utilizes a radially extending collar for sealing and connection.

FITTING, FLARED: A fitting which seals and grips by a preformed flare at the end of the tube.

FITTING, FLARELESS: A fitting which seals and grips by means other than a flare.

FITTING, WELDED: A fitting attached by welding.

FLANGE: A rim on the end of a pipe, valve or fitting for bolting to another pipe element.

FLANGE BONNET: A valve bonnet having a flange through which bolts connect it to a matching flange on the valve body.

FLANGE ENDS: Refers to a valve or fitting having flanges for joining to other piping elements. Flanged ends can be plain faced, raised face, large male and female, small male and female, large tongue and groove, small tongue and groove and ring joint.

FLAP VALVE: A non-return valve in the form of a hinged disc or flap, sometimes having leather or rubber faces; used for low pressure.

FLARED ENDS: A term applied to the end of a pipe or valve, etc. when it is shaped so as to be increasing diameter towards the end.

FLASH POINT: The temperature at which a fluid first gives off sufficient flammable vapor to ignite when approached with a small flame or spark.

FLAT FACED BONNET JOINT: The point of connection between a valve body and bonnet when the bonnet is not recessed into the body but is seated on a flat surface.

FLAT FULL FACE GASKET: A flat gasket covering the entire surface of the parts being joined.

FLEXIBLE WEDGE DISC: A valve disc which has a solid center but which is flexible on the outside.

FLOAT LEVEL CONTROLLER: A control which is operated by means of a bulb floating on the surface of a liquid within a tank. The rising and falling action opens or closes the valve.

FLOAT VALVE: A valve which is operated by means of a bulb or ball floating on the surface of a liquid within a tank. The rising and falling action operates a lever which opens and closes the valve.

FLOATING ACTION: An action in which there is a predetermined relation between value of the controlled variable and rate of motion of a final control element.

FLOATING AVERAGE POSITION ACTION: An action in which there is a predetermined relation between the value of the controlled variable and rate of change in the time average position of a final control element which is moved periodically from one of two fixed positions to the other.

FLOATING CONTROL: Type of control action which varies the flow without a definite relation other than direction of change, to the value of the variable.

FLOATING CONTROLLER ACTION: An action in which there is predetermined relation between values of the control variable, and the rate of motion of a final control element, with or without neutral zones.

FLOATING RATE: Applies to proportional plus floating controller action and is expressed in units of the number of times per unit time that the effect of proportional position action is reproduced by proportional speed floating action.

FLOATING SPEED: Applied to floating controller action it is the rate of movement of a final control element corresponding to a specified deviation. It is conveniently expressed in percent of full range of movement per unit or time.

FLOATING TIME: Applying to proportional plus floating controller action, it is the reciprocal of floating rate.

FLOW CHARACTERISTIC: Relation between flow through a valve and the percent of valve stem travel required for a given flow.

FLOW COEFFICIENT (Cv): Indicated as Cv. The number of U.S. gallons per minute of 60° F water that will flow thru a valve with a one psi pressure drop under stated conditions. These stated conditions will include pressure and percent rated travel.

FLOW, LAMINAR: A flow situation in which fluid moves in parallel layers.

FLOW RATE: The volume, mass, or weight of a fluid passing through any conductor per unit of time.

FLOW, STEADY STATE: A flow situation wherein conditions such as temperature, pressure and velocity at any point in the fluid do not change.

FLOW, STREAMLINE: Same as FLOW, LAMINAR.

FLOW, TURBULENT: A flow situation in which the fluid particles move in a random manner.

FLOWMETER: A device which indicates either flow rate, total flow or a combination of both.

FLUID: That which is not solid and can flow; able to move and change shape without separating when under pressure.

FLUID, HALOGENATED: A fluid composed of any of the five very active, non-metallic chemical elements, fluorine, chlorine, bromine, astatine, and iodine.

FLOW, UNSTEADY: A flow situation wherein conditions such as temperature, pressure, and velocity change at points in the liquid.

FLUID CONDITIONER: A device which controls the physical characteristics of a fluid.

FLUID FRICTION: Friction caused by the viscosity of fluids.

FLUID POWER: Energy transmitted and controlled through use of a pressurized fluid.

FLUID POWER SYSTEM: A system that transmits and controls power through use of a pressurized fluid within an enclosed circuit.

FLUID STABILITY, CHEMICAL: Resistance of a fluid to chemical change.

FLUID STABILITY, HYDROLYTIC: Resistance of a fluid to permanent changes in properties caused by chemical reaction with water.

FLUID STABILITY, OXIDATION: Resistance of a fluid to permanent changes caused by chemical reaction with oxygen.

FLUID STABILITY, THERMAL: Resistance of a fluid to permanent changes caused solely by heat.

FRONT CONNECTED: Where connections are made to normally exposed surfaces of components.

G

GAUGE: An instrument or devise for measuring, indicating, or comparing a physical characteristic.

GAUGE, BELLOWS: A gauge in which the sensing element is a convoluted closed cylinder. A pressure differential between outside and inside causes the cylinder to expand or contract axially.

GAUGE, BOURDON TUBE: A pressure gauge in which the sensing element is a curved tube which tends to straighten out when subjected to internal fluid pressure.

GAUGE, DIAPHRAGM: A gauge in which the sensing element is a diaphragm and its inner portion is free to deflect with respect to its periphery.

GAUGE, FLUID LEVEL: A gauge which indicates the fluid level.

GAUGE, PISTON: A pressure gauge in which the sensing element is a piston operating against a spring.

GAUGE, PRESSURE: An instrument for measuring and indicating the pressure in the system to which it is connected.

GAUGE PRESSURE: Pressure above atmospheric pressure.

GAUGE, VACUUM: A pressure gauge for pressures less than atmospheric.

H

HAGEN POISEUILLE LAW: The friction factor of Darcy's formula is a ratio of 64 to the Reynolds Numbers when flow is laminar.

HAMMER BLOW HANDWHEEL: Provides additional operating torque to facilitate operation of valves in service where the plain handwheel may be insufficient yet where gearing is not necessary.

HANGER: A device for supporting pipe line.

HEAD: The height of a column above a given point expressed in linear units, i.e., feet of water, inches of mercury, etc. Used interchangeably with "pounds of pressure".

HEAD, FRICTION: The head required to overcome the friction at the interior surface of a conductor and between fluid particles in motion.

HEAD, STATIC: The height of a column or body of fluid above a given point.

HEAD, STATIC DISCHARGE: The static head from the centerline of the pump to the free discharge surface.

HEAD, STATIC SUCTION: The head from the surface of the supply source to the centerline of the pump.

HEAD, TOTAL STATIC: The static head from the surface of the supply source to the free discharge surface.

HEAD, VELOCITY: The equivalent head through which the liquid would have to fall to attain a given velocity.

HEADER: The length of pipe or vessel to which two or more pipe lines are joined to carry fluid from a common source to various points of use.

HEAT EXCHANGER: A device which transfers heat through a conducting wall from one fluid to another.

HICKEY: The length of pipe or an extension handle used on a wrench to get greater leverage; also know as a PERSUADER.

HIGH-LOW PLUG TYPE COMPOSITION DISC: A valve plug having non-metallic inserts; used for tight shut off for high and low pressures.

HOSE END VALVES: Valves for water service which have fittings for connection to a hose.

HOSE, WIRE BRAIDED: Hose consisting of a flexible material reinforced with woven wire braid.

HUB END: A caulked or leaded type of end connection used on valves, fittings and pipe for water supply or sewage line.

HUMIDITY: The amount of moisture in the air; also see RELATIVE HUMIDITY.

HYDRAULIC: Operated by the movement and force of liquid.

HYDRAULIC ACTUATOR: A device which converts hydraulic energy into mechanical motion.

