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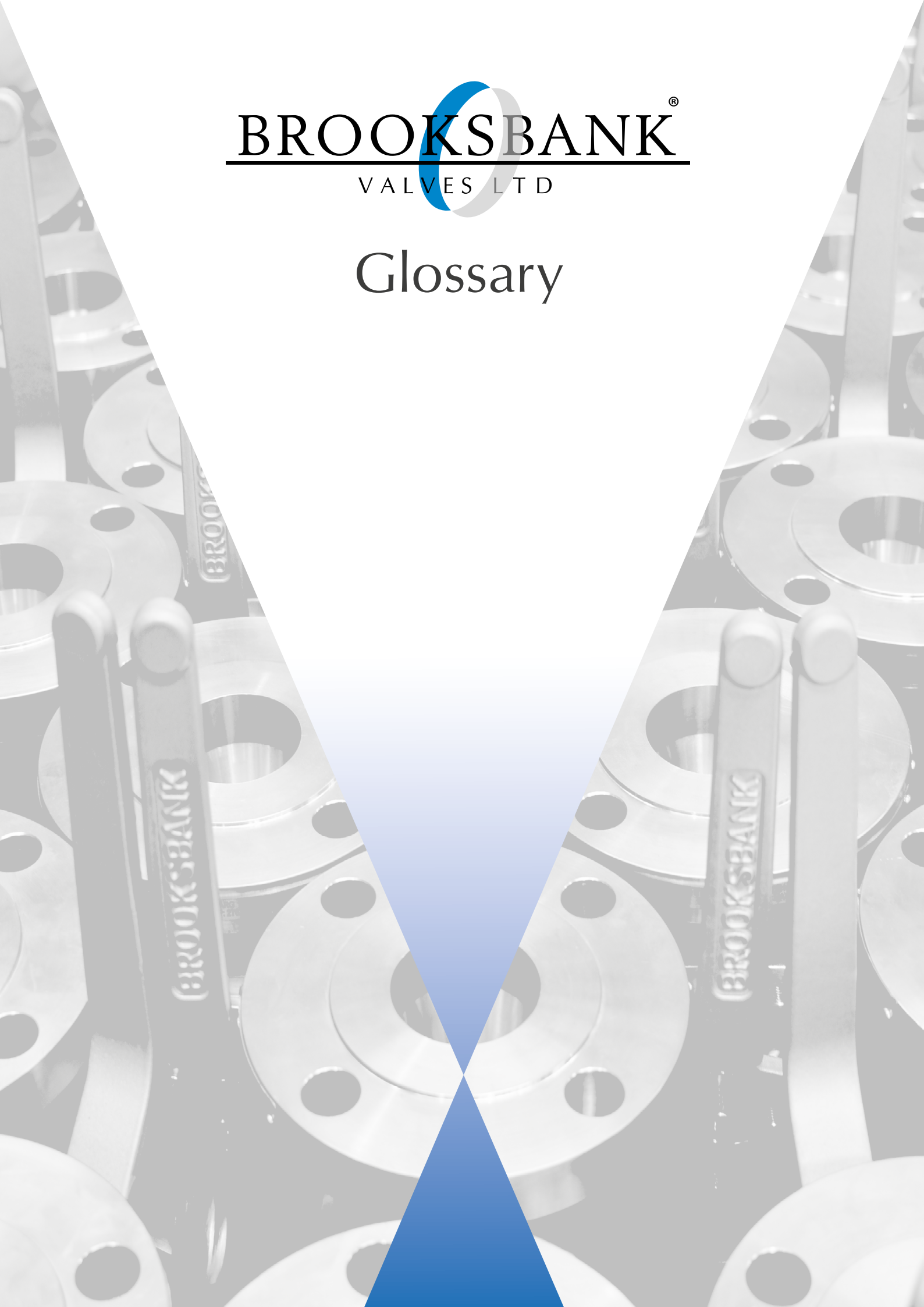
Glossary



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Absolute Pressure: The pressure expressed in bar, Pascal or PSI, as measured above a perfect vacuum.

Actuator: An accessory generally used to remote control / operate a valve using electric, pneumatic or hydraulic means.

Air-To-Close: An increase in air pressure to the actuator is required to cause the valve to close. This is another way of saying the valve is fail open or normally open.

Air-To-Open: An increase in air pressure to the actuator is required to cause the valve to open. This is another way of saying the valve is fail closed or normally closed.

AISI (American Iron & Steel Institute): The American association of steel makers which sets standards for the chemical and physical properties of iron, steel and alloys in various shapes and forms — pipe, cast, wrought, sheet, etc.

All Welded Construction: Valve construction where the body is completely welded and cannot be disassembled and repaired in the service.

