BLACOH™
FLUID CONTROL

CAPABILITIES GUIDE

VERSION 3.0



SINCE 1976. DON'T PUMP WITHOUT US.

800.603.7867 951.342.3100 WWW.BLACOH.COM SALES@BLACOH.COM



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BLACOH PRODUCTS ARE DESIGNED TO HELP PREVENT, ENSURE, PROTECT YOUR PUMPING SYSTEM FROM HARMFUL AND DAMAGING HYDRAULIC SHOCK & VIBRATION. OUR UNITS CAN ELIMINATE UP TO 99% OF THE PULSATION.

Use this Capabilities Guide as a quick reference, but our sales and engineering team are always available for full support.

Contact Us:
Sales@Blacoh.com

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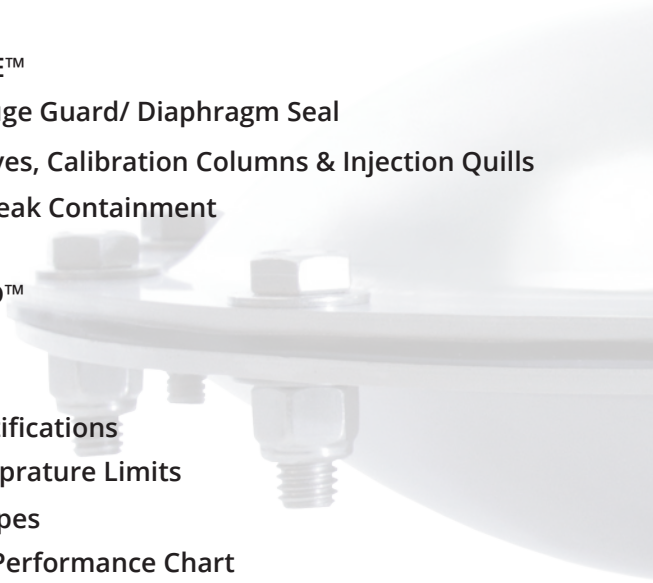
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BLACOH™ FLUID CONTROL

COMPREHENSIVE SOLUTIONS

There is no substitute for experience. Understanding your requirements and specific needs at a technical level and proof of design ensure you are getting the expertise you need and deserve.

TECHNICAL SALES SUPPORT

Our sales team and global footprint make it easy for you to get the answers you need and personalized solution for your pumping system.

ENGINEERING ASSISTANCE

The engineering team is here to problem solve and provide you with the necessary drawings, technical documenation, calculations and system modelling.

QUICK TURN AROUND

Some of our units are ready to ship same day. Our customer service team is also proud of our excelptional on-time delivery rate, and with Blacoh GmbH, a new European Distribution Center in Germany, we can provide quick service around the globe.

ABOUT US

FOUNDED IN **1976** CELEBRATING OVER **40 YEARS**

DOMESTIC SALES & ADMINSTRATIVEOFFICES:
California, Arizona, Indiana, South Carolina & Louisiana

INTERNATIONAL SALES REPRESENTATIVES IN:
Austria, Germany, Argentina, Australia, China & South Korea

BLACOH HEADQUARTERS IS: **ISO 9001:2015 CERTIFIED**



"BLACOH SERVICE AND RESPONSE HAS BEEN OUTSTANDING, THEY UNDERSTAND THEIR PRODUCT LINE AND CAPABILITIES AND STRIVE TO FIND SOLUTIONS NOT EXCUSES."

-CUSTOMER SURVEY RESPONSE

OUR BLACOH PROMISE:

Our customer service, engineering, sales, and management teams are here to work cohesively to ensure that your orders are hassle free and we deliver in our promise to:

- Conduct our business with honesty and integrity, both as a company and as individuals
- Maintain the highest standards for manufacturing quality, safety testing and product distribution
- Provide innovative and "best-in-class" products at competitive prices
- Retain experienced fluid control professionals dedicated to exceeding customer expectations
- Unconditionally stand behind each and every BLACOH product sold



WHAT MAKES THE BLACOH EXERIENCE DIFFERENT

PROVIDING YOU WITH THE NECESSARY RESOURCES:

CONFIGURE ONLINE

E-Configurator allows you to build your dampener online, and get a dimensional drawing to your specifications.

GET IMMEDIATE QUOTE

Our website's SpeedQuote is a quick and easy way to request quotes onlines. Always available 24/7.

ENGINEERING DRAWINGS

Engineering assistance and 3D drawings also available for easy implementation into your system model.

WEB & MARKETING ASSISTANCE

Online media kit has up to date literature, photos and videos for download. Customized flyers are also available.

BLACOH™ UNIVERSITY

We created a complimentary e-learning resource dedicated to the discovery, development, and application of knowledge relating to fluid control processes across a variety of industries. In just a few years, the Blacoh University videos have over garnered 250,000 combined views. Check them out at BlacohU.com

Industry Resources



It is not just about the products; we are dedicated to providing white papers, case studies, articles and videos of a wide range of topics across various fluid related industries to grow professionally.

Distributor Training



We provide in-person Distributor Training Sessions or you can view the series of learning videos online to enhance your industry knowledge and ability to confidently deliver fluid control solutions to end users.

Engineer PDH Credit



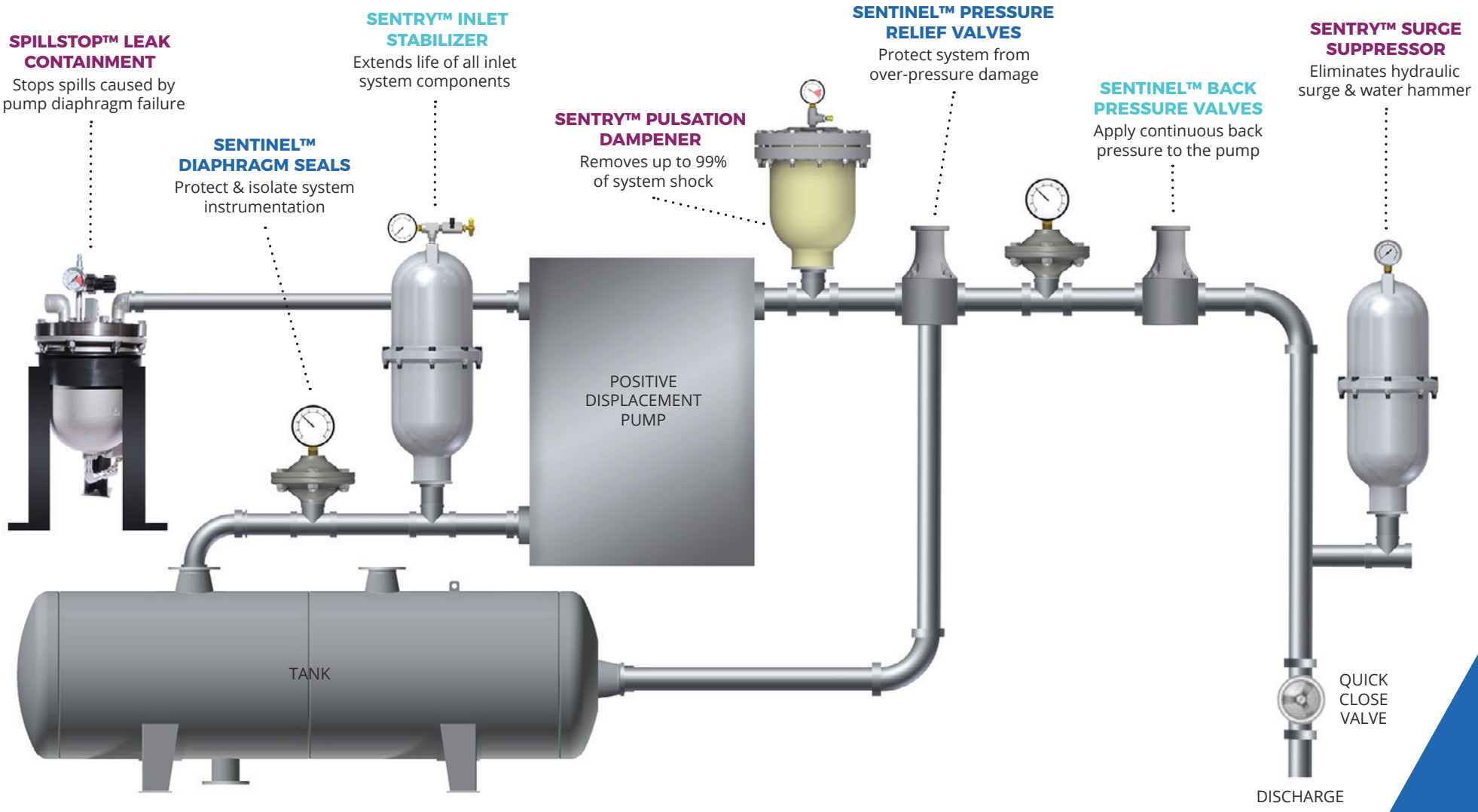
Engineering professionals can watch our courses, complete quizzes and earn free Professional Development Hours (PDH). Lecture video topics include acceleration head, surge analysis and water hammer.