HYDRAULIC AMPLIFIER: A fluid valuing device such as a nozzle flapper, jet pipe with receivers, or a sliding spool which acts as a power amplifier.

HYDRAULIC CONTROLLERS: A controller that is operated by means of water or power.

HYDRAULIC CYLINDER OPERATOR: A valve that is operated by a cylinder with the power furnished by water or other liquid.

HYDRAULIC GAUGE: A gauge specifically constructed for the service at extremely high pressures where water or noncorrosive liquid is the pressure medium.

HYDRAULIC MOTOR ACTUATOR: A device in which rotation of hydraulic motor is translated into mechanical motion.

HYDRAULIC PISTON OPERATION: A piston which is operated hydraulically.

HYDRAULICS: The branch of physics having to do with the mechanical properties of water and other liquids.

HYDRODYNAMICS: The branch of physics having to do with the motion and action of water and other liquids.

HYDROKINETICS: The branch of physics having to do with the motions of fluid.

HYDROPNEUMATICS: Pertaining to the combination of hydraulic and pneumatic power in a unit.

HYDROSTATICS: The engineering science that pertains to the energy of liquids that are at rest.

HYSTERESIS: The difference between the response of a unit or system to an increasing signal, and to a decreasing signal.

I

INCREASER: A fitting with large opening at one end that is used to increase size of pipe opening.

INDICATING INSTRUMENT: Any measuring device that is read by observing the pointer on a scale.

INDICATOR DISC: Another term for STEM TRAVEL INDICATOR.

INDUSTRIAL INSTRUMENT: A device that measures and controls the values of a process variable.

INHERENT DIAPHRAGM PRESSURE RANGE: The high and low values of pressure applied to the diaphragm to produce greater plug travel with atmospheric pressure in the valve body.

INHERENT FLOW CHARACTERISTIC: Flow characteristic when constant pressure drop is maintained across the valve.

INHERENT RANGEABILITY: Ratio of maximum to minimum flow within which the deviation of the specified inherent flow characters does not exceed some stated limits.

INHIBITOR: Any substance which prevents chemical reaction such as corrosion or oxidation.

INLET PORT: The port which is connected directly to the upstream pressure of a fluid system.

INNER VALVE: A term for VALVE PLUG.

INNER VALVE SEAT: Another term for VALVE SEAT RING.

INPUT: An incoming signal of a control unit or system.

INPUT CURRENT: The current to a control valve which commands control flow. Usually expressed in milliamps.

INSIDE SCREW, NON-RISING STEM: A type of stem usually found in gate valves. The disc rises on the threaded part of the stem instead of the stem rising through a threaded portion of the bonnet.

INSIDE SCREW, RISING STEM: A stem normally found on gate and globe valves. The stem rises as the handwheel is turned. The term inside screw means that the threads are inside of the bonnet.

INSTALLED DIAPHRAGM PRESSURE RANGE: The high and low values of pressure applied to the diaphragm to product rated travel with stated conditions within the valve body.

INSTALLED FLOW CHARACTERISTIC: Flow characteristic when pressure drop across the valve varies as dictated by flow and related conditions in a system in which the valve is installed. As opposed to inherent (Bench) flow characteristic.

INSTRUMENT: Used broadly to denote a device that has measuring, recording, indicating and/or controlling abilities.

INSTRUMENTATION: Describes the application of industrial instruments to a process or a manufacturing operation.

INTEGRAL ACTION: An action in which there is a predetermined relationship between an integral function of the controlled variable and positions of a final control element.

INTEGRAL CONTROL ACTION: A mode of control action in which the value of the manipulated variable is changed at a rate proportional to the deviation.

INTEGRATOR: A device which continuously adds up the quantity being measured over a period of time.

INTENSIFIER: A device which increases a pressure over that of the source power.

INTERMEDIATE: Another term for YOKE.

ISOLATING VALVE: In a control valve an isolating valve is hand operated and is located between the packing lubricator assembly and the packing box assembly. It shuts off the fluid pressure from the lubricator assembly.

J

JET ACTION: A valve design in which flow effect is controlled by the relative position of a nozzle and a receiver.

JOINT: A line position connector which connects two or more lines.

JOINT, ROTARY: A joint connecting lines which have relative operation rotation.

JOINT, SWIVEL: A joint which permits variable operational positioning of lines. Also referred to as swing joint.

L

LAG: An engineering term for the delay in response.

LANTERN RING TYPE GLAND: A chamber with lantern spacer and rings of packing below to wipe stem clean before it passes into the sealing rings above.

LAPPING-IN: Rubbing and polishing a surface such as disc face to obtain a smooth bearing with the body seat rings.

LATENT HEAT: The heat required to transform liquids to a vapor, or a vapor to liquids.

LATENT HEAT OF CONDENSATION: That which represents the heat extracted when a vapor is changed to a liquid.

LATENT HEAT OF VAPORIZATION: That heat required to change a liquid to a vapor.

LBH: Abbreviation for pounds per hour.

LEDOUX BELL: A measuring device which is a bell floating semi-immersed in mercury or some other suitable liquid. The mercury surface inside the bell is exposed to the high pressure side of a differential pressure primary element. The surface outside the bell is exposed to the low pressure side. Changing the differential pressure will displace the bell correspondingly. Limitations of this bell are the relatively high machining costs and the fact that each bell is suitable for one range only. It is not applicable to diaphragm bellows type flow meter.

LEVEL REGULATOR: A valve with a positioning actuator using a self-generated power signal for moving the closure member relative to the port or ports in response and in proportion to the changes in level of the controlled fluid.

LEVEL REGULATOR: SELF-OPERATED A self-operated controller in which the energy to position the valve closure member is provided by the changes of level of the controlled fluid.

LEVER AND WEIGHT: A lever with weights suspended on it, used in lieu of springs or air pressure loading in a regulating valve. Has advantage of minimizing droop, and disadvantage of being bulky.

LIFT: The height of a column of body of fluid below a given point expressed in linear units. Often used in to keep vacuum or pressure below atmospheric. The term "lift" also refers to the stem travel of a valve.

LIFT CHECK VALVE: A form of check valve in which the vertically rising flow opens the gate and a reverse pressure causes the gate to drop back into its closed position to stop the reverse flow.

LIFT, STATIC SUCTION: The lift from the centerline of the pump to the surface of the supply source.

LINE: A tube, pipe, or hose for conduction of fluids.

LINE, EXHAUST: A line returning power or control fluid back to the reservoir or to atmosphere.

LINE, PILOT: A line which conducts control fluid.

LINE, WORKING: A line which conducts fluid power.

LINEAR FLOW CHARACTERISTIC: One in which equal increments of valve stem movement will produce equal quantities of flow change at a constant pressure drop for incompressible fluids, with constant upstream and downstream pressures for compressible fluids.

LINES: Two or more fluid power lines.

LINES, JOINING: Lines which connect in a circuit.

LINES, PASSING: Lines which cross but do not connect in a circuit.

LOAD CHANGE: The change in the demand for a controlled medium.

LOAD ERROR: See ACCURACY OF REGULATION.

LOADING SPRING: Another term for ACTUATOR SPRING.

LOAD PRESSURE DROP: The differential pressure between valve control ports. Expressed in PSI.

LOGGER: An instrument which automatically scans conditions (temperature, humidity, pressure) and records findings on a chart.

LONG SWEEP FITTING: A fitting with a long radius turn.

LOW PRESSURE COMPOSITION DISC: A Non-metallic disc for low pressure ON-OFF service, provides tight shut-off.

LOWER STEM: Another term for VALVE PLUG STEM.

LUBRICANT RING: Another term for LANTERN RING.

LUBRICANT SPREADER: Same as LANTERN RING.