Aluminum / Aluminium Bronze: Copper-aluminium alloys where aluminium is the major alloying element. This range of bronzes combines high strength and high resistance to corrosion, the latter depending largely on a thin surface film of alumni. This also confers resistance to tarnish and high temperature oxidisation.

Ambient temperature: The temperature of the environment immediately surrounding an object.

Anchor Pin: A pin fixed or welded to the body of ball valves which aligns and prevents movement of the adapter plate and gear operator while the valve is being operated.

Angle Valve: A type of the globe valve, in which the end connections are at right angles to each other.

Anti-blowout Stem: A valve stem that is made with a shoulder, positively retained by the body or bonnet (to avoid under certain operating conditions, that the stem could accidentally blow out).

Atmospheric Pressure: The external pressure exerted on a body by the atmosphere: 1.014 Bara (14.7 psia) at sea level.

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Back Pressure: The pressure exerted on the downstream side of a valve.

Backseat: A shoulder on the valve stem which seals against a mating surface inside the bonnet to allow replacement of stem seals or packing under pressure.

Ball Check: A fitting with a small ball that seals against a seat preventing flow in one direction while allowing flow in the opposite direction.

Ball Valve: A valve using a spherical (ball) closure element which can be rotated thru 90º to open and close the valve.

Ball: The spherical closure element of a ball valve.

Bare-Shaft: Refers to a valve supplied without lever or hand wheel, where the end of the stem (shaft) is exposed and ready for others to fit their own actuator.

Barstock Valve: Typically a term used to describe small diameter valves where the body is made from wrought bar material rather than castings.

Bellows Seal Bonnet: A bonnet which uses a bellows for sealing against leakage around the valve plug stem.

Bevel Gear Operator (BGO): Accessory allowing operation of a gate or globe valve by means of a set of bevel gears, where the axis of the pinion gear is at right angles to the larger ring gear. The reduction ratio of these two gears enables multiplication of the available torque.

Bi-directional Valve: A valve that is designed to seal against flow or pressure from either direction.

Block and Bleed: The capability of obtaining a seal across the upstream and downstream seat rings of a valve when the body pressure is bled to atmosphere through blow down valves or vent plugs. This is useful for testing the integrity of seat seals. See “Double Block and Bleed.”

Blow Down Valve (BDV): A small ball valve that is installed to vent body cavity pressure. Also see “Block and Bleed”.

Body: The principal pressure containing part of a valve, in which the closure element and seats are located. It provides the pipe connecting ends and the fluid flow passageway.

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Body Relief Valve (BRV): A relief valve (optional) installed on ball valves used in liquid service to provide for the relief of excess body pressure caused by thermal expansion.

Bolt: A fastener having a typically hexagon head and a threaded shank to receive a nut.

Bolted Bonnet: A bonnet which is connected to a valve body with bolts or studs and nuts.

Bolted Construction: Describes a valve construction in which the pressure shell elements are bolted together, and thus can be taken apart and repaired in the field.

Bolt Sets: Bolts or studs, and nuts sometimes supplied with flanged valves to install the valve between line flanges.

Bonnet: The top part of a valve shell which attaches to the body, and typically contains the packinggland, guides and the stem.

Bore (or port): The inside diameter of the smallest opening through a valve, e. g., inside diameter of a seat ring, diameter of hole through ball in a ball valve.

Bubble-Tight Shut-Off: A phrase used to describe the sealing ability of a valve. During air pressure testing of a new valve in the closed position, leakage past the seats is collected and bubbled thru water. To qualify as “bubble tight,” no bubbles should be observed in a prescribed time limit.

Butt Weld Ends (BWE): The profile of end connections of a valve suitably prepared for butt welding to a connecting pipe.

Butterfly Valve: A short face-to-face valve which has a movable disc, in the centre of the flow stream. The disc closure member is pivotally supported by a stem, allowing it to rotate 90° to open and close. Butterfly valves are available in several styles, eccentric and high-performance (zeroleakage) valves, double and triple off-set.

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Cap Screw: A fastener generally having a head with hexagonal drive and whose shank is normally threaded for its full length.

Cast: The form of a valve part e.g. Body, where the shape is formed by moulding.

Casting: A product produced by or the act of producing a product made by: pouring molten metal into a mould and allowing it to solidify.

Cavitation: Cavitation is a concern for liquid services where cavities or bubbles form and thencollapse. It is the two-stage process of vaporization and condensation of a liquid. Vaporization is the boiling of liquid (also known as flashing), and occurs in control valves because the pressure of the liquid is lowered, instead of the raised. As fluid passes through a valve just downstream of the orificearea, there is an increase in velocity or kinetic energy that is accompanied by a substantial decrease in pressure or potential energy. This occurs in an area called the “vena-contracta”. If the pressure in this area falls below that of the vapour pressure of the flowing fluid, vaporization (boiling) occurs. Vapour bubbles then continue downstream where the velocity of the fluid begins to slow and the pressure in the fluid recovers. The vapour bubbles then collapse or implode. Cavitation can cause a choked flow condition to occur and can cause mechanical damage to valves and piping. Can be the cause of excessive noise.

