TECHNICAL DATA

MODEL VXR DRY SYSTEM RISERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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1. DESCRIPTION



The Viking Model VXR Dry Pipe Valve is an externally resettable, latching, differential valve used to separate the water supply from the dry pipe sprinkler system. The valve includes a clapper assembly with a differential air-to-water seat design. The clapper provides a positive mechanical seat for the air/nitrogen pressure in the dry pipe system. The differential design allows an air/nitrogen supply of moderate pressure to control a higher water supply pressure. When the air/nitrogen pressure in the dry pipe system is lowered sufficiently to overcome the pressure differential, the valve opens allowing water to enter the dry pipe system. The clapper is reset using a convenient push rod located on the bottom of the valve body.

The valve is also designed to operate a water motor alarm and/or an electric pressure alarm switch. The Viking Model D-2 Accelerator can be used to speed the operation of the valve on large capacity systems or where faster action is required.

2. LISTINGS AND APPROVALS

cULus Listed: VPZV

FM Approved: Dry Pipe Valves

3. TECHNICAL DATA

3.1 Specifications

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

Rated to - 250 PSI (17.2 bar) Water Working Pressure.
Factory tested hydrostatically - 500 PSI (34.5 bar) with the clapper open.
Air/nitrogen pressure to water pressure area differential: Approximately 5.75 to 1.
Color - black
Available Since 2021.

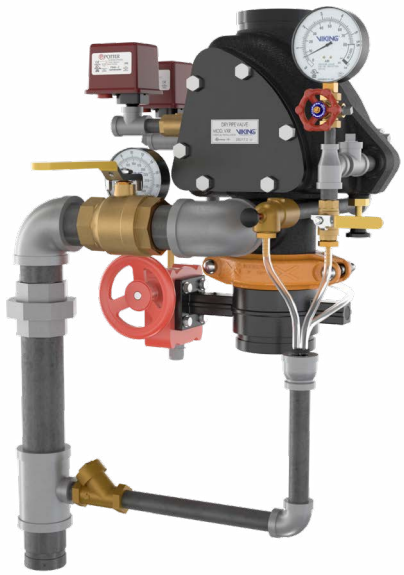


Figure 1: Pre-Trimmed Riser (PTR) Configuration



Figure 2: Standard Riser Configuration

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3.2 Ordering Information

Model VXR Dry Pre-Trimmed Risers (PTR)

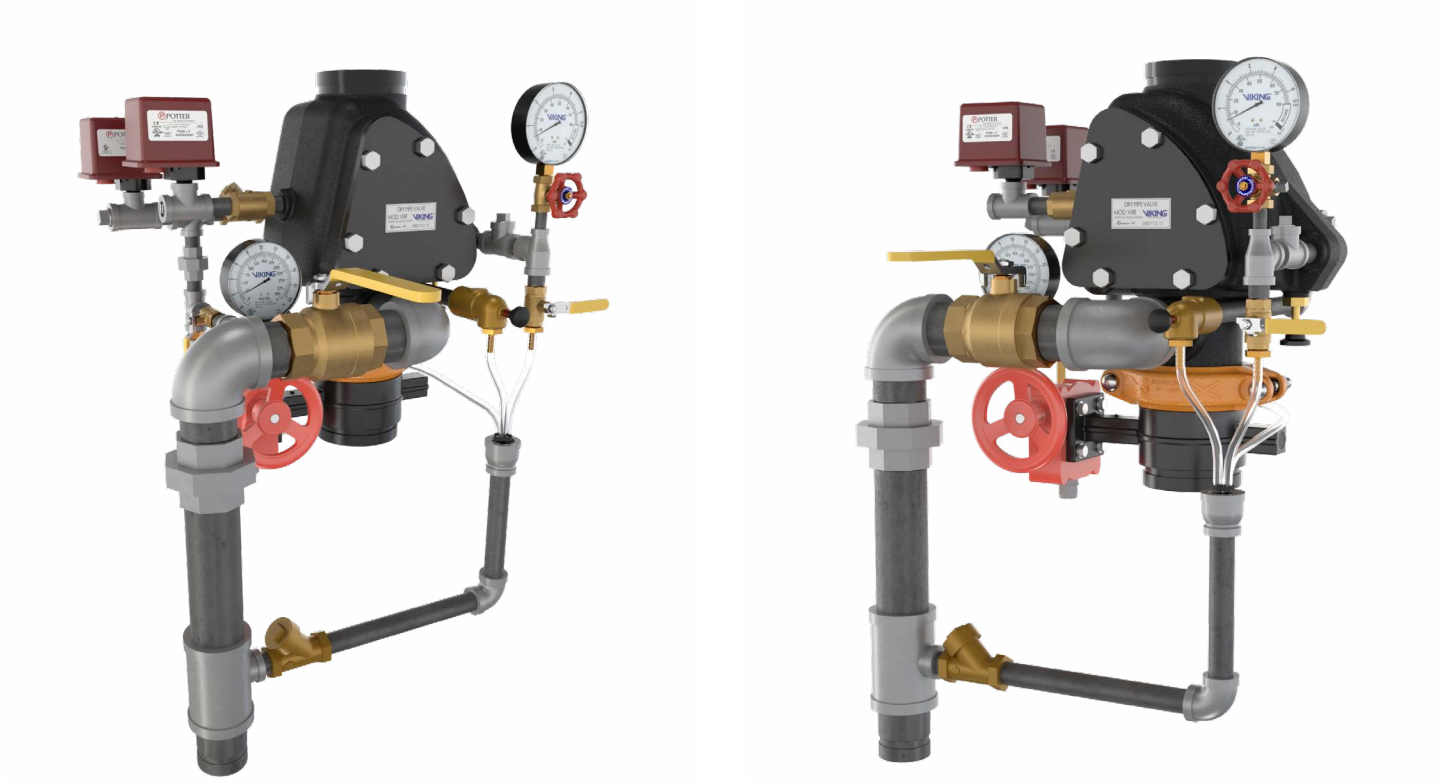


Figure 3: PTR Configurations

TABLE 1: ORDERING INFORMATION
PRE-TRIMMED RISER PACKAGES AND ACCESSORIES

Available since 2022			
	Nominal Size	**Part Number**	**Description**
Pre-Trimmed Risers	2½"	24746-1	The PTR packages ship from the factory fully assembled, tested, and ready to install. These riser assemblies include the Model VXR Valve, all required trim with check valves, water and air gauges, air and water pressure switches, drip check valve, water supply control valve, integrated drain manifold, and drain hoses. Optional accessories are available for separate.
	3"	24748-1	
	4"	24750-1	
	6"	24752-1	
Optional Accessories		09881	Model D-2 Accelerator (includes integrated Anti-Flood Device, requires trim to connect)
		24112-1	Accelerator Trim Kit - includes trim components and air gauge (model VXR only)
		14800	Model LD-1 Anticolumn Device
		14816	LD-1 Trim Kit - includes trim components needed to connect to the dry valve

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Model VXR Valve/Trim Options and Accessories

The Model VXR Dry Valve and Trim Options are shown below. The valve and trim must ordered separately. For operation, maintenance, and other valve related information, refer to form number F_112220.