Maintenance Videos



Quick and easy to view video tutorials describe the how-to's of installation, maintenance and repair of our Blacoh product lines. Watch assembly videos for each model and get quick links to installation manuals.

A WELL DESIGNED SYSTEM MAKES ALL THE DIFFERENCE. AN EXAMPLE OF BLACOH'S RECOMMENDED SET-UP:



Installation of the pulsation dampener should be no more than ten pipe diameters from the pump's discharge.
Additional pump system diagragm featuring the Hybrid Valve™ set-up is available on page 29 of this guide.

4 IN3 (0.06 L)

SENTRY III



Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.375" to 0.5" (10 to 15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	150 psi (10.3 bar)	Adjustable Chargeable	2 to 4 lbs (0.91 to 1.81 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.375" to 0.75" (10 to 20 mm)		1000 psi (68.9 bar)		4 to 6 lbs (1.81 to 2.72 kg)	

Plastic Series	Wetted / Non- Wetted
04PP	PP / PP
04PVC	PVC / PVC
04X	CPVC / CPVC
04K	PVDF / PVDF
T1010	PTFE / PTFE
T1050	PTFE / PTFE

Metal Series	Wetted / Non- Wetted
1120	SS / SS
1170	A20 / A20
1175	A20 / SS
1185	HAST / SS
7325	SS / SS
8325	SSP/ SSP

Accessories
Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
Pressure Relief Valves
Back Pressure Valves
Gauge Guards
Gauge Upgrades
Spill Containment for AODD

SENTRY III

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Acetal Acetal Conductive CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.375" to 0.5" (10 to 15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	150 psi (10.3 bar)	Adjustable Chargeable Inlet Stabilizer	6 to 10 lbs (2.72 to 4.54 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.375" to 0.75" (10 to 20 mm)		1000 psi (68.9 bar)		14 to 18 lbs (6.35 to 8.16 kg)	

Plastic Series	Wetted / Non- Wetted
10PP	PP / PP
10PVC	PVC / PVC
10X	CPVC / CPVC
DC1005	Acetal-Cond / Acetal-Cond
10K	PVDF / PVDF
T1000	PTFE / PTFE
T1012	PTFE / PTFE

Metal Series	Wetted / Non- Wetted
1020	SS / SS
1070	A20 / A20
1075	A20 / SS
1080	HAST / HAST
1085	HAST / SS
7320	SS / SS
8320	SSP / SSP

Accessories
Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
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Spill Containment for AODD

SENTRY XPA, XPX, XPH

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
XPA/XPX 	Stainless Steel (SS) Duplex Stainless Steel (DSS)	Buna-N EPDM PTFE Viton	0.5" (15 mm)	Autoclave FNPT BSP ANSI Flange DN Flange RTJ Flange Socket Weld	XPA: 7500 psi (517.1 bar) XPX: 15000 psi (1034.2 bar)	Chargeable Gauge Adap-tor	XPA: 10-13 lbs (4.54 to 6.90 kg) XPX: 44 lbs (20.0 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
XPH 				HP Flow-Through	XPH: 7500 psi (517.1 bar)		XPH: 10-13 lbs (4.54 to 6.90 kg)	

Series	Size	Wetted / Non- Wetted
XPA_-08 / XPH_-08	8 in3 / 0.13 L	SS / SS
XPX10-12	12 in3 / 0.20 L	SS / SS
XPA_-12 / XPH_-12	12 in3 / 0.20 L	SS / SS
XPA_-24 / XPH_-24	24 in3 / 0.39 L	SS / SS

Accessories

Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
Pressure Relief Valves
Back Pressure Valves
Gauge Guards
Gauge Upgrades
Spill Containment for AODD

About

The XPH model's unique design allows it to effectively remove both hydraulic pulses and acoustic pulses. The flow-through inlet is specifically designed to remove high frequency pulses greater than 15 Hz. Residual pulsations of less than 1% can be achieved with the flow- through design versus a single inlet/outlet dampener. (See performance chart on p. 30)

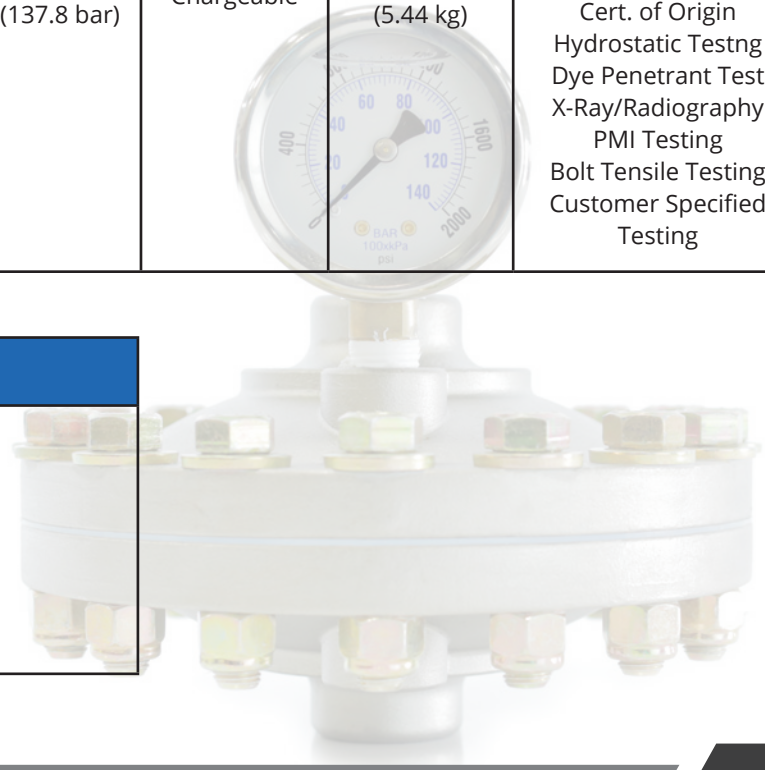
12 IN3 (0.20 L)

SENTRY TEF-GUARD

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
METAL 	Stainless Steel (SS)	PTFE	0.5" (15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld	2,000 psi (137.8 bar)	Chargeable	12 lbs (5.44 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Plastic Series	Wetted / Non- Wetted
TG12SS	SS / SS

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD



SENTRY II



Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Acetal CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.5" to 1" (15 to 25 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	150 psi (10.3 bar)	Adjustable Automatic Chargeable	6 to 10 lbs (2.72 to 4.54 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.75" to 1.5" (20 to 40 mm)		1000 psi (68.9 bar)		14 to 18 lbs (6.35 to 8.16 kg)	

Plastic Series	Wetted / Non- Wetted
601	PTFE / PTFE
1301	PP / PP
1305	PP / PP
1311	PVC / PVC
1315	PVC / PVC
1341	CPVC / PVC
1401	PVDF / PP
1801	Acetal / PP

Metal Series	Wetted / Non- Wetted
3120	SS / SS
3124	SS / CS
3140	CS / CS
3174	A20 / CS
3175	A20 / SS
3185	HAST / SS
7225	SS / SS
8225	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