Certifying Authority (CA or Certification Authority): An independent body appointed by the purchaser to conduct a survey of the valves and/or materials that they are buying. It is the responsibility of the supplier to provide the Certification Authority with information, documents, accessto works and personnel to enable the survey to be conducted.
Chain Wheel Operated Valve: An overhead valve operated by a chain drive wheel instead of a handwheel.

Charpy impact test: A destructive mechanical test conducted on a precisely machined coupon of metal to be tested. The coupon is clamped in a special machine and subjected to lateral hammer blows. The test provides a relative measure of the toughness of the metal or its resistance to shock or impact loads and is usually required for material used in low temperature applications.

Check valve: A one-directional valve which is opened by the fluid flow in one direction and closed automatically when the flow stops or is reversed.

Chevron Packing: A type of packing used for gland packing’s, consisting of a nest of “V” cross section rings.

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Clapper: The hinged closure element of a swing check valve.

Class: A designation of pressure capability. E.g. ANSI 150, 300, PN10, PN16, etc.

Closure Member: The moving part of the valve which is positioned in the flow path to control the rate of flow through the valve, e.g. Ball, Disc, Clapper, Gate, and Plug.

Control Valve: A power operated valve that controls a process variable, such as pressure, flow or temperature by modulating its opening in response to a signal from a controller. See "Controller". It usually consists of a valve and an actuator, which responds to a signal from the controlling system and changes the position of a flow controlling element in the valve.

Controller: A device that measures a controlled variable, compares it with a predetermined setting and signals the actuator to re-adjust the opening of the valve in order to re-establish the original control setting.

Corrosion: The deterioration of a material due to chemical action or environmental conditions.

Cold Rating: The maximum pressure that a valve is designed to withstand at ambient temperature.

Cold Working Pressure:- The maximum allowable pressure under non-shock conditions at ambient temperature (approx.-30°C to +40°C.)

Cryogenic Valve: A term used to describe valves designed generally to operate below –40°C.

Cv: Flow coefficient expressed as the number of gallons of water that would flow through an opening, such as a valve port, in 1 minute under a differential pressure of 1 psi.

Cycle Test: A procedure whereby a product is put through a repeated process "Cycle" or series of performance events "Cycles". This can be a set number of cycles, cycles repeated for a set duration of time or it can be continuous operation until something in the product fails.

Cycle: A single complete operation or process returning to the starting point. A valve, stroked from full open to full close and back to full open, has undergone one cycle.

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Dampener: (Slam Retarder). A device designed to prevent the disc / clapper of a check valve from slamming as it closes upon flow reversal. Hydraulic damping cylinders, rotary vanes, and torsional springs are all used for this purpose.

Delta P: See “Differential Pressure,” “Pressure Drop.”

Design Appraisal: A procedure by which a certifying authority, appraises the design parameters of valves or equipment. The supplier shall submit drawings, calculations, and documents as required to the C.A.

Diaphragm Actuator: Is a fluid (usually pneumatic) pressure-operated, spring-opposed diaphragm assembly which positions the valve stem in response to an input signal.

Differential Pressure: The difference in pressure across a valve in a pressurized line. The difference in pressure between any two points in a pressurized system under flowing conditions.

Dip Tube: Extending the blow down valve on large gate valves requires a tube which is located inside of the valve. The tube is called the “dip tube” and extends through the bonnet to the bottom of the body cavity.

Direct Acting: A direct-acting actuator is one in which the actuator stem extends with an increase in diaphragm pressure. A direct-acting positioner or a direct-acting controller outputs an increase in signal in response to an increase in set point.

Disc: The closure element of a globe valve or a swing check valve.

Drain Plug: A fitting at the bottom of a valve body, the removal of this plug allows for the draining or flushing the body cavity.

Drive Pins: Some Ball valves have two pins which fit into the bottom of a valve stem, which engage with corresponding holes in the ball. As the operator turns the stem, the drive pins turn the ball.

Dual Plate Wafer Check Valve: A wafer check valve that is equipped with two half discs mounted on a shaft transverse to the centre of the valve. The discs respond automatically to the fluid flow, permitting fluid to flow in one direction only.

Dye Penetrant Inspection: or Liquid Penetrant Inspection. A non-destructive method of detecting the presence of surface cracks and imperfections through use of a special coloured dye.

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Elastomer: A natural or synthetic elastic material, often used for O-ring seals. Typical materials include Nitrile, Viton, Buna-n, etc.