LUBRICATED PLUG VALVE: A valve designed with a groove which permits a lubricant to seal and lubricate the valve as well as functioning as a hydraulic jacking force to lift the plug within the body.

LUBRICATOR: A device for adding lubricants into a fluid power system.

M

MAIN BODY ASSEMBLY: Another term for VALVE BODY ASSEMBLY.

MAIN VALVE: Another term for VALVE PLUG; or the main valve of a pilot-operated valve.

MALE AND FEMALE JOINT - BONNET: A connection in which the bonnet rests into the body assuring alignment and correct gasket compression. Also eliminates all possibility of gasket blowing out.

MALE THREAD: The external thread on pipe, fittings and valves, etc. for making screwed connections.

MALLEABLE FITTING: Any pipe fitting made of malleable iron.

MANIFOLD: A conductor that provides for multiple connection ports.

MANIFOLD, VENTED: One which is open to the atmosphere and returns fluid to the reservoir.

MANIPULATED VARIABLE: That quantity or condition which is varied by an automatic controller so as to effect the value of the controlled variable; Also a condition or characteristic of the control agent.

MANUAL CONTROL (HAND CONTROL): A hand control of changes in controlled variables.

MANUAL CONTROLLER: A controller having all the basic functions performed by devices which are hand operated.

MAXIMUM OPERATING PRESSURE DIFFERENTIAL: The maximum difference between the pressure on the upstream side of the valve and the downstream side measured at specific locations.

MEASUREMENT: A determining of the instantaneous value of a process variable.

MEASURING ELEMENT: That portion of a control system which senses or measures the degree or amount of change of a process variable.

MEASURING MEANS: That which measures a condition.

MICRON: One millionth of a meter.

MINIATURIZATION: Reducing the size of components to minimize space requirements.

MINIMUM CONTROLLABLE FLOW: The lowest flow at which steady condition of fluid could be maintained, or as guaranteed.

MOTOR: A rotating machine that transforms fluid or electric energy into a mechanical motion.

MOTOR, FIXED DISPLACEMENT: A motor in which the displacement per cycle cannot be varied.

MOTOR, LINEAR: The same as a cylinder.

MOTOR OPERATOR: Also known as actuator. That part of the unit which actually operates the opening and closing of a valve.

MOTOR, ROTARY: A motor capable of continuous rotary motion.

MOTOR, ROTARY, LIMITED: That rotary motor which has a limited motion.

MOTOR, VARIABLE DISPLACEMENT: A motor in which the displacement per cycle can be varied.

MUFFLER: A device for reducing gas flow noise. Noise is reduced by back pressure control of gas expansion.

MULTIPLE ACTION: An action in which two or more controller actions are combined.

MULTI-PORT PLUG VALVE: A plug valve that has two or more port openings.

MULTI POSITION ACTION: An action in which a panel control element is moved to one of three or more predetermined positions, each corresponding to a definite range of values of the controlled variable.

MULTI POSITION CONTROL: A type of control response which selects one of several rates of corrective action, depending on the deviation of a process variable.

MULTIPOSITION CONTROLLER ACTION: An action in which there are three or more predetermined positions of a final control element corresponding to definite values of the variable.

MULTISPEED FLOATING ACTION: An action in which a final control element is moved in two or more rates, each corresponding to a definite range of values of the controlled variable.

N

NEEDLE POINT VALVE: A type of valve having a needle point plug and a small seat orifice for low flow metering.

NEEDLE VALVE: Same as NEEDLE POINT VALVE.

NEUTRAL ZONE: (Pertaining to an automatic controller) A predetermined range of values of the controlled variable within which no control action occurs.

NEWT: The standard unit of kinematic viscosity in the English System. It is expressed in square inches per second.

NIPPLE: The short length of pipe or tube, for joining piping elements.

NOISE: Stray signals in a control system that do not require correction.

NON-CORRESPONDING CONTROL: Same as FLOATING CONTROLLER ACTION.

NON-RISING STEM: A type of valve stem which turns but does not rise when the valve is operated.

NORMALLY CLOSED: Applying to a normally closed valve assembly: One which closes when the diaphragm pressure is reduced to atmosphere. In multi-port valves the normally opened port must be specified.

NORMALLY CLOSED SOLENOID VALVE: A valve in which the inlet orifice is closed when the solenoid coil is deenergized and opened when solenoid coil is energized.

NORMALLY OPEN: Applying to a normally open control valve assembly: One which opens when the diaphragm pressure is reduced to atmosphere. In multi-port valves the normally open port must be specified.

NORMALLY OPEN SOLENOID VALVE: A valve in which the inlet orifice is open when the solenoid coil is deenergized and closed when the solenoid coil is energized.

O

OFF AND ON RESPONSE: A Controller response in which the final control element is moved immediately from one extreme to the other as a result of a change in the controlled variable.

OFFSET: The difference between the value or condition desired and that which is actually obtained. Also known as DROOP.

ON-OFF CONTROL: A control system in which the final control element has only two positions from which to select. Also known as two-position control.

OPERATING PRESSURE: Pressure in the line at which a valve is to be operated.

OPERATING PRESSURE SPAN: The difference between the high and low values of fluid pressure on the diaphragm to produce the required value of plug travel.

O S & Y: Type of valve stem screw, which means "outside screw and yoke". The packing is between the stem screw and the valve body, isolating the fluid from the stem threads. Useful for abrasive and corrosive applications.

OUTPUT: Outgoing signal of a control unit or operation.
OUTSIDE SCREW, RISING STEM: See O S & Y.

OVERSHOOT: Occurs when the process exceeds a target value as operation conditions change.

P

PACK: To install a packing.

PACKING: A sealing device consisting of deformable material or one or more mating deformable elements. Reshaped by manually adjustable compression to obtain or maintain effectiveness of a leak-proof seal.

PACKING ASSEMBLY: That part of a valve which contains the packing gland, the packing nut, etc.

PACKING BOX ASSEMBLY: The part of the bonnet assembly used to seal against leakage around the valve stem.

PACKING, COIL: Packing in coil form.

PACKING GLAND: Another term for PACKING FOLLOWER.

PACKING GLAND FLANGE: Another term for PACKING FLANGE:

PACKING LANTERN: Another term for LANTERN RING.
PACKING LUBRICATOR ASSEMBLY: Air assembly which is used for lubricating the valve.

PACKING NUT WITH GLAND: A packing nut with a gland which compresses the packing.

PACKING NUT WITHOUT GLAND: A packing nut compresses the packing in the stuffing box of a valve.

PACKING, "U": One which the deformable has a "U" shaped cross-section.

PACKING, "V": Packing in which the deformable element has a "V" shaped cross-section.

PACKING, "W": Packing in which the deformable has a "W" shaped cross-section.

PANEL: A plate or a surface for mounting components.

PAPER STOCK VALVE: A valve which is used in the paper industry. The wedge has a knifelike action which closes against the line fluid.

PARALLAX: (with reference to glass front instruments). The apparent change in position of an object resulting from the change in the direction or position from which it is viewed.

PASCAL'S LAW: A pressure applied to a confined fluid at rest is transmitted with equal intensity throughout the fluid.

PERCENTAGE FLOW CHARACTERISTIC: An inherent flow characteristic which, for equal increments of rated plug travel, will give equal percentage changes of the existing flow.

PHASE: A distinct functional operation during a cycle.

PHASE, NEUTRAL: The phase of the cycle from which the work sequence begins.

PHASE SHIFT: A time difference between the input and output signal of a control unit or system.

PILOT-OPERATED: A device in which energy transmitted through the primary element is either supplemented or amplified by energy from another source.

PILOT VALVE: Device for controlling the flow of an auxiliary fluid used to amplify the power of a controller measuring system in effecting control, i.e. a small valve used to operate a large valve.