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SENTRY II

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Acetal CPVC Polypropylene (PP) Polypropylene Conductive PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.5" to 1" (15 to 25 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	150 psi (10.3 bar) PVDF to 250 psi (17.2 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	7 to 9 lbs (3.18 to 4.08 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.75" to 1.5" (20 to 40 mm)		1000 psi (68.9 bar)		15 to 19 lbs (6.80 to 8.62 kg)	

Plastic Series	Wetted / Non- Wetted
301	PP / PP
305	PP / PP
311	PVC / PVC
321	PP- Cond / PP- Cond
331	CPVC / CPVC
401	PVDF / PP
421	PVDF / PVDF
651	PTFE / PTFE
661	PTFE / PTFE
801	Acetal / PP

Metal Series	Wetted / Non- Wetted
3020	SS / SS
3024	SS / CS
3040	CS / CS
3075	A20 / SS
3085	HAST / SS
7220	SS / SS
8220	SSP / SSP

Accessories
Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
Pressure Relief Valves
Back Pressure Valves
Gauge Guards
Gauge Upgrades
Spill Containment for AODD

175 IN3 (2.87 L)

SENTRY I

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Noryl (non-wetted only) Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	1.5" to 2" (40 to 50 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	150 psi (10.3 bar)	Adjustable Automatic Chargeable	18 to 22 lbs (8.16 to 9.98 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		1.5" to 2.5" (40 to 70 mm)		1000 psi (68.9 bar)		34 to 37 lbs (15.42 to 16.78 kg)	

Plastic Series	Wetted / Non- Wetted
501	PTFE / PTFE
901	PP / Noryl
905	PP / Noryl
911	PVC / Noryl
915	PVC / Noryl
1201	PVDF / Noryl
1221	PVDF / PVDF

Metal Series	Wetted / Non- Wetted
2175	A20 / SS
2185	HAST / SS
2500	SS / Noryl
2520	SS / SS
2700	CS / Noryl
2720	CS / CS
7125	SS / SS
8125	SSP / SSP

Accessories
Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
Pressure Relief Valves
Back Pressure Valves
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Gauge Upgrades
Spill Containment for AODD

370 IN3 (6.06 L)

SENTRY I

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	1.5" to 2" (40 to 50 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	200 psi (13.7 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	24 to 27 lbs (10.80 to 12.25 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		2" to 2.5" (50 to 70 mm)		1000 psi (68.9 bar)		42 to 50 lbs (19.05 to 22.68 kg)	

Plastic Series	Wetted / Non- Wetted
101	PP / PP
105	PP / PP
111	PVC / PVC
115	PVC / PVC
201	PVDF / PP
221	PVDF / PVDF
551	PTFE / PTFE

Metal Series	Wetted / Non- Wetted
2075	A20 / SS
2085	HAST / SS
2400	SS / PP
2420	SS / SS
2425	SS / CS
2600	CS / PP
2620	CS / CS
7120	SS / SS
8121	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

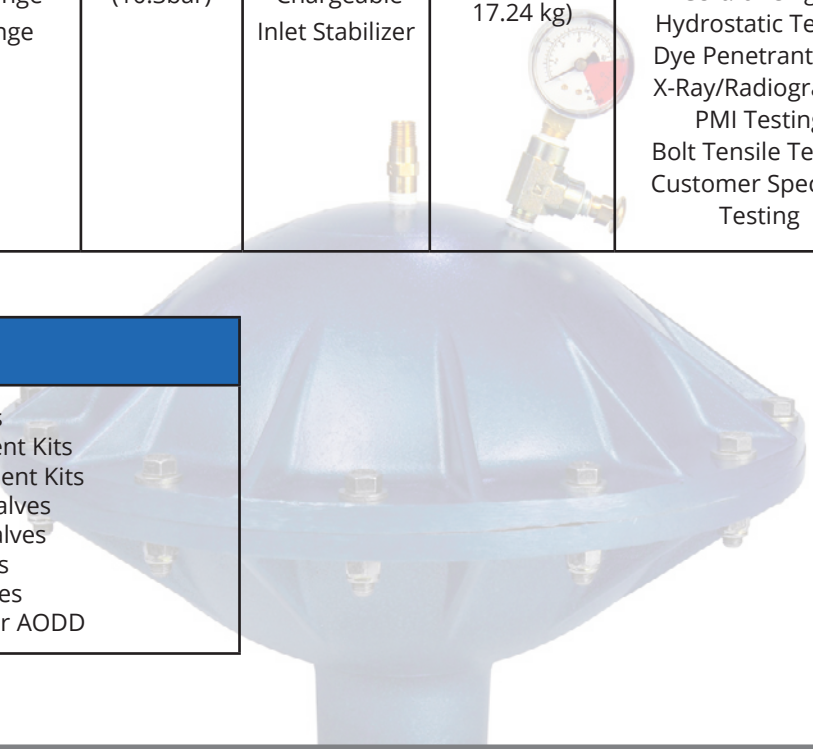
577 IN3 (9.46 L)

SENTRY 577

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
METAL 	Aluminum (AL)	Buna-N EPDM Neoprene Viton	2” (50 mm)	FNPT BSP ANSI Flange DN Flange	150 psi (10.3bar)	Adjustable Automatic Chargeable Inlet Stabilizer	32 to 38 lbs (14.51 to 17.24 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Plastic Series	Wetted / Non- Wetted
577	AL / AL

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD



SENTRY IV

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	Polypropylene (PP)	Buna-N EPDM Hypalon Neoprene PTFE Silicone (Food Grade) Viton	3″ (80 mm)	ANSI Flange DN Flange Hammer Union Tri-Clamp NPTF	90 psi (6.2 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	33 to 36 lbs (14.97 to 16.33 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
METAL 	Aluminum (AL) Epoxy Coated AL (ECAL) Alloy 20 (A20) Carbon Steel (CS) Epoxy Coated CS (ECCS) Hastelloy C (HAST) Stainless Steel (SS) SS - 30 RA Polished (SSP) Duplex SS (DSS)		3″ to 6″ (80 to 150 mm)		275 psi (18.9 bar)		72 to 82 lbs (32.66 to 37.19 kg)	

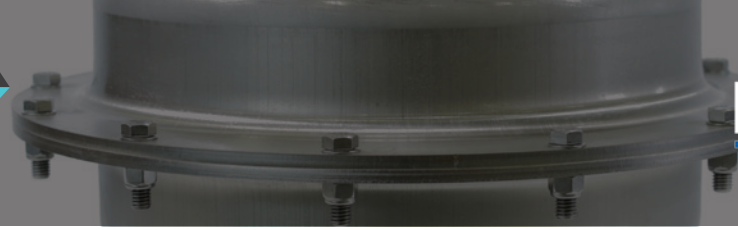
Plastic Series	Wetted / Non- Wetted
P4000	PP / PP

Metal Series	Wetted / Non- Wetted
4000	AL / AL
4015	ECAL/ ECAL
4020	SS / SS
4030	CS / AL
4040	CS / CS
4045	ECCS/ ECCS
4046	ECCS/ AL
4050	SS / AL
4060	SS / CS
4065	SS / ECCS
4070	A20 / A20
4075	A20 / SS
4080	HAST / HAST
4085	HAST / SS
7420	SS / SS
8420	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

2310 IN3 (37.9 L); 10 GAL

SENTRY V



BLACOH FLUID CONTROL

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
METAL 	Carbon Steel (CS) Epoxy Coated Carbon Steel (ECCS) Stainless Steel (SS) Duplex Stainless Steel (DSS)	Buna-N EPDM Hypalon Neoprene Silicone (Food Grade) Viton	3" to 6" (80 to 150 mm)	ANSI Flange DN Flange	275 psi (18.9 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	145 to 155 lbs (65.77 to 70.31 kg)	ATEX ISO 9001:2008 NAFTA CRN PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testng Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Plastic Series	Wetted / Non- Wetted
5040	CS / CS
5045	ECCS / ECCS
5420	SS / SS
5440	CS / CS
5445	ECCS / ECCS
5620	SS / SS

Accessories
Charging Kits
Bladder Replacement Kits
Hardware Replacement Kits
Pressure Relief Valves
Back Pressure Valves
Gauge Guards
Gauge Upgrades
Spill Containment for AODD

AODDAMPENER™

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
METAL 	316 Stainless Steel (SS)	PTFE backed Buna	1.0" (25 mm) 1.5" (40 mm) 2.0" (50 mm)	FNPT BSP	150psi (10.3 bar)	Fully Automatic	18 lbs (8.16 kg)	ATEX ISO 9001:2008 Material Cert. Cert. of Origin Hydrostatic Tes ng

Plastic Series	Wetted / Non- Wetted
AOD-10-NPT	1.0" NPT
AOD-10-BSP	1.0" BSP
AOD-15-NPT	1.5" NPT
AOD-15-BSP	1.5" BSP
AOD-20-NPT	2.0" NPT
AOD-20-BSP	2.0" BSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

About
The Blacoh AODDampener™ is specifically designed for AODD pumps and constructed of 316L Stainless Steel with a PTFE back diaphragm. The single configuratioon will allow the unit to handle most AODD applications and is great of off-the-shelf capabilities.

