

Glossary of Terms

ABS	American Bureau of Shipping
Actuator	operation of valve using electric, hydraulic or pneumatic powered device. Primarily used for remote valve control or valve sequencing.
Aluminum bronze disc	furnished to comply with ASTM B-148 Alloy 952 or Alloy 954.Al- Bronze discs are normally used in seawater and a variety of medium corrosive service conditions.
Ambient temperature	temperature immediately surrounding an object.
Angle valve	similar in principle and a companion line to the globe valve. They are designed to permit a 90 degree turn in piping and are less restrictive to flow.
ANSI	American National Standards Institute
API	American Petroleum Institute
Articulated tug barge (ATB)	barge and tug connected by a mechanical gear or pin system that allows tug to stay connected to the barge in push mode in heavier seas than traditional winch connections.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
Austenitic stainless steel	alloy is used widely to combat corrosion in chemical process industries, pulp and paper mills, and in the textile and dye industries. Particularly suitable for handling acetic acid, phosphoric acid, dilute sulfuric acid, food stuffs, fatty acids, and many reducing organic acids. ASTM A-351, Grade CF8M
AWWA	American Water Works Association
Ball	closure mechanism of a ball valve.
Ball valve	unique in design, ball valves controls the flow of a wide variety of fluids. It can be opened or closed in a quarter-turn of the operating handle. Light and durable, these valves are widely used because of their weight, cost and ease of operation.
Ballast	The use of water in ship tanks to control buoyancy and stability on vessels.
Basket strainer	device for mechanically removing solids from flowing liquids or gases by means of perforated or wire mesh straining element.
Bilge	lower section of a vessel that collects water from rough seas, rain, minor leaks, and interior spills that can be pumped out for discharge.
Black oil barge	barge that carries asphalt, oil and crude oil. Typically have heating system on barge.
Body	the portion of a valve containing the closure element and seat.
Bolted bonnet joint	a practical and commonly used joint for larger size valves or for higher pressure applications. Multiple bolting, with small diameter bolts, permits equalized sealing pressure without the excessive torque needed to make large threaded joints.
Bolted construction	valve construction where elements are bolted together. This allows for valve to be taken apart and repaired in field.
Bolted gland	deep stuffing box with two-piece gland and flange with swing-type eye bolts. Construction maintains an even load on the packing and prevents binding on the stem even when the gland bolt nuts are pulled up unevenly.



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Bonnet	top part of valve that contains packing gland, guides the stem and adapts to extensions or operators.
Bore	inside diameter of the smallest opening in a valve.
British Standard Pipe	threaded fitting pattern also known as BSP. Comes in either British Standard Pipe Parallel (BSPP) which is a straight socket design also known as "G" thread ISO 228 or British Standard Pipe Tapered (BSPT) which has a tapered design. Also known as "R" thread ISO 7-1. JIS "PT" is interchangeable with BSPT thread.
Bunker barge	small barge that delivers fuel to ships. Also known as a Lightering Vessel.
Butt Weld	connection between valve and pipe where both ends are beveled for jointing and then welded.
Butterfly valve	extremely durable, efficient and reliable. The seating surface is not critical because the disc impinges against a resilient liner to provide bubble tightness with low operating torque.
Cast brass	good machinability of this copper-base alloy makes this material ideally suited for 600 PSI valve bodies. ASTM B-584
Cast carbon steel	excellent material for pressure-containing parts of steel valves within the scope of carbon steel. Its strength and toughness assure high resistance to shock, vibration, piping strainners, and fire and freezing hazards. It is readily weldable and meets requirements of the various piping codes. ASTM A-216, Grade WCB
Cast chromium-molybdenum alloy steel	recommended for welding piping systems operating at temperatures up to 1,100°F and 1,000°F for flanged. This alloy is readily weldable and strong resistance to graphitization and creep at elevated temperatures. ASTM A-217, Grade WC6
Cast chromium stainless steel	valve trim for wide range of service conditions where severe corrosion resistance is not required. This alloy is recommended for oil, oil vapor, and mild corrosives up to 1,000°F. Discs for smaller size valves, hinges for swing check valves, and centrifugal tube castings for seat rings for Trim 1 valves have a considerable difference in hardness to minimize seizing and galling. ASTM A-217, Grade CA15
Cast composition bronze	an alloy of copper, tin, lead, and zinc. Often called ounce metal or 85-5-5-5. This alloy is used in lower pressure bronze valves and is serviceable as well as economical. Service recommendations are for steam, water, oil, or gas up to 450°F. ASTM B-62
Cast ferritic ductile iron (Nodular Iron)	given and ferritizing heat treatment to ensure uniform mechanical and ductility properties throughout each section. ASTM A-395 & A-536
Cast gray iron	high strength cast iron. Constant chemical and physical control assures uniform density, soundness, and close grained structure throughout the different section thicknesses. ASTM A-126, Class B
Cast steam bronze	a high grade bronze alloy of unusual strength and toughness. This alloy is used for castings in higher pressure bronze valves. Service recommendations are for steam, water, oil, or gas up to 550°F. ASTM B-61