PINCH VALVE: Has flexible hose and is hand-wheel or cylinder operated. The hose is "pinched" to effect closure.

PIPE DOPE: Another term for PIPE THREAD LUBRICANT.

PIPE SCALE: A hard scale-like material frequently found in pipe, caused by heating operations in making the pipe.

PIPE STRAP: A device for holding light-weight pipe to wall or ceiling.

PIPE SUPPORT: A device for supporting pipe lines.

PIPE THREADS: Screw threads for joining pipe.

PIPING: General term for pipe and fittings used in pipe lines. A complete piping system.

PISTON CHECK VALVE: See LIFT CHECK VALVE.

PLUG: That part of a valve which closes the orifice to stop the flow. See DISC

PLUG COCK: A simple valve in which the fluid passage is a hole in a rotatable plug fitted in the valve body.

PLUG STEM: Another term for VALVE PLUG STEM.

PLUG TYPE DISC: A type of disc used in valves; tapered plug disc and cone shaped seat having wide bearing seating surface.

PLUNGER: Another term for VALVE PLUG.

PNEUMATIC ACTUATOR: A device which converts pneumatic energy into mechanical motion.

PNEUMATIC CONTROLLERS: A mechanism which measures the value of a variable quality or condition and operates to correct or limit deviation of this measured value from a selected reference by pneumatic means.

PNEUMATIC MOTOR ACTUATOR: A device in which rotation of pneumatic motor is translated into mechanical action.

PNEUMATIC OPERATOR: Another term for PNEUMATIC ACTUATOR.

PNEUMATIC POSITIONING RELAY: A device attached to a diaphragm motor or other power unit which is responsive to a pneumatic pressure signal and to the position of the final control element. It controls the energy applied to the power units.

PNEUMATICS: Engineering science pertaining to gaseous pressure densities, and flow.

PNEUMATIC TRANSMISSION: A pneumatic transmission system may be used for distances up to many hundreds of feet. The control variable is converted to an air pressure at a transmitter. The air pressure is then conducted through a single tube to a receiver where it is transduced to a position or force for operation of the controller.

POINTER: Another term for travel indicator, or the indicating needle in a gauge or instrument.

POISE: The standard unit of absolute viscosity in the centimeter-gram-second system.

POP VALVE: A spring loaded quick opening safety valve which opens automatically when pressure exceeds limits for which the valve is set; Normally used as a safety device on boilers and other equipment to prevent damage from an excessive pressure.

POPPET VALVE: A mushroom or tulip shaped valve made of head resisting steel, commonly used for inlet and exhaust valves.

PORT: An internal-external terminus of a passage in a component. The inlet or outlet of a valve. Sometimes used to refer to the valve seat opening.

PORTABLE AIR MOTOR OPERATOR: A device which operators handwheel valves through a pinion ring gear.

PORT-GUIDED CONTROL VALVE: A type of valve in which the plug is aligned by the body port or ports only.

PORT OPENING: The pipe opening of a valve.

PORT, PIPE: A port which conforms to pipe thread standards.

PORT, PLAIN "O" RING: One which uses an "O" ring in a groove located on the port face.

PORT VALVING: A controllable opening between passages that can be closed, opened or modulated.

POSITION ACTION: Action in which there is a predetermined relationship between the value of the control variable and the position of the final control element.

POSITION ACTUATOR: An actuator which produces mechanical motion proportional to the magnitude or duration of the power signal.

POSITION CONTROL: See proportional control.

POSITIONING DIAPHRAGM MOTOR: The same as a DIAPHRAGM ACTUATOR.

POUR POINT: The lowest temperature at which a liquid will flow under specified conditions.

POWER ACTUATED VALVE: A valve having an actuator which uses mechanical, fluid, thermal, or electrical power to open, close, and modulate the valve.

POWER SIGNAL: The energy applied to the actuator of a valve.

POWER UNIT: That portion of the controlling means which applies power for operating the final control element.

PREACT RESPONSE: An output pressure change additive to the proportional response, which has a magnitude dependent upon the rate of the proportional response changes.

PREACT TIME: An output pressure change additive to the proportional response, which has a magnitude dependent upon the rate of the proportional response changes.

PRECISION: The quality of being precise; exactness; accuracy.

PRESSURE: Force exerted against an opposing body, usually expressed in pounds per square inch.

PRESSURE, ABSOLUTE: See ABSOLUTE PRESSURE.

PRESSURE, ATMOSPHERIC: See ATMOSPHERIC PRESSURE.

PRESSURE, BACK: See BACK PRESSURE

PRESSURE DIFFERENTIAL: The difference in pressure between any two points of a system or a component. Also known as pressure drop or ΔP .

PRESSURE DROP: See PRESSURE DIFFERENTIAL.

PRESSURE ELEMENT LAG: The delay between the time a change occurs in a measured medium and the time it appears on an indicating or recording meter; caused by pipe friction, etc.

PRESSURE, GAUGE: See GAUGE PRESSURE.

PRESSURE GAUGE: An instrument for measuring the pressure exerted by a medium on its container.

PRESSURE, HEAD: The force caused by the weight of a column or body of fluids. Normally expressed in feet or inches.

PRESSURE, OPERATING: The pressure at which a system is operating.

PRESSURE REGULATOR: A valve that is used to automatically reduce and maintain pressure below that of the source, for certain processing and heating devices.

PRESSURE REVERSAL: A reversal of direction of movement initiated by a signal responsive to rise in pressure.

PRESSURE, SHOCK: The excess pressure existing in a pressure wave.

PRESSURE, STATIC: The pressure that exists if there is no motion in the fluid.

PRESSURE, SUCTION: The absolute pressure of the fluid at the inlet of a pump.

PRESSURE SEALED BONNET: A valve bonnet which does not depend upon threads and gaskets for a tight seal as the line pressure increases, the seal becomes tighter.

PRESSURE SWITCH: A switch operated by a rise or drop in pressure.

PRIMARY CONTROL ELEMENT: That part of the controller which causes a motion or variation of the measuring element to actuate the controller system.

PRIMARY ELEMENT: That portion of the measuring means which first utilizes or transforms energy from the controller medium to produce a change in the value of the controlled variable.

PRIMARY FEEDBACK: A signal which is a function of the controlled medium, and is compared with the reference input to obtain the actuating signal.

PRIMARY SENSITIVE ELEMENT: A device which senses changes in the process medium and determines magnitude of change, without indicating.

PROCESS: A continuing development involving many changes, a complete system being controlled.

PROCESS CHANGES: Changes in the conditions of a process, such as pressures, temperatures, flows, etc.

PROCESS CHARACTERISTICS: The physical characteristics related to the problems of automatic controls, such as temperature, viscosity, specific gravity, etc.

PROCESS LAG: The interval of time between the movements of a control valve and changes of the controlled variable.

PROCESS TIME LAG: The elapsed time between a change in the final control element and its first effect on the measuring element.

PROCESS VARIABLE: See VARIABLE.

PROGRAM CONTROL: A control system which automatically holds or changes its target value on the basis of time to follow a prescribed program for the process.

PROPORTIONAL: Having the same or a constant ratio; relative to; another term for LINEAR.

PROPORTIONAL BAND: See THROTTLING RANGE.

PROPORTIONAL CONTROL: A controller function which provides an output pressure control signal proportional to the measured variable.

PROPORTIONAL DERIVATIVE CONTROL: A combination of proportional control action and derivative control action.

PROPORTIONAL INTEGRAL CONTROL: A combination of proportional control action and integral control action.

PROPORTIONAL PLUS FLOATING ACTION: A combination of proportional position action and floating acting.

PROPORTIONAL PLUS FLOATING CONTROLLER ACTION: A combination of proportional position action and speed floating action.