10 IN3 (0.16L)

HYBRID VALVE™

PULSATION DAMPENER + BACK PRESSURE VALVE



BLACOH FLUID CONTROL

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
PLASTIC 	CPVC PVC	Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.375" to 0.5" (10 to 15 mm)	FNPT BSP Socket Weld SW Flange Union Fitting	50 psi (3.4 bar) to 150 psi (10.3 bar)	Chargeable	6 to 10 lbs (2.72 to 4.54 kg)	ATEX ISO 9001:2008 NAFTA PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Customer Specified Testing

Plastic Series	Wetted / Non- Wetted
H10-*-CV H10-*-VV	CPVC / PVC PVC / PVC

Accessories
Charging Kits Bladder Replacement Kits O-Ring Replacement Tool Pressure Relief Valves Gauge Guards Gauge Upgrades

About
The new patent-pending Hybrid Valve™ combines the steady flow control of a pulsation dampener and the regulation of a back pressure valve to deliver the performance and functionality of both. Why install and maintain two pieces of equipment when the Hybrid Valve™ can do the same, only better?

GAUGE GUARD

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Est. Shipping Weight	Certifications & Testing
PLASTIC 	CPVC Polypropylene (PP) PVC PVDF	EPDM PTFE Viton	1/2” (12.7 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp Union Fitting	200 psi (13.7 bar)	1-2 lbs (0.5 to 0.9 kg)	ATEX ISO 9001:2008 NAFTA PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Customer Specified Testing
METAL 	Alloy 20 (A20) Stainless Steel (SS)				1000 psi (68.9 bar)	2-3 lbs (0.9 to 1.4 kg)	

Plastic Series	Wetted / Non- Wetted
PVDF CPVC PVC PP	PVDF / PVDF CPVC / CPVC PVC / PVC PP / PP

Metal Series	Wetted / Non- Wetted
A20 SS	A20 / A20 SS / SS

About
SENTINEL Diaphragm Seals employ a chemically resistant diaphragm to effectively isolate process fluids from gauges and other process instrumentation. This durable diaphragm allows SENTINEL to accurately transfer process pressure without direct contact with hazardous or corrosive fluids.

VALVES, COLUMNS, & QUILLS

Series	Body Material	Diaphragm Material	Inlet Size	Inlet Type	Pressure	Capacity or Length
BACK PRESSURE VALVE 	Alloy 20 CPVC Hastelloy C Polypropylene PTFE PVC PVDF Stainless Steel	EPDM PTFE Viton	0.375" to 4" (10 to 100 mm)	FNPT BSP Flange Right Angle Socket Weld Union Fitting	5-150 psi (0.34 to 10.3 bar)	N/A
BACK PRESSURE VALVE 	Alloy 20 CPVC Hastelloy C Polypropylene PTFE PVC PVDF Stainless Steel	EPDM PTFE Viton	0.375" to 4" (10 to 100 mm)	3 Port FNPT BSP Flange Right Angle Socket Weld Union Fitting	5-150 psi (0.34 to 10.3 bar)	N/A
CALIBRATION COLUMN 	Glass Clear PVC	Oring: EPDM or Viton	0.5" to 2" (15 to 50 mm)	FNPT BSB Flange Socket Weld Union	15psi (1 bar)	100-20,000 mL 3.2-640 GPH
INJECTION QUILL 	CPVC Polypropylene PTFE PVC PVDF Stainless Steel	Oring: EPDM or Viton	0.5" to 2" (15 to 50 mm)	FNPT BSP	1000 psi (68.9 bar)	4-6" (100- 150 mm) Adder Length Available

800.603.7867 951.342.3100 WWW.BLACOH.COM SALES@BLACOH.COM

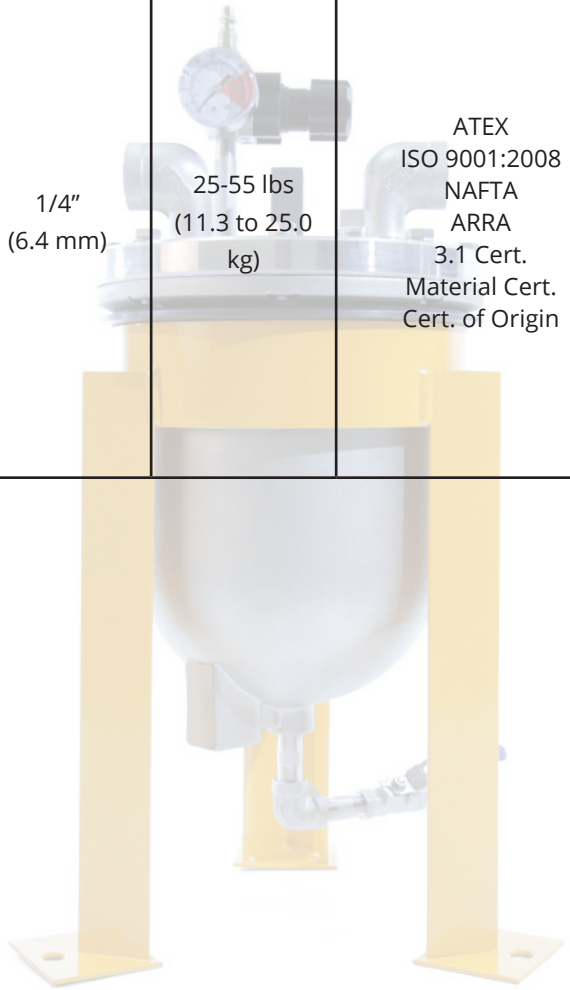
SPILLSTOP™

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Add On	Air Inlet	Est. Shipping Weight	Certifications & Testing
	Hastelloy C (HAST) Polypropylene (PP) PVC PVDF Stainless Steel (SS)	Noryl PVDF Stainless Steel	3/4-1" (19-25 mm)	FNPT BSP	Whistle Electronic Switch	1/4" (6.4 mm)	25-55 lbs (11.3 to 25.0 kg)	ATEX ISO 9001:2008 NAFTA ARRA 3.1 Cert. Material Cert. Cert. of Origin

Plastic Series	Wetted / Non- Wetted
SPS-10	PP / NORYL
SPS-11	PVC / NORYL
SPS-20	SS / NORYL
SPS-21	SS / SS
SPS-30	PVDF / NORYL
SPS-31	PVDF / PVDF
SPS-33	PVDF / PVDF
SPS-39	PVDF / NORYL
SPS-80	HAST / NORYL

About

The SPILLSTOP™ Leak Containment System attaches directly to the exhaust of an air operated diaphragm pump. When pump diaphragms fail, SPILLSTOP™ captures dangerous and/or expensive process fluid in an internal receptacle while raising a float switch to automatically shut down the pump. SPILLSTOP™ can also be con gured to sound a warning alarm and/or initiate a backup pump switchover.



