Series 78BV 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.**

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

INSTALLATION REQUIREMENTS

1. **Consult with the chemical manufacturer and reference Victaulic publication 05.01 to verify fluids or additives are compatible with valve seals and all other seal materials in the system.**
2. The Series 78BV can be installed in the supply or return line to maintain flow. However, Victaulic recommends installing the valve in the return line to reduce noise, flow instability, cavitation risk, and entrapped air.
3. Victaulic recommends that a strainer be installed in the supply side of the coil kit to protect the coil, control valve, and other kit components from blockage due to debris.
4. Verify that the flow direction arrow on the valve body is facing the direction of flow and that the valve body is rotated to the desired position for handle access.

   THREADED CONNECTIONS: All threaded connections shall be clean and free of any burrs. Apply a small amount of pipe joint compound or PTFE thread sealant tape to the external threads of male threaded pipe connections. **DO NOT** use a combination of tape and pipe joint compound. Avoid getting any foreign material into the flow path.

   SWEAT CONNECTIONS: Place the valve in the fully open position before attempting to solder the ends. Heat sink the valve body with a wet cloth or putty at the closest joint to protect internal components, and direct the flame away from the center of the valve body. Sweat connections shall be soft soldered with 95/5 (95% tin, 5% antimony) type solder. **DO NOT** exceed the temperature rating of the valve (+248°F/+120°C). To prevent damage to internal components, the valve body shall be allowed to cool to room temperature before attempting operation.

CHECKING FLOW THROUGH THE VALVE

To check flow through the valve, use:

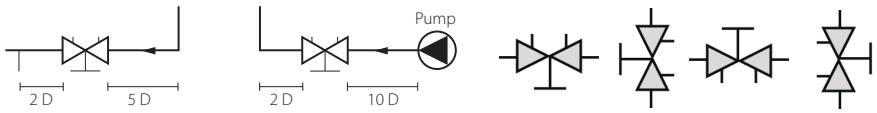
$$Q = C_v * \sqrt{\Delta p}$$

Where:
Q = Flow rate in gallons per minute (gpm)
ΔP = Pressure differential across orifice in pounds per square inch (psi)
C_v = C_v of valve at given handle position (from table on following page)

Example: With a pressure loss of 2 psi for a 3/4" valve with a handle position of 4 (Cv = 0.44 from table on following page), the calculated flow is:

$$Q = C_v * \sqrt{\Delta p} = 0.44 * \sqrt{2} = 0.62 \text{ gpm}$$

INSTALLATION POSITION



For accuracy of measurement, it is recommended that the valve be installed (10) pipe diameters downstream of a pump or (5) pipe diameters downstream of elbows, valves, or other pipe fittings. In all cases, (2) pipe diameters should be located downstream of the valve. Valve may be installed in any orientation.

CORRECTION FACTORS

$$\text{Actual Flow} = \frac{Q}{\sqrt{SG}}$$

For liquids other than water, the flow value can be adjusted as follows:
Divide the flow rate by the square root of the specific gravity.
This applies to liquids having the same viscosity as water (i.e. most water/glycol mixtures at room temperature).

USING THE PRESSURE/TEMPERATURE PORTS

⚠ WARNING

- **DO NOT touch any hot, non-insulated surfaces of the Series 78BV.**
- **Proceed with caution when using differential pressure measurement device to prevent burns from hot water that may be released during connection.**
- **Always refer to the operating manual for the differential pressure measurement device for complete connection and safety requirements.**

Failure to follow these instructions could result in serious personal injury.

The pressure/temperature (PT) ports of the Series 78BV can be connected to a differential pressure measurement device to determine flow. Always refer to the operating manual for the differential pressure measurement device for complete connection and safety requirements.
NOTE: When PT ports are not in use, the caps shall be replaced.

MAINTENANCE

⚠ WARNING

- **Depressurize and drain the piping system before attempting to maintain any Victaulic products.**
- **Allow the system temperature to cool to below 100°F/38°C before attempting to remove the valve for maintenance.**

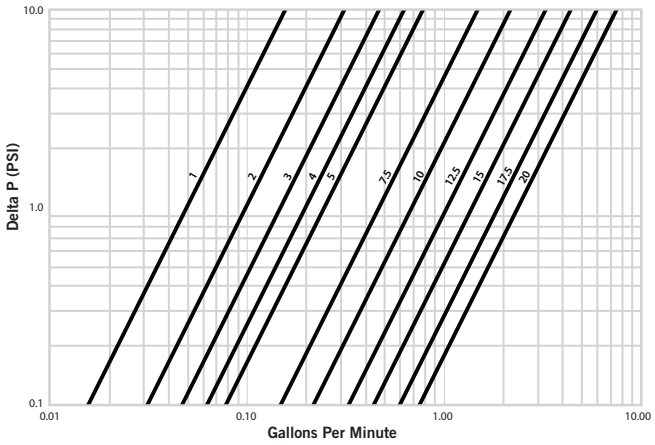
Failure to follow these instructions could result in death or serious personal injury.