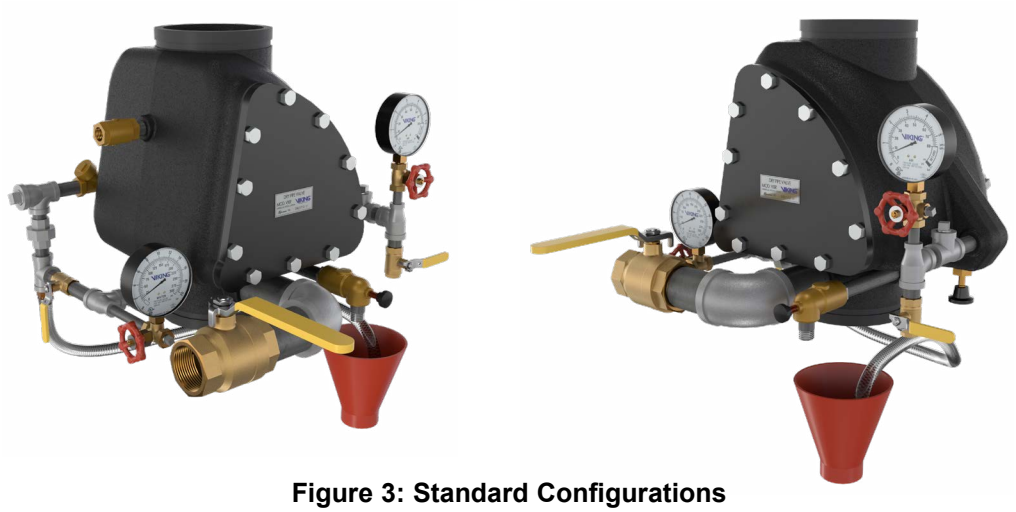


Figure 3: Standard Configurations

TABLE 2: VALVE ORDERING INFORMATION AND SPECIFICATIONS

	Nominal Size	Part Number	Friction Loss[1]	CV Factor	Shipping Weight
Valve Groove/Groove Connection	2½"	24047	11 ft. (3.35 m)	159	26 lbs. (11.8 Kg)
	3"	24065	14 ft. (4.27 m)	250	31 lbs. (14.01 Kg)
	4"	24068	21 ft. (6.4 m)	409	50 lbs. (22.7 Kg)
	6”	24069	29 ft. (8.84 m)	1009	107 lbs. (48.5 Kg)

Footnotes

1. Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C = 100.

TABLE 3: ORDERING INFORMATION
LOOSE TRIM AND PRE-TRIMMED ASSEMBLIES AND ACCESSORIES

	Nominal Size	Part Number	Description
Pre-trimmed Assemblies with Dry Valve	2½"	24097-1USA	The pretrimmed assemblies ship from the factory fully assembled. These assemblies include the Model VXR Valve, all required trim with check valves, water and air gauges, drip check valve, drain cup, and drain hoses. Optional accessories are available for separate purchase.
	3"	24100-1USA	
	4"	24107-1USA	
	6”	24110-1USA	
Loose Trim	2½"	24064-1	The loose trim packages do NOT include the Model VXR Dry Valve. See above for valve part numbers. The loose trim ships from the factory loose. These packages include all required trim with fittings and pipe, check valves, water and air gauges, drip check valve, drain cup, and drain hoses. Refer to the trim diagrams in this document.
	3"	24099-1	
	4"	24106-1	
	6”	24109-1	
Optional Accessories		09881	Model D-2 Accelerator (includes integrated Anti-Flood Device, requires trim to connect)
		24112-1	Accelerator Trim Kit - includes trim components and air gauge (model VXR only)
		14800	Model LD-1 Anticolumn Device (requires trim to connect)
		14816	LD-1 Trim Kit - includes trim components needed to connect to the dry valve
		PS-402A	Air supervisory switch
		PS-102A	Water flow switch

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3.3 System Components

Refer to 3.4 (Standard Riser) or 3.5 (PTR) for connection point specifications.

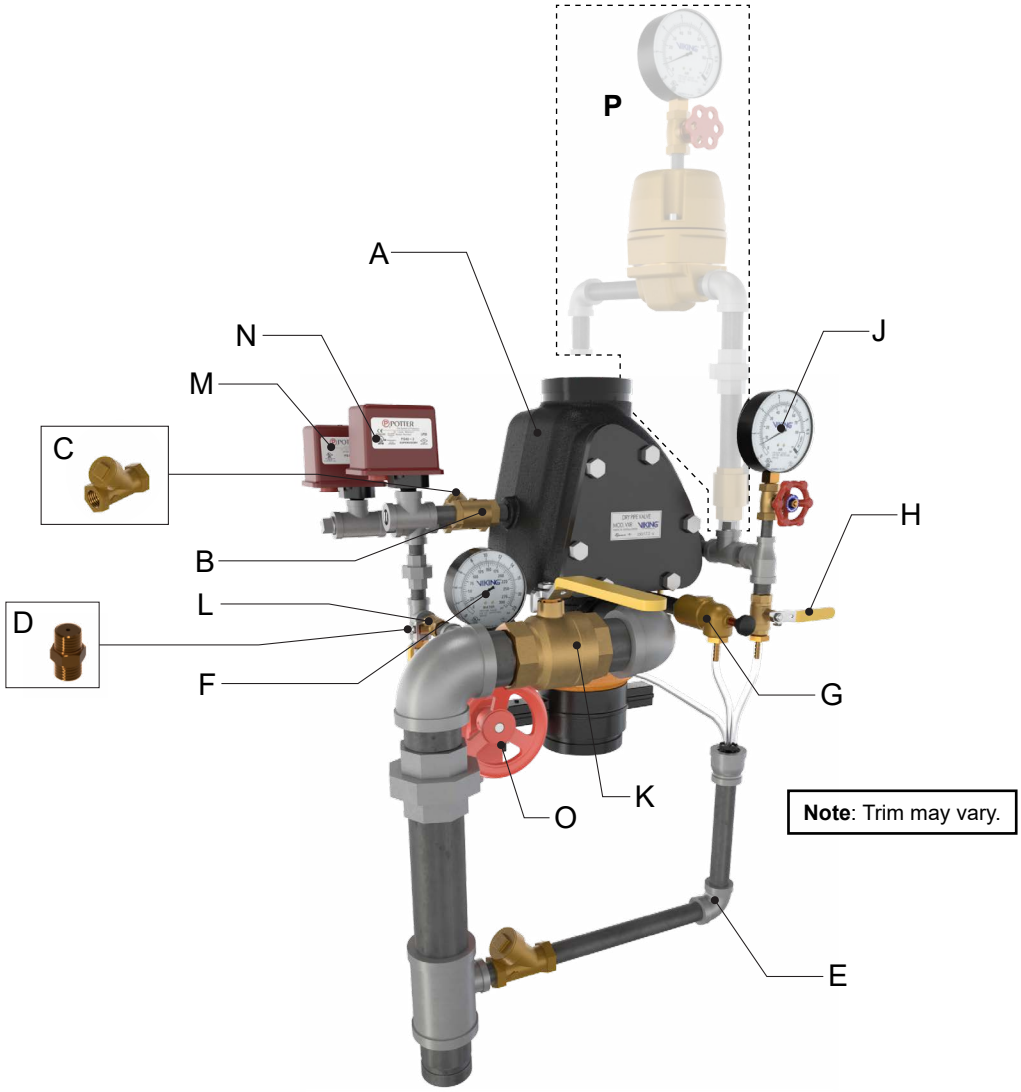


Figure 4: System Components (4" PTR Shown)

Item	Description	Item	Description
A	Dry Valve	J	Air/nitrogen supply pressure gauge
B	1/2" Inline check valve	K	Main drain (normally closed)
C	1/2" Swing check valve	L	Alarm test valve (normally closed)
D	1/8" Restricted orifice	**M***	**PS-10 Water flow alarm switch**
E	Drain manifold (drain cup provided with Standard version)	**N***	**PS-40 High/Low air switch**
F	Water supply pressure gauge	**O***	**Main water supply valve (Model 02G)**
G	Model D-3 Drip Check	P	Optional Accelerator with trim
H	Prime level test valve (normally closed)		
*** Included with PTR version only.**			

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3.4 Connection Points (Standard Riser)

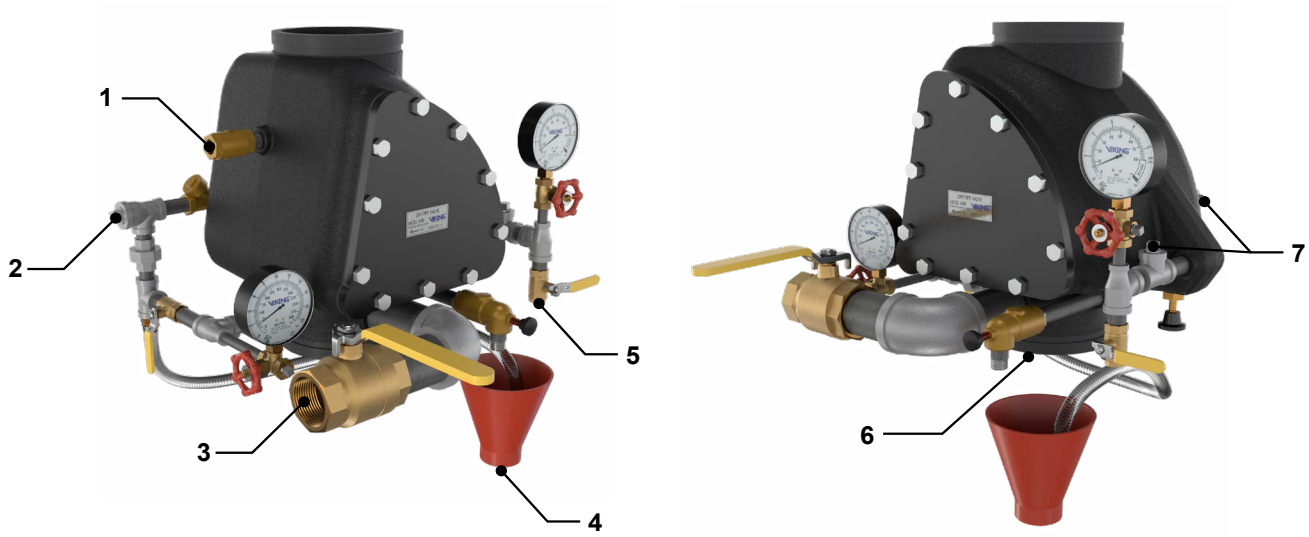


Figure 5: System Connection Points (4" Standard Riser Shown)

