Frequently Asked Questions

SENTRY

Functions & Usage

- What is the difference between a pulsation dampener, surge suppressor, inlet stabilizer, thermal expansion chamber, accumulator and standpipe?

  These designations, with the exception of standpipe, are used to describe pressure vessels containing a flexible bladder or bellows inside that separate an inert pressurized gas (air or Nitrogen) from a system fluid in the lower chamber. Generally referred to as dampeners, their use and location in a liquid piping system determines the name designation. A standpipe is simply a pipe with a cap on one end, and does not separate a gas charge from the product being pumped.

- Can I use a Blacoh SENTRY pulsation dampener to dampen airflow?

  Generally, SENTRY pulsation dampeners are used to minimize hydraulic pressure/flow fluctuations. There are some applications where a SENTRY pulsation dampener has been successfully used to dampen pneumatic pulses. Consult Blacoh or your local distributor for an analysis of your specific application.

- Can I use a plastic pulsation dampener model in a water hammer or surge application?

  Water hammer is usually caused by a quick closing valve located somewhere in a liquid piping system. When a valve closes quickly, a pressure spike above normal operating pressure is usually created. SENTRY plastic pulsation dampener models can only be used for pressure up to 150 psi (10.3 bar) at ambient temperature. For water hammer or surge, SENTRY metal pulsation dampeners with a higher pressure rating must be used.

- What is the difference between air controls on Blacoh SENTRY Automatic, Adjustable, Chargeable and Inlet Stabilizer pulsation dampener models?

  Different air controls are used for different types of applications:

  Chargeable Models have a charging valve that allows for a predetermined pressure charge to be applied and held in the dampener. No permanent source of compressed gas is required to be attached to the dampener. Chargeable models are used primarily with metering, piston and peristaltic pumps for pulsation dampening. Chargeable models are also used for surge suppression to prevent water hammer from quick closing valves, for make-up fluid to prevent pump cycling, and for suppression of pump startup or shutdown pressure spikes.

  Adjustable Models use a self-relieving regulator to set dampener pressure. A compressed air line must be permanently attached to the regulator. The regulator allows for an easy, convenient method for readjusting the dampener if the system fluid pressure changes. Adjustable models are designed for use on air operated diaphragm pumps.

  Automatic Models have an automatic poppet type valve located in the non-wetted section of the dampener which allows for an increase in compressed air pressure to balance an increase in system liquid pressure. As liquid system pressure increases, the bladder is pushed further up into the dampener until it touches the internal automatic valve. This contact opens the valve and allows an increase of compressed air to enter the dampener. When the air pressure equals the system liquid pressure, the dampener is in balance and pulsations are minimized. If a change in pressure occurs this process is repeated. Automatic models are designed for use on air operated diaphragm pumps in systems with a varying discharge pressure. A compressed air line must be permanently attached to the dampener.

  Inlet Stabilizer (J Model) air controls consist of a compound pressure gauge, a pressure/vacuum tight ball valve and a Venturi valve. When compressed air is passed through the Venturi valve at high speed, a low pressure area is created which is used to evacuate the air from the inlet stabilizer, creating a vacuum internally. Conversely, when the flow of air through the Venturi valve is diverted into the inlet stabilizer, a pressure charge is obtained. When pump inlet conditions are optimized, pump efficiency is maximized.

Certifications

- Do Blacoh products meet European ATEX safety standards?

  Yes. Many Blacoh models and sizes have ATEX certification with new models and sizes added regularly. Consult Blacoh for the latest status on ATEX certifications.

- Do Blacoh SENTRY pulsation dampeners comply with the European Pressure Equipment Directive (97/23/EC)?

  Blacoh SENTRY pulsation dampeners, surge suppressors and inlet stabilizers comply under Sound Engineering Practices (SEP). In some cases, however, compliance requires a lowered pressure rating. Contact Blacoh for specific information.

- Do Blacoh SENTRY pulsation dampeners have the Canadian CRN designations?

  Yes. Many Blacoh SENTRY models have been registered and have received CRN designation in several Canadian provinces. If required, we can apply for additional CRN designation for certain models. Please contact Blacoh for more specific information.

- What other certifications are available for Blacoh products?

  All current certifications are shown on the certification page of the Blacoh website, and we are working on obtaining new certifications on a continual basis. If a particular certification is not listed, please contact Blacoh to find out the latest certification availability.

- Do Blacoh SENTRY pulsation dampeners have ASME U-stamp approvals?

  Most Blacoh SENTRY pulsation dampeners are exempt per ASME Section VIII Div. 1 standard, section U-1.c.2.i, which states vessels having an inside diameter, width, height, or cross section diagonal not exceeding 6 in. (152 mm), with no limitation on length of vessel or pressure. However, we understand that there are projects that absolutely require the vessels to have an ASME U-stamp, and we can assist in determining what options are available.