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Centrifical pump	pump has impellers that are connected to a shaft and driven by engine or electric motor. Pumps will spin at 1,800 RPM and can be used on clean or dirty oil cargos. Most common style of pump on barges.
Check valve	sometimes referred to as the non-return valve, check valves stop back-flow in piping systems. Unlike gate and globe valves, this simplest type of valve operates automatically.
Clean oil barge	barge that carries clean products such as gasoline and home heating oil.
Commercial brass	used for low stressed parts of bronze valves such as glands, pins, and other miscellaneous valve parts. ASTM B-16
Composition disc	non-metallic seal for closure disc. Commonly used in bronze globe valves for air or other bubble tight service.
Compressed air	used to operate various ship systems including automation, air starter and tools. Other compressed gases are used on certain vessels for HVAC, fire fighting systems or welding.
Conventional (ordinary) disc	closure disc for globe valves. Designed for moderate flow throttling service.
DIN	Deutsches Institute für Normung eV. German Institute for Standardization; like US ANSI
DNV	Det Norske Veritas
Double flanged butterfly valve	offers intergrally cast flanged ends for installation similar to flanged gate valves. A gasket is required for installation.
Double hull barge	vessel that has an outer hull around the cargo tanks to protect the cargo tanks in a grounding.
Ductile iron disc	normally nickel plated for added corrosion resistance. PVDF (polyvinylidene flouride) coated ductile discs are also available. ASTM A-395
Duplex strainer	pipeline strainer that can operate continuously and never has to shut down for cleaning. A diverter valve fitted into the strainer body and permits flow to pass to either side. When one basket becomes full, the flow is shifted for cleaning.
End connection	type of valve connection to pipe: flanged, socket weld, threaded, welded.
EPDM/EPT	Ethylene Propylene Dimonomer. A general-purpose synthetic rubber with premium-performance properties. In chemical terms, it is a terpolymer of ethylene, propylene and a nonconjugated diene. Generally, EPT has better heat and chemical resistance than Buna-N. Since it is hydrocarbon-based, it is not resistant to flame or petroleum-based oils.
Face to face	dimension from inlet face of valve to outlet face of valve.
Fire safe	valve designed to pass a fire test with specified limits on leaks.
Fitting	component used with pipe.
FKM	is the designation for about 80% of fluoroelastomers. All FKM's contain vinylidene fluoride as a monomer. Originally developed by DuPont (Viton). Fluoroelastomers are more expensive than neoprene or nitrile rubber elastomers. They provide additional heat and chemical resistance. ASTM D1418