Electric Actuator: Also known as an Electro-Mechanical Actuator which uses an electrically operated motor-driven gear train or screw to position the actuator stem. The actuator may respond to either adigital or analogue electrical signal.

Emergency Seat Seal: To obtain tight shut off in an emergency situation, a sealant can be injected into a specially designed groove in the seat rings. Available for most ball valves and gate valves.

End Connection: The type of connection supplied on the ends of a valve which allows it to beinstalled in a pipeline. The most common of these connections are threaded, welded or flanged whichinclude flat faced (FF), raised face (RF) and ring type joint (RTJ).

End Entry Ball Valve: A one piece ball valve that has the ball assembled from one end of the boreand held in position by a seat/retainer ring fastened to the body.

Erosion: The mechanical wearing away of a metal surface or part due to fluid impingement. Thepresence of entrained solid particles accelerates this process.

Extended BDV (Blow Down Valve): Used on buried valves where the drain plug is inaccessible. Instead, a line is piped above ground, terminating in a small valve. Line pressure isused to blowout condensates and other material which settles in the bottom of the body cavity. See“Blow down valve”

Extensions: The equipment applied to buried valves or valves below walkways to provide above grade accessibility to operating gear.

External Coating: Coating applied to protect valves against various arduous environments – sea water/air, etc. (not normally a requirement for bronze valves).

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Face-To-Face: The overall dimension from the inlet face of a valve to the outlet face of the valve.This dimension is governed by various standards, including ANSI B16.10 and API-6D to ensure that such valves are mutually interchangeable, regardless of the manufacturer.

Facing: The finish of the contact surface of flanged fittings, often expressed as a roughness value.

Fail Safe Valve: A valve designed to fail in a preferred position (open, closed or in-place) in order to avoid an undesirable consequence in a piping system.

Fail-Open: or normally open: Another way of describing an air-to-close actuator.

Fail-Closed: or normally closed: Another way of describing an Air-To-Open actuator. The majority of all spring-return diaphragm operators are of this construction.

Fail-In-Place: A term used to describe the ability of an actuator to stay at the same percent of travel it was in, when it lost its air supply. On spring return actuators this is accomplished by means of a lockup valve. On piston actuators a series of compressed air cylinders must be employed.

Female Thread: An internal screw thread designed to mate with a component having male (external) threads of the same size and type.

Field Serviceable Valve: An indication that normal repair or replacement of operating parts can be accomplished in the field without return to the manufacturer.

Fire Safe Valve: A valve designed to be capable of passing certain specified leakage and operational tests after exposure to fire. API Spec. 6FA and BS Spec 6755 refer. Not a term generally applied to bronze valves due to the low melting point of bronze.

Flange: A cast or formed pipe fitting with bolt holes to provide means of attachment to piping components having a similar fitting.

Flangeless: A valve that does not have integral line flanges, sometimes referred to as a Wafer Style valve. The valve is installed by bolting it between the companion flanges with a set of bolts or studs, called line bolting.

Flat Face (FF): A flange surface in which the gasket sealing area is the entire surface from the inner diameter to the outside diameter. Usually used brittle materials such as cast iron or soft / very ductile materials such as bronze, where over tightening of the flange bolt could otherwise crack or bend a RF flange.

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Flexible Wedge: A specially designed closure member (Wedge) from a gate valve, which allows themating surfaces of the wedge to flex/move and align more accurately to the valve seats. Helps avoid thermal wedging.

Floating Ball Valve: A ball valve where the ball is free to float between the seat rings. Generally such a valve will have higher torques than a trunnion mounted ball valve.

Flow Coefficient: The number of gallons of water per minute that will flow through a valve with a pressure drop of 1 psi. Also referred to as the Cv of the valve.

Fluid: Any non-solid substance that can be made to flow. Both liquids and gases are fluids.

Forging: A metalworking process which generally involves hammering / pressing, with or without a die, at high temperatures to form a specific shape.

Full bore (full port): Describes a valve in which the bore (port) is nominally equal to the bore of the connecting pipe.

Galling: The tearing of metal surfaces when two elements rub against each other. Usually caused by lack of lubrication or extreme contact pressure of materials of a similar hardness value.

Gas: A compressible fluid – such as air, hydrogen, nitrogen, etc.

Gasket: A component whose purpose is to seal a joint between two larger components, softer than the surfaces of the joint being sealed and usually squeezed by means of bolting to effect the seal.

Gate Valve: A straight-thru pattern valve whose closure element is a wedge, situated between two fixed seating surfaces, with means to move it in or out of the flow stream in a direction perpendicular to the pipeline axis.

Gate: The closure member of a gate valve (sometimes called wedge).

Gland: That part of a valve which retains or compresses the stem packing. Sometimes manually adjustable.