Sizing & Materials

- What sizes are available for Blacoh SENTRY pulsation dampeners?

  Blacoh SENTRY pulsation dampeners are available from stock in sizes from 4 cubic inches (.065L) to 10 gallons (37.8L). For larger sizes, please contact Blacoh for availability.

- How do I size a pulsation dampener, surge suppressor or inlet stabilizer?

  Proper pulsation dampener sizing is based on several variables. Consult Blacoh or your local distributor for sizing and application assistance.

- What materials are available for Blacoh SENTRY pulsation dampeners?

  Blacoh SENTRY pulsation dampeners are available in a full range of chemically resistant materials, with bladder materials for even the most corrosive applications.

- What is the material AFLAS® that is offered for bladders?

  AFLAS® is a trade name for a fluoroelastomer based on an alternating copolymer of tetrafluoroethylene and propylene (TFE/P). It is primarily for strong acids and/or high temperature applications up to 400°F (204°C).

- What are the minimum and maximum temperature limits for Blacoh SENTRY pulsation dampeners?

  Operating temperatures are based on the maximum temperature of the wetted dampener components only. Non-wetted dampener components may have a lower temperature limit. Temperature and certain chemicals may reduce the maximum allowable working pressure (MAWP) of the dampener. SENTRY products can be used with operating temperatures ranging from -40°F (-40°C) up to +400°F (+204°C). Refer to the Installation & Operation Manual for more detailed information. When consulting material specifications for temperature ranges, be sure to check the bladder material, and the wetted and non-wetted body material. If you are unsure of the proper component materials or you need further assistance, contact Blacoh or your local distributor. CAUTION: Plastic materials lose strength as temperature increases which reduce the maximum operating pressure of the dampener.

- Can I order special inlet connections on Blacoh SENTRY pulsation dampeners?

  Blacoh can customize almost any type of pulsation dampener or inlet stabilizer inlet connection, including NPT and BSP threads, ANSI and DIN flanges, tri-clamp fittings, socket weld ends, butt weld ends, metric flare type fittings, and many more.

- Are material and pressure test certificates available for Blacoh SENTRY pulsation dampeners?

  Yes. Blacoh maintains traceability of most materials used in all products. Additionally, each and every Blacoh pulsation dampener is factory tested prior to shipment at design pressure or higher to assure proper and leak-free operation. A pressure test certificate can be provided upon request. Any material and/or pressure certification must be requested at the time of order.

Pressurization

- What is the maximum pressure rating available on Blacoh SENTRY pulsation dampeners?

  Blacoh pulsation dampeners with maximum allowable working pressure (MAWP) ratings up to 10,000 psi (689.4 bar) are available from stock depending on the specific design and material of the dampener. Pressure ratings up to 25,000 psi (1,724 bar) are available through special order.

- What pressure should the pulsation dampener, surge suppressor or inlet stabilizer be charged to?

  Charging pressure depends on the specific model and application. Refer to the appropriate Installation & Operation Manual for detailed information.

- What compressed gas do I use to charge the pulsation dampener?

  Charging pressure depends on the specific model and application. Refer to the appropriate Installation & Operation Manual for detailed information.

Installation & Maintenance

- Where should the pulsation dampener, surge suppressor or inlet stabilizer be installed?

  Within 10 pipe diameters of the source of the pressure fluctuation; i.e. at the pump discharge for pulsation, at the pump inlet for inlet stabilization, upstream of a quick closing valve for water hammer, and at the discharge of a centrifugal pump for startup and/or shutdown.

- How should the Blacoh SENTRY pulsation dampener be installed?

  Since pressure is equal in all directions, the SENTRY pulsation dampener can be installed in a vertical, horizontal, or upside-down position. A vertical installation is recommended for better drainage of the dampener. Limitations for horizontal and upside down mounting include high specific gravity, high viscosity, settling of solid material, or possible air entrapment, which could result in shortened bladder/bellows life and/or reduced dampening performance.

- What direction is the pulsation dampener bladder (or bellows) installed?

  Elastomeric (rubber) bladders are always installed with the open end away from the dampener inlet, whether in dome or flat top models. PTFE bellows are installed with the open end of the bellows facing up in flat top models. In dome top models, PTFE bellows are assembled with the open end of the bellows facing toward the inlet.

- What maintenance is required for pulsation dampeners?

  Pulsation dampeners require very little maintenance. There is only one wear part - the elastomeric bladder or PTFE bellows. There is no need for lubrication. Elastomeric bladder replacement should be part of a preventive maintenance program. Pulsation dampeners used in conjunction with diaphragm pumps should have the bladders replaced at least every second time the diaphragms in the pump are replaced. Periodic inspection of the pulsation dampener and fasteners should be conducted to visually check for signs of over-pressurization, fatigue, stress, or corrosion.

