

Victaulic® Series UBA Unibody ABV Balancing Valve

 **WARNING**







- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, gloves, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

RECEIVING THE SHIPMENT

Upon receipt of the shipment, verify that the kit is the correct one for the coil being installed. If any components are damaged or missing, contact Victaulic.

Series UBA Valve Weights

Size			Weight
Nominal	IPS Actual Outside Diameter	CTS Actual Outside Diameter	Approx. (Each)
inches DN	inches mm	inches mm	lbs kg
1/2 DN15	0.840 21.3	0.625 15.9	4.7 2.1
3/4 DN20	1.050 26.9	0.875 22.2	5.5 2.5
1 DN25	1.315 33.7	1.125 28.6	6.0 2.7

LUBRICANT COMPATIBILITY FOR GASKETS

The following recommendations are for the gasket material listed. Commercial lubricants may contain multiple ingredients. Always refer to the lubricant manufacturer's recommendations for material compatibility.

	Victaulic Lubricant	Soap-Based Solutions	Glycerin	Silicone Grease	Silicone Spray	Corn Oil	Soybean Oil	Hydrocarbon-Based Oils	Petroleum-Based Greases
Compatible with EPDM Gaskets?	Yes	Yes	Yes	Yes	No	No	No	No	No

ABV CARTRIDGES

Choose the Victaulic ABV Cartridge that coincides with the required constant flow rate and range of differential pressure needed for the application. Refer to the ABV External Cartridge Selection Guide and Adjustment Diagram and ABV Internal Selection Guide and Adjustment Diagram on the following page.

NOTE: Victaulic will pre-set ABV Internal Cartridges flow rates based on the order. ABV External Cartridge flow rates will require field-setting. Reference Performance tables on pages 2 through 5 for detailed pressure ranges and flow setting.

Continued on the following page.

STORAGE

- DO** protect the valve from direct sunlight and mechanical damage. Valves shall be stored in a dry area that is protected from dirt and debris accumulation.
- DO** store valves in temperatures from -4°F up to 140°F/-20°C up to +60°C, maximum relative air humidity of 95%.
- DO NOT** expose valves to aggressive fluids or heat sources.

SWEAT CONNECTIONS

 **CAUTION**

- DO NOT** exceed the temperature rating of the valve (250°F/121°C).
- Separate tailpieces and union nuts from valve before soldering to pipe.

Soldering tailpieces with valve attached may cause damage to internal components, resulting in valve leakage and property damage.

Verify that the valve is installed in the correct direction of flow (refer to applicable flow direction arrow on the valve body). Separate tailpieces and union nuts from valve to solder to the pipe. Connections shall be soft soldered with 95/5 (95% tin, 5% antimony) type solder. Tailpieces, union nuts, and pipe shall be allowed to cool to room temperature before attaching to valve. **DO NOT** exceed the temperature rating of the valve (250°F/121°C) at seats and seals.

THREADED PIPE CONNECTIONS

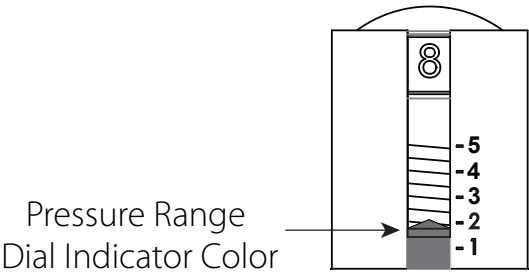
Verify that all threaded connections are clean and free of any burrs. Apply PTFE thread sealant tape or pipe dope to the external threads of all threaded pipe connections. **DO NOT** get any tape, dope, or other foreign material into the flow path. For threaded connections to Series UH1, refer to the "Series UH1 Stainless Steel Annular Corrugated Flexible Pipe" section in this document.

UNION-TYPE ADAPTERS/CONNECTIONS

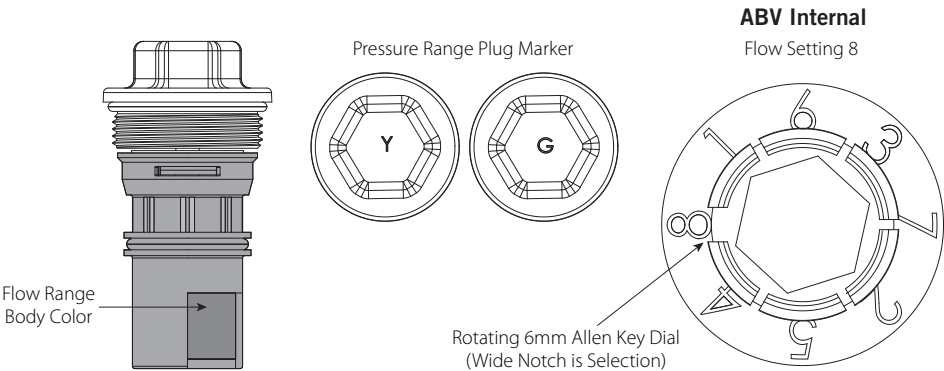
The o-rings in union-type adapters/connections shall be lubricated with a compatible lubricant to help prevent the o-ring from pinching or tearing during installation. Refer to the "Lubricant Compatibility for Gaskets" table below. Tighten union-type adapters/connections hand-tight, then apply an additional quarter turn. **DO NOT** over-tighten the connection. **DO NOT** apply pipe tape or dope to union threads.

ABV EXTERNAL SELECTION GUIDE AND ADJUSTMENT DIAGRAM

ABV External



ABV INTERNAL SELECTION GUIDE AND ADJUSTMENT DIAGRAM



ABV CARTRIDGE SELECTION GUIDE

Adjustment	ABV Code	Plug Marker or Dial Color	Body Color	Body Color GPM	Flow Range LPM	Pressure Differential Range psid	Pressure Differential Range kPaD	Part Code
Internal Adjustment	A	Y	Grey	0.128 to 0.68	0.49 to 2.58	2.2 to 18.9	15 to 130	P000UBA0YY
	B	Y	Red	0.911 to 1.89	3.45 to 7.15	2.9 to 18.9	20 to 130	P000UBA0YR
	C	Y	Blue	0.981 to 2.32	3.72 to 8.78	2.9 to 18.9	20 to 130	P000UBA0YU
	D	Y	Black	0.713 to 3.06	2.70 to 11.58	2.9 to 18.9	20 to 130	P000UBA0YB
	E	Y	Green	1.55 to 4.33	5.87 to 16.39	2.9 to 18.9	20 to 130	P000UBA0YG
	F	G	Grey	0.185 to 1.10	0.71 to 4.16	4.4 to 58	30 to 400	P000UBA0GY
	G	G	Red	1.24 to 2.88	4.70 to 10.90	5.8 to 58	40 to 400	P000UBA0GR
	H	G	Blue	0.894 to 3.49	3.39 to 13.21	5.8 to 58	40 to 400	P000UBA0GU
	J	G	Black	0.946 to 4.39	3.59 to 16.61	5.8 to 58	40 to 400	P000UBA0GB
	K	G	Green	2.33 to 6.46	8.83 to 24.45	5.8 to 58	40 to 400	P000UBA0GG
External Adjustment	L	White	Black	0.44 to 1.81	1.67 to 6.85	2.5 to 30	17 to 210	P000UBAEYB
	M	White	Green	0.691 to 2.68	2.62 to 10.14	2.5 to 30	17 to 210	P000UBAEYG
	N	White	Red	1.22 to 3.60	4.62 to 13.62	2.5 to 29	17 to 200	P000UBAEYR
	P	Grey	Black	0.607 to 2.71	2.33 to 10.25	5.1 to 58	35 to 400	P000UBAEGB
	R	Grey	Green	1.05 to 3.95	3.98 to 14.95	5.1 to 58	35 to 400	P000UBAEGG
	S	Grey	Red	1.79 to 5.57	6.78 to 21.08	4.4 to 58	30 to 400	P000UBAEGR
	AC	Cap	Tan	2.73 to 11.70	10.34 to 44.28	5.1 to 116	35 to 800	P000UBPPAC

ABV INTERNAL CARTRIDGE FLOW PERFORMANCE AND SETTINGS

Control Characteristic	Internal Adjust									
Cartridge Model	A		B		C		D		E	
Visual Plug Marker	Y		Y		Y		Y		Y	
Visual Body Color	Grey		Red		Blue		Black		Green	
Pressure Differential Range psid kPaD	2.2 to 18.9 15 to 130		2.9 to 18.9 20 to 130		2.9 to 18.9 20 to 130		2.9 to 18.9 20 to 130		2.9 to 18.9 20 to 130	
Flow Setting	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM
1	0.128	0.49	–	–	–	–	–	–	1.55	5.87
2	0.211	0.80	–	–	–	–	–	–	1.88	7.12
3	0.277	1.05	–	–	–	–	0.713	2.70	2.15	8.14
4	0.352	1.33	0.911	3.45	0.981	3.72	1.06	4.01	2.19	8.29
5	0.493	1.87	1.46	5.53	1.83	6.93	2.45	9.27	3.66	13.85
6	0.56	2.12	1.66	6.28	2.17	8.21	2.80	10.60	3.76	14.23
7	0.607	2.30	1.80	6.81	2.31	8.74	2.85	10.79	4.00	15.14
8	0.68	2.58	1.89	7.15	2.32	8.78	3.06	11.58	4.33	16.39

NOTE

- Accuracy greatest of either +/-0.088 GPM or +/- 10% of controlled flow rate

Control Characteristic	Internal Adjust									
Cartridge Model	F		G		H		J		K	
Visual Plug Marker	G		G		G		G		G	
Visual Body Color	Grey		Red		Blue		Black		Green	
Pressure Differential Range psid kPaD	4.4 to 58 30 to 400		5.8 to 58 40 to 400		5.8 to 58 40 to 400		5.8 to 58 40 to 400		5.8 to 58 40 to 400	
Flow Setting	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM
1	0.185	0.71	–	–	–	–	–	–	2.33	8.83
2	0.30	1.14	–	–	–	–	–	–	2.95	11.17
3	0.392	1.48	–	–	0.894	3.39	0.946	3.59	3.32	12.57
4	0.515	1.95	1.24	4.7	1.44	5.45	1.52	5.75	3.83	14.50
5	0.748	2.83	2.17	8.21	2.87	10.86	3.75	14.20	5.79	21.92
6	0.837	3.17	2.56	9.69	3.43	12.98	4.21	15.94	5.85	22.14
7	1.01	3.82	2.75	10.41	3.46	13.10	4.26	16.13	6.21	23.51
8	1.10	4.16	2.88	10.90	3.49	13.21	4.39	16.61	6.46	24.45

NOTE

- Accuracy greatest of either +/-0.088 GPM or +/- 10% of controlled flow rate

ABV External Cartridge Flow Performance and Settings

Control Characteristic	External Adjust					
Cartridge Model	L		M		N	
Visual Dial Indicator	White		White		White	
Visual Body Color	Black		Green		Red	
Pressure Differential Range psid kPaD	2.5 to 30 17 to 210		2.5 to 30 17 to 210		2.5 to 29 17 to 200	
Flow Setting	GPM	LPM	GPM	LPM	GPM	LPM
1.0	0.44	1.67	0.691	2.62	1.22	4.62
1.1	0.475	1.80	0.741	2.80	1.29	4.88
1.2	0.509	1.93	0.791	2.99	1.36	5.15
1.3	0.543	2.06	0.841	3.18	1.44	5.45
1.4	0.578	2.19	0.89	3.37	1.51	5.72
1.5	0.612	2.32	0.94	3.56	1.58	5.98
1.6	0.646	2.45	0.99	3.75	1.66	6.28
1.7	0.681	2.58	1.04	3.94	1.73	6.55
1.8	0.715	2.71	1.09	4.13	1.80	6.81
1.9	0.749	2.84	1.14	4.32	1.88	7.12
2.0	0.784	2.97	1.19	4.50	1.95	7.38
2.1	0.818	3.10	1.24	4.69	2.02	7.65
2.2	0.852	3.23	1.29	4.88	2.09	7.91
2.3	0.887	3.36	1.34	5.07	2.16	8.18
2.4	0.921	3.49	1.39	5.26	2.23	8.44
2.5	0.955	3.62	1.44	5.45	2.30	8.71
2.6	0.99	3.75	1.49	5.64	2.37	8.97
2.7	1.02	3.86	1.54	5.83	2.44	9.24
2.8	1.06	4.01	1.59	6.02	2.51	9.50
2.9	1.09	4.13	1.64	6.21	2.57	9.73
3.0	1.13	4.28	1.69	6.40	2.64	9.99
3.1	1.16	4.39	1.74	6.59	2.70	10.22
3.2	1.20	4.54	1.79	6.78	2.76	10.45
3.3	1.23	4.66	1.84	6.97	2.83	10.71
3.4	1.26	4.77	1.89	7.15	2.89	10.94
3.5	1.30	4.92	1.94	7.34	2.94	11.13
3.6	1.33	5.03	1.98	7.50	3.00	11.36
3.7	1.37	5.19	2.03	7.68	3.06	11.58
3.8	1.40	5.30	2.08	7.87	3.11	11.77
3.9	1.44	5.45	2.13	8.06	3.17	12.00
4.0	1.47	5.56	2.18	8.25	3.22	12.19
4.1	1.50	5.68	2.23	8.44	3.27	12.38
4.2	1.54	5.83	2.28	8.63	3.32	12.57
4.3	1.57	5.94	2.33	8.82	3.36	12.72
4.4	1.61	6.09	2.38	9.01	3.41	12.91
4.5	1.64	6.21	2.43	9.20	3.45	13.06
4.6	1.68	6.36	2.48	9.39	3.49	13.21
4.7	1.71	6.47	2.53	9.58	3.53	13.36
4.8	1.75	6.62	2.58	9.77	3.57	13.51
4.9	1.78	6.74	2.63	9.96	3.60	13.62
5.0	1.81	6.85	2.68	10.14	3.60	13.62

NOTE

- Accuracy greatest of either +/- 5% of controlled flow rate or +/- 2% of maximum flow rate.

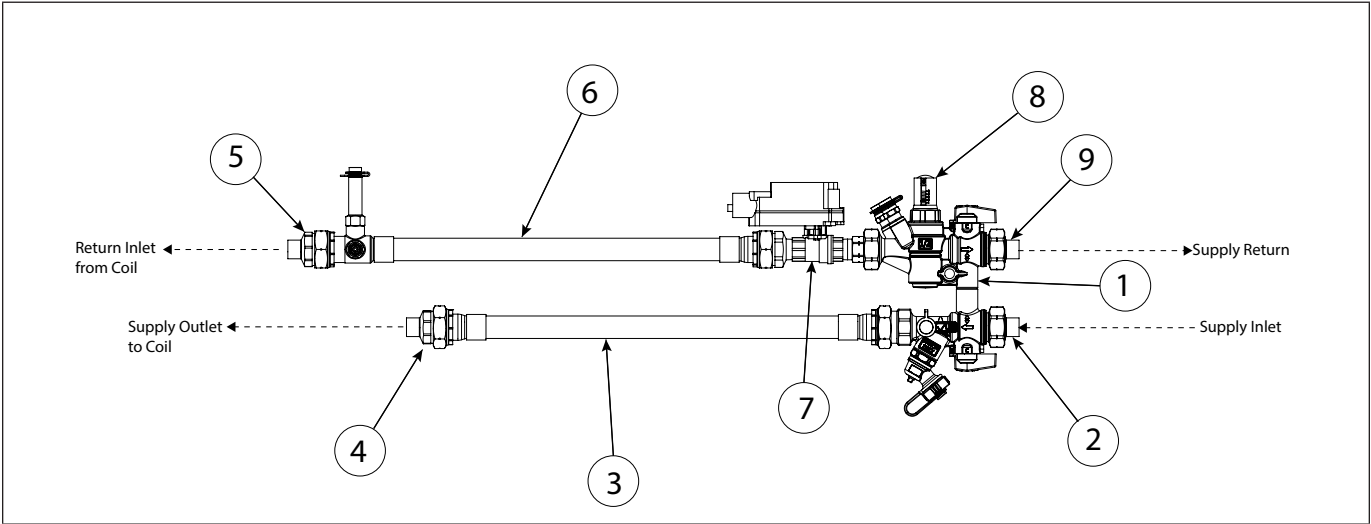
ABV External Cartridge Flow Performance and Settings

Control Characteristic	External Adjust							
Cartridge Model	P		R		S		AC	
Visual Dial Indicator	Gray		Gray		Gray		Cap	
Visual Body Color	Black		Green		Red		Tan	
Pressure Differential Range psid kPaD	5.1 to 58 35 to 400		5.1 to 58 35 to 400		4.4 to 58 30 to 400		5.1 to 116 35 to 800	
Flow Setting	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM
1.0	0.607	2.30	1.05	3.98	1.79	6.78	–	–
1.1	0.66	2.50	1.12	4.24	1.88	7.12	–	–
1.2	0.712	2.70	1.19	4.50	1.98	7.50	–	–
1.3	0.765	2.90	1.26	4.77	2.07	7.84	–	–
1.4	0.817	3.09	1.34	5.07	2.17	8.21	–	–
1.5	0.87	3.29	1.41	5.34	2.26	8.56	2.73	10.34
1.6	0.922	3.49	1.48	5.60	2.36	8.93	3.17	12.00
1.7	0.975	3.69	1.55	5.87	2.45	9.27	3.61	13.67
1.8	1.03	3.90	1.63	6.17	2.54	9.61	4.10	15.52
1.9	1.08	4.09	1.70	6.44	2.64	9.99	4.67	17.68
2.0	1.13	4.28	1.77	6.70	2.73	10.33	5.15	19.49
2.1	1.18	4.47	1.84	6.97	2.83	10.71	5.55	21.01
2.2	1.24	4.69	1.92	7.27	2.92	11.05	5.95	22.52
2.3	1.29	4.88	1.99	7.53	3.02	11.43	6.28	23.77
2.4	1.34	5.07	2.06	7.80	3.11	11.77	6.61	25.02
2.5	1.40	5.30	2.13	8.06	3.21	12.15	6.96	26.35
2.6	1.45	5.49	2.21	8.37	3.30	12.49	7.27	27.52
2.7	1.50	5.68	2.28	8.63	3.40	12.87	7.62	28.84
2.8	1.55	5.87	2.35	8.90	3.49	13.21	7.93	30.02
2.9	1.61	6.09	2.42	9.16	3.59	13.59	8.28	31.34
3.0	1.66	6.28	2.50	9.46	3.68	13.93	8.59	32.52
3.1	1.71	6.47	2.57	9.73	3.78	14.31	8.72	33.01
3.2	1.76	6.66	2.64	9.99	3.87	14.65	8.85	33.50
3.3	1.82	6.89	2.71	10.26	3.96	14.99	8.99	34.03
3.4	1.87	7.08	2.79	10.56	4.06	15.37	9.12	34.52
3.5	1.92	7.27	2.86	10.83	4.15	15.71	9.25	35.02
3.6	1.97	7.46	2.93	11.09	4.25	16.09	9.47	35.85
3.7	2.03	7.68	3.00	11.36	4.34	16.43	9.69	36.68
3.8	2.08	7.87	3.08	11.66	4.44	16.81	9.91	37.51
3.9	2.13	8.06	3.15	11.92	4.53	17.15	10.10	38.23
4.0	2.18	8.25	3.22	12.19	4.63	17.53	10.40	39.37
4.1	2.24	8.48	3.29	12.45	4.72	17.87	10.50	39.75
4.2	2.29	8.67	3.37	12.76	4.82	18.25	10.60	40.13
4.3	2.34	8.86	3.44	13.02	4.91	18.59	10.70	40.50
4.4	2.39	9.05	3.51	13.29	5.01	18.96	10.90	41.26
4.5	2.45	9.27	3.58	13.55	5.10	19.31	11.00	41.64
4.6	2.50	9.46	3.66	13.85	5.20	19.68	11.10	42.02
4.7	2.55	9.65	3.73	14.12	5.29	20.02	11.30	42.78
4.8	2.60	9.84	3.80	14.38	5.38	20.37	11.40	43.15
4.9	2.66	10.07	3.87	14.65	5.48	20.74	11.50	43.53
5.0	2.71	10.25	3.95	14.95	5.57	21.08	11.70	44.28

NOTE

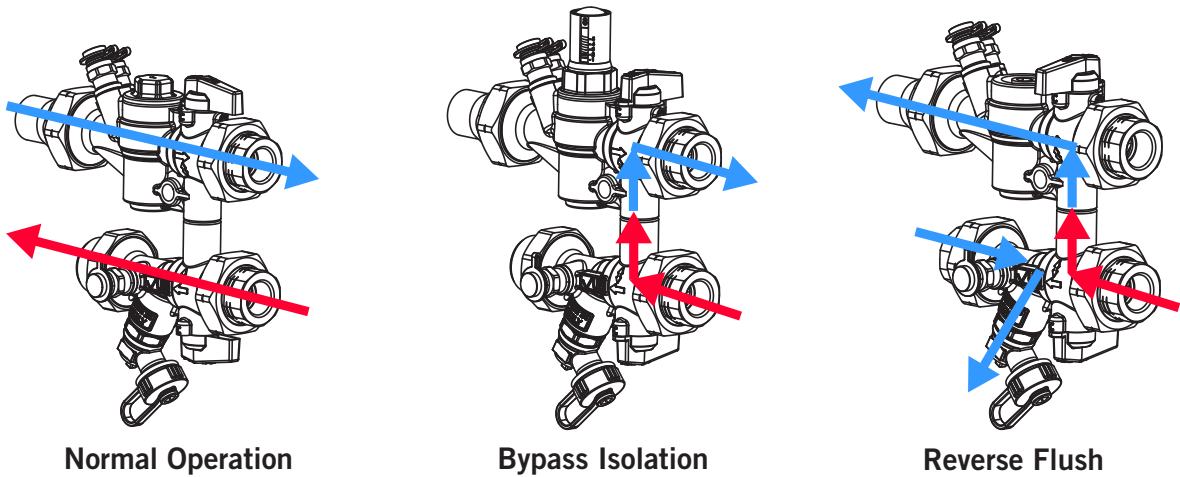
- Accuracy greatest of either +/- 5% of controlled flow rate or +/- 2% of maximum flow rate.

SERIES UBA VALVE TRIM COMPONENTS - EXPLODED VIEW DRAWING



Item	Description
1	Series UBA Valve
2	Supply Inlet Tailpiece
3	Inlet Series UH1
4	Supply Outlet to Coil Tailpiece
5	Return Inlet from Coil Tailpiece
6	Return Series UH1 (w/ PT Port)
7	ATC Valve
8	ABV Insert
9	Supply Return Tailpiece

SERIES UBA VALVE HANDLE OPERATION POSITIONS



Valve	Normal Operation	Bypass Isolation	Reverse Flush
Upstream (Red)	B	C	C
Downstream (Blue)	B	C	A

SERIES UBA VALVE INSTALLATION

Refer to the drawings and tables on the previous page when completing the following steps.

- 1. Mount the Series UBA Valve according to available space and type of location. (If desired, the valve may be supported with a 3/8" threaded rod attached through the provided mounting hole.)
- 2. Connect applicable tailpieces to coil (not shown in drawing on previous page) and Supply Pipe and Return Pipe (not shown in drawing on previous page) via standard connection practices, described previously in Sweat, Threaded, Union-Type, or Copper Press sections in this document.
- 3. Connect the Supply Inlet Tailpieces to the Valve, verifying that the flow arrow is in the correct direction. Move the handles to Position C (Bypass Isolation) for tightening.
- 4. If using a Series UH1, verify that the seals are in place and undamaged. Series UH1 in 1/2 - 1" sizes contains seals in the swivel union ends. Refer to the "Series UH1 Stainless Steel Annular Corrugated Flexible Pipe" section for more information.
- 5. Connect Inlet and Return Series UH1 and Supply Outlet to Coil Tailpiece and Return Inlet from Coil Tailpiece and appropriate valve ends.
NOTE: Verify that the return side of the coil is connected to the return side of the valve, and the supply side of the coil is connected to the supply side of the valve. Refer to the "Series UH1 Stainless Steel Annular Corrugated Flexible Pipe" section for details on minimum static bend radius specifications and additional installation requirements.
- 6. Verify joints are properly tightened including air bleed on Series UH1 body (Items 3 and 6) and UB Drain Valve (located in Item 1).
NOTE: Use cap of Drain Valve as handle.
- 7.
 - a. For externally adjusted ABV, use 7-mm square key to adjust flow setting. See diagrams describing balancing insert instructions on page 2.
 - b. For internally adjusted ABV, while factory-set, the flow setting may be adjusted with 6-mm hex key wrench based on balancing instructions diagrams shown on page 2.
 - c. Remove ABV Insert and replace with plug before Reverse Flush.
- 8. Move valve handles into Bypass Isolation (Position C) Operation to flush the system without exposing the coils to fluid, then return to Normal Operation Position (Position B).

NOTICE

- Verify that the ATC Valve contains the correct inlet and outlet sizes. Cutout lengths, etc. will need to be determined on a case-by-case basis, depending on the type of ATC valve being installed.
- If ATC valves are sent to Victaulic for inclusion in kits, verify that the appropriate ATC valve is installed for the particular connection to ensure proper design flows and performance.
- Refer to the instructions supplied with the ATC valve for complete installation and maintenance requirements.

CAUTION

- If ATC valve is installed, fully open valve and consult manufacturer's literature for back flushing.
- Failure to follow this instruction could cause damage to the valve.

SERIES UH1 STAINLESS STEEL ANNULAR CORRUGATED FLEXIBLE PIPE

WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

- The installer shall understand the use of this product and why it was specified for the particular application.
 - The installer shall understand common industry safety standards and potential consequences of improper product installation.
 - It is the responsibility of the system designer to verify suitability of stainless steel annular corrugated flexible pipe for use with the intended fluid media within the piping system and external environments.
 - The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on stainless steel annular corrugated flexible pipe shall be evaluated by the material specifier to confirm system life will be acceptable for the intended service.
- Failure to follow these instructions could cause product failure, resulting in death or serious personal injury and property damage.

Guidelines for the Installation and Use of Series UH1 Stainless Steel Annular Corrugated Flexible Pipe:

NOTICE

- Certain applications may require special testing and analysis prior to Series UH1 selection. Actual service life can only be determined through testing under all extreme conditions.

The installation and routing requirements in this document are consistent with the following standards and guidelines: SAE J1273, ISO 17165-2, and Hose Safety Institute Handbook – Design and Specification of Hose Assemblies v1.3.

- Pressure spikes shall not exceed the maximum pressure rating of the Series UH1. Pressure pulsations outside the intended working pressure can cause fatigue and lead to premature failure.
- Exposure to chemicals, UV radiation, salt water, and mechanical wear can degrade the Series UH1.
- Incorrect Series UH1 selection for the fluid being conveyed can lead to chemical degradation. The system designer shall verify suitability of the Series UH1 for use with the intended fluid media within the piping system and external environments.
- Store the Series UH1 in their original packaging in a clean, dry, and well-ventilated area.
- Care shall be taken to protect Series UH1 from wear, snagging, cuts, and other damage.
- External mechanical loads can significantly reduce Series UH1 service life. Mechanical loads include: tensile, compressive, torsional, and bending loads such that the Series UH1 is forced outside the installation guidance given below.
- Avoid installing the Series UH1 in dynamic systems. A dynamic system is defined as having one fixed end connection with the other end connection independently moving in a single plane.
- The system designer shall verify that the correct Series UH1 length has been specified to:
 - Avoid excessive stretching or compression during service
 - Reduce strain on components
 - Compensate for tolerance stack-up in assemblies
 - Allow for length changes during pressurization, thermal expansion or contraction, and system component tolerances and movement
- Avoid installing the Series UH1 in applications involving steam services.
- Avoid installing the Series UH1 in untreated systems and systems where media is exposed to atmosphere.

Installation:

- The OD of the seal is marked with a ✓. Inspect the seal to confirm that it has been installed properly.
- Connect applicable adapters to coil and valve locations before installing the Series UH1 to adapters.
- Use the Series UH1 only for hydronic applications that are suitable for the Series UH1 seal material. Reference 05.01 and GSG-100, which can be downloaded at victaulic.com.
- Avoid installing the Series UH1 where it can come in contact with vibrating equipment, abrasive surfaces, or sharp surfaces such as sheet metal corners. Series UH1 should not contact each other during service.
- Use angled fittings if the minimum static bend radius cannot be achieved.
- Check the Series UH1 for frayed braiding and any other damaged components just prior to installation.
- DO NOT use the Series UH1 in gas/air applications.
- DO NOT apply thread tape or dope to parallel Series UH1 union connections of adapter.
- DO NOT allow torque to exceed hand-tight plus a quarter turn during assembly. Wrench must engage only with wrench flats of Series UH1 connection nuts.
- DO NOT twist the Series UH1 during installation or tightening. Minimize torsional twisting.
- DO NOT expose the Series UH1 to solder flux or other chemicals known to deteriorate stainless steel.

Minimum Static Bend Radius:

	Size	Minimum Static Bend Radius (MSBR)	
	inches DN	inches mm	
Installation at less than the minimum static bend radius listed may significantly reduce service life of the Series UH1. Any bends that are less than the minimum static bend radius shall be avoided. To the right is a listing of the minimum static bend radius requirement per Series UH1 diameter.	1/2 DN15	1 1/2 38	
	3/4 DN20	2 51	
	1 DN25	2 1/2 64	
	1 1/4 DN32	3 76	
	1 1/2 DN40	3 1/2 89	
	2 DN50	4 1/2 114	

Post-Installation Inspection and Testing:

Perform a visual inspection of Series UH1 assemblies prior to any leak and pressure testing. If any of the following conditions are noted, the Series UH1 assembly shall be removed from the system, discarded, and replaced:

- Series UH1 that have been bent to a radius smaller than the minimum static bend radius
- Series UH1 that have been cut, cracked, or otherwise damaged
- Series UH1 that have frayed braid wire
- Fittings that contain damage such as scratches on sealing surfaces and deformation

After visual inspection has occurred, pressurize the system gradually to verify proper assembly and check for leaks. Depressurize and drain the system before attempting to replace or adjust any system components.

Using the Manual Air Vent of the Series UH1:

1. Attach a 7/16" wrench to the hexed needle of the manual air vent along with 1/4" tubing, as shown, to direct the flow of air and water spray.
2. Loosen the hexed needle of the manual air vent counterclockwise to vent air from the system.
3. When air has been sufficiently vented, re-tighten the hexed needle of the manual air vent clockwise and remove the tubing.



MAINTENANCE

⚠ WARNING



- Always place any operating coils in non-operational mode prior to isolation and allow isolated section to reach 120°F or below in the case of heating before attempting to depressurize or drain fluid. Always follow coil manufacturer instructions for any maintenance performed.
- Always verify that the piping system has been completely depressurized and drained before installation and removal. Adjustment, or maintenance may require similar precautions if not outlined in this document.

- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.

Failure to follow this instruction could result in death or serious personal injury and property damage.

DRAIN MAINTENANCE

Refer to "Series UBA Valve Handle Operation Positions" section in this document.

1. Deactivate coils.
2. Place the valve into bypass isolation to isolate the coils and the drain valve, and allow fluid to cool to a safe working temperature, if needed.
3. Prepare a container to capture fluid from the isolated section and position appropriately underneath the UB Drain Valve.
4. Remove the Drain valve cap and use its square key feature or a wrench to open the drain valve and allow to drain.
5. Use a wrench to unthread UB drain valve counterclockwise.
6. Remove the UB strainer screen. Replace after cleaning or with a new component.
7. Inspect the UB Drain Valve and verify it is clear of debris and close the valve. If clear of debris, it may be reinstalled.
8. Inspect the UB Strainer Plug O-ring. If undamaged, it may be reinstalled.
9. If all components are clear and undamaged, reinstall the UB Drain Valve, or replace with a new component.
10. Place the valve into normal operation and verify the UB Drain valve is leak tight through the drain valve and at the joint.
11. Reactivate coils.

NOTE: The maximum particulate size the strainer drain valve will pass is 500 micron (0.02"). To clean larger particles or replace components, follow the "Drain Maintenance" section above.

Replacement Strainer Baskets

Description	Part Code
UB Strainer (20 Mesh, 800 µm)	P004UBPSTN

Replacement O-Rings

Description	Part Code
UB Strainer Plug O-Ring	P004UBPORG

SERIES UBA REPLACEMENT PART INFORMATION

⚠ WARNING

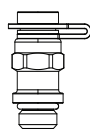


- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.

- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.

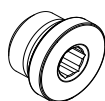
Failure to follow this instruction could result in death or serious personal injury and property damage.

The following parts are sold separately through Victaulic for UB Components. Contact Victaulic with any order requests or questions regarding these parts.



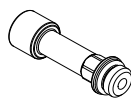
UB PT Ports are field-replaceable. Remove the existing PT port(s), and thread the new port(s) into the valve body. DO NOT use PTFE thread sealant tape or pipe dope on the o-ring sealed PT Port threads.

Nominal Size	Part Code	Description
1/4"	P002UBPPTB	UB PT Port w/ O-Ring Standard Length BSPP Blue
1/4"	P002UBPPTR	UB PT Port w/O-Ring Standard Length BSPP Red



PT Port Plugs are field replaceable with PT Ports. Thread the new plug into the valve body. DO NOT use PTFE thread sealant tape or pipe dope on the o-ring sealed plug threads.

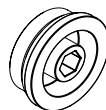
Nominal Size	Part Code	Description
1/4"	P002UBPPLG	UB PT Port Plug with O-Ring BSPP



Port Extenders are available for applications where Series UBA components will be insulated, to extend the PT ports to provide clearance for 2 inches/51 mm or 4 inches/102 mm of insulation.

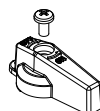
Thread the port extenders into the existing PT ports. Use PTFE thread sealant or pipe dope on the tapered PT port thread but DO NOT use thread sealant or pipe dope on the o-ring sealed extender thread. **NOTE:** Depending on the configuration ordered, some Series UBA kits may be supplied with this option factory installed.

Nominal Size	Part Code	Description
2"	P002UBP2XT	UB PT Port Extender 2-inch
4"	P002UBP4XT	UB PT Port Extender 4-inch



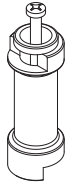
Replace the PICV or ABV Cartridge with this **Balancing Insert Plug** for the reverse flush operation, as outlined in the instructions. DO NOT use thread sealant or pipe dope on the o-ring sealed threads.

Part Code	Description
P004UBPPLG	Balancing Insert Plug

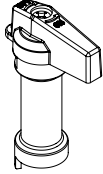


UB Standard Handles with retaining screws are available for replacement. Place valve in Normal Operation position for replacement or install, and verify handle and valve are in the proper position.

Part Code	Description
P004UBPRHL	UB Standard Handle (with Red screw kit)
P004UBPBHL	UB Standard Handle (with Blue screw kit)

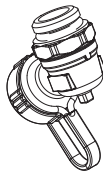


UB Handle Extension parts are used in applications where Series UBA components will be insulated. These handle extension parts provide clearance for 2 inches/51 mm or 4 inches/102 mm of insulation. Remove the retaining screw and handle. Re-install the handle assembly onto the handle extension by using the provided extension body in between the handle and valve along with the provided long screw.



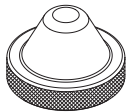
The handle is not provided in the handle extension part code and must be ordered separately or use existing part. **NOTE:** Depending on the configuration ordered, some Series UBA kits may come with this option factory installed.

Nominal Size	Part Code	Description
2"	P004UBP2HL	UB Handle Extension 2" Length
4"	P004UBP4HL	UB Handle Extension 4" Length



UB Drain Valves are field-replaceable. Remove the existing drain valve from the valve body, retain or replace the stainer in the valve body, and thread the new assembly into the adapter. DO NOT use thread seal tape or pipe dope on the male o-ring sealed threads.

Part Code	Description
P000UBPDRN	UB Drain Valve

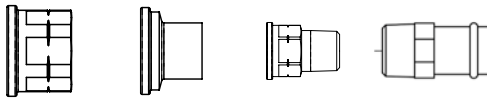


The **ABV Cartridge Cap** can cover the Series UBA Cartridge stem and adjustment interface when there is no actuator installed. Thread the Cartridge Cap onto the M30 x 1.5 thread of the Series UBA Cartridge. DO NOT use thread sealant or pipe dope. Hand tighten.

Part Code	Description
P0044UB006	ABV Cartridge Cap

Part Code	Description
P000UBA0KY	Cartridge Keys

Replacement Tailpieces for Supply Side



Nominal Size Inches	Female Tailpiece Part Code	Sweat Tailpiece Part Code	Male Tailpiece Part Code	Copper Press Part Code
1/2" x 1/2"	P00478Y304	P00478Y504	P00478U404	P0047990PM
3/4" x 1/2"	P00678Y304	P00678Y504	P00678U404	P0047990PM
3/4" x 3/4"	P00678Y306	P00678Y506	P00678U406	P0067990PM
1" x 1/2"	P00678Y304	P00678Y504	P00678U404	P0047990PM
1" x 3/4"	P00678Y306	P00678Y506	P00678U406	P0067990PM
1" x 1"	P00678Y310	P00678Y510	P00678U410	P0107990PM

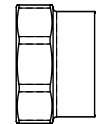
NOTE: The copper press adapter requires a female NPT tailpiece to thread into to complete the connection.

SERIES UH1 REPLACEMENT PART INFORMATION

Replacement Coil Side Tailpieces for 1/2 – 1" Sizes of Series UH1

Size	Part Code
M33 Male x 1/2" NPT Male	P004UH1404
M33 Male x 1/2" NPT Female	P004UH1304
M33 Male x 1/2" Sweat US	P004UH1504
M33 Male x 3/8" Sweat US	P004UH1503
M33 Male x 1/2" Press	P004UH1604
M33 Male x 3/4" NPT Male	P004UH1406
M33 Male x 3/4" NPT Female	P004UH1306
M33 Male x 3/4" Sweat US	P004UH1506
M33 Male x 3/4" Press	P004UH1606
M33 Male x 1" NPT Male	P004UH1410
M33 Male x 1" NPT Female	P004UH1310
M33 Male x 1" Sweat US	P004UH1510
M33 Male x 1" Press	P004UH1610

Optional Tailpiece – Series UH1 Only



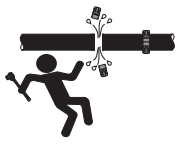
Nominal Size	Series UH1 M33 Part Code
1/2" x M33	P00478Y033
3/4" x M33	P00678Y033
1" x M33	P00678Y033

Replacement Series UH1 Seals

Description	Part Code
1/2 - 1" Gasket Seal	P000UH1002

Replacement Series UH1 PT Port and Manual Air Vent

Description	Part Code
Series UH1 PT Port	P000UH1006
Series UH1 Manual Air Vent	P000UH1008

PRESS-END TAILPIECE/ADAPTER INSTALLATION INSTRUCTIONS**⚠ WARNING**

- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.

Failure to follow this instruction could result in death or serious personal injury and property damage.

Copper tubing in accordance with ASTM B88 or B75 shall be used. When using ASTM B88 copper tubing, types K, L, or M are acceptable.

Soft anneal O60 and light anneal O50 are limited to ½ - 1 ¼" nominal tubing sizes. Hard temper H58 is acceptable for ½ - 2" nominal tubing sizes.

When using ASTM B75 Soft Anneal O60 and Light Anneal O50 copper tubing, the dimensions shall be in accordance with the following table.

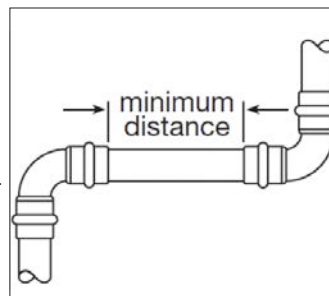
Nominal Tube Diameter inches	Outside Diameter inches/mm	Tolerance on Outside Diameter inches/mm	Wall Thickness Maximum inches/mm	Wall Thickness Minimum inches/mm
½	0.625 15.9	0.0025 0.06	0.054 1.37	0.025 0.64
¾	0.875 22.2	0.0030 0.08	0.071 1.80	0.029 0.74
1	1.125 28.6	0.0035 0.09	0.071 1.80	0.031 0.79

When using ASTM B75 hard temper H58 copper tubing, the dimensions shall be in accordance with the following table.

Nominal Tube Diameter inches	Outside Diameter inches/mm	Tolerance on Outside Diameter inches/mm	Wall Thickness Maximum inches/mm	Wall Thickness Minimum inches/mm
½	0.625 15.9	0.0010 0.025	0.054 1.37	0.025 0.64
¾	0.875 22.2	0.0010 0.025	0.071 1.80	0.029 0.74
1	1.125 28.6	0.0015 0.038	0.071 1.80	0.031 0.79

Minimum Distance Between Fittings

To ensure a correct press, a minimum distance between press-end tailpieces/adapters shall be maintained. Failure to provide this distance may result in an improper seal or incomplete press. Refer to the table to the right.



Tube Diameter inches	Minimum Distance inches/mm
½	0.4 10
¾	
1	

⚠ CAUTION

- Press-end tailpieces/adapters can form improper connections as the result of damaged tube and/or sealing elements.
- DO NOT use flame cutters when cutting the tube.
- DO NOT use grease or oils when cutting the tube.

Failure to follow these instructions could cause product damage, resulting in joint leakage and property damage.

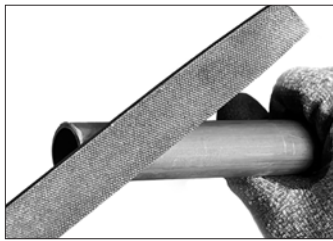


1. Cut the tube square using a displacement-type cutter or fine-tooth saw.

NOTE: If using a vise, cut tubing a minimum of 4 inches/102 mm away from the contact area of the vise to prevent possible damage to the tubing in the press area.

⚠ CAUTION

- Damage as the result of using an improper deburring tool can occur.
 - Connections may leak if they are damaged by improper deburring.
- Failure to deburr tubing may cause system leaks, resulting in property damage.



- 2a.** Deburr the ID and OD of the tubing end.
2b. Clean the tube using a wire brush, scouring pad, or sandpaper to remove loose dirt and rust particles from the pressing and sealing area. Cleaning marks shall be in the circumferential direction and not run longitudinally along the pipe.

NOTE: The tube ends shall be thoroughly deburred after cutting. Deburring prevents damage or twisting of the seal during installation.

WARNING

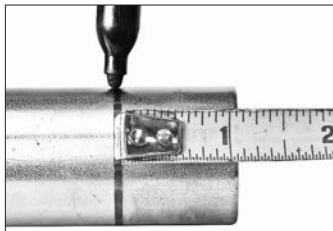


- Prior to pressing tailpieces/adapters, read and understand all information and safety requirements in the press tool manufacturer's installation instructions.
- Keep extremities and foreign objects away from press tool during pressing operation to prevent injury or incomplete press.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.



- 3.** Check the following before proceeding.
- The tube end shall not be bent or damaged.
 - The tube shall be deburred.
 - The seal shall be undamaged.
 - The complete seal shall be engaged within the bead of the tailpiece/adapter.



- 4a.** Measure tube insertion depth. Refer to the table below.
4b. Mark the proper insertion depth on the outside of the tube. Verify that the depth marking is visible on the completed assembly. **NOTE:** Victaulic tailpieces/adapters may have a mechanical stop for insertion depth.

Insertion Depths for 1/2" to 1" Press-End Tailpiece/Adapter

Tube Diameter inches	Insertion Depth inches/mm
1/2	15/16 24
3/4	1 1/8 29
1	1 1/16 27

CAUTION

- Improper insertion depth may result in an improper seal.
 - Mark the correct insertion depth on the tube before pressing the tailpiece/adapter.
- Failure to properly mark the insertion depth could cause an improper seal, resulting in joint leakage and property damage.



- 5.** Insert the prepared end of the tube into the press-end tailpiece/adapter. Turn the tube slightly during insertion until it contacts the mechanical stop of the tailpiece/adapter. Verify that the mark on the tube indicates full insertion into the press-end tailpiece/adapter.
6. Perform the pressing operation with a press tool equipped with the proper size jaws. Always reference the press tool manufacturer's instructions for complete assembly and maintenance requirements.

CAUTION

- Avoid pressing over grooves, manufacturer's markings, or engravings on the tube surface.
- Failure to follow this instruction could cause an improper seal, resulting in property damage.

Continued on the following page.

Series UBA Unibody ABV Balancing Valve

⚠️ WARNING

- Always inspect each joint to ensure proper product installation.
- Undersized or oversized tube and improperly pressed tailpieces/adapters are unacceptable. Any of these conditions shall be corrected before attempting to pressurize the system.

Failure to follow these instructions could result in death or serious personal injury and property damage.

7. Inspect all press-end tailpieces/adapters and compare to the photos below. If the press does not look like the “Proper Press” photo, the tailpiece and tube shall be removed and replaced.

8. Re-inspect all press-end tailpieces/adapters immediately before and after any system testing.

PROPER PRESS	IMPROPER PRESSES (NOT ACCEPTABLE)		
Tube Inserted Fully and Tailpiece/ Adapter Pressed Properly	Tube Not Inserted Fully	Tailpiece/Adapter Not Fully Pressed	Tailpiece/Adapter Not Pressed Correctly Due to Incorrect Press Jaw Placement

For complete contact information, visit victaulic.com