Optional Components (Ordered Separately)	Part Code
Kit of (2) PT Port Extensions	K00078BV2X
Handle Extension for ½" or ¾" Valve	P00478Y2HL
Handle Extension for 1 – 1½" Valve	P01278Y2HL
Handle Extension for 2" Valve	P02078Y2HL

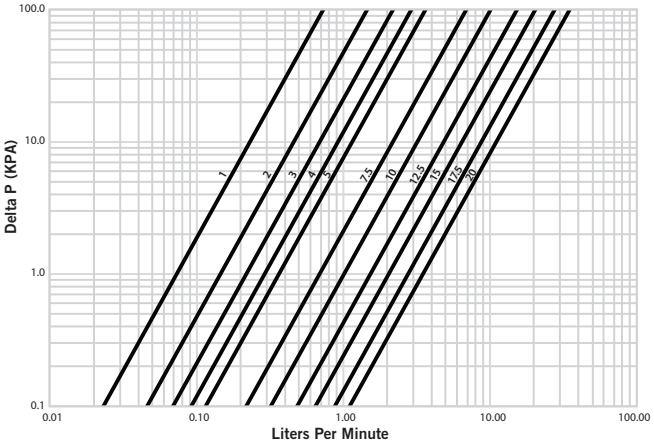
Cv/Kv VERSUS HANDLE POSITION – THREADED AND SWEAT END

Handle Position	Cv/Kv					
	½"/DN15	¾"/DN20	1"/DN25	1 ¼"/DN32	1 ½"/DN40	2"/DN50
0	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00
1	0.04/0.03	0.05/0.04	0.04/0.03	0.00/0.00	0.00/0.00	0.00/0.00
2	0.07/0.06	0.15/0.13	0.16/0.14	0.00/0.00	0.00/0.00	0.00/0.00
3	0.08/0.07	0.27/0.23	0.33/0.29	0.53/0.46	0.85/0.74	0.84/0.73
4	0.11/0.10	0.44/0.38	0.57/0.49	0.61/0.53	1.32/1.14	1.51/1.31
5	0.15/0.13	0.60/0.52	0.78/0.67	1.25/1.08	1.74/1.51	2.29/1.98
7 ½	0.30/0.26	1.18/1.02	1.50/1.30	2.49/2.15	3.60/3.11	4.98/4.31
10	0.49/0.42	1.77/1.53	2.68/2.32	4.46/3.86	7.10/6.14	9.32/8.06
12 ½	0.98/0.85	2.72/2.35	4.02/3.48	6.52/5.64	10.21/8.83	13.77/11.91
15	1.50/1.30	3.73/3.23	6.00/5.19	9.44/8.17	15.40/13.32	20.97/18.14
17 ½	1.88/1.63	5.30/4.58	9.14/7.91	14.30/12.37	20.67/17.88	32.72/28.30
20	2.35/2.03	6.31/5.46	10.95/9.47	15.92/13.77	23.66/20.47	40.58/35.10

