

Series 76G Automatic Balancing Valve

WARNING



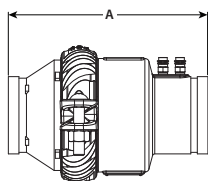
- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, 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, hardhat, and foot protection.

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

OPERATING INFORMATION

Victaulic Series 76G Automatic Balancing Valves are rated to 365 psi/ 25 Bar maximum working pressure within a temperature range of -4°F/-20°C minimum to +230°F/+110°C maximum. Operation is automatic and does not require any adjustment (differential pressure range is up to 87 psi/6 Bar).

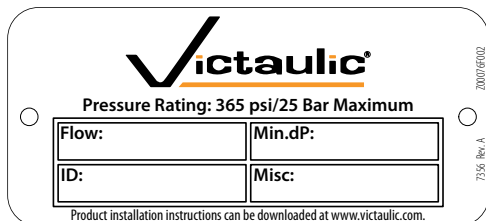
DIMENSIONAL INFORMATION



Nominal Size inches	DN	Number of Openings Per Valve*	A End-to-End inches/mm
2½	DN65	1	10.6 269.2
3	DN80	1	10.7 271.8
4	DN100	2	11.7 297.2
6	DN150	4	12.7 322.6

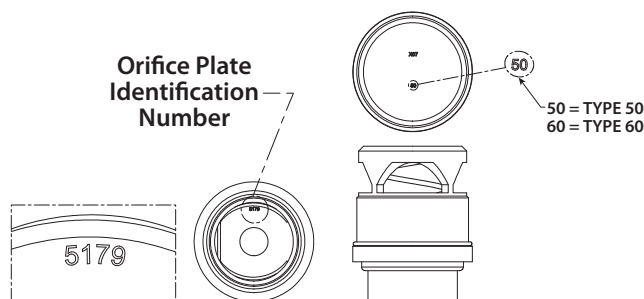
* The sum of the cartridge flow rate is the valve assembly's flow rate. Refer to the table in the following column for the flow rate per cartridge. When using multiple cartridges, cartridge flow rates should be as close as possible to each other to provide the required flow. Contact Victaulic for additional details.

VALVE IDENTIFICATION



The tag, shown above, is attached to the valve body and documents all pertinent information related to the valve configuration. Contact Victaulic if any information does not match system requirements or specifications.

REFERENCE FOR ORIFICE PLATE MARKINGS



Cartridge Type	Flow Rate GPM	Victaulic Code	Orifice Plate Identification Number
Type 50	16.82	5A	5179
	17.31	5B	5184
	17.83	5C	5189
	18.49	5D	5194
	19.37	5E	5200
	20.43	5F	5206
	21.80	5G	5213
	23.38	5H	5220
	25.10	5I	5227
	27.34	5J	5235
	28.67	5K	5243
	31.18	5L	5251
	34.79	5M	5260
	39.19	5N	5269
	45.79	5O	5279
	50.00	5P	5287
	55.00	5Q	5292
	59.00	5R	5298
	65.00	5S	5303
	70.45	5T	5308
Type 60	75.02	6A	6285
	79.91	6B	6292
	82.77	6C	6301
	85.72	6D	6305
	90.11	6E	6312
	94.79	6F	6319
	98.85	6G	6326
	103.40	6H	6332
	108.02	6I	6338
	112.82	6J	6344
	116.81	6K	6349
	121.91	6L	6356
	128.39	6M	6362
	131.90	6N	6367
	136.40	6O	6373
	142.05	6P	6379
	147.80	6Q	6385
	153.91	6R	6391
	160.00	6S	6393
	165.94	6T	6398
	170.00	6U	6400
	180.41	6V	6407
	198.19	6W	6407H

Series 76G Automatic Balancing Valves are shipped from the factory with the applicable cartridges installed, per the specifications stated at the time of order. **NOTE:** Blank plates will be installed in any unused cartridge openings.

INSTALLATION REQUIREMENTS

1. Flush the piping system before installing the Automatic Balancing Valve. NOTE: Consult with the chemical manufacturer and reference Victaulic submittal publication 05.01 to ensure flushing chemicals are compatible with all seal materials in the system. Failure to use compatible flushing chemicals will result in a voided warranty.

2. Automatic Balancing Valves can be installed in the supply or return line to maintain flow at a pre-determined value. However, subject to design specifications, Victaulic recommends installing the valve in the return line to reduce noise, flow instability, and entrapped air. A Y-strainer with a blow-down valve shall be installed in the supply line.

3. Make sure the flow direction arrow on the Automatic Balancing Valve body is facing the direction of flow and that the valve body is rotated to the desired position for access to the pressure/temperature (PT) ports.

GROOVED PIPING CONNECTIONS: To prevent the Automatic Balancing Valve from rotating in the system, Victaulic recommends installing the valve with at least one Victaulic rigid coupling. If two Victaulic flexible couplings are used, additional support may be required to prevent the valve from rotating. Refer to the instructions for the applicable couplings for complete installation requirements. These instructions can be downloaded at victaulic.com.