Gland Nut: The gland nuts are used to exert a force on the gland.

Gland Packing: A soft conformable material fitted to a valve to create a seal between the process fluid and the atmosphere.

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Gland Plate: The plate in a valve which retains the gland, gland bushing or stem seals and sometimes guides the stem.

Globe valve: A valve whose closure element is a flat disc or conical plug sealing on a seat which is usually parallel to the flow axis. Can be used for throttling services.

Gear Operated: The actuation of a valve thru a gear set which multiplies the torque applied to the valve stem.

Graphite: Flexible carbon material used to make gaskets and packing. The gaskets may be flat graphite sheet or have metal inserts for added strength. The packing is a combination of lattice braided rings used as anti-extrusion or wiper rings and die-formed rings which are compressed to effect the seal.

Hand wheel: A wheel-shaped valve operating device intended to be grasped with one or both hands which allows turning the valve stem or operator shaft to which it is attached.

Hard facing: A surface preparation in which an alloy is deposited on a metal surface usually by weld overlay to increase resistance to galling, abrasion and or corrosion.

Heat Treatment: Describes any process or procedure by which the internal structure of a material is altered by heating to produce desired physical characteristics. This is usually accomplished by furnace heating followed by controlled cooling.

Holiday: An imperfection or “bare spot” in a coating, paint or plating.

Hot tears: A defect occurring in castings caused where partially solidified or weak, newly solidified sections are subjected to a pull resulting from the contraction of thinner parts that have solidified earlier. A hot tear is an inter-granular failure.

Hydraulic Motor Actuator (Operator): A device by which rotation of a hydraulically powered motor is converted into mechanical motion.

Hydrostatic Test (Shell Test): A test in which a valve is completely filled with water and pressure tested. Used to test the integrity of the pressure-containing parts.

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Incompressible Flow: A fluid such as water, which has no significant change in volume and density as the pressure increases.

Incremental Seat Test: The leakage testing of valve seats in an assembled valve by increasing the applied pressure in prescribed pressure steps.

Inlet Port: That end of a valve which is connected to the upstream pressure zone of a fluid system.

Inside-Out Air Seat Test: A pressure test that can be performed only on independent seating trunnion mounted ball valves. By closing the valve and pressurizing the body cavity, all of the seals in an independent seating ball valve can then be pressure tested.

"INSITU" Service: To maintain or repair a product "in its original place," such as a top entry ball valve.

Integral Flanged: A valve body whose flange connections are an integral or cast part of the body.

Integral Seat: The flow control orifice and seat that is an integral part of the valve body or cage. The seat is machined directly out of the valve body and is not replaceable without replacing the body itself.

Internal Pressure Relief: A self-relieving feature in non-independent seating valves that automatically relieves excessive internal body pressure caused by sudden changes in line pressures. By means of the piston effect principal the excessive body pressure will move the seat away from its seating surface and relieve it to the lower pressure side.

ISO (International Standards Organization): An organization which sets minimum international standards for a wide variety of items manufactured and used in pipeline services.

ISRS: Inside screw, rising stem- common term for any valve design in which the stem threads are exposed to the fluid below the packing and the stem rises up through the packing when the valve is opened.

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Lever: A handle type operating device for quarter-turn valves.

Leakage Classification: Procedures are outlined in various standards, which gives specific tests and tolerances for seat leakage classifications. It should be remembered that these tests are used to establish uniform acceptance standards for manufacturing quality and are not meant to be used to estimate leakage under actual working conditions. It should not be expected that these leakage rates will be maintained after a valve is placed in service.

Lifting Lugs: Lugs that may be provided on large valves, for lifting and positioning. Also called lifting eyes.

Limit Switch: An electrical device providing a signal to a remote observation station indicating when the valve is in the fully open or fully closed position. Usually a component of a valve operator.

Linear Valve: Another name for a globe valve. It refers to the linear or straight-line movement of the plug and stem.

Liquid Penetrant Inspection: or Dye Penetrant Inspection. A non-destructive method of detecting the presence of surface cracks and imperfections through use of a special coloured dye.

Locking Device: A device such as a padlock, provided to prevent unauthorized valve operation or tampering.

Locking Facility: The mechanism provided on a valve, which can accommodate a locking device to prevent unauthorised valve operation.

Magnetic Particle Inspection: An inspection procedure for detecting surface cracks in welded areas through the use of fine iron particles in an electrical field. Cannot be used on non-magnetic non-ferrous materials.

Male Thread: The external thread on pipe, fittings or valves used in making a connection with mating female (internal) threaded parts.

Material Test Reports: Certificates provided by the material manufacturer indicating the chemical analysis and mechanical properties of a specific batch of material traced by heat numbers.