25- 40,000+ GALLONS

SURGE SHIELD™



EXCEPTIONAL PERFORMANCE. PROVEN RELIABILITY.

Surge Shield™ is the latest advancement of pump and pipeline protection from Blacoh. This innovative line is specifically designed to address the challenging water hammer and surge conditions found in your facility's pumping system.

9 STANDARD SIZES

Engineered with attention to detail and system needs, Blacoh's Surge Shield™ provides a standard line that is easy to size and apply to a multitude of applications. Custom sizes up through 40,000+ gallons are also available.

Body Material	Bladder Material	Standard Inlet	Max Temp	Max Pressure	Coatings	Certifications & Testing
Stainless Steel	PVC Polyurethane Buna-N Viton	4" ANSI 150# Flange Larger sizes also available	120 °F (49 C)	275 psi (18.9 bar)	NSF-61 Epoxy (Inside) Primer & 2-Coat Epoxy (Outside)	ASME Section VIII, Division 1 with U Stamp

Series	Volume (gal / liter)	Diameter (in / mm)	Height w/o legs (in / mm)	Weight Dry (lb / kg)
BSC025-275	25 / 95	24.4 / 620	34.0 / 865	345 / 156
BSC040-275	40 / 150	24.4 / 620	43.0 / 1090	403 / 183
BSC060-275	60 / 225	24.4 / 620	56.0 / 1420	483 / 219
BSC080-275	80 / 300	24.4 / 620	69.0 / 1750	575 / 261
BSC100-275	100 / 375	28.4 / 720	65.3 / 1650	863 / 391
BSC125-275	125 / 475	28.4 / 720	77.3 / 1960	949 / 430
BSC150-275	150 / 565	28.4 / 720	89.3 / 2265	1035 / 470
BSC250-275	250 / 945	36.8 / 935	90.2 / 2290	1581 / 717
BSC500-275	500 / 1890	44.8 / 1135	115.7 / 2940	2444 / 1109

NEED MORE? WE'VE GOT YOU COVERED:
FULLY CUSTOMIZABLE & AVAILABLE
UP THROUGH 40,000+ GALLONS

SURGE CONTROL

Bladder Style Vessels



Surge control vessels with the expandable bladder absorbs dangerous hydraulic transient pressure spikes. Customizable size ranges up to 40,000+ gallons and 1160 psi.

Compressor Style



Compressor style surge vessels contains detection instrumentation and allow for additional or less air into the tank to adjust for a change in the fluid level.

Control Panels



UL CSA listed electrical and instrumentation control panels, VFD and PLC driven panels, or Variable Speed Drive (VSD) panels to control and minimize transient pressures.

Check Valves



Close, control and prevent back flow of fluid. A wide variety of sizes, materials and configurations are available to handle each unique application.

Air Vacuum Valves



Designed for operation in potable water, wastewater and sewage conditions, air release/vacuum valves add air to the piping system when draining the pipeline.

SurgeWave Transient Monitoring System™



Blacoh's patented SurgeWave™ Transient Monitoring Systems solves the need for pipeline operators to detect and record transient pressure events occurring in water, wastewater and petroleum pipelines. The system is unique in that it employs a system of dynamic pressure transducers and digital technology to monitor pipelines for indefinite periods of time. When a transient such as a pressure surge, pressure spike or water hammer event is detected, the system activates a high speed data recorder to record the event 200x/second.

SURGEWAVE™
TRANSIENT MONITORING SYSTEM

TESTING & CERTIFICATIONS



TESTING & ENGINEERING	PARTS	PART NUMBER	NOTES
STANDARD UNIT TEST CERTIFICATION	ALL UNITS	DOC-TEST CERT	STANDARD BFC TEST PERFORMED ON ALL UNITS NO MODIFICATIONS TO TESTING PROCEDURE
HYDROSTATIC TEST & CERTIFICATE	ALL UNITS	DOC-HYDRO	STANDARD BFC FORMAT DOCUMENT
HYDROSTATIC TEST & CERTIFICATE – WITNESSED	ALL UNITS	DOC-HYDRO TEST- WITNESSED	CONSULT FACTORY FOR DETAILS
XRAY EXAM & DYE PENETRANT TEST	METAL UNITS	DOC-XRAYDYE	CONSULT FACTORY FOR DETAILS
DYE PENETRANT TEST	METAL UNITS	DOC-DYE	CONSULT FACTORY FOR DETAILS
XRAY/RADIOGRAPHY	METAL UNITS	DOC-XRAY	CONSULT FACTORY FOR DETAILS
POSITIVE MATERIAL INDENTIFICATION	ALL METAL HOUSINGS	DOC-PMI	CONSULT FACTORY FOR DETAILS
BOLT TENSILE TEST REPORT	BOLTS	DOC-BOLT	STANDARD BFC FORMAT DOCUMENT
GAUGE TESTING	GAUGES	DOC-GAUGE	STANDARD BFC FORMAT DOCUMENT
SPILLSTOP UNIT TESTING	SPILLSTOP	DOC-TEST-SS	STANDARD BFC FORMAT DOCUMENT
CUSTOMER OR THIRD PARTY INSPECTION		CONTACT FACTORY	CONSULT FACTORY FOR DETAILS
ASME CALCULATIONS		ASME CALC	CONSULT FACTORY FOR DETAILS

MATERIAL CERTIFICATION	PARTS	PART NUMBER	NOTES
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	SENTRY PRODUCT (NO LOT NUMBERS)	DOC-MC-SENTRY	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	SPILL STOP PRODUCT (NO LOT NUMBERS)	DOC-MC-SS	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	GAUGE GUARD PRODUCT (NO LOT NUMBERS)	DOC-MC-GG	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF CONFORMANCE TO PO	ALL ORDERS	DOC-COC	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	BLADDER	DOC-MCB	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED & NONWETTED HOUSING	DOC-MCWN	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED HOUSING & BLADDER	DOC-MCWB	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED & NONWETTED HOUSING, BLADDER	DOC-MCWNB	STANDARD BFC FORMAT DOCUMENT
CERTIFICATION OF OIL FREE WETTED ASSEMBLY	WETTED HOUSING OF UNIT	DOC-OIL	STANDARD BFC FORMAT DOCUMENT
MILL TEST REPORT (MTR) CHEMICAL COMPOSITION & HEAT NUMBER	WETTED HOUSING - METAL ONLY	DOC-MTR-METAL-W	CHEMISTRY REPORT FROM FOUNDRY
MILL TEST REPORT (MTR) CHEMICAL COMPOSITION & HEAT NUMBER	WETTED, NONWETTED HOUSING – METAL ONLY	DOC-MTR-METAL-WN	CHEMISTRY REPORT FROM FOUNDRY
3.1 (EN10204) CERTIFICATION	WETTED HOUSING - METAL ONLY	DOC-CERT 3.1-W	CHEMISTRY REPORT FROM FOUNDRY
3.1 (EN10204) CERTIFICATION	WETTED, NONWETTED HOUSING – METAL ONLY	DOC-CERT 3.1-WN	CHEMISTRY REPORT FROM FOUNDRY
3.1 (EN10204) CERTIFICATION & HYDRO TESTING	SENTRY PRODUCTS	DOC-CERT 3.1H	CHEMISTRY REPORT FROM FOUNDRY & HYDRO TEST
CE STATEMENT	VARIOUS	DOC-CE1	COMPLIANCE WITH PED CAT 1, GROUP 1
SILICONE FREE STATEMENT	ALL PRODUCTS	DOC-SILICONE	STANDARD BFC FORMAT DOCUMENT

TESTING & CERTIFICATIONS

ORDER DOCUMENTATION	PARTS	PART NUMBER	NOTES
NAFTA CERTIFICATION	NORTH AMERICA ORDERS	DOC-NAFTA	
CERTIFICATION OF ORIGIN	ANY ITEM	DOC-COO	STANDARD BFC FORMAT DOCUMENT
CERT OF CONFORMANCE FOR ORDER	ANY ORDER	COC	STANDARD BFC FORMAT DOCUMENT
EC ATEX DECLARATION OF CONFORMITY	ALL ATEX UNITS	DOC-EC	STANDARD BFC FORMAT DOCUMENT
EC ATEX DECLARATION OF CONFORMITY IN GERMAN	ALL ATEX UNITS	DOC-EC-GR	STANDARD BFC FORMAT DOCUMENT
EC PED DECLARATION OF CONFORMITY	ALL PED UNITS	DOC-EC-PED	STANDARD BFC FORMAT DOCUMENT
EC WORK TEST CERTIFICATE	ALL PED UNITS	DOC-EC-WORK	STANDARD BFC FORMAT DOCUMENT
DOCUMENTATION-NON STANDARD-CUSTOMER SPECIFIED		DOC-CS	MINIMUM FEE. MAY VARY BY ORDER. CONSULT FACTORY.