PROPORTIONAL PLUS FLOATING PLUS DERIVATIVE ACTION: A combination of proportional position action, proportional speed floating action and derivative action.

PROPORTIONAL PLUS RESET ACTION: A controller action which prevents excessive offset from the desired value when load changes are large or frequent and the process will not tolerate quick or drastic changes in the control action.

PROPORTIONAL PLUS RESET PLUS RATE ACTION: A combination of proportional position action, proportional speed floating action, and rate action.

PROPORTIONAL-POSITION ACTION: An action in which there is a continuous linear relationship between the value of the controlled variable and the position of a final control element.

PROPORTIONAL-POSITION CONTROLS: See PROPORTIONAL CONTROL.

PROPORTIONAL-POSITION CONTROLLER ACTION: An action in which there is a continuous linear relationship between the position of the final control element and the value of the control variable.

PROPORTIONAL RESPONSE: See PROPORTIONAL CONTROL.

PROPORTIONAL SPEED FLOATING ACTION: An action in which there is a continuous linear relationship between value of the controlled variable and rate of motion in a final control element.

PROPORTIONAL SPEED FLOATING CONTROLLER ACTION: An action in which there is a continuous linear relationship between the rate of motion of a final control element and the deviation of controlled variable.

PSI: Abbreviation for POUNDS PER SQUARE INCH.

PUMP: Any of various machines which force a gas or liquid into, or draw it out of something, as by suction or pressure.

PUMP, AXIAL PISTON: A pump having multiple pistons disposed with their axis parallel.

PUMP, CENTRIFUGAL: A pump which produces fluid velocity and converts it to pressure head.

PUMP, FIXED DISPLACEMENT: A pump in which the displacement per cycle cannot be varied.

PUMP, GEAR: A pump having two or more intermeshed rotating members enclosed in a housing.

PUMP, HAND: A hand operated pump.

PUMP, MULTIPLE STAGE: Two or more pumps in a series.

PUMP, RADIAL PISTON: A pump having multiple pistons disposed radially actuated by an eccentric element.

PUMP, RECIPROCATING DUPLEX: A pump having two reciprocating pistons.

PUMP, RECIPROCATING SINGLE PISTON: A pump having a single reciprocating piston.

PUMP, SCREW: A pump having one or more screws rotating in a housing.

PUMP, VANE: A pump having multiple radial vanes within a supporting rotor.

PUMP, VARIABLE DISPLACEMENT: A pump in which the displacement per cycle can be varied.

PYROMETER: An instrument for measuring temperatures higher than those which can be measured by an ordinary thermometer.

Q

QUICK OPENING: An inherent flow characteristic of a valve in which there is a maximum flow with minimum travel.

QUICK OPENING VALVE: A gate valve that has a sliding stem, fulcrum and lever which opens and closes quickly.

R

RADIATION FIN BONNET: A bonnet with fins to reduce heat transfer between the valve body and packing box assembly.

RAILROAD UNION: A type of piping union. See UNION.

RANGEABILITY: The ratio of maximum to minimum flow within which flow characteristics are maintained within stated limits. E.G., a regulator valve producing good flow control between 2% and 98% of its rated flow capacity is said to have a range ability of 49:1 (98/2)

RATE ACTION: An action in which there is a continuous linear relationship between rate of change of the controlled variable and position of a final control element.

RATED CAPACITY

1. **RATED CAPACITY OF A REGULATOR** for specified conditions is the rate of flow through the regulator, guaranteed by the manufacturer, at which the magnitude of the regulated condition of fluid deviates no more than a specified number of units from the set value at the minimum controllable flow, when constant fluid supply pressure to the regulator is maintained.

2. **RATED CAPACITY OF A PRESSURE REGULATOR** for specified condition and fluid is the rate of flow obtainable through the regulator body when the regulated pressure deviates by a stated number of units. (psi, inches, etc.) from the pressure as set originally at the minimum controllable flow.

3. **RATED CAPACITY OF A TEMPERATURE REGULATOR** for specified conditions and fluid is the rate of flow obtainable through the regulator body when the regulated temperature deviates by a stated number of degrees from the temperature as set originally at the minimum controllable flow.

4. **RATED CAPACITY OF A LEVEL REGULATOR** for specified condition and fluid is the rate of flow obtainable through the regulator body when the regulated level deviates by a stated number of units (inches, feet, etc.) from the level as set originally at the minimum controllable flow.

5. **RATED CAPACITY OF A DIFFERENTIAL PRESSURE REGULATOR** for specified condition and fluid is the rate of flow obtainable through the regulator body when the regulated differential pressure deviates by a stated number of units (psi, inches, etc.) from the differential pressure as set originally at the minimum controllable flow.

6. **RATED CAPACITY - EFFECT OF ADJACENT PIPING** - Rated capacity of regulator as guaranteed is based only on the net resistance of regulator and does not include the effect of adjacent piping which may materially limit the operating capacity.

7. **RATED- CAPACITY - LIMITATION** - Rated capacity of regulator as guaranteed may be less than maximum capacity obtainable under stated conditions.

RATED Cv: The value of Cv of a valve at the rated full open position.

RATED TRAVEL: Linear movement of the valve plug from the closed position to the rated full open position.

RATE OF FLOW: An expression of measurement of the medium flowing through a given space in a given time; expressed as GPM (Gallons per Minute), CFH (Cubic Feet per Hour), LBH (Pounds per Hour), etc.

RATE RESPONSE: A controller response which is proportional to the rate of change of the controlled variable.

RATE TIME - DERIVATIVE TIME: The unit of measurement of rate response. The time interval by which the final control element actuated by rate response anticipates a subsequent position to proportional response.

RATIO CONTROL: A control based on a relative proportion between two variables.

REACTION LAG: Process delay caused by the time necessary to complete a reaction before the result of the reaction can be measured.

REDUCER: A connector having a smaller line size at one end than at the other end.

REGULATOR CAPACITY: See RATED CAPACITY.

REGULATOR FLOW COEFFICIENT: See FLOW COEFFICIENT.

RELATIVE HUMIDITY: The amount of moisture in the air as compared with the amount that the air could contain at the same temperature, expressed as a percentage.

RELAY OPERATED CONTROLLER: A controller in which the motion or force developed by the measuring means is used to operate an amplifying relay, the output of which operates the final control element either directly or through additional relays.

RELAY OPERATED CONTROLLING MEANS: A method of controlling in which the energy transmitted from the measuring means is either supplemented or amplified for operating final control element.

RELAY OPERATED MEASURING MEANS: A method of measuring in which the energy transmitted through the primary element is either supplemented or amplified for actuating an automatic controller.

RELAY OUTPUT: That portion of the relay supply which is transmitted to the power unit or to another relay.

RELAY SUPPLY: The auxiliary energy supplied to a relay.

RELIEF VALVE: A self-operated quick opening valve used for bleeding off excessive pressure.

REMOTE CONTROL: System for control of remotely located devices and valves.

REPACK: To change packing.

REPRODUCIBILITY: The exactness with which measurement of a given value can be duplicated.

RESERVOIR: Container for storage of liquid in a fluid power system.

RESERVOIR, ATMOSPHERIC: A reservoir for storage of fluid media at atmospheric conditions.

RESERVOIR, SEALED: A reservoir for storage of fluids isolated from atmospheric conditions.

RESERVOIR, SEALED, PRESSURE: A sealed reservoir for storage of fluids under pressure.

RESET ACTION: (See Proportional-Plus-Reset) If automatic reset, a type of control response giving a rate of valve movement proportional to deviation of the variables.

RESET RATE: A number of corrections per minute made by the control system. Usually expressed as a number of repeats per minute.

RESET RESPONSE: A response in which the controller output rate is proportional to the deviation of the controlled variable.