Item	Description	Item	Description
1	Air supply and/or supervisory switch	5	To drain
2	Alarm connection	6	Main water supply
3	Main drain/drain manifold	7	Accelerator trim
4	Auxiliary drain (cup)		

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3.5 Connection Points (PTR)

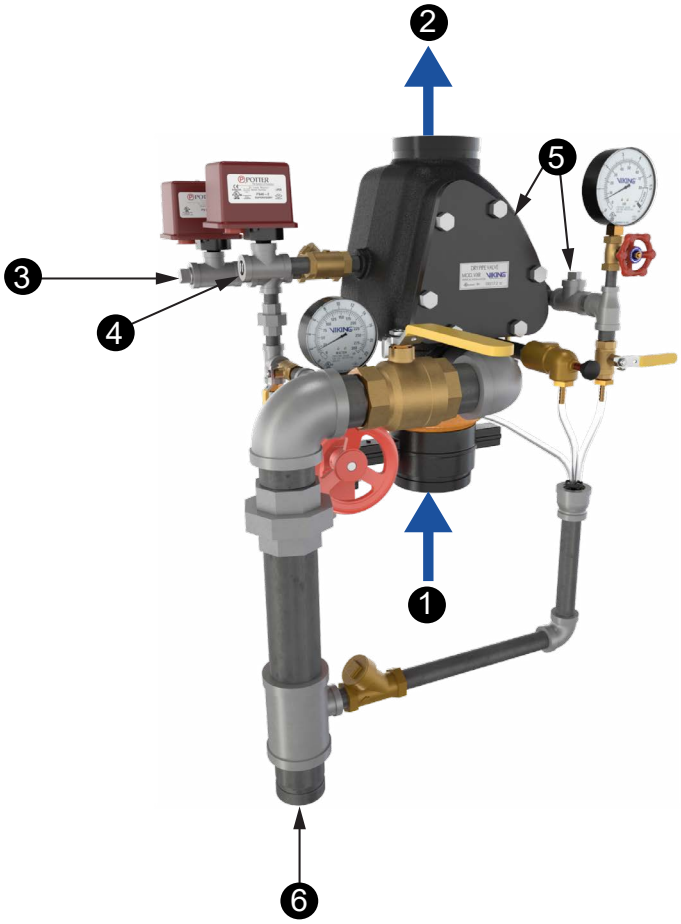


Figure 6: System Connection Points (4" PTR Shown)

Item	Description	Item	Description
1	Riser-supply side	4	Air supervisory
2	Riser-system side	5	Accelerator trim (one side hidden)
3	Water supervisory	6	Drain

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4. INSTALLATION

4.1 Requirements

- For proper operation and approval, the valve must be trimmed in accordance with Viking Model VXR Dry Valve Trim Charts in this document.
- The Model VXR Dry Valve must be installed in the vertical position as shown in Figure 6.
- Air/nitrogen supply to the dry pipe system must be clean, dry, and oil free.
- Automatic air/nitrogen supplies must be regulated, restricted, and from a continuous source. Viking recommends that an air maintenance device be installed on each system equipped with an automatic air/nitrogen supply.
- Never exceed 65 PSI (4.5 bar) pressure in the system piping with the dry valve clapper closed.
- The dry valve must be installed in an area not subject to freezing temperatures or physical damage. If required, provide a valve house (enclosure) with adequate heat around the dry valve and trim. Freezing temperatures and/or excessive pressure will permanently damage the valve.
- When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Model VXR Dry Valve and associated equipment.
- Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present.

4.2 Air/nitrogen Supply Installation

1. Install the required air/nitrogen supply, using the properly sized compressor, producing the required cubic feet per minute in accordance with section 4.3. The air/nitrogen supply to the Dry System must be clean, dry, and oil free.
2. Automatic air/nitrogen supplies must be regulated, restricted, and from a continuous source. A Viking Air Maintenance Device should be installed on each system equipped with a tank mounted compressor, plant air/nitrogen. For compressors with a capacity less than 5.5 ft^3/min at 10 psi, NFPA 13 does not require an air maintenance device. The use of an air maintenance device with riser mounted compressors can lead to compressor "short cycling". Viking always recommends that a tank mounted compressor with air maintenance device be used.

4.3 Recommended Air/nitrogen Pressure Settings

TABLE 3 - AIR/NITROGEN PRESSURE SETTINGS

Maximum Water Pressure:		Minimum Air/ nitrogen Pressure		Maximum Air/ nitrogen Pressure	
PSI	bar	PSI	bar	PSI	bar
50	3.4	25	1.7	35	2.4
75	5.1	30	2.1	40	2.8
100	6.8	35	2.4	40	2.8
125	8.6	35	2.4	45	3.1
150	10.3	40	2.8	45	3.1
175	12.0	45	3.1	50	3.5
200	13.7	50	3.5	60	4.1
225	15.5	55	3.8	65	4.5
250	17.2	60	4.1	65	4.5

TABLE 4 - PIPE CAPACITY FOR SIZING AIR COMPRESSORS

Pipe Diameter		Capacity			
US	DN	Sch. 40 (1" to 6") Sch. 30 (8")		Sch. 10	
		Gal / Ft	L / m	Gal / Ft	L / m
1"	DN25	0.045	0.559	0.049	0.608
1-1/4"	DN32	0.078	0.969	0.085	1.043
1-1/2"	DN40	0.106	1.316	0.115	1.428
2"	DN50	0.174	2.161	0.190	2.360
2-1/2"	DN65	0.248	3.080	0.283	3.515
3"	DN80	0.383	4.756	0.434	5.390
3-1/2"	DN90	0.513	6.370	0.577	7.165
4"	DN100	0.660	8.196	0.740	9.190
5"	DN125	1.040	12.915	1.144	14.206
6"	DN150	1.501	18.640	1.649	20.477
8"	DN200	2.660	33.032	2.776	30.472
For Metric Units 1 Ft. = 0.3048 M, 1 Gal. = 3.785L					

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4.4 Air/nitrogen Supply Design

Air compressor size:

NFPA 13 requires that the air/nitrogen supply be capable of filling the entire sprinkler system to its required air/nitrogen pressure within 30 minutes. A common method of sizing an air/nitrogen compressor is to use the following formula:

Compressor Size (ft^3/min) = $\frac{V \times P}{7.48 \times 14.7 \times T}$	**Where:** V= Volume P = Required Air Pressure T = Fill time (typically 30 min.) 7.48 = gal. / $ft.^3$ 14.7 = atmospheric pressure	**Example:** System volume as determined by table 1 = 750 gallons Required Air pressure = 30 psi Compressor Size (ft^3/min) = $\frac{(750 \times 30)}{7.48 \times 14.7 \times 30}$ = 6.8 ft^3/min
Therefore, the compressor shall be capable of providing 7 ft^3/min.		

Nitrogen Cylinder Gas Supply

Nitrogen may be used in place of air compressors. Nitrogen is supplied in pressurized cylinders in various sizes and pressures. Some of the most common are 122 ft^3 at 1900 PSI (3455 L at 13100 kPa), 225 ft^3 at 2100 PSI (6372 L at 14480 kPa), and 280 ft^3 at 2300 PSI (7930 L at 15859 kPa).