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MAWP: (Maximum Allowable Working Pressure or Cold Working Pressure). The maximum working pressure (Bar or Psi) at which a valve is designed to be operated up to

MDS – Material Data Sheet: The material data sheet defines the minimum requirements for the required materials, i.e., chemical requirements, manufacturing, qualification of supplier, mechanical testing and properties, non-destructive examination, repair, marking, and certification.

Mechanical Seal: The wedging action of a gate against the seats or the seat springs pushing the seat against the ball or gate are examples of mechanical seals in a valve.

Metal-To-Metal Seal: Seal produced by metal-to-metal contact of the seat ring and the closure element, without use of an elastomer seal. Manual Gear Operator: A gear operator that is operated manually (usually with a hand wheel).

Mill Certificates: Certificates, provided by the material manufacturer, indicating the chemical analysis and physical properties of a unique batch often referred to as a "heat". "Mill Certificates" are usually required for pressure containing parts only and customers should make their requirements known at the time order placement.

Mill Tests: All tests required by the material specification. Generally includes Chemical analysis and mechanical properties as a minimum. Low temperature materials would also require impact tests.

Mould: A hollow cavity often in sand, providing a desired geometry to be filled by molten metal for making castings.

MSS: (Manufacturers Standardization Society of the Valve and Fitting Industry).
The technical association of valve and actuator manufacturers, which publishes appropriate recommended standards and practices for the valve industry.

Multiport valve: A valve that has three or more ports arranged to switch flow.

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NiAlBr: Nickel Aluminium / Aluminum Bronze alloy. Renowned has having high strength and ductility which is retained at low temperatures, good shock & wear resistance, good casting qualities as well as being easy to machine. Additionally it is easy to weld and has good thermal and electrical conductivity properties. It has exceptional corrosion resistance due to a tough oxide layer. Heat treatment further increases its seawater corrosion properties, making it an ideal choice in marine environments with the material being used for seawater valves and ships components.

NACE – National Association of Corrosion Engineers: This technical association publishes papers, articles and standards on all aspects of corrosion, and has written the definitive standards for valve materials for sour gas service.

NDE: (Non-Destructive Examination). See NDT

NDT: (Non-Destructive Testing). Inspection tests which are not destructive to the component structure or function. Tests such as radiography, dye penetrant and magnetic particle testing.

Needle Valve: A multi-turn device with a needle-shaped closing element. Similar in design to globe valves, but often much smaller.

Non-Rising Stem: When the stem turns in a gate Valve, the gate moves but the stem does not rise. Stem threads are generally exposed to process fluids.

NPS - Nominal pipe size: Dimensionless number used to indicate sizes of pressure pipe.

NPT - National Pipe Taper: Standard tapered thread for pressure pipe and components. Requirements defined in ASEM B1.20.1.

Operator: A device which converts manual, hydraulic, pneumatic or electrical energy into mechanical motion to open and close a valve

O-Ring: An elastomeric or synthetic seal ring of circular cross-section.

Outside Screw & Yoke: Where the stem sealing is between the valve body and the stem threads.Used to ensure the fluid does not come in contact with the stem threads.

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Packing Gland: That part of a valve which retains or compresses the stem packing. Sometimes manually adjustable.

Packing: A sealing system that normally consists of a deformable material such as PTFE, graphite, etc. It is usually in the form of solid or split rings contained in a packing box that are compressed so as to provide an effective pressure seal.

Packing Box: The chamber located in the bonnet that surrounds the stem and contains the packing and other stem-sealing components.

Pattern: Usually wooden or aluminium in the shape of a part to be cast. Used to form the mould into which molten metal is poured.

Pig: A device, closely conforming to the pipe bore, which is forced thru a pipeline to clean the pipe of all foreign material and debris. The valves in a pipeline that will be pigged, must be thru-conduit, full port, otherwise the pig will not pass through them.

Pinion Shaft: The external input shaft of certain gear operators which drives internal reduction gearing. The pinion shaft can accept a hand wheel or power operator.

Plug Valve: A quarter-turn device which uses a rotating plug as the closing element. When the valve is open, the media flows through a hole in the plug, which can be cylindrical or truncated.

Plug: The rotating closure element of a plug valve. Also a threaded fitting used to close off and seal an opening into a pressure containing chamber, e.g. drain plug.

PMI: (Positive material identification). A method for cross checking the identity of a piece of material, often using a portable spectrometer, usually with x-rays (nuclear analyser or optcal spectrometer). However, sometimes PMI is used to simply request Mill certificates to be traceable to individual components by marking with heat numbers.

Pneumatic test: A test in which a valve is tested with air or nitrogen.

Porosity: A defect found in castings or welds consisting of gas bubbles or voids in the solidified metal.

Positioner: A device used to position a valve with regard to a signal. The positioner compares the input signal with a mechanical feedback link from the actuator.