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Flat face	flange mating surface where entire surface area is machined flat, commonly used to mate bronze and cast iron valves.
Free machining brass rod	used for low stressed parts of bronze valves such as glands, pins, and other miscellaneous valve parts. ASTM B-16
Full bore	bore (port) is nominally equal to the bore of the connecting pipe.
Gasket	used to seal a joint between two components.
Gate valve	commonly used in industrial piping, this type of valve should be used in applications requiring high flow - to turn on and shut off the flow as opposed to regulating flow. It gets its name from the gate-like disc that operates at a right angle to the path of flow.
Gland	valve component that retains or compresses the stem packing to seal stem leakage.
Globe valve	stop valve, a shut off valve designed for flow regulation (throttling) and positive shut off capabilities. The valve is named after its globular body.
Grey/Black water	sources from toilets, galleys, laundry, showers and must be treated in certain areas.
Handwheel	wheel-shaped valve operating device intended to be used manually to turn valve stem or other operator shaft.
Hard facing	a cobalt, chromium, tungsten alloy equivalent to Haynes Stellite Alloy 6. This facing is deposited on the disc and seat ring base metal by the oxyacetylene or plasma arc process and then machined to a mirror-like surface. These alloys retain their wearing qualities, corrosion resistance, and hardness at extremely high temperatures.
Hydraulic system	used to operate valve systems, deck machinery, stabilizers, steering gears, bow thrusters and stern thrusters.
IMO	International Maritime Organization
Inert gas system	barges will have an inert gas generator that pumps inert gas into the vapor system that eliminates explosive mixture of fumes in cargo tanks. Inert gas generators require special piping systems that provide sea water for cooling and scrubbing of inert gas. Piping is often specified as FRP. Also increases the size of the ballast pump.
Inside Diameter (ID)	measurement of the inside diameter of a circular item.
Integrated tug barge (ITB)	barge and tug connected by rams from the tug that fit in to channels on the barge. This type of unit being replaced in favor of ATB.
ISO	International Organization for Standardization
JIS	Japanese Industrial Standards
Lap joint flange	flange employed as the mating flange for stub-end pipe fittings, used in piping systems is in services necessitating frequent dismantling for inspection and cleaning and where the ability to swivel flanges and to align bolt holes materially simplifies the assembly of flanged connections.
Lift check valve	operate automatically by line pressure and should be installed with pressure under the disc. Like the globe valve with its indirect line of flow, the lift check offers positive shut-off in backflow situations and used as a companion to globe valves.



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Liquid shaft seal	a mechanical style seal that also uses a pocket of fluid as part of the sealing process.
LR	Lloyds Register
Lug butterfly valve	similar to wafer butterfly valve with the addition of lugs around the body. The lugs are drilled and tapped to allow attachment of the valve directly to the flanges for ease of pipeline removal.
Material Test Reports (MTRs)	documentation provided by the manufacturer to certify the chemical and mechanical properties of a specific batch of metal can be traced by sequentially assigned heat numbers or codes.
Mechanical shaft seal	a spring loaded seal that allows the shaft to penetrate the discharge head without allowing the cargo to leak through.
Monel	a Nickel-Copper alloy possessing high strength and resistance to corrosion. This alloy is used for both seating surfaces in valves. This trim is recommended for salt water, dilute sulfuric acid, and food processing lines.
MSC	The United States Navy's Military Sealift Command (MSC) is an organization that controls the replenishment and military transport ships of the Navy.
MSS	Manufacturers Standardization Society
National Pipe Thread (NPT)	standard tapered thread for pressure pipe and components. ASME B1.20.1
National Standard Thread (NST)	also known as National Hose (NH) thread. The most common type of fire hose coupling used in the USA. The male and female straight (non-tapered) threads screw together and the connection is sealed with a gasket.
NAVSEA	Naval Sea Systems Command
Needle point disc and seat	needle point valves are designed to give fine control of flow in small-diameter piping. Available in both globe and angle patterns, in bronze and steel, and find usage on steam, air, water, oil, gas, light liquid, fuel oil and similar service.
Nitrile rubber (Buna-N)	has high tensile strength, excellent resistance to abrasion, low compression set and very good aging characteristics under severe operating conditions. This elastomer is a good general purpose material suited for most general services such as warm and cold water, vacuum, salt solutions, alkaline solutions, and aliphatic hydrocarbons (saturated and unsaturated).
Nominal Pipe Size (NPS)	number used to indicate sizes of pressure pipe and valves. Also commonly referred to as IPS (Iron Pipe Size).
Non-Rising Stem (NRS)	stem remains stationary as the gate valve moves. Stem treads are exposed to line fluid in this type of gate valve.
Oil barge	tank vessel designed to carry petroleum products, which does not have its own means of propulsion. Towed or pushed by tug boat.
OPA 90	Oil Pollution Act of 1990 is the International agreement requiring all oil carrying vessels to be double hull by 2015. Single hull vessels are phased out based on the date originally built.