When nitrogen cylinders are used as a primary air supply, spare cylinders should be furnished and located at same location of the valve. Special attention must be given to systems employing a bottled-gas supply. Because only a limited amount of gas is available, small leaks which normally would go unnoticed in systems being supplied by mechanical compressors, can become critical to the system's overall performance. If the system is to function at temperatures as low as -40 °F (-40 °C), and, if bottled nitrogen is the gas supply, the system is particularly susceptible to leakage, and special care should be taken to ensure against leaks throughout the entire system.

Nitrogen Generator Gas Supply

Nitrogen Generators may be used in place of air compressors. When selecting and sizing a nitrogen generator, consult the manufacturer of the generator for details.

4.5 Hydrostatic Test

⚠ CAUTION Risk of damage to valve/system components.

Performing the hydrostatic test with the dry valve clapper closed can damage system components.

- **DO NOT perform a hydrostatic system test with the dry valve clapper in the closed position.**
- **Never exceed 65 PSI (4.5 bar) air/nitrogen pressure in the system piping with the dry valve clapper closed.**
- **DO NOT expose the Viking accelerator to the hydrostatic test. For warnings and considerations regarding hydrostatic testing of the Viking accelerator and other system components, refer to Technical Data for the equipment used.**

Perform the Hydrostatic Test as required by the applicable standard.

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4.6 Placing the System in Service (Refer to Figure 6)

When the dry pipe system is ready to be placed in service, follow the procedure below.

1. Verify that all equipment is adequately heated and protected to prevent freezing and physical damage.
2. Verify that the main water supply control valve is closed (A).
3. OPEN the main drain valve (B).
4. Drain all water from the dry pipe system. If the system has operated, or if water has entered the system, open all auxiliary drains and the system test valve. Allow enough time to completely drain the system.
5. Verify that the dry pipe system is not pressurized and the air gauge (C) reades ZERO.
6. PRESS the push-rod (D) upward to lift the latch and ensure the clapper is fully closed, then pull the handle downward.
7. CLOSE all auxiliary drains and the alarm test valve (E). The main drain should remain open.
8. If equipped with a Viking Model D-2 accelerator (F), verify the pressure reading on the gauge (G) reads ZERO. It may be necessary to loosen the plug to vent trapped pressure from the upper chamber.

   CAUTION! Excessive air/nitrogen pressure in the system piping will cause damage. Never exceed 65 PSI (4.5 bar) air/nitrogen pressure in the system piping with the dry valve clapper closed.
9. OPEN the dry system air/nitrogen supply and establish desired system pressure. See Table 3 for recommended settings.
10. PRESS the drip check valve (H) to verify that the intermediate chamber of the dry valve is free of air pressure.
11. If equipped with a Viking D-2 accelerator (F), verify the pressure reading on the gauge (G) equals the system set pressure.
12. When the air/nitrogen pressure is properly set, SLOWLY OPEN the water supply main control valve (A).
13. When flow is developed from the main drain, SLOWLY CLOSE the main drain valve.
14. PRESS the drip check valve (H) to verify that the intermediate chamber of the dry valve is free of water.
15. Secure all valves in their normal operating position.
16. Notify Authorities Having Jurisdiction and those in the affected area that the system is in service.

All valves in normal position
System piping not shown

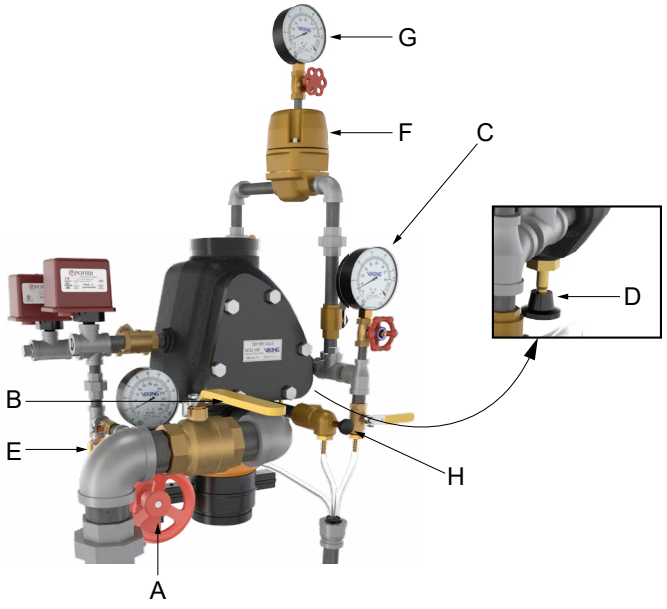


Figure 6: System Placed in Service

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5. OPERATION

5.1 In the SET condition:

The clapper is closed; however, the latch does not hold the clapper closed. System air/nitrogen pressure enters the valve through the main air/nitrogen connection point and forces the clapper assembly down therefore keeping the water from entering the valve.

5.2 In fire conditions:

When a sprinkler operates, the system air/nitrogen pressure is reduced. When system air/nitrogen pressure is reduced to the differential operating point of the valve, water supply pressure in the inlet chamber forces the clapper open allowing water to flow through the valve. The latch holds the clapper off the seat after activation if water pressure is reduced.

When using the optional accelerator, the accelerator senses the system air/nitrogen pressure drop and operates. Upon operating, the accelerator allows the system air/nitrogen pressure to enter the dry valve intermediate chamber (not shown). This immediately overcomes the differential causing the clapper to open faster.

The intermediate chamber is normally at atmospheric pressure and is connected to the alarm line. When the valve operates, the intermediate chamber and alarm line are pressurized with system water pressure, activating alarms connected to the dry valve trim.

5.3 Resetting the System

After the valve has been activated, follow the steps below to reset the system.

1. CLOSE the main water supply control valve.
2. OPEN the main drain valve and CLOSE the air/nitrogen supply valve.
3. Allow the system to drain completely.

   NOTE: *If, for any reason, the push-rod is pressed upward before the system has completely drained, open the 1/2" ball valve (Prime level test valve) to completely drain the system. Once the system has been drained, pull the handle downward and close the Emergency Release.*
4. PARTIALLY CLOSE the main drain valve after the system has been drained.
   - Verify there is no water pressure showing on the water supply pressure gauge.
   - Verify there is no pressure showing on the air/nitrogen supply pressure gauge.
   - Verify there is no water trapped in the drip-check by pressing the plunger.
5. If applicable, silence all alarms.
6. Replace any sprinklers or repair any broken pipes.
7. If applicable, verify there is no air/nitrogen pressure in the accelerator. If necessary, bleed any residual pressure.

   NOTE: *Pressing upward on the push-rod may cause residual pressurized air/nitrogen to escape.*
8. Reset the clapper by pressing the push-rod upwards. Once reset, pull the handle downward.
9. If applicable, open the 1/2" air maintenance device bypass valve to fill the system air/nitrogen pressure to within 5 psi of set pressure. Then close the 1/2" bypass valve and open the 1/4" isolation valves to use the air maintenance regulator to slowly bring the system up to set pressure. Verify that the system air/nitrogen pressure is set to the proper settings. If an optional accelerator is installed, verify that the accelerator air gauge reading is equal to the system air/nitrogen pressure reading.
10. SLOWLY OPEN the water supply valve to allow water to enter the valve.
11. SLOWLY CLOSE the main drain valve. The water supply pressure gauge will show the supply pressure.
12. OPEN the main water supply control valve to the fully open position.

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6. INSPECTIONS, TESTS, AND MAINTENANCE

⚠ WARNING

Any system maintenance that involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

NOTICE

The owner is responsible for maintaining the fire protection system and devices in proper operating condition.

It is imperative that the system be inspected and tested on a regular basis in accordance with NFPA 25. Refer to current Viking Technical Data describing individual components.

The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, corrosive atmospheres, as well as the condition of the air/nitrogen supply to the system. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

6.1 Inspection

Weekly inspection is recommended. If the system is equipped with a low air/nitrogen alarm, monthly inspections may be adequate.

1. Check pressure gauges located on the supply side and system side of the dry valve. Verify that the proper ratio of air/nitrogen pressure to water supply pressure is being maintained (refer to Table 3).
2. Verify that the intermediate chamber of the dry valve is free of water or pressurized air/nitrogen by pushing the drip check plunger. No water or pressurized air/nitrogen should be present.
3. If equipped with a Viking Model D-2 accelerator, check the air/nitrogen pressure gauge located on the top of the accelerator. Air/nitrogen pressure in the upper chamber of the accelerator should equal the pneumatic pressure maintained in the system.