CERTIFICATES OF ORIGIN	PARTS	PART NUMBER	NOTES
CERTIFICATE OF ARRA BUY AMERICAN ACT	ALL	DOC-ARRA	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF PRODUCTS MADE IN USA	ALL	DOC-COO-USA	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF PRODUCTS MADE IN USA (FOR KOREA)	ALL - USE FOR KOREA ONLY	DOC-COO-USA-K	COMPLIANCE TO KOREA-USA FREE TRADE AGREEMENT-STANDARD BFC DOCUMENT

DRAWINGS	PARTS	PART NUMBER	NOTES
STANDARD PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	AVAILABLE AT WWW.BLACOH.COM
STANDARD CERTIFIED PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	SIGNED & DATED BY BLACOH ENGINEERING DEPT
SPECIAL CERTIFIED PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	SIGNED & DATED BY BLACOH ENGINEERING DEPT

FEES	PARTS	PART NUMBER	NOTES
CUSTOMER SUPPLIED GAUGE MOUNTED ON PRODUCT		CSG	
FILLING OF GAUGE GUARD - 2" AND UNDER	GAUGE GUARDS	FILL	CAN BE ANY TYPE OF INSTRUMENTATION
FILLING OF GAUGE GUARD - 3" AND OVER	GAUGE GUARDS	FILL-3	CAN BE ANY TYPE OF INSTRUMENTATION
FILL, MINERAL OIL, 2" INSTRUMENTS AND UNDER	GAUGE GUARDS	FILL-M	CAN BE ANY TYPE OF INSTRUMENTATION
FILL, MINERAL OIL, 3" INSTRUMENTS AND OVER	GAUGE GUARDS	FILL-M	CAN BE ANY TYPE OF INSTRUMENTATION
FILL FOR SPECIAL INSTRUMENTATION		FILL-SPECIAL	VARIES BY TYPE
PMT BY WIRE TRANSFER UNDER $1,000		BANK	BANK FEE CHARGED FOR SMALL WIRES
DROP SHIP OUTSIDE THE UNITED STATES	ANY ORDER	DROP SHIP	MINIMUM FEE. MAY VARY BY ORDER. CONSULT FACTORY.
CANCELLATION FEE	ANY ORDER	CANCEL	MINIMUM FEE. MAY VARY BY ORDER. CONSULT FACTORY.

BLADDER & BELLOW TEMPERATURE LIMITS



BLADDER MATERIAL	TEMPERATURE LIMITS	APPLICATIONS
Aflas	0°F to +400°F (-18°C to +204°C)	High temperature, petroleum based chemicals, strong acids and bases.
Buna	+10°F to +180°F (-12°C to +82°C)	Good flex life; use with petroleum, solvents and oil-based fluids.
FDA Buna	+10°F to +180°F (-12°C to +82°C)	FDA-approved food grade; similar characteristics of regular Buna.
EPDM	-60°F to +280°F (-51°C to +138°C)	Use in extreme cold; good chemical resistance with ketones, caustics.
Hypalon	-20°F to +275°F (-29°C to +135°C)	Excellent abrasion resistance; good in aggressive acid applications.
Neoprene	0°F to +200°F (-18°C to +93°C)	Good abrasion resistance and flex; use with moderate chemicals.
PTFE	-20°F* to +220°F (-29°C to +104°C)	Bellows design; excellent flex life; use with highly aggressive fluids. **bellows design only*
Santoprene	-20°F to +225°F (-29°C to +107°C)	Excellent choice as a low cost alternative for PTFE in many applications.
FDA Silicone	-20°F to +300°F (-29°C to +149°C)	FDA-approved food grade material; for use in food and pharmaceutical processing.
Viton®	-10°F to +350°F (-23°C to +177°C)	Use in hot and aggressive fluids; good with aromatics, solvents, acids and oils.

BLADDERS & BELLOWS

CAPACITY	BLADDERS	PTFE BELLOWS
4 to 10 in3 (0.06 to .16 L)		
8 in3 (0.13 L)		N/A
12 in3 (0.20 L)		
24 in3 (0.39 L)		
36 to 85 in3 (0.59 to 1.40 L)		

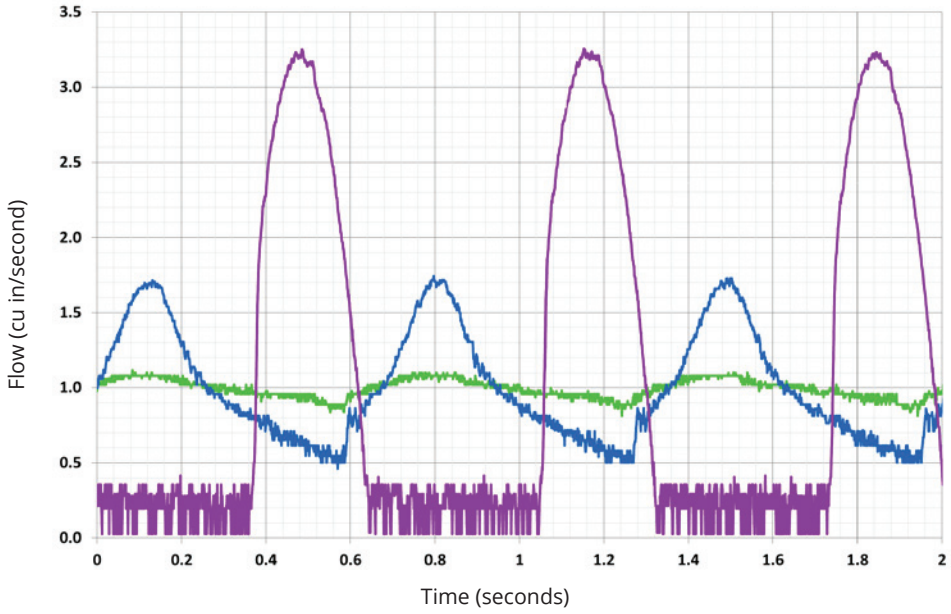
CAPACITY	BLADDERS	PTFE BELLOWS
175 to 370 in3 (2.87 to 6.06 L)		
577 in3 (9.46 L)		N/A
1155 in3 (5 gal) (18.93 L)		
2310 in3 (10 gal) (37.85 L)		
AODDampener 1.0, 1.5, 2.0” Inlet (25, 40, 50 mm)	 PTFE Back Diaphragm	

AIR CONTROL TYPES



TYPE	DESCRIPTION	MAX PRESSURE	INSTALLATION
Adjustable 	-Mounted on single port -Self relieving regulator -Gauge and one-way check valve -Compressed air line must be permanently attached to the regulator	150 psi (10.3 bar)	-Within 10 pipe diameters of pump discharge -Connect to a constant source of air -Do NOT use oxygen -Charge dampener to 80% of operating pressure -Adjust dampener PSI to minimize pulse level
Automatic 	-Mounted on single port -Automatic valve assembly on center port -Gauge and one-way check valve -Automatically self adjusts as system pressure increases/decreases and resets when system restarts	150 psi (10.3 bar)	-Within 10 pipe diameters of pump discharge -Connect to a constant source of air -Do NOT use oxygen -Dampener gauge will read system pressure -No further adjustments are needed
Chargeable 	-Gauge and charging valve -Leak-proof operation in corrosive environments -No permanent source of compressed gas -Manually bled or charged to required pressure	10,000 psi (689.5 bar)	-Within 10 pipe diameters of pump discharge -Charge to recommended percentage of system operating pressure with compressed air or clean dry nitrogen -Do NOT use oxygen
Inlet Stabilizer 	-Adjustable for suction lift or positive inlet conditions -Consists of compound pressure gauge, a pressure/vacuum tight ball valve and a Venturi valve	30 inHg (30 psi) (2.1 bar)	-Within 10 pipe diameters of pump discharge -Use compressed air line and air chuck to pressurize or create a vacuum -Do NOT use oxygen -Vacuum charge to 5-7 inHg for suction lift or charge to 50% of static inlet pump pressure for flooded suction

HYBRID VALVE PERFORMANCE CHART



THE PROOF IS IN THE PERFORMANCE:

The patent-pending Hybrid Valve was engineered to proven principles with state-of-the-art design for optimum performance and maximum efficiency.