VERIFYING FLOW RATE THROUGH INTEGRATED ORIFICE PLATE

When Δp and the C_v or K_v value are known, use the formulas shown below to verify flow rate.

$$Q = C_v \cdot \frac{\sqrt{\Delta p}}{1.52} \quad Q \text{ in GPM, } \Delta p \text{ in feet of H}_2\text{O}$$

$$Q = C_v \cdot \sqrt{\Delta p} \quad Q \text{ in GPM, } \Delta p \text{ in psi}$$

OR

$$Q = K_v \cdot \sqrt{\Delta p} \quad \Delta p \text{ in Bar, } Q \text{ in m}^3 \text{ per hour}$$

$$Q = 100 \cdot K_v \cdot \sqrt{\Delta p} \quad \Delta p \text{ in kPa, } Q \text{ in liters per hour}$$

$$Q = \frac{K_v}{36} \cdot \sqrt{\Delta p} \quad Q \text{ in liters per second, } \Delta p \text{ in kPa}$$

NOTICE

- Depending on the differential pressure across the valve in some systems, the cartridges may be nearly closed, resulting in fluctuations with measured differential pressure stability due to non-laminar flow.
- The calculated flow rates are meant to verify flow through the valve and may not accurately reflect the exact flow rate provided by the cartridges.

Nominal Size inches	DN	Average C_v Value	Average K_v Value
2½	DN65	55.8	48.0
3	DN80	92.8	80.0
4	DN100	133.0	115.0
6	DN150	393.0	339.0

CORRECTION FACTORS

For liquids other than water, the flow values from a balancing wheel can be adjusted, as follows:

Divide the flow rate (as indicated by a balancing wheel) by the square root of the specific gravity of the fluid used in the system.

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

This applies to liquids having the same viscosity as water (i.e. most water/glycol mixtures and water/brine solutions at room temperature).

USING THE PRESSURE/TEMPERATURE PORTS

WARNING



- DO NOT touch any hot, non-insulated surfaces of the Automatic Balancing Valve.
- Proceed with caution when using differential pressure readout kits to prevent burns from hot water that may be released during hookup of the readout kit.

- Always refer to the operating manual for the differential pressure readout kit for complete hookup and safety requirements.

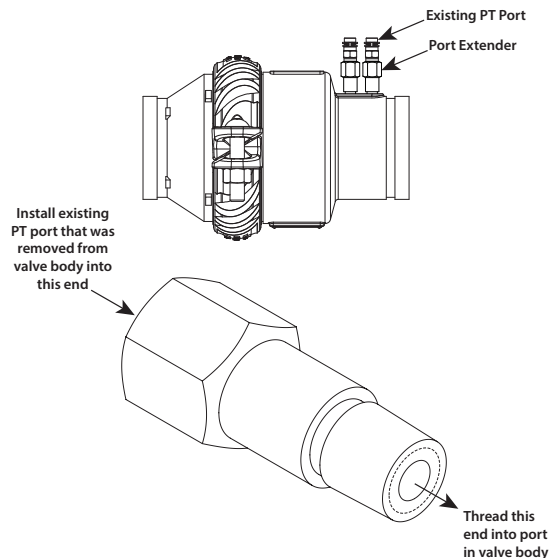
Failure to follow these instructions could result in serious personal injury.

The pressure/temperature (PT) ports of the Automatic Balancing Valve can be connected to a differential pressure meter to determine flow through the valve and to determine if differential pressure is within the operating range of the valve. Always refer to the operating manual for the differential pressure meter for complete hookup and safety requirements. **NOTE:** Caps SHALL be replaced when PT ports are not in use.

Port Extenders

2-inch/51-mm Length (Part Number P-012-78Y-2XT)

4-inch/102-mm Length (Part Number P-043-78Y-0XT)



In applications where Series 76G Automatic Balancing Valves will be insulated, port extenders are available to extend the PT ports to provide clearance for 2 inches/51 mm or 4 inches/102 mm of insulation. Remove the existing PT ports from the valve body. Apply PTFE thread sealant tape or pipe dope to the threads of the ports and port extenders, then thread a port extender into each port in the valve body. Thread the original PT ports into the end of each port extender.

MAINTENANCE AND CARTRIDGE REPLACEMENT

⚠ 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.
 - 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 and property damage.

The Automatic Balancing Valve can be removed from the system for periodic inspection to determine if any corrosion or debris is present or to replace cartridges. **NOTE:** Contact Victaulic for guidance on replacement of cartridges to accommodate different flow rates.

Replacement of Cartridges in 2 ½-inch/DN65 and 3-inch/DN80 Automatic Balancing Valves

Series 76G Automatic Balancing Valves in 2 ½-inch/DN65 and 3-inch/DN80 sizes contain one cartridge that is installed in the valve body with a retaining ring.