   NOTE: *Standard tolerance allowance in pressure gauge calibration may result in a slight variation when pressure readings from any two gauges are compared. A difference in pressures other than slight variation due to gauge calibration tolerance may indicate maintenance is required. Refer to Technical Data for the Viking Model D-2 Accelerator.*
4. Verify that the ½" (15 mm) isolation valves to the accelerator are open.
5. Verify that the water supply main control valve is open and all trim valves are in their normal operating position.
6. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.
7. Verify that dry valve and trim are adequately heated and protected from freezing and physical damage.

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6.2 Tests

Quarterly

Quarterly (every 3 months) testing of water flow alarms is recommended and may be required by the Authority Having Jurisdiction. Before beginning any test, Notify the Authority Having Jurisdiction and those in the area affected by the test.

A. Water Flow and Alarm Test

1. SLOWLY OPEN the main drain valve (B) to flush away any accumulation of foreign material. If the water is not flowing, identify and correct the cause.
2. CLOSE the main drain valve (B) completely.
3. To test the local electric alarm (if provided) and/or mechanical water motor gong (if provided), SLOWLY OPEN the alarm test valve (E). The following should occur:
   a. Electric alarm pressure switches (if provided) should activate.
   b. Electric local alarms should be audible.
   c. The local water motor gong should be audible.
   d. Verify that (if provided) remote station alarm signals were received.
4. When testing is complete, CLOSE the alarm test valve (E).
5. Verify the following:
   a. All local alarms stop sounding and alarm panels (if provided) reset.
   b. All remote station alarms reset.
   c. All supply piping to water motor alarm properly drains.
6. PRESS the drip check valve (H) to verify that the intermediate chamber of the dry valve is free of water.
7. Notify the Authority Having Jurisdiction and those in the affected area that testing is complete.

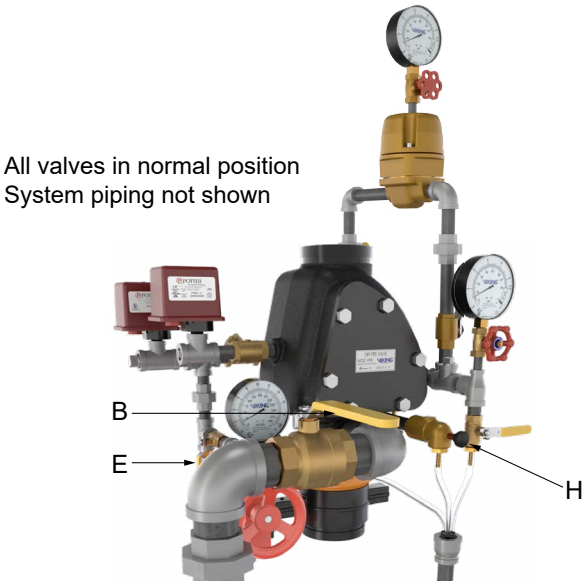


Figure 7: Water Flow and Alarm Test

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B. Main Drain Test

Quarterly performance of the Main Drain Test is recommended and may be required by Authorities Having Jurisdiction to verify integrity of the water supply. Before beginning any test, Notify the Authority Having Jurisdiction and those in the area affected by the test.

1. Record pressure reading from the water supply pressure gauge.
2. PRESS the drip check valve to verify that the intermediate chamber of the dry valve is free of water.
3. Verify that the dry pipe system is pressurized at or above the minimum pressure recommended in Table 3 for the water supply pressure available.
4. FULLY OPEN the main drain valve located on the inlet of the dry valve.
5. When a full flow is developed from the main drain, record the residual pressure from the water supply pressure gauge.
6. When the test is complete, SLOWLY CLOSE the main drain valve.
7. Compare test results with previous flow information.
8. Verify that normal water supply pressure and system pneumatic pressure have been restored, and that all alarm devices and valves are secured in normal operating position.
9. Notify the Authority Having Jurisdiction that the test is complete. Record and/or provide notification of test results as required by the Authority Having Jurisdiction.

C. Priming Water Level and Low Air/nitrogen Alarm Test

Quarterly testing is recommended to verify that water is NOT present above the Priming Level Test Valve . Quarterly testing of low air/nitrogen alarms is recommended. Before beginning any test, Notify the Authority Having Jurisdiction and those in the area affected by the test.

1. FULLY OPEN the main drain valve to flush away any accumulated foreign material, then close it.
2. CLOSE the main water supply control valve .
3. OPEN the main drain valve .
4. If applicable, CLOSE the 2 ball valves on the accelerator trim to isolate the accelerator during this test.
5. Dry valve priming water level test:
   a. Verify that the main water supply control valve is closed and the main drain valve is open.
   b. PARTIALLY OPEN the priming level test valve to check for the presence of water. If an accelerator is installed, this may cause the dry pipe valve to operate. If the presence of water is detected, the system may not have been properly drained. Open all drain valves to drain the system and repeat this test.
   c. If/when no water is detected and the test is complete, continue to step 6.
6. Low Air/nitrogen Alarm Test:
   a. Verify that the water supply main control valve is closed and the main drain valve is open.
   B. GRADUALLY OPEN the priming level test valve to simulate operation of the dry system. Observe and record the pressure at which the low air/nitrogen alarm operates.
7. CLOSE the priming level test valve.
8. if applicable, SLOWLY OPEN the 2 ball valves on the accelerator trim.
9. Place the system in service. Refer to Section 4.6 Placing the System in Service.

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Annually

Partial Flow Trip Tests are conducted with the water supply main control valve partially closed to minimize the amount of water entering the system during the test. Performance of a Partial Flow Trip Test is recommended during warm weather at least annually except when a Full Flow Trip Test is conducted. Partial Flow Trip Tests may verify operation of equipment and devices but do not simulate operation of the system in fire conditions.

A. Partial Flow Trip Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Record the following:
   a. Water supply pressure
   b. System pneumatic pressure
3. FULLY OPEN the main drain valve (located on the inlet of the dry valve) to flush away any accumulation of foreign material.
4. PARTIALLY CLOSE the water supply main control valve.
5. CLOSE the main drain valve.
6. OPEN the priming level test valve to simulate operation of the system.
7. Take note of (for records) the water supply pressure and system pneumatic pressure when the dry valve operates.
8. IMMEDIATELY CLOSE the water supply main control valve and open the main drain valve when test is complete.
9. Place the system in service. Refer to Section 4.6 Placing the System in Service.
10. Verify that the water supply main control valve is open, and all other valves are in their normal operating position.

Every Three Years

Full Flow Trip Tests are conducted with the water supply main control valve fully open. The dry valve is operated by opening the remote system test valve to simulate the opening of a sprinkler in fire conditions. When the dry valve operates, the sprinkler piping will be flooded with water. Performance of a Full Flow Trip Test is recommended during warm weather at least once every three years. More frequent testing may be required by the Authority Having Jurisdiction.

A. Full Flow Trip Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.

   NOTE: *Alarms and electric panels controlled by an alarm pressure switch installed in the "electric alarm panel connection" cannot be interrupted (see Dry Valve Trim Chart).*
2. FULLY OPEN the main drain valve (located on the inlet of the dry valve) to flush away any accumulation of foreign material.
3. CLOSE the main drain.
4. Record the following:
   a. Water supply pressure
   b. System pneumatic pressure
5. OPEN the remote system test valve to simulate operation of the dry system. Record the following:
   a. Elapsed time from opening of the test valve to operation of the dry valve.
   b. System pressure when the dry valve operated.
   c. Elapsed time from opening of the test valve to development of full flow of water from the system test connection.
   d. Any other information required by the Authority Having Jurisdiction.
6. Verify that alarms operate properly.
7. Allow water to flow from the system test connection until it appears clear and clean.
8. When test is complete, CLOSE the water supply main control valve.
9. Perform steps 1 through 16 of section 4.6 Placing the System in Service.
10. Verify that the water supply main control valve is open, and all other valves are in their normal operating position.

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6.3 MAINTENANCE (See Figure 6)

Refer to the Model VXR Dry Valve technical data sheet Form No. F_112220.

⚠ WARNING Risk of injury or death.