RESET TIME: The time for the reset system to approach equilibrium after an upset.

RESISTANCE: An opposition to flow or movement; a coefficient of friction.

RESTRICTOR: A device for producing a deliberate pressure drop or resistance in a line by reducing the cross sectional flow area.

RESTRICTOR, CHOKE: A device which reduces the cross-sectional flow area.

RETURN BEND: A "U" type fitting for reversing direction of pipe run.

REVERSE ACTING CONTROLLER: An air operated controller in which its output pressure is decreased as the controlled medium increases.

REVERSE ACTING VALVE: A valve which is normally closed and is opened by an increase of air pressure.

REVERSE ACTUATOR: The actuator of a reverse acting valve.

REVERSE DIAPHRAGM MOTOR: See REVERSE ACTUATOR.

REYN: The standard unit of absolute viscosity in the English system, expressed in pounds-seconds per square inch.

REYNOLDS NUMBERS: A numerical ratio of the dynamic forces of mass flow to the shear stress due to viscosity.

RING JOINT ASSEMBLY: An assembly in which a metal ring of oval or octagonal cross section fits into machined grooves in matching flange faces. General used in high pressure, high temperature service.

RING, PISTON: A ring which seals the space between a piston and the cylinder wall.

RING, SCRAPER: A ring which removes material by a scraping action.

RING, WIPER: A ring which removes material by a wiping action.

RISING STEM: A type of valve stem which turns and rises when the valve is open.

S

SAFETY VALVE: A self operated quick opening valve used for fast relief of excessive pressures.

SCALE ERROR: Difference between true and indicated values of a variable.

SCANNER: An instrument which automatically checks a number of measuring points and indicates which have wandered too far from their desired values.

SCFH: Abbreviation for Standard Cubic Feet per Hour. See AIR, STANDARD.

SCREWED BONNET: A bonnet which screws into the valve body.

SCREWED END: Type of end on valve, fitting or pipe which is joined by threaded connections.

SCREWED FLANGE: A flange which is attached to a pipe by a threaded connection.

SCREWED-IN BONNET: See SCREWED BONNET.

SCREWED STUFFING BOX: Another term for PACKING BOX ASSEMBLY.

SEAL, DIAPHRAGM: A relatively thin, flat sealing device fastened and sealed at its periphery with its inner portion free to move.

SEAL, DYNAMIC: A seal which is used between parts that have relative motion.

SEAL, MECHANICAL: A seal which is aided by mechanical force.

SEAL, OIL: A device which retains oil.

SEAL, PRESSURE: A seal which is aided by fluid pressure.

SEAL, WATER: A seal using water as a barrier.

SEAT: That portion of a valve against which the plug presses to effect shut-off.

SEAT BUSHING: Same as SEAT RING.

SEAT INSERT: Same as SEAT RING.

SEATING ACTION: A valve design in which flow is stopped by a seated obstruction in the flow path.

SEATING ACTION, BALL: A seating action valve design which utilizes a spherical ball to obstruct the flow path.

SEATING ACTION, DIAPHRAGM: A seating action valve design which utilizes a diaphragm to obstruct the flow path.

SEATING ACTION, DISC: A seating action valve design which utilizes a disc to obstruct the flow path.

SEATING ACTION, DISC, SWING CHECK: A seating action valve design which utilizes a hinged disc to obstruct the flow path.

SEATING ACTION, GATE: A seating action valve design which utilizes a wedge to obstruct a flow path.

SEATING ACTION, GATE, SPREADER: A valve which utilizes two companion discs which are positively seated by common spreaders to obstruct the flow path.

SEATING ACTION, GATE, WEDGE: A gate valve which utilizes a solid wedge-shaped gate to obstruct the flow path.

SEATING ACTION, PLUG: A seating action valve design which utilizes a plug to obstruct the flow path.

SEATING ACTION POPPET: A seating action valve design in which the seating valve pops open to obtain free flow in one direction and immediately reseats when flow reverses.

SEAT RING: A separate piece inserted in the valve body to form a valve body part.

SECOND DERIVATIVE CONTROL: A type of control response giving a rate of final control element movement proportional to the acceleration of the change in deviation.

SELF-ACTING CONTROLLER: A type of controller employing the power of the measuring system, without amplification by an auxiliary power source, to effect necessary corrective action.

SELF-ACTUATED CONTROLLER: A type of controller in which all the energy necessary to operate the final control element is supplied by the measuring elements.

SELF-OPERATING CONTROLLER: See SELF-ACTING CONTROLLER.

SELF-OPERATED CONTROLLING MEANS: A system in which all the energy necessary to operate the final control element is derived from the measuring means.

SELF-OPERATED MEASURING MEANS: A system in which all the energy necessary to actuate the controlling means of an automatic controller is derived from the controller medium through the primary element.

SEMI-CONE PLUG DISC: A tapered plug for fine non-characteristic flow regulation.

SENSIBLE HEAT: The heat of the air at dry bulb temperature.

SENSITIVITY: The degree of response of an instrument or control unit to a change in the incoming signal.

SEPARATOR: A device to separate water or foreign matter in suspension in a flowing stream.

SERVO-MECHANISM: A device, as an electric motor, a pump, or a stoker, activated by electrical or mechanical impulses, that automatically operates a machine.

SERVO-MOTOR: An auxiliary power operated amplifying device used in instruments to position final control element under control of the measuring element.

SERVO TECHNIQUES: Methods devised to study performance of servo mechanisms or control systems.

SET POINT: A target value which automatic control devices attempt to reach or hold.

SET VALUE: The value of regulated variable at minimum controllable flow.

SHEAR ACTION: A valve design in which flow is modulated by an element which slides across the flow path.

SHEAR ACTION, BALL: A shear action valve design which utilizes a ported ball rotating on an axis normal to the flow path.

SHEAR ACTION, PLUG: A shear action valve design which utilizes a ported plug rotating on an axis normal to the flow path.

SHEAR ACTION, PLUNGER: See SPOOL SHEAR ACTION.

SHEAR ACTION, SLIDING PLATE: A shear action valve design which utilizes a plate that slides across the flow path.

SHEAR ACTION, SLIDING PLATE, LINEAR: A sliding plate shear action valve design in which the motion of the plate is linear.

SHEAR ACTION, SLIDING PLATE, ROTARY: A sliding plate shear action valve design in which the motion is rotary.

SHEAR ACTION, SPOOL: A shear action valve design which utilizes a spool that slides through the flow path.

SHOCK WAVE: A pressure wave front which moves at a supersonic velocity.

SIDE OUTLET: An ell or tee fitting with a side outlet.

SIGNAL: Information relayed from one point in the system to another.

SILENCER: See MUFFLER.

SINGLE SPEED FLOATING ACTION: An action in which the final control element is moved at a single rate.

SINGLE SPEED FLOATING CONTROL: A control in which the manipulated variable changes at a constant rate in one direction when the deviation is positive and in the opposite direction at a constant rate when the deviation is negative.

SINGLE SPEED FLOATING CONTROLLER ACTION: An action in which the final control element has a single rate of motion.

SINGLE WEDGE GATE: A valve design in which a wedge shaped plug is forced between angled seats to stop the flow.

SLIDING-GATE: A registered trademark of the Jordan Valve Division of Richards Industries for a valve design in which a sliding disc blocks the orifices in a stationary plate to stop or modulate the flow.

SLIP-ON FLANGE: Flange that slips onto pipe and is welded in place.

SLURRY VALVE: A valve having a lever operated knife edged disc that rejects solids which would prevent tight sealing.

SOCKET OR BUTT WELDING ENDS: A type of end used on valves for mating with pipe then are welded into place.

SOCKET WELDED: A valve or fitting which slips over end of pipe and is made pressure tight by welding.