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Outside Diameter (OD)	measurement of the outside diameter of a circular part.
Outside Screw & Yoke (OS&Y)	valve design where stem threads are above the packing gland or outside the valve body. There is a yoke to support the top or outer end of the stem.
Packing	sealing material used in valve stuffing box and compressed by gland to provide a tight seal around the stem.
Packing gland	sealing mechanism that effects a tight seal around the stem to retain pressurized fluid inside the valve. Stem must be tight without binding. Packing is subject to wear and must be periodically compressed and eventually replaced.
Packing nut with gland	conventional type packing nut with loose gland. this gland offer better stem sealing than packing without gland.
Packing nut without gland	used on low-pressure and small-size valves. With wheel and packing nut removed, this type is easier to repack than ordinary gland type on valves with small diameter stem.
Pipe	hollow, usually rigid material used to convey fluid. Specified by nominal OD and wall thickness and manufactured to national and international standards.
Plug type disc	long taper with corresponding seat for globe valve gives a wide area of seating contact making it superior to all others for severe throttling service, such as blow-off, soot-blower, boiler feed.
Port	inside diameter of the smallest opening in a valve.
Potable water	water fit for human consumption may be produced on board or purchased (bunkered). Used for drinking and in sensitive equipment such as boilers.
Resilient seat	valve seat containing a soft seal such as an o-ring or plastic to assure tight shut-off.
Rising Stem (RS)	valve stem with threads that allow stem to move with the closure element attached.
Screw pump	shaft is cut like a screw thread. Used in asphalt, black oil or very viscous cargos. Not as common in barges as the centrifugal.
Screwed union ring bonnet	convenient when valves need frequent inspection or cleaning - also for quick renewal or changeover of disc in composition disc valves.
Screwed-in bonnet	simple and least expensive construction, frequently used on bronze gate, globe and angle valves. Recommended where frequent dismantling is not needed.
Seat	part of valve body where closure element create a tight shut-off.
Seawater cooling	seawater used on board for general service to remove energy through heat exchangers or direct cooling.
Slip on flange	slip on flanges are popular low-cost flange type for low pressure applications. The flange simply slides onto the pipe where two fillet welds, one on the outside and the other on the inside, seal and fasten the connection.
Socket weld flange	socket weld pipe flanges are typically used on smaller sizes of high pressure pipes. These pipe flanges are attached by inserting the pipe into the socket end and applying fillet weld around the top. This allows for a smooth bore and better flow of the fluid or gas inside of the pipe.