Prior to servicing internal operating parts of the dry valve, take the following precautions.
a. CLOSE the water supply main control valve, placing the system out of service.
B. OPEN the main drain valve located on the inlet of the dry valve.
C. CLOSE the air/nitrogen supply to the dry system piping.
d. Relieve all pressure from the dry system piping. If the system has operated, open all auxiliary drains and the system test valve to allow the system to drain completely.

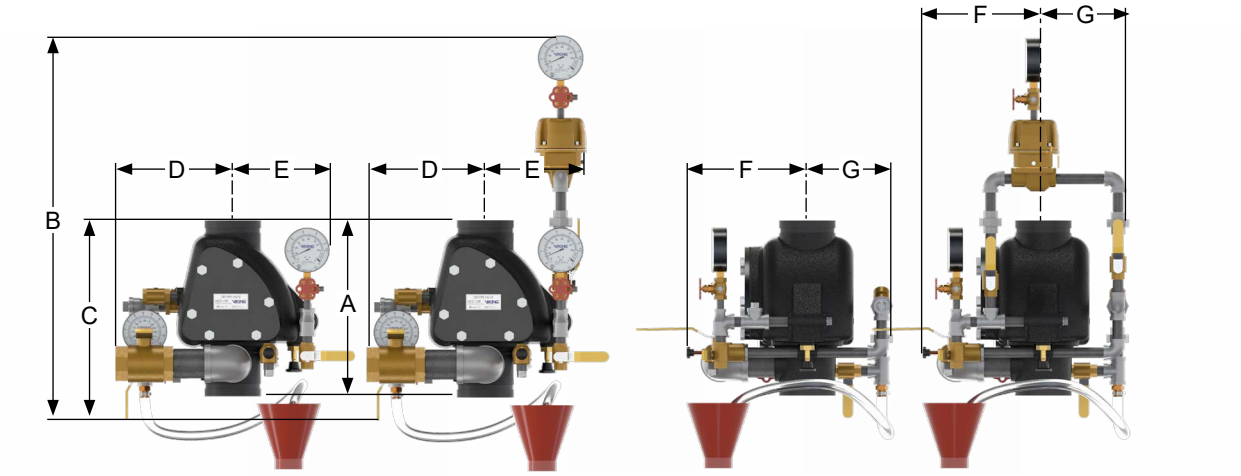
7. AVAILABILITY

The Viking Model VXR Dry System Risers are available through a network of domestic and international distributors. See the Viking Corporation website for closest distributor or contact The Viking Corporation.

8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

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With Model D-2 Accelerator

With Model D-2 Accelerator

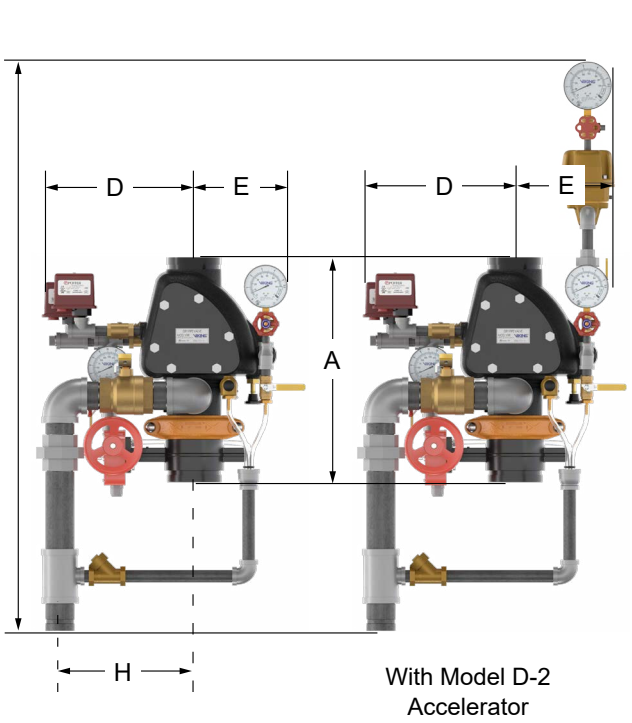
NOTE: All dimensions are approximate.

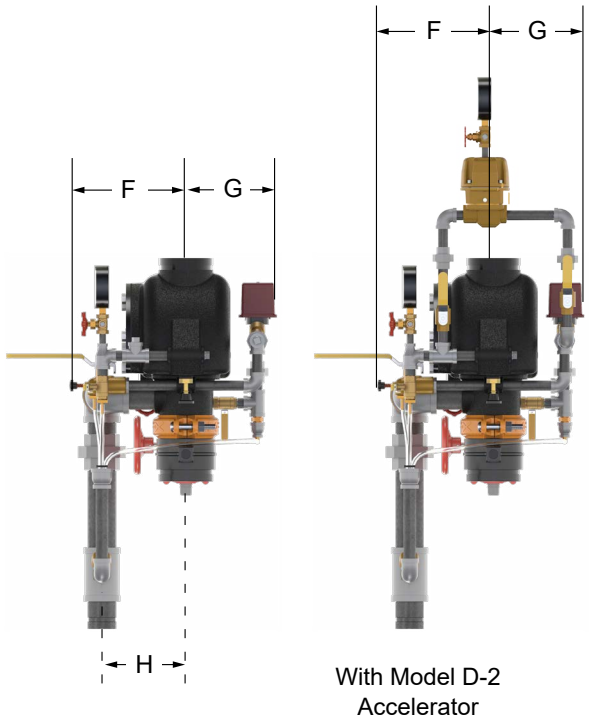
Figure 8: System Dimensions for Standard Packages (4" Shown)

Table 2: Model VXR System Dimensions

Valve Size	A Inches (mm)	B Inches (mm)	C Inches (mm)	D Inches (mm)	E Inches (mm)	F Inches (mm)	G Inches (mm)
2½”	10⅞ (276)	30⅝ (778)	12⅝ (320)	5¾ (146)	6¼ (159)	9 (229)	6⅜ (162)
3”	12⅜ (314)	30⅝ (778)	14 (356)	5¾ (146)	6¾ (171)	8¾ (222)	6⅜ (162)
4”	14⅛ (357)	31½ (800)	15⅞ (403)	8⅞ (225)	7¾ (197)	9¾ (248)	6¾ (171)
6”	17 (432)	31⅛ (790)	18⅝ (473)	7⅞ (200)	10⅜ (264)	10¾ (273)	7⅞ (200)

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NOTE: All dimensions are approximate.

Figure 9: System Dimensions for Pre-Trimmer Risers (PTR)

(4" Pre-Trimmed Risers Shown)

Table 3: Model VXR System Dimensions - Pre-Trimmed Risers

Valve Size	A Inches (mm)	B Inches (mm)	C Inches (mm)	D Inches (mm)	E Inches (mm)	F Inches (mm)	G Inches (mm)	H Inches (mm)
2½"	14⅝" (371)	45" (1143)	8⅛" (206)	11½" (292)	6¼" (159)	8½" (216)	7⅛" (181)	5¾" (146)
3"	17" (432)	45¼" (1149)	8⅛" (206)	10½" (267)	6¾" (171)	8¾" (222)	6¾" (171)	6" (152)
4"	19⅞" (505)	45¾" (1162)	11⅛" (283)	11⅝" (295)	7¾" (197)	9⅞" (251)	7¼" (184)	7⅜" (187)
6"	24⅝" (625)	45⅞" (1927)	11⅛" (283)	12⅝" (321)	10¼" (260)	10⅞" (276)	8¼" (210)	9½" (241)