SOLDERED ENDS OR JOINTS: A type of connection made by soldering. Normally used with copper tubing.

SOLDER OR SILVER BRAZED ENDS: A valve design in which sockets are formed at each end into which pipe is either soldered or silver brazed. Commonly used in the plumbing and heating field.

SOLENOID OPERATED VALVE: A valve which is opened or closed by means of an electrical solenoid.

SOLID WEDGE DISC: A disc or wedge of one piece.

S P: An abbreviation for Steam Pressure. A number following the abbreviation is the maximum non-shock operating pressure in psi at a given temperature.

SPACER: See LANTERN RING.

SPECIFIC GRAVITY (LIQUID): The ratio of the weight of a given volume of liquid to the weight of an equal volume of water.

SPRING: A device, as a coil of wire, that returns to its original shape after being forced out of shape.

SPRING ADJUSTING BUTTON: See SPRING SEAT.

SPRING ADJUSTOR: A device used to adjust the compression of a valve spring.

SPRING BUTTON: See SPRING SEAT.

SPRING CASE: See DIAPHRAGM CASE.

SPRING GUIDE: See SPRING SEAT.

SPRING HOLDER: See SPRING SEAT.

SPRINGLESS DIAPHRAGM CONTROL VALVE: A valve having a spring less diaphragm actuator.

SPRING NUT: See SPRING SEAT.

SPRING RANGE: See DIAPHRAGM PRESSURE SPAN.

SPRING RATE: The elastic limit at which a spring is set.

SPRING RETAINER: See SPRING SEAT.

SPRING SEAT: The plate upon which the spring seats rests or is affixed.

SPRING STEM: See ACTUATOR STEM.

STABILITY: The tendency of a fluid to resist permanent change in properties.

STABLE CONTROL: Control in which the value of the controlled variable is maintained within or returned within desirable limits without sustained oscillation.

STANDARD AIR: Air at a temperature of 68°F, a pressure of 14.7 psi, and a relative humidity of 36%.

STATIC BEHAVIOR: The performance of a control system under certain fixed conditions.

STATIC ERROR: The error resulting from the set point being changed from one value to another value and the controlled variable does not follow exactly.

STATIC UNBALANCE: The net force produced on the valve plug in its closed position by the fluid pressure acting upon it.

STEAM BRONZE: A composition of bronze used in valves and fittings.

STEAM TRAP: An automatic device which allows the discharge of condensed water from steam pipes while preventing the escape of steam.

STEM CONNECTOR: A device for connecting the stem of the valve with the spring in the operator.

STEM GUIDED: A valve design in which the stem is mechanically guided to assure plug and seat alignment.

STEP CHANGE: The change from one value to another in a single step.

STOKE: The standard unit of kinematic viscosity in the centimeter-gram-second system. Expressed in square centimeters per second.

STOP CHECK OR NON-RETURN VALVE: A valve which automatically closes when flow reverses and which can be screwed down into a stop or closed position.

STRAIGHT LINE: See LINEAR.

STRAIGHT PROPORTIONAL: See LINEAR.

STAINER: A device through which a fluid is passed to separate insoluble materials.

STRAIN GAUGE: A measuring instrument which converts a force such as pressure, tension, etc. into an electrical signal.

STREET ELL: A pipe elbow having male threads on one end and female threads on the other.

STROKE: See SEATED TRAVEL.

STUFFING BOX BODY: See BONNET ASSEMBLY.

STUFFING BOX FLANGE: See PACKING FLANGE.

STUFFING BOX NUT: See PACKING NUT.

STUFFING BOX SPACER: See LANTERN RING.

SUPERSTRUCTURE: That part of a valve which is located above the body.

SUPERVISORY CONTROL: A control system which furnishes information to a centralized location, to be used by an operator to supervise the control of a process or operation.

SUPPLY SIDE OF PROCESS: That part of the process which does the heating, cooling, or supplying of the material to control the process.

SURFACE TENSION: A property of liquids in which the exposed surface tends to contract to the smallest possible area, as in the spheroidal formation of drops.

SURGE: A momentary rise of pressure in a circuit.

SWING CHECK VALVE: A valve which has a swinging disc that opens with the pressure of the flow and closes automatically when the pressure drops.

SYSTEM ENGINEERING: A method of engineering approach which takes into consideration all of the elements in the control system and the process itself.

T

Tee: A three-way fitting shaped like the letter "T".

TEMPERATURE PILOT ACTUATOR: An actuator which translates thermal change into movement of pilot stem.

TEMPERATURE REGULATOR: (Self Operated) A self operated valve which is opened, closed, or modulated by changes in temperature of the process medium.

THERMAL ACTUATOR: A device which converts thermal energy into mechanical motion.

THERMISTOR: A semiconductor whose resistance is extremely temperature sensitive, permitting it to transmit a strong signal from minor temperature changes.

THERMOCOUPLE: A temperature sensing device consisting of two dissimilar metals which create an electrical signal from temperatures sensed at their point of connection.

THREE POSITION CONTROL: See MULTI-POSITION CONTROL.

THREE-WAY VALVE: A multi-orifice flow control valve with supply return and control ports arranged so that valve stem action in one direction opens supply to control port and reversed valve action opens the control port to return.

THROTTLING: Regulation of flow through a valve.

THROTTLING CONTROL: A type of control which is able to position its final control element in any position between maximum and minimum limits.

THROTTLING RANGE: A percentage of the total range of the variable which will cause the control valve to move from one extreme to the other. Also known as Proportional Band.

TIGHT CLOSING: See DEAD END SHUT-OFF.

TIGHT SHUT-OFF: See DEAD END SHUT-OFF.

TIME SCHEDULE CONTROLLER: A controller which regulates batch processes according to some predetermined time schedule.

TONGUE AND GROOVED JOINT: Normally found on bonnet to body connections. The tongue on the bonnet fits into the groove of the body and assures perfect alignment. Normally used in high pressure, high temperature installations.

TOP AND BOTTOM GUIDED: A design in which the valve plug is aligned by guides in the body or in the bonnet and bottom flange.

TOP BONNET: See BONNET ASSEMBLY.

TOP DIAPHRAGM CASE: See DIAPHRAGM CASE.

TOP GUIDED: A design in which the valve plug is aligned by a single guide in the body, adjacent to the bonnet or in the bonnet.

TOPWORKS: See SUPERSTRUCTURE.

TORICELLI'S THEOREM: The liquid velocity at an outlet discharging into the free atmosphere is proportional to the square root of the head.

TOTAL HEAT: The sum of both the sensible and latent heat.

TRANSDUCER: An element which converts one form of energy into another. Usually an element creating a signal in relation to a condition being measured, like a thermocouple, or a strain gauge.

TRANSFER FUNCTION: A mathematical expression which expresses the relationship between the outgoing and incoming signals of a process or a control element.

TRANSIENT STATE: A temporary abnormal condition of a variable, such as speed, temperature, or pressure change.

TRAP: See STEAM TRAP.

TRAVEL INDICATOR: An indicator for showing the degree of opening or closing of a valve.

TRAVEL INDICATOR SCALE: A scale or plate fastened to a valve and marked with graduations to indicate the valve plug position.

TRAVEL SCALE: See TRAVEL INDICATOR SCALE.

TRIM: A term used in reference to those parts of a valve which are exposed and in contact with the line medium.

TUBING:

1. Small diameter; light weight pipe, usually copper, brass or plastic.
2. A system of small diameter light weight pipes.

TWO-POSITION ACTION: An action in which a final control element is moved from one of two fixed positions to the other. Also known as "open and shut" or "on and off" action.

TWO-POSITION CONTROL: A type of control response in which the final control element can be positioned in one or the other of only two positions.