Position Indicator: An external device which visually indicates the open and closed position of a valve.

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Power Operator: Powered valve operators are of the following general types: Electric Motor, Pneumatic or Hydraulic Motor, Pneumatic or Hydraulic Cylinder.

Pressure Class: A designation of pressure capability. E.g. ANSI 150, 300, PN10, PN16, etc.

Pressure Sealed Bonnet: A type of bonnet design where the fluid pressure is used to produce the seal between the body and bonnet.

Pressure Test: A test using specified pressures of liquid or gases, which can be used to check sealing, integrity, design standards, etc. of a particular product.

Pressure-Temperature Ratings: The maximum allowable working pressures at specified temperatures. For steel valves, the ratings are defined by “classes” and found in ASME B16.34. For iron and bronze valves, the ratings are defined in the applicable MSS specifications.

PTFE (Polytetrafluoroethylene): a soft polymer that is compatible with almost any substance. Known for “flowing” under elevated pressure and temperature.

Quality Assurance: Planned regular and/or preventive actions which are used to ensure that materials, products, or services will meet specified requirements.

Quarter-turn: A method of valve operation involving a 90 degree turn of the stem to move from being fully open to fully closed. This describes valves such as ball, plug, and butterfly.

Radiographic inspection: A non-destructive inspection method using x-rays to locate internal flaws in castings, fabricated parts and welds. Abbreviated as RT.

Raised Face (RF): The raised area of a flange face which is the gasket sealing surface between mating flanges. RF flanges should not be used on brittle or soft ductile materials to avoid cracking or bending of the flange.

Reduced Port (RP): A valve port opening that is smaller than the line size or the valve end connection size. A reduced port is used for several reasons including, adjusting a large valve to handle smaller flow requirements, reduced inlet and outlet fluid velocities, and correct errors in over sizing.

Regular Port Valve: A term usually applied to plug valves. The “regular” port of such a valve is customarily about 40% of the line pipe area.

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Relief Valve: A spring loaded valve that opens (relieves) when the pressure exceeds the spring setting. Occasionally fitted to the body cavity of ball and gate valves to relieve thermal overpressure in liquid services.

Resilient Seat: A valve seat containing a soft seal, such as an O-ring, to assure tight shut-off.

Rim Pull Force: The force required at the edge of the hand wheel to generate the required on thestem.

Ring Type Joint (RTJ): A flange connection using a specially shaped soft metal ring as a gasket. Generally used on high pressure valves.

Rising Stem: A valve stem which rises as it is turned and the valve is opened.

Rotary Valve: A valve style in which the flow closure member is rotated in the flow stream to modify the amount of fluid passing through the valve (i.e. Ball Valve).

Sampling Valve: A valve that can be used to take samples from a vessel or piping system.

Schedule: A system for indicating the wall thickness of pipe. The higher the schedule number, the thicker the wall for a certain pipe size.

Screw Down Check Valve: A check valve that is a check valve where the closure member can be tightened against the seat.

Screwed Ends: Threaded end connections supplied on some valves. Usually tapered pipe threads (NPT or BSPT).

Seal (Dynamic): A seal used between parts with relative motion, e.g. stem seals, seat seal O-rings, etc.

Seal (Static): A seal used as a gasket between two non-moving parts, e.g. valve body / bonnet O-ring, flange gasket.

Seat: That part of a valve against which the closure element (wedge, ball or disc) effects a tight shutoff. Can be “Integral” to the valve body or “Separate” using a replaceable seat ring.

Seat Ring: A part of the flow passageway that is used in conjunction with the closure member to effect a tight shut-off. Often replaceable to allow for maintenance purposes.

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Self-Relieving: The process whereby excessive internal body pressure, is automatically relieved either into the upstream or downstream line by forcing the seats away from the closure element.

Short Pattern Valve: A valve whose face-to-face dimension is less than the industry standard.

Shrinkage: Internal defect in castings that are internal voids, irregular in shape, caused by volume contraction during solidification. Can be caused by not maintaining a fluid channel to the riser during solidification.

Slam Retarder - Dampener: A device designed to prevent the disc / clapper of a check valve from slamming as it closes upon flow reversal. Hydraulic damping cylinders, rotary vanes, and torsional springs are all used for this purpose.

Socket weld end (SWE): The end connection of a valve suitably prepared for socket welding to a connecting pipe.

Specification: A document that defines the requirements that a finished product must conform to- may include chemical and mechanical properties, tolerances, marking, shipping, etc. Split Body: A valve whose body is split. This design allows for easy plug and seat removal. Splitbodied valves are made in both the straight-through and angle versions.

Stem Indicator: (Visible Position Indicator). A position indicating device which can be supplied with gate valves. It serves to indicate the relative position of the wedge/gate.