- What are the torque specifications for the bolts (fasteners)?

  Each Blacoh pulsation dampener model has its own fastener torque specifications. Refer to the appropriate Installation & Operation Manual for detailed information based on the model and serial number tag on the unit, or contact Blacoh for assistance.

- Can I reuse the fasteners (nuts and bolts) on the pulsation dampener?

  DO NOT re-use old nuts and bolts. After the initial torque of fasteners, bolts will usually lose up to 20% of their strength when re-torqued. Failure to replace both nuts and bolts upon each vessel reassembly will void the product warranty given by Blacoh Fluid Control, Inc. and Blacoh Fluid Control, Inc. will have no liability whatsoever for any vessel failure or malfunction. Replace nut and bolt fasteners at each re-assembly with

fasteners of equal grade/strength value. Where dampeners are used in corrosive environments, nut and bolt fasteners should be regularly inspected and replaced with nut and bolt fasteners of equal grade/strength value if corrosion is observed.

- What should be done to protect the pulsation dampener during a system pressure test?

  First, make sure that the pulsation dampener is pressure rated for the intended pressure test. Second, make sure that the pulsation dampener is pre-charged to approximately 80% of the system test pressure. This will prevent damage to the internal bladder/bellows/diaphragm. Remove dampener pressure after test is completed.

Troubleshooting

- How can I tell if the pulsation dampener is working properly?

  If the pulsation dampener is sized and installed correctly, pump pulsations should be reduced to a very minimal amount. If a pressure gauge is installed at the pump discharge, the gauge pressure reading should usually only vary by 3 to 10 psi (.207 to .689 bar). Inlet stabilizers work the same way on the inlet side of the pump. Consult Blacoh or your local distributor if the pulsation dampener does not appear to be working properly or, if the residual pulsation is greater than expected.

- Why is the gauge not reading 0 psi when the pump is off and the pulsation dampener is depressurized?

  The gauge has probably been damaged by momentary system over-pressurization. Check for a quick closing valve in the system which when closed can cause a pressure spike in excess of the maximum gauge pressure rating. CAUTION: Remove all pressure from the dampener AND pumping system before disassembly, removal or maintenance of the dampener.

- Why does the pulsation dampener lose pressure?

  The primary reason a pulsation dampener will not hold pressure is a failed bladder/bellows. The pulsation dampener should be inspected and the bladder/bellows replaced if it has failed. A spray solution of soap and water should be used to check the fittings around the control package at the top of the dampener as vibration over time can loosen these fittings. For a thorough dampener test, the pulsation dampener should be removed from the system. Charge the dampener to working pressure and submerge under water. Any leakage will be seen as air bubbles. CAUTION: Remove all pressure from the dampener AND pumping system before disassembly, removal or maintenance.

Warranty

- What is the warranty policy for SENTRY pulsation dampeners?

  All Blacoh products are guaranteed for workmanship and materials for two (2) years from shipment, with the exception of PTFE bellows which carry a three (3) year guarantee of performance from date of shipment. Certain limitations and restrictions apply. Refer to Blacoh's *Manufacturer's Limited Warranty and Return Policy* for complete details.

SENTINEL

Functions & Usage

- What are diaphragm seals used for?

  SENTINEL Diaphragm Seals ensure gauge and switch accuracy, smooth out erratic pressure surges, extend pressure instrumentation life, and protect gauges from freezing and slurries. Without proper protection, process fluids regularly contaminate and damage system instrumentation. SENTINEL Diaphragm Seals are unconditionally guaranteed to protect and isolate all forms of system instrumentation from hazardous and corrosive process fluids.

- What is used to fill the diaphragm seal?

  The diaphragm seal housing and the gauge Bourdon tube are filled at the factory when a diaphragm is purchased complete with gauge. These pre-assembled diaphragm seals are filled with glycerine, silicone, mineral oil, or halocarbon. Consult warning tag on diaphragm seal for type of body fill. Unassembled diaphragm seals (no fill without gauge) must be completely filled with a temperature stable liquid fill fluid. Glycerine, silicone, mineral oil or halocarbon are commonly used fill fluids. Additionally, the gauge or other pressure instrument must also be filled with the fill fluid under vacuum. WARNING: Glycerine or Silicone could result in a spontaneous chemical reaction

or explosion when combined with strong oxidizing agents. Do not use glycerine or silicone filled gauges or accessories in these types of service.

Sizing & Materials

- What sizes and materials are available for diaphragm seals?

  SENTINEL Diaphragm Seals are available with inlet ports from 1/4 (6.35mm) to 3/4 (19.05mm). Standard models are available in stock, with custom models available through special order. Models are available in a full range of chemically resistant materials.

- What is the maximum pressure range for diaphragm seals?

  SENTINEL Diaphragm Seals are designed for pressure ranges up to 1000 psi (68.9 bar).