1. Depressurize and drain the piping system completely and allow the system to cool to below 100°F/38°C before attempting to disassemble the Automatic Balancing Valve.
2. To access the cartridge, remove the coupling that joins the end fitting with the mating pipe and the Style 107 Coupling that joins the end fitting to the valve body (refer to the graphic below).
3. Remove the retaining ring to gain access to the cartridge. The cartridge may then be pulled out of the valve body.
4. Remove any debris from the internal surfaces of the valve body. If damage or corrosion is present, replace any affected components. If coupling gaskets show any signs of wear or damage, replace them with new Victaulic-supplied gaskets of the same material grade.
5. Reassemble the valve with the correct cartridge in the orientation shown in the graphic below. Ensure that the retaining ring is seated fully in the groove in the valve body. Refer to the instructions for the applicable couplings for complete installation requirements. These instructions can be downloaded at victaulic.com.
6. Return the system to service.

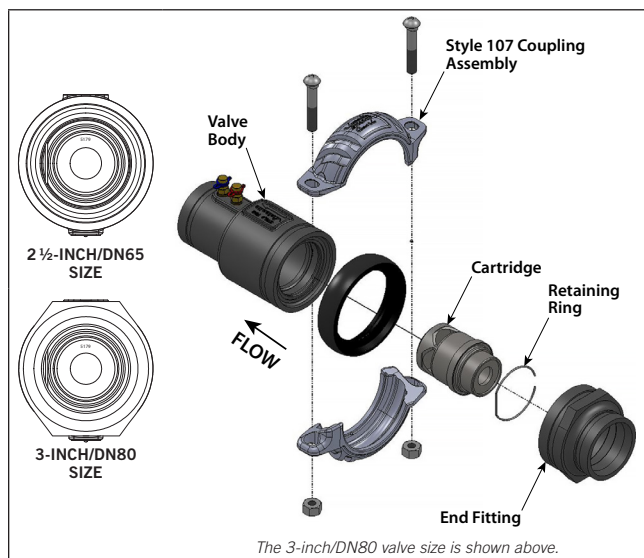
Replacement of Cartridges in 4-inch/DN100 and 6-inch/DN150 Automatic Balancing Valves

Series 76G Automatic Balancing Valves in the 4-inch/DN100 size contain two cartridges that are installed in the valve body with hex socket-head cap screws, washers, and spacers.

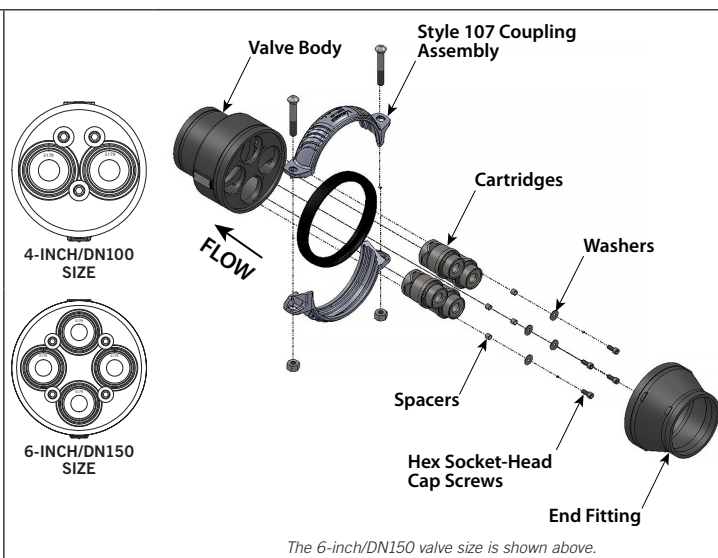
Series 76G Automatic Balancing Valves in the 6-inch/DN150 size contain four cartridges that are installed in the valve body with hex socket-head cap screws, washers, and spacers.

1. Depressurize and drain the piping system completely and allow the system to cool to below 100°F/38°C before attempting to disassemble the Automatic Balancing Valve.
2. To access the cartridges, remove the coupling that joins the end fitting with the mating pipe and the Style 107 Coupling that joins the end fitting to the valve body (refer to the graphic below).
3. Remove the hex socket-head cap screws, washers, and spacers to gain access to the cartridges. The cartridges may then be pulled out of the valve body.
4. Remove any debris from the internal surfaces of the valve body. If damage or corrosion is present, replace any affected components. If coupling gaskets show any signs of wear or damage, replace them with new Victaulic-supplied gaskets of the same material grade.
5. Reassemble the valve with the correct cartridges in the orientation shown in the graphic below. Refer to the instructions for the applicable couplings for complete installation requirements. These instructions can be downloaded at victaulic.com.
6. Return the system to service.

2 ½-inch/DN65 and 3-inch/DN80 Sizes



4-inch/DN100 and 6-inch/DN150 Sizes



Series 76G Automatic Balancing Valve

For complete contact information, visit victaulic.com

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