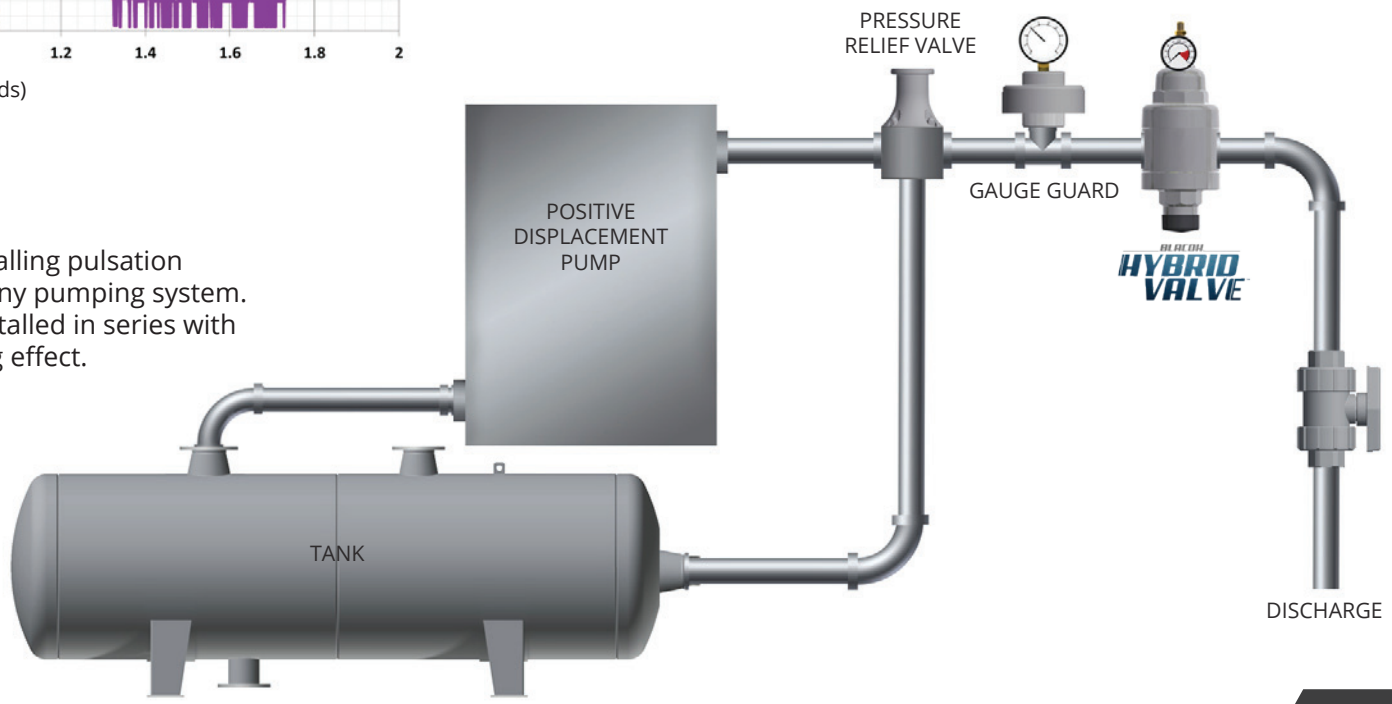
In a metering pump system, using a back pressure valve alone (purple) does nothing to improve fluid flow. When put in series with a pulsation dampener, the flow improves significantly (blue) but, results still can't match the performance of the single unit Hybrid Valve for the steadiest flow (green).



EXAMPLE SYSTEM SET-UP:

Location and proximity are key when installing pulsation dampeners and back pressure valves in any pumping system. If a back pressure valve is incorrectnly installed in series with a dampener, it can negate the dampening effect.

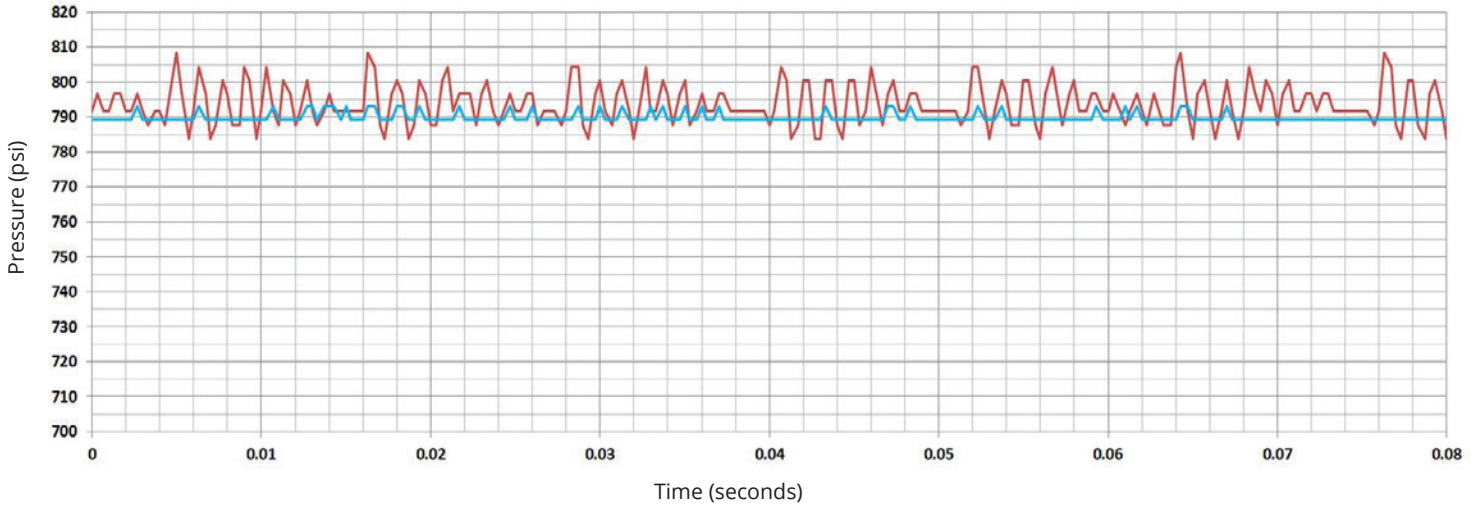
By combining the dampener and back pressure valve into a single engineered unit, we've eliminated the most common issues with installation for a more efficient, simplified system.