Stem Nut: A one or two-piece nut which engages the stem threads of a valve and transmits torque from an operator to the valve stem.

Stem: A shaft used to transmit motion from an operator to the closure element of a valve.

Stem Guide: A guide bushing closely fitted to the valve stem and aligned with the seat. Good stem guiding is essential to minimize packing leakage.

Stop Collar: A collar on a ball valve which restricts the ball to 90º of rotation from the fully open to the fully closed position.

Stroke: The distance the plug or stem moves to go from a fully closed to a fully open position. Also called Travel.

Stud: A bolt, threaded on both ends, often used in bolting together two components, one of which has blind tapped bolt holes.

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Stuffing Box: (Gland or Packing Box). The annular chamber provided around a valve stem in a sealing system into which deformable packing is introduced.

Swing Check Valve: A check valve in which the closure element is a hinged disc / clapper which swings or rotates about a supporting shaft.

Tensile test: A destructive test performed on a specially machined specimen taken from material in its delivered condition to determine mechanical properties, such as tensile strength, yield strength and percent elongation.

Test Certificates: Documents provided by a manufacturer certifying that required tests were performed and the results of those tests.

Three Piece Ball Valve: A split body ball valve that has a body which can be split into three parts, comprising body and body end connectors including the pipe flanges.

Three Way Plug Valve: A plug valve that is a three way valve with three paths of flow through the valve body.

Throttling: The intentional restriction of flow by partially closing or opening a valve.

Top Entry: The design of a particular valve where its internals can be accessed by removing its top, hence it can be serviced or repaired by leaving its body in the process line.

Torque: The turning effort required to operate a valve.

Travel: The distance the plug or stem moves to go from a fully closed to a fully open position. Also called Stroke.

Trim: Commonly refers to the valve's working parts and to their materials. Usually includes seat ring sealing surfaces, closure element sealing surfaces, stems, and back seats.

Triple Eccentric (Butterfly Valves): A particular design of a butterfly valve where the stem is located behind the disc, below the centreline of the disc, and its cone axis is offset from the centreline of the disc. This particular design is capable of a very tight shutoff.

Trunnion: That part of a ball valve which holds the ball on a fixed vertical axis and about which the ball turns. The torque requirement of a trunnion mounted ball valve is significantly less than that for a floating ball design.

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Ultrasonic Inspection: An inspection procedure using high frequency sound waves to detect voids and imperfections throughout the thickness of metal parts.

Uni-directional Valve: A valve that is designed to seal in one flow direction.

Union bonnet: A type of valve construction in which the bonnet is held on by a union nut with threads on the body.

Union Connection: A small 3-piece fitting used to join two lengths of pipe. A female piece is installed on each of the two pipe ends and the connection is mechanically sealed by an external nut.

Valve: A device used to control the flow of fluid contained in a pipe line.

VDS: (Valve Data Sheet). A data sheet defining the minimum level of a valve design, including the materials, testing, inspection, and certification requirements.

Vena Contracta: The location where the cross-sectional area of the flow stream is at its minimum size, where fluid velocity is at its highest level, and where fluid pressure is at its lowest level. The vena contracta normally occurs just downstream of the actual physical restriction in a control valve.

Venturi Valve: A reduced bore valve. A valve having a bore smaller in diameter than the inlet or outlet. The flow through a venture valve will be reduced because of the smaller port. Venturi valves can often be economically substituted for plug valves.

Visible Position Indicator: (Stem Indicator). A position indicating device which can be supplied with gate valves. It serves to indicate the relative position of the wedge / gate.

Wafer Style Valve: A valve that does not have integral line flanges, sometimes referred to as a flangeless valve. The valve is installed by bolting it between the companion flanges with a set of bolts or studs, called line bolting.

Water Hammer: The physical effect, often accompanied by loud banging, produced by pressure waves generated within the piping by rapid change of velocity in a liquid system. Can be caused by a valve closing too quickly.

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Weld End: The end connection of a valve which is to be installed by welding into the line.

Weather Proof: Describes a valve operator or other device that is protected against intrusion of water or other atmospheric contamination.

Wedge Gate: A gate whose seating surfaces are inclined to the direction of closing thrust so that mechanical force on the stem produces tight contact with the inclined seats.

Worm Gears: Gears used to transmit motion or power between right angle shafts when a high-ratio reduction is necessary. The worm is the small gear which drives the larger ring gear. Worm threads resemble screw threads.

Wrench Operated: The operation of a valve by means of a handle or lever. Used on smaller size and lower pressure class valves.

X-RAY Inspection: (Radiographic Inspection). A non-destructive inspection method using x-rays to locate internal flaws in castings, fabricated parts and welds.

Yoke: That part of a gate valve which serves as a spacer between the bonnet and the operator or actuator.

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