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Solid wedge disc	the most widely used disc in gate valves because of its strong, simple design and single part. Can be installed in any position without danger of jamming due to misalignment of parts. Ideal for steam service and well suited for water, air, oil, gas and many other fluids.
Steam Working Pressure SWP	pressure rating used for valves in moderate service. Indicates maximum working pressure in steam applications.
Stem	rod or shaft effecting the open or close of valves operating disc.
Strainer	device for mechanically removing solids from flowing liquids or gases by means of perforated or wire mesh straining element. They are used in pipelines to protect equipment such as pumps, meters, control valves, steam traps and regulators.
Strainer basket	the filtering element of a strainer usually made of perforated sheet metal in a wide range of opening sizes. The size of perforation should be slightly smaller than the minimum particle size to be removed.
Stuffing box	typical on ballast pump, black oil and 2 oil applications. Seen on older barges. Typical packing used and then grease filled.
Swing check valve	flow through swing checks is in a straight line and without restriction at the seat, similar to a gate valve. Whether used in a horizontal line or vertical line for upward flow, swing checks will not function properly unless installed with pressure under the disc.
Teflon® (TFE or PTFE)	a fluorinated plastic polymer with excellent resistance to hostile chemicals. It can be used in temperatures to 400°F maximum. PTFE is relatively soft, but tough.
Threaded flange	similar to slip-on pipe flanges except the bore of threaded pipe flange has tapered threads. Threaded pipe flanges are used with pipes that have external threads. The benefit of these pipe flanges is that it can be attached without welding. Threaded pipe flanges are often used for small diameter, high pressure requirements.
Trim	a valve's working parts and their materials. Includes: seat right sealing surfaces, closure element sealing surfaces, stems, back seats. API 600, API 602
Tube	hollow, usually rigid material used to convey fluid. Specified by actual OD and wall thickness. Broader range of sizes and standards depending on application.
Union bonnet	valve type where bonnet is held on by a union nut with threads on the body.
Valve	controlling element in any fluid handling system. Primary functions include: starting and stopping flow; regulation of flow or throttling by restriction of flow; relieving and regulating pressure; prevention of backflow. Proper valve selection will give the best service.
Valve bronze	a high grade bronze alloy of unusual strength and toughness. This alloy is used for castings in higher pressure bronze valves. Service recommendations are for steam, water, oil, or gas up to 550°F. ASTM B-61
Vane style pump	a rotary vane pump is a positive-displacement pump that consists of vanes mounted to a rotor that rotates inside a cavity.



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Vapor recovery	connected to the cargo systems, allows the containment and recapture of cargo vapors.
Viton®	fluoroelastomer, a fluorine-containing hydrocarbon polymer, is a high-performance synthetic rubber with exceptional resistance to oils and chemicals at temperatures between 20 and 250°F. Viton has better chemical resistance than Buna-N, better temperature resistance and better release qualities and is particularly good in hydrocarbon service.
Wafer butterfly valve	designed for quick installation between pipe flanges. On resilient seated valves, no gasket is required, as the line face acts as the gasket. The body is generally self centering inside the flange bolt circle.
Wafer check valve	cost effective alternative to check valve. They are quick closing at zero flow and are used with gate and butterfly valves.
Wall thickness	thickness of the wall of valve or pressure component. ASME B16.34
Water, Oil, Gas (WOG)	pressure rating used for valves in moderate service. Indicates maximum working pressure at 32°F to +100°F.
Weld neck flange	pipe flanges that attach by welding the pipe to the neck of the flange. This transfers stress from the flange to the pipe instead. It also reduces the stress concentration from the base of the hub. Weld neck flanges are often used for applications where high pressure is a factor. The inside diameter of the flange is designed to match the pipe's inside diameter.
Welding	a fabrication process that joins materials, usually metals or thermoplastics, by causing coalescence. This is often done by melting the work pieces and adding a filler material to form a pool of molten material that cools to become a strong joint.
Working pressure	pressure at which a fluid handling is designed to operate.
Wrought chromium-nickel stainless steel	an austenitic stainless steel containing approximately 2-1/2% molybdenum. The addition of molybdenum increases the corrosion resistance. Stainless steel ball valve bodies and balls are made from this material and are particularly recommended for extremely corrosive oil service, paper and pulp mills, and other services where corrosive resistance is necessary. ASTM A-276, Type 316
Yoke	piece of gate or globe valves that acts as a bracket to support the top or outer end of the stem and stem bearing.
Y-strainer	device for mechanically removing solids from flowing liquids or gases by means of perforated or wire mesh straining element. They are used in pipelines to protect equipment such as pumps, meters, control valves, steam traps and regulators. With Y-shaped valve body design.