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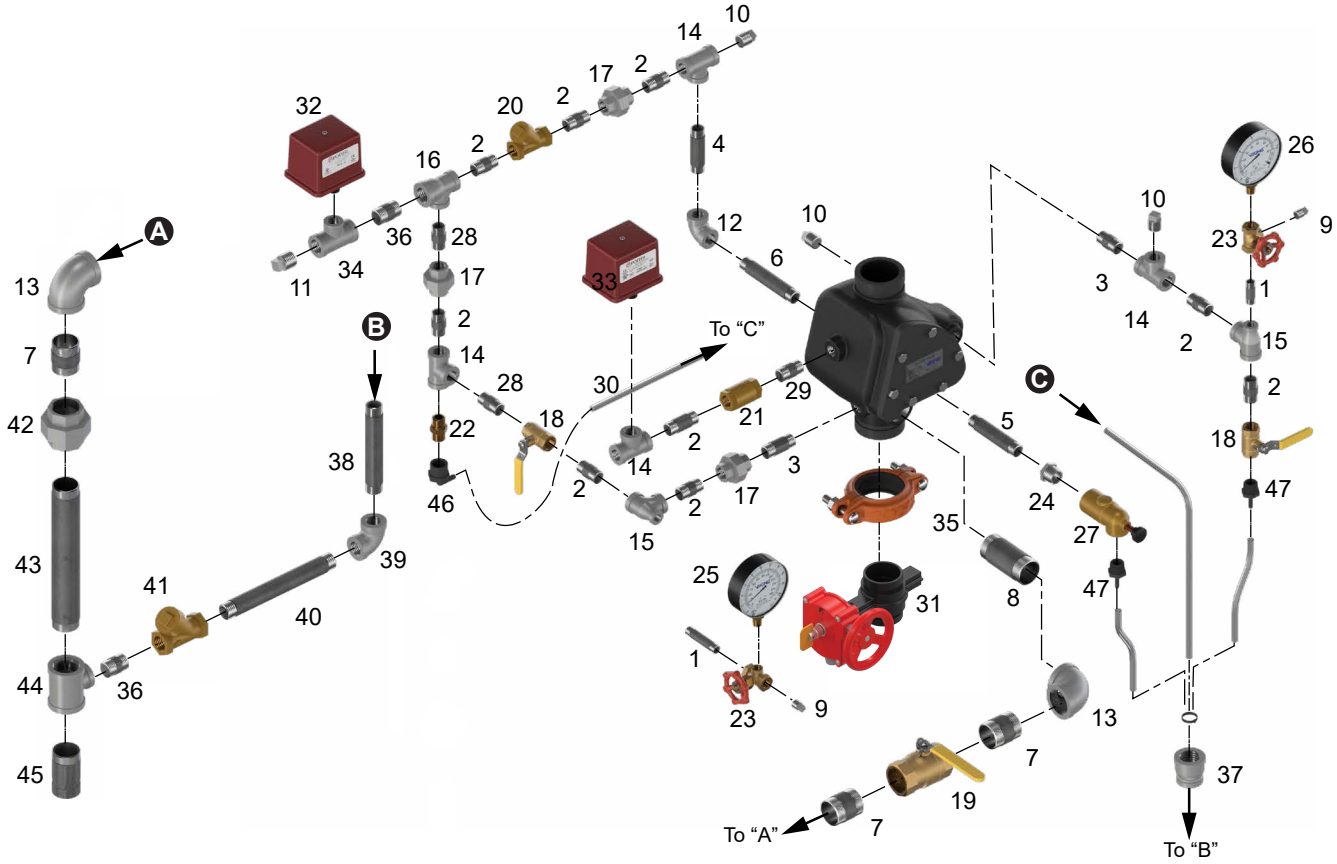


Figure 10: Trim Diagram - PTR (2½")

#	Description/Specification	Metric Length	Quantity
1	1/4" X 1-1/2"	38 mm	2
2	1/2" X 1-1/2"	38 mm	9
3	1/2" X 2"	51 mm	2
4	1/2" X 3"	76 mm	1
5	1/2" X 3-1/2"	89 mm	1
6	1/2" X 4-1/2"	115 mm	1
7	1-1/4" X 2"	51 mm	3
8	1-1/4" X 3-1/2"	89 mm	1
9	1/4" Plug	--	2
10	1/2" Plug	--	3
11	3/4" Plug	--	1
12	1/2" Elbow	--	1
13	1-1/4" Elbow	--	2
14	1/2" Tee	--	4
15	1/2" X 1/4" X 1/2" Tee	--	2
16	1/2" X 3/4" X 1/2" Tee	--	1
17	1/2" Union	--	3
18	1/2" Ball Valve	--	2
19	1-1/4" Ball Valve	--	1
20	1/2" Swing Check Valve	--	1
21	1/2" Inline Check Valve	--	1
22	1/8" Restricted Orifice	--	1
23	1/4" Side Outlet Valve	--	2
24	3/4" X 1/2" Reducer	--	1

#	Description/Specification	Metric Length	Quantity
25	Water Pressure Gauge	--	1
26	Air Pressure Gauge	--	1
27	Drip Check Valve (Mod.D-3)	--	1
28	1/2" X Close	--	2
29	1/2" X 2-1/2"	64 mm	1
30	Drain Hose	--	1
31	2-1/2" Butterfly Valve (02G)	--	1
32	PS-10 Water Flow Switch	--	1
33	PS-40 High/Low Air Switch	--	1
34	3/4" X 1/2" X 3/4" Tee	--	1
35	2-1/2" Grooved Coupling	--	1
36	3/4" X 1-1/2"	38 mm	2
37	1" X 3/4" Reducer	--	1
38	3/4" X 6"	152 mm	1
39	3/4" Elbow	--	1
40	3/4" X 8"	203	1
41	3/4" Swing Check Valve	--	1
42	1-1/4" Union	--	1
43	1-1/4" X 10"	254	1
44	1-1/4" X 1-1/4" X 3/4" tee	--	1
45	1-1/4" X 3" Grooved	--	1
46	Hose Barb, Hex Elbow	--	1
47	Hose Barb, Hex Adapter	--	2

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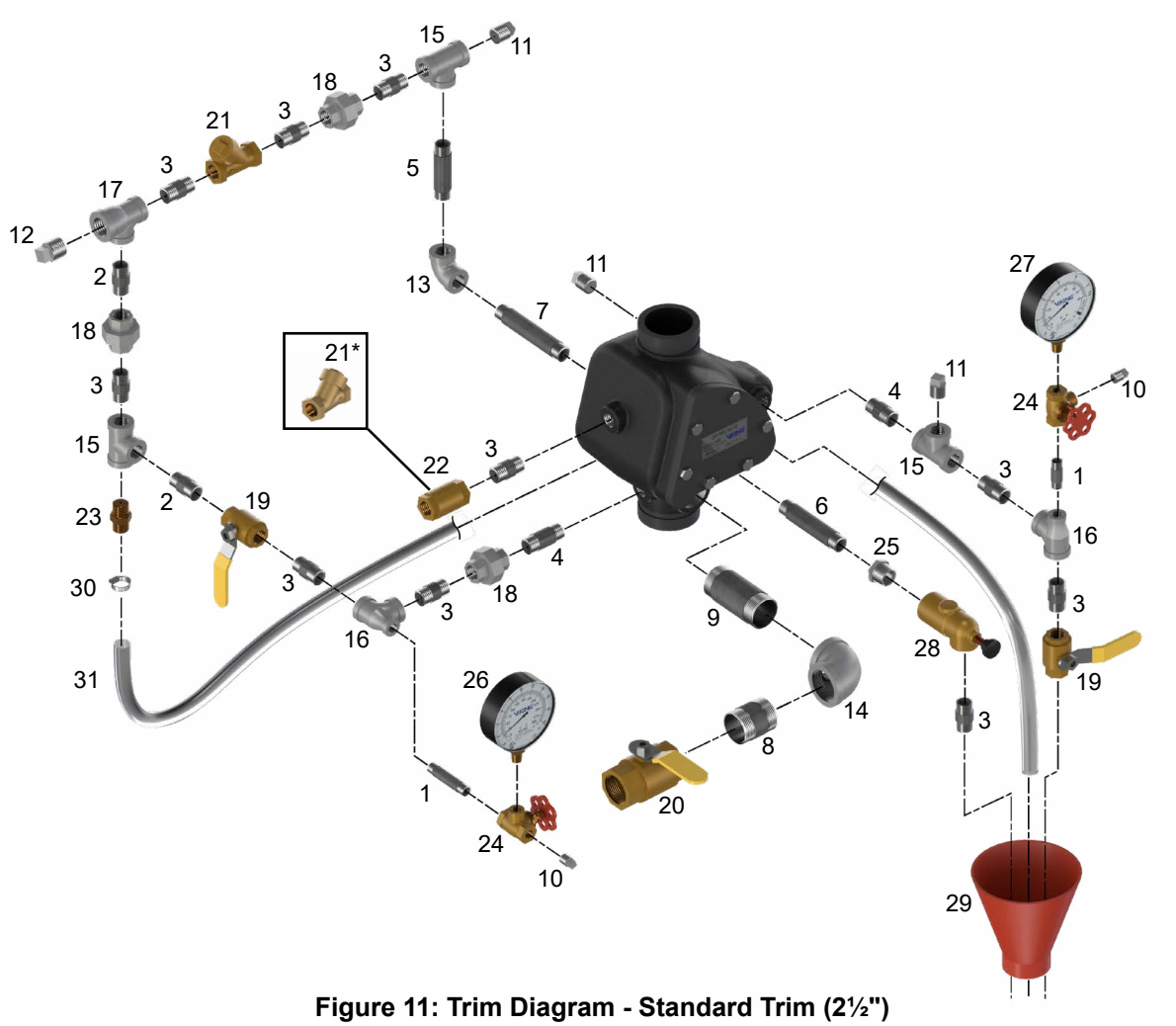