TWO-POSITION DIFFERENTIAL GAP ACTION: An action in which a final control element is moved from one of two fixed positions to the other when the controlled variable reaches a predetermined value from one direction, and subsequently is moved to the other position only after the variable has passed in the opposite direction to a range of values to a second predetermined value.

TWO-POSITION DIFFERENTIAL GAP CONTROLLER

ACTION: A position action in which a final control element is moved in one direction at a predetermined value of the controlled variable, and subsequently in the other direction only after the value of the variable has crossed a "differential" gap to a second predetermined value.

TWO-POSITION POWER ACTUATED VALVE: A valve having only two positions (open-closed) and which is positioned in one or the other by means of a power actuator such as an electric motor, a piston, etc.

TWO-POSITION SINGLE POINT ACTION: An action in which a final control element is moved from one of two fixed positions to the other at a single value of controlled variable.

TWO-WAY VALVE: A valve with one inlet port and one outlet port.

U

UNION: A pipe coupling which allows the joining or separating of pipe lines without rotating the pipe.

UNION BONNET: A valve bonnet which is fastened to the valve body by means of a union fitting.

UNION FITTING: See UNION.

UPPER DIAPHRAGM CASE: See DIAPHRAGM CASE.

UPPER SPRING BUTTON: See DIAPHRAGM PLATE.

UPPER VALVE STEM: See ACTUATOR STEM.

V

VACUUM: A space out of which most of the air or gas has been taken or until its pressure is less than atmospheric pressure.

VALVE: A device which controls fluid flow direction, pressure, or flow rate.

VALVE, AIR: A valve for controlling air.

VALVE BODY: The main part of a valve which contains the passageway for the medium and the seating surfaces for the plug or disc which control the amount of flow.

VALVE, BUTTERFLY: See BUTTERFLY VALVE.

VALVE CLOSURE MEMBER: That part of the valve which is positioned to close, open, or to control the amount of flow.

VALVE, DIRECTIONAL CONTROL: A valve whose function is to direct or prevent flow through selected passages.

VALVE, DIRECTIONAL CONTROL, CHECK: A directional control valve which permits flow of liquid only one direction.

VALVE, DIRECTIONAL CONTROL, FOUR-WAY: A directional control valve whose primary function is to alternately pressurize and exhaust two working ports.

VALVE, DIRECTIONAL CONTROL, SELECTOR: A directional control valve whose primary function is to selectively interconnect two or more ports.

VALVE, DIRECTION CONTROL, STRAIGHTWAY: A two port directional control valve.

VALVE, DIRECTIONAL CONTROL, THREE-WAY: A directional control valve whose primary function is to alternately pressurize and exhaust working port.

VALVE DISC: Same as VALVE PLUG.

VALVE DISC GUIDE: Same as VALVE PLUG GUIDE.

VALVE DISC STEM: Same as VALVE PLUG STEM.

VALVE FLOW CONTROL: A valve whose primary function is to control flow rate.

VALVE, FLOW CONTROL, DECLARATION: A flow control valve which gradually reduces flow rate to provide deceleration.

VALVE, FLOW CONTROL, PRESSURE COMPENSATED: A flow control valve which controls the rate of flow independent of system pressure.

VALVE, FLOW CONTROL PRESSURE-TEMPERATURE COMPENSATED: A pressure compensated flow control valve which controls the rate of flow independent of fluid temperature.

VALVE, FLOW DIVIDING: A valve which divides the flow from a single source into two or more branches.

VALVE, FLOW DIVIDING, PRESSURE COMPENSATING: A flow dividing valve which divides the flow at constant ratio regardless of the difference in the resistance of the branches.

VALVE, FLOW METERING: See VALVE, FLOW CONTROL.

VALVE GUIDE: See GUIDE BUSHING.

VALVE, HYDRAULIC: A valve for controlling the flow of liquids.

VALVE OPERATOR: The valve part or parts through which forces are applied to move or position the seats. Also known as the actuator.

VALVE OPERATOR, MANUAL: A valve operator consisting of a hand lever, palm button, foot treadle or other manual devices.

VALVE OPERATOR, MECHANICAL: A valve operator consisting of a cam, lever, roller, screw, spring, stem, or other mechanical devices.

VALVE, PILOT: A valve applied to operate another valve or control.

VALVE PLUG GUIDE: A guide in a valve bonnet or body which aligns the plug to assure positive seating.

VALVE PLUG: The movable part of a valve which moves to restrict the port through which the medium travels.

VALVE PLUNGER OPERATOR: See DIAPHRAGM ACTUATOR.

VALVE, PNEUMATIC: A valve for controlling the flow of air or gas.

VALVE PORT: A controllable opening between passages that can be closed, opened or varied. Sometimes refers to the inlet or outlet openings of the valve.

VALVE, NORMALLY CLOSED: A valve which is closed in its static condition.

VALVE, NORMALLY OPEN: A valve which is open in its static condition.

VALVE, PREFILL: A valve which permits full flow from a tank to a working cylinder during the advance portion of a cycle, permits the operative pressure to be applied to the cylinder during the pressing portion of the cycle, and permits free flow from the cylinder to the tank during the return portion of the cycle.

VALVE, PRESSURE CONTROL: A valve whose primary function is to control pressure.

VALVE, PRESSURE REDUCING: A valve whose primary function is to limit outlet pressure.

VALVE: PRESSURE RELIEF: A pressure control valve whose primary function is to limit system pressure.

VALVE, PRESSURE CONTROL, RELIEF SAFETY: A relief valve whose primary function is to provide limitation after malfunction.

VALVE, PRESSURE CONTROL, UNLOADING: A pressure control valve whose primary function is to permit a pump or compressor to operate at minimum load.

VALVE SEQUENCE: A valve whose primary function is to direct flow in a predetermined sequence.

VALVE, SHUT-OFF: A valve designed to operate fully open or fully closed, and not at an intermediate position.

VALVE, SHUTTLE: A connective valve which selects one of two or more circuits because of flow or pressure changes between the circuits.

VALVE STEM: Also known as VALVE PLUG STEM.

VALVE STEM EXTENSION: Also known as ACTUATOR STEM.

VALVE, SURGE DAMPENING: A valve which reduces shock by limiting the rate of the acceleration of fluid flow.

VALVE, THREE-POSITION: A directional control valve having three selections of flow conditions or direction.

VALVE, TWO-POSITION: A directional control valve having two positions to give two selections of flow conditions or directions.

VALVE, TIME DELAY: A valve in which the change of flow occurs only after desired time interval has elapsed.

VALVE TRIM: Normally includes all internal parts of a valve which are exposed to the line fluid.

VARIABLE: A factor or condition which can be measured, altered, or controlled, i.e., temperature, pressure, flow, liquid level, humidity, etc.

VELOCITY: Quickness or rapidity of motion; swiftness; speed.

VENURI THROAT VALVE: A valve which has a reduced opening across the seat and is smaller than the port diameter.

VISCOSITY, ABSOLUTE: The ratio of the shearing stress to a shear rate of a fluid. Usually expressed in centipose.

VISCOSITY INDEX: A measure of the viscosity temperature characteristics of a fluid as referred to that of other fluids.

VISCOSITY KINEMATIC: The ratio of absolute viscosity to the specific gravity of a fluid.

V PORT PLUG: A type of valve plug which provides an orifice in the shape of the letter V; has good throttling characteristics.

W

WELDING ENDS: A type of end on pipe or pipe fittings suitable for welding to another section or fitting.

WET BULB TEMPERATURE: A measure of the degree of moisture. It is the temperature of evaporation.

W. O. G.: An abbreviation for Water, Oil, Gas.

WYE (Y): A pipe fitting with three parts located at other than 90° angles with each other.

Y

Y (WYE): See WYE

YOKE: That part of a valve which connects the valve actuator to the valve body.