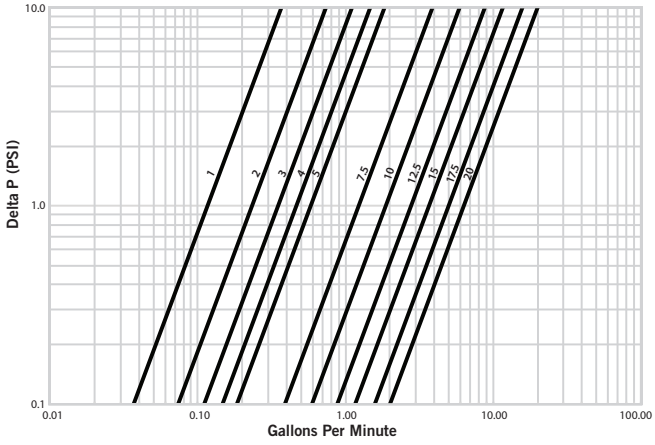
½" Valve



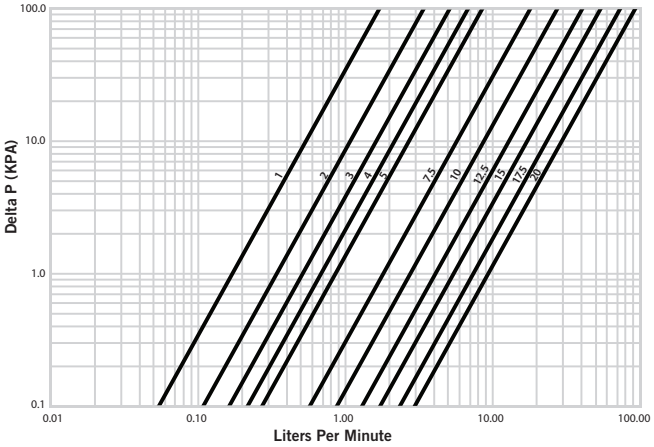
½" Valve



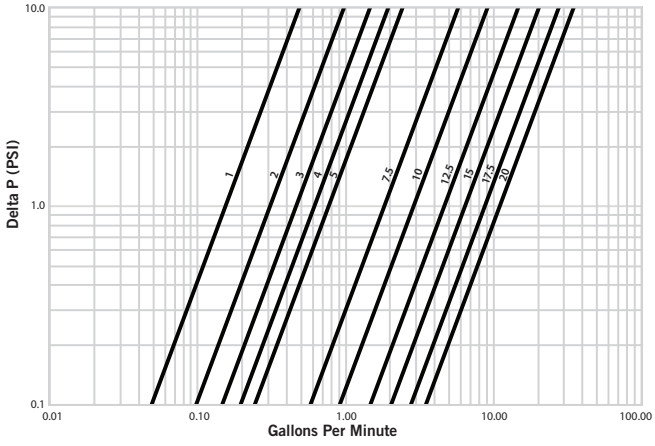
¾" Valve



¾" Valve



1" Valve



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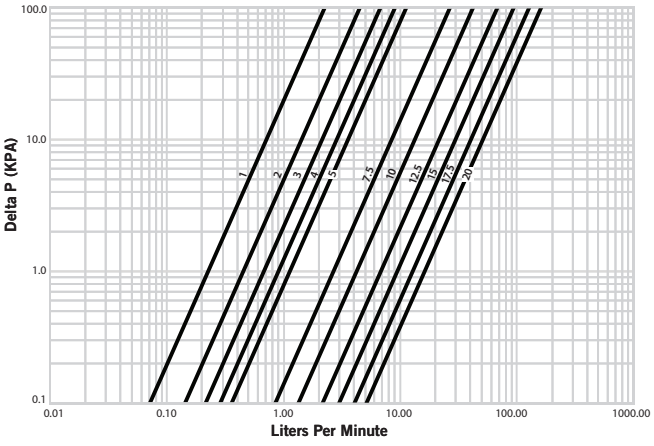