Figure 11: Trim Diagram - Standard Trim (2½")

#	Description/Specification	Metric Length	Quantity	
			STD	USA
1	1/4" X 1-1/2"	38 mm	2	2
2	1/2" X Close	--	2	2
3	1/2" X 1-1/2"	38 mm	10	10
4	1/2" X 2"	51 mm	2	2
5	1/2" X 3"	76 mm	1	1
6	1/2" X 3-1/2"	89 mm	1	1
7	1/2" X 4-1/2"	115 mm	1	1
8	1-1/4" X 2"	51 mm	1	1
9	1-1/4" X 3-1/2"	89 mm	1	1
10	1/4" Plug	--	2	2
11	1/2" Plug	--	3	3
12	3/4" Plug	--	1	1
13	1/2" Elbow	--	1	1
14	1-1/4" Elbow	--	1	1
15	1/2" Tee	--	3	3
16	1/2" X 1/4" X 1/2" Tee	--	2	2

#	Description/Specification	Metric Length	Quantity	
			STD	USA
17	1/2" X 3/4" X 1/2" tee	--	1	1
18	1/2" Union	--	3	3
19	1/2" Ball Valve	--	2	2
20	1-1/4" Ball Valve	--	1	1
21	1/2" Swing Check Valve	--	1	2
22	1/2" Inline Check Valve	--	1	0
23	1/8" Restricted Orifice	--	1	1
24	1/4" Side Outlet Valve	--	2	2
25	3/4" X 1/2" Reducer	--	1	1
26	Water Pressure Gauge	--	1	1
27	Air Pressure Gauge	--	1	1
28	Drip Check Valve (Mod.D-3)	--	1	1
29	Drain Cup	--	1	1
30	Drain Hose Clamp	--	1	1
31	Drain Hose	--	1	1
*Alternate check valve used in 24097-1USA.				

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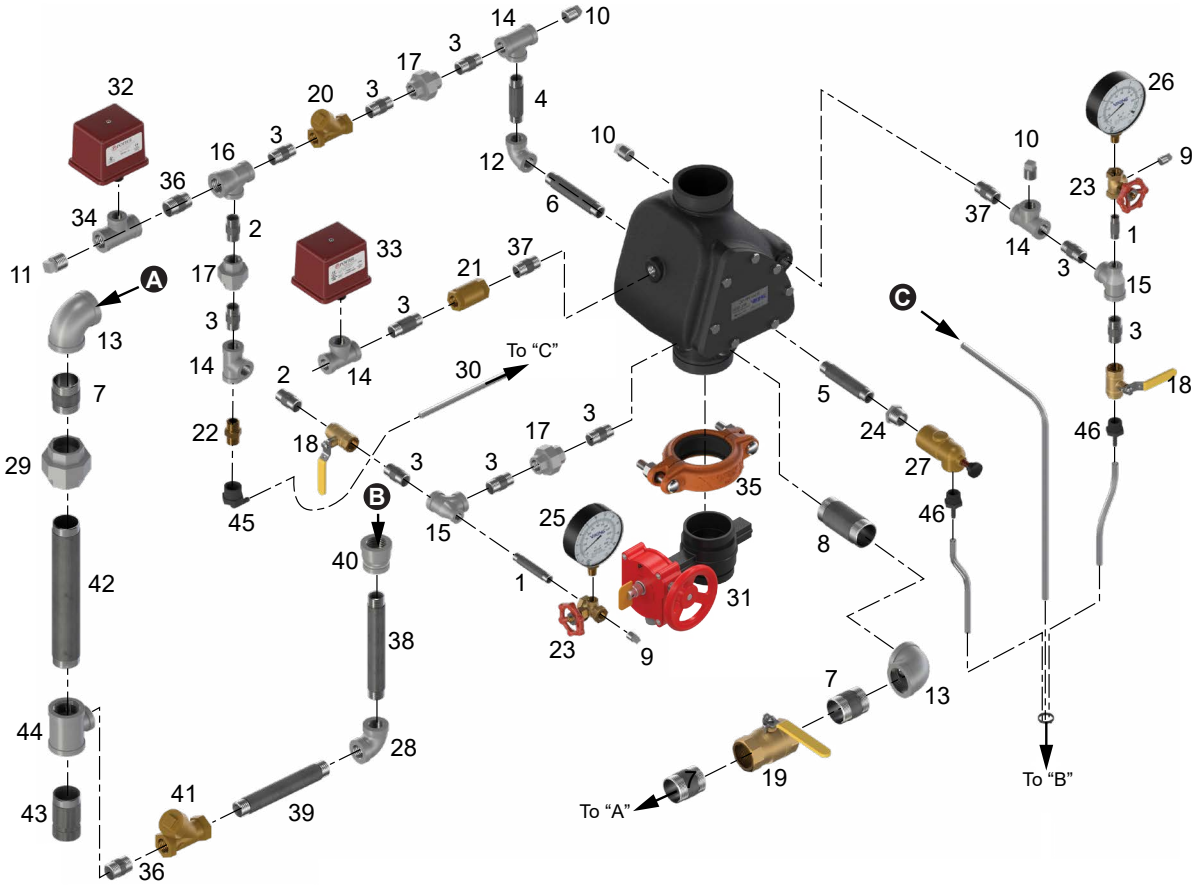


Figure 12: Trim Diagram - PTR (3")

#	Description/Specification	Metric Length	Quantity
1	1/4" X 1-1/2"	38 mm	2
2	1/2" X Close	--	1
3	1/2" X 1-1/2"	38 mm	10
4	1/2" X 3"	76 mm	1
5	1/2" X 4"	102 mm	1
6	1/2" X 4-1/2"	115 mm	1
7	1-1/4" X 2"	51 mm	3
8	1-1/4" X 3-1/2"	89 mm	1
9	1/4" Plug		2
10	1/2" Plug	--	3
11	3/4" Plug	--	1
12	1/2" Elbow	--	1
13	1-1/4" Elbow	--	2
14	1/2" Tee	--	4
15	1/2" X 1/4" X 1/2" Tee	--	2
16	1/2" X 3/4" X 1/2" Tee	--	1
17	1/2" Union	--	3
18	1/2" Ball Valve	--	2
19	1-1/4" Ball Valve	--	1
20	1/2" Swing Check Valve		1
21	1/2" Inline Check Valve	--	1
22	1/8" Restricted Orifice	--	1
23	1/4" Side Outlet Valve	--	2

#	Description/Specification	Metric Length	Quantity
24	3/4" X 1/2" Reducer	--	1
25	Water Pressure Gauge	--	1
26	Air Pressure Gauge	--	1
27	Drip Check Valve (Mod.D-3)	--	1
28	3/4" Elbow	--	1
29	1-1/4" Union	--	1
30	Drain Hose	--	1
31	3" Butterfly Valve (02G)		1
32	PS-10 Water Flow Switch	--	1
33	PS-40 High/Low Air Switch	--	1
34	3/4" X 1/2" X 3/4" Tee	--	1
35	3" Grooved Coupling	--	1
36	3/4" X 1-1/2"	--	2
37	1/2" X 2"	51 mm	2
38	3/4" X 6"	152 mm	1
39	3/4" X 8"	203 mm	1
40	1" X 3/4" Reducer	--	1
41	3/4" Swing Check Valve	--	1
42	1-1/4" X 10"	254 mm	1
43	1-1/4" X 3", Grooved	89 mm	1
44	1-1/4" X 1-1/4" X 3/4" Tee	--	1
45	Hose Barb, Hex Elbow	--	1