PERFORMANCE CHARTS

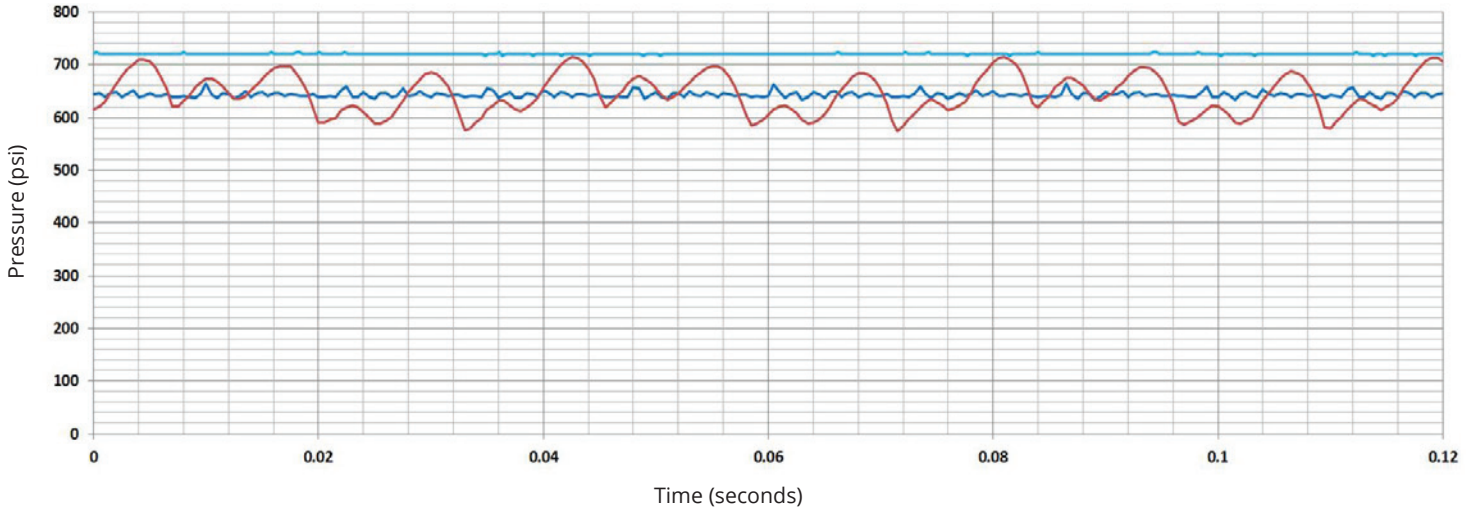
TRIPLEX PUMP with SENTRY XPH Dampener

- Without Dampener (1715 rpm, 757 pulses/sec)
- With XPH Flow-Thru Dampener (± 4 PSI)



TRIPLEX PUMP with SENTRY XPA & XPH Dampener

- Without Dampener
- With XPA Dampener
- With XPH Flow-Thru Dampener

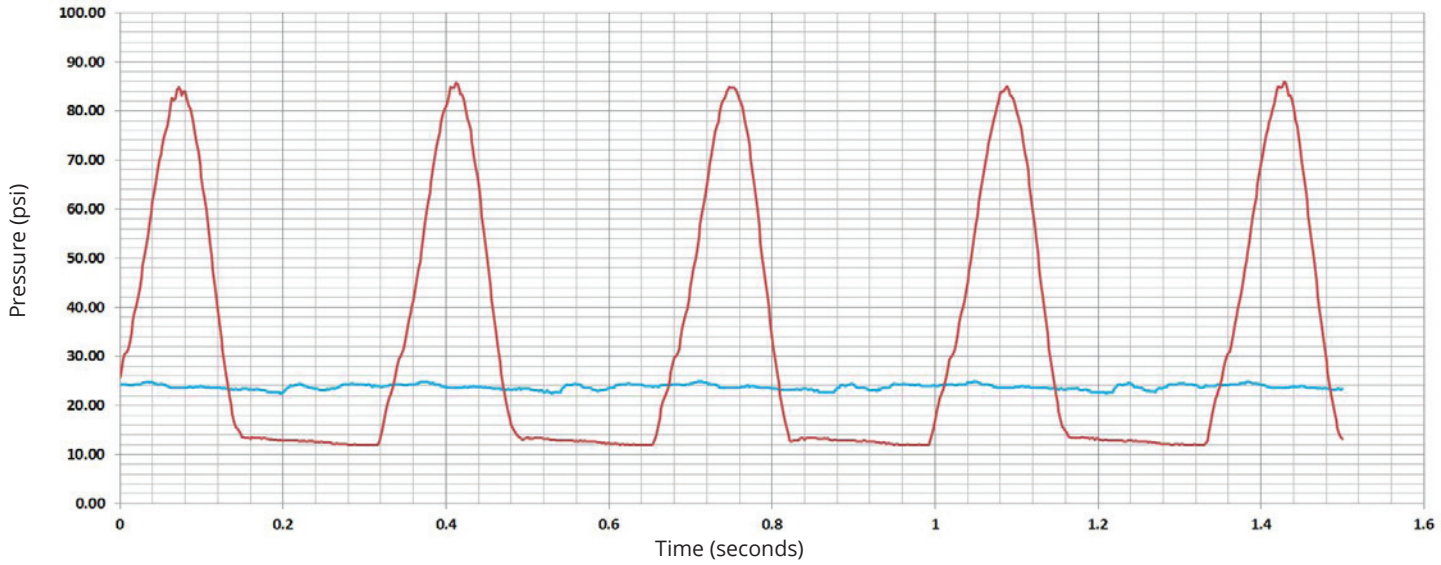


PERFORMANCE CHARTS

1" METERING PUMP with SENTRY II Dampener

Without Dampener

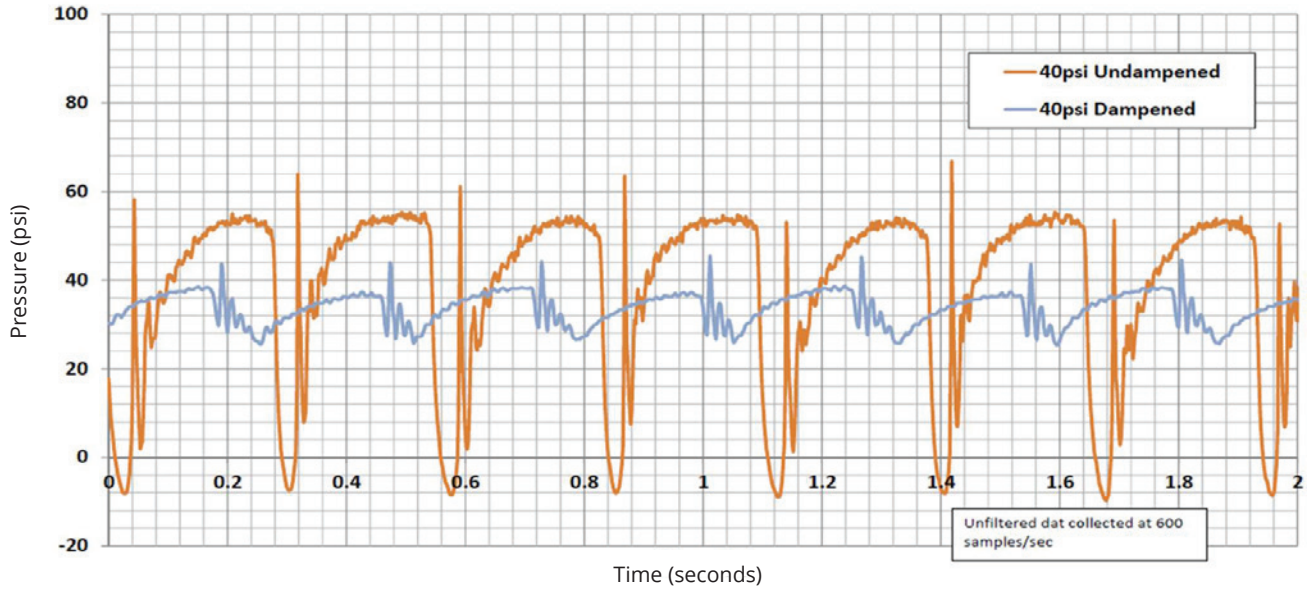
With Dampener



1" AODD PUMP with 1" AODDampener

Without Dampener

With AODDampener



COULD THIS BE PREVENTED?





Don't put employees and the community at risk. Dangerous and expensive failures such as these can happen in all industries. Having the right solutions in place including pulsation dampeners, surge suppressors, leak containment, monitoring systems, and the correct system configuration can help prevent these types of situations from occurring, saving both money and lives.

DON'T PUMP WITHOUT US.

BLACOH™
INDUSTRIES

BLACOH™ FLUID CONTROL
BLACOH™ SURGE CONTROL
BLACOH™ METAL SOLUTIONS

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