- What are SENTINEL valves used for?

  SENTINEL Pressure Relief Valves are designed to protect pumping systems from over pressure damage caused by defective equipment or a blockage in the pump system line. SENTINEL Back Pressure Valves are designed to enhance the performance of pumping systems by applying a continuous back pressure to the system pump, while also acting as an anti-siphon valve.

- What sizes and materials are available for SENTINEL pressure relief and back pressure valves?

  SENTINEL valves are available in sizes up to 3 inches (76.2 mm). Wetted materials include PVC, CPVC, PP, PVDF, PTFE, 316L SS, Alloy 20 and Hastelloy C.

Warranty

- What is the warranty on SENTINEL diaphragm seals?

  SENTINEL Diaphragm Seals carry an unconditional lifetime guarantee of performance. Certain limitations and restrictions apply. Refer to Blacoh's Manufacturer's Limited Warranty and Return Policy for complete details.

SPILLSTOP

Function & Usage

- What does the SPILLSTOP Leak Containment System do?

  Blacoh’s SPILLSTOP Leak Containment System, which is pneumatically operated, captures any liquid expelled from the air exhaust of an air operated double diaphragm (AODD) pump that can occur as a result of diaphragm failure in the pump. The pump is automatically turned off and a standby pump and/or an alarm can be actuated. SPILLSTOP's design safely captures leaked product while effectively shutting down failing pumps. Optional warning alarm and backup pump switchover feature ensures maximum productivity and minimal system downtime.

- How does SPILLSTOP work?

  If a leak develops through the pump's diaphragm, the pumped liquid will enter the pump's air exhaust and will be carried to the SPILLSTOP. As liquid is accumulated in the SPILLSTOP, an internal float will be raised and airflow will be shifted through the SPILLSTOP's three-way valve. When this shifting occurs, air pressure will be removed from the pump shut off valve, closing it. This stops the pump, and prevents the spill.

- How is SPILLSTOP powered?

  SPILLSTOP is pneumatically operated with shop air that also operates the pump.

- What type of pump does SPILLSTOP work with?

  The SPILLSTOP Leak Containment System is designed for use with air operated double diaphragm (AODD) pumps. Diaphragm failure of your AODD pump allows process fluid to escape from the pump's air exhaust port. Unmonitored, the spill can create an extreme expense for your company in lost product, material cleanup and EPA reporting.

Sizing & Materials

- What materials and sizes are available?

  SPILLSTOP is compatible with AODD pumps with discharge sizes from 1/4 (6.35mm) to 4 (101.6mm). Standard models are available in stock with custom models available through special order. Models are available in a full range of chemically resistant materials.

Maintenance

- How much maintenance is required?

  SPILLSTOP is normally maintenance free. A function test of the unit should be conducted quarterly.

- How do I drain the process liquid collected in the SPILLSTOP?

  SPILLSTOP has a petcock valve located on the bottom of the unit. A tube or hose should be attached to the petcock so that liquid can be drained into a container suitable for the type of liquid involved. After the SPILLSTOP is drained, it will automatically reset itself and be ready for the next time an event occurs.

Warranty

- What is the warranty policy for SPILLSTOP?

  The SPILLSTOP Leak Containment System is guaranteed for workmanship and materials for two (2) years from shipment. Certain limitations and restrictions apply. Refer to Blacoh's Manufacturer's Limited Warranty and Return Policy for complete details.

GENERAL

Purchase & Delivery

- Where can I purchase Blacoh products?

  Blacoh products are sold through a worldwide network of authorized distributors and select OEM customers. Blacoh distributors can provide end users with any local assistance they require. Consult Blacoh for the distributor in your area.

- What is the lead time for delivery?

  Orders for in stock parts received before 3:00 p.m. PST are shipped on the same day. Orders for standard products/models are shipped within 48 hours.

Chemical Compatibility

- Does Blacoh have a chemical compatibility guide?

  There are many chemical resistance guides available for metal, plastic, and elastomer (rubber) materials that have been compiled by experts. Blacoh has chosen to use their expertise, referring to these guides to assist you in choosing the proper materials of construction for your application. Additional information is also available via the internet by searching chemical compatibility. Consult Blacoh or your local distributor for assistance.

- Can Blacoh products be used when pumping harsh chemicals?

  Blacoh products are available in a full range of chemically resistant materials for even the most corrosive applications.

Warranty

- What is Blacoh's warranty policy?

  All Blacoh products are guaranteed for workmanship and materials for two (2) years from shipment, with the exception of SENTINEL Diaphragm Seals and PTFE bellows. SENTINEL Diaphragm Seals are unconditionally guaranteed; PTFE bellows carry a three (3) year guarantee of performance. Certain limitations and restrictions apply. Refer to Blacoh's *Manufacturer's Limited Warranty and Return Policy* for complete details.

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