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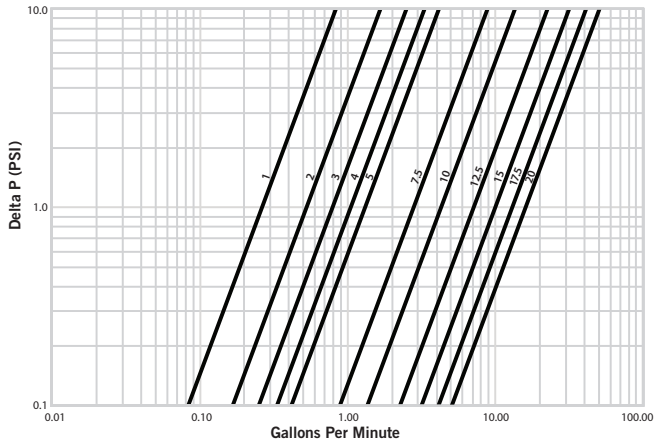
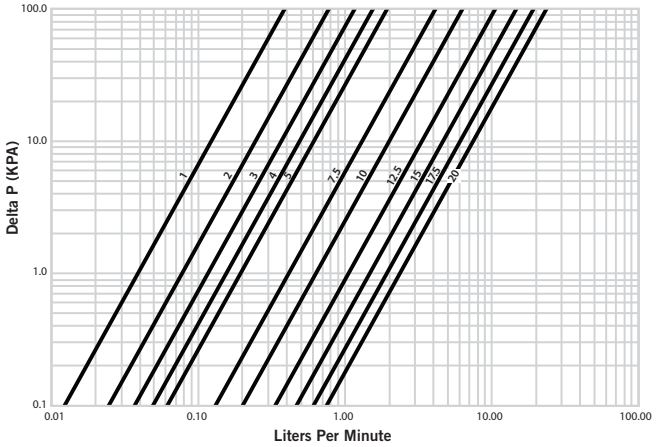
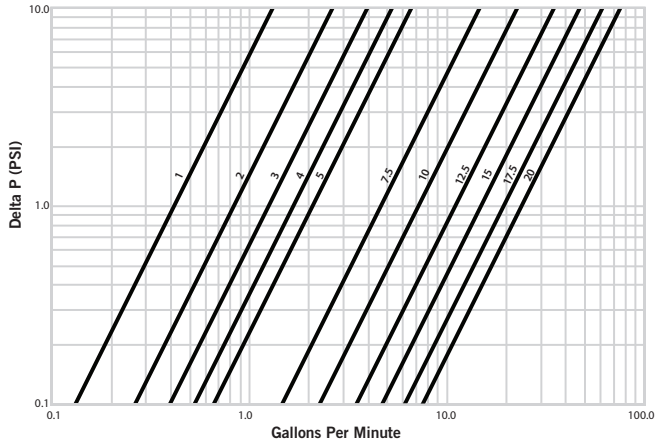


1¼" Valve



1 ½" Valve



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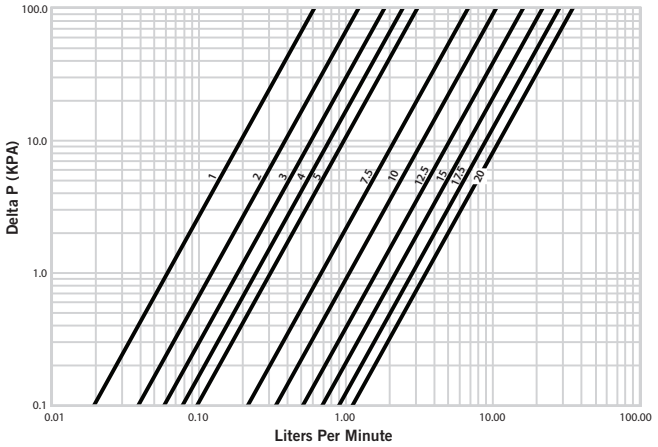
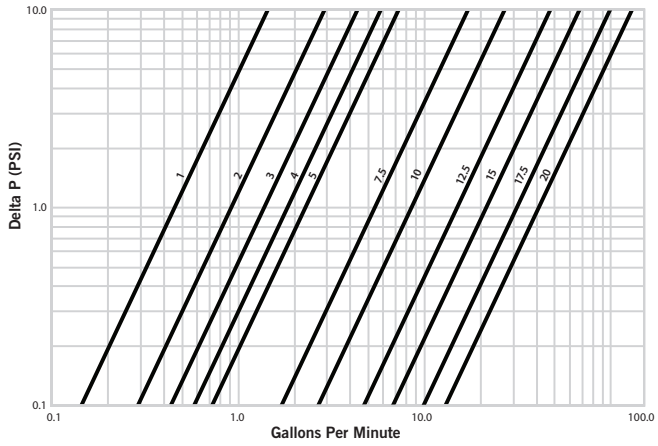
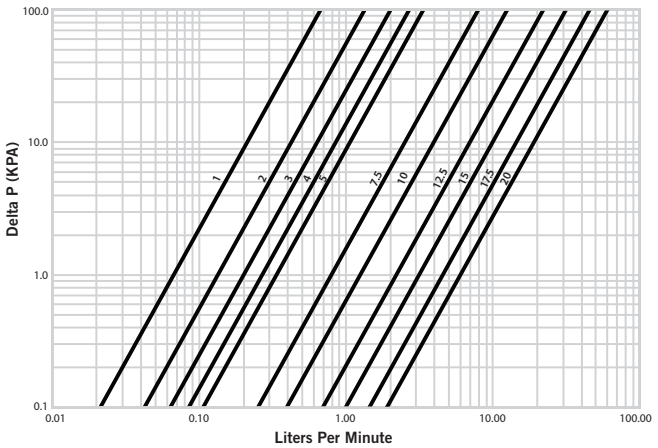


2" Valve



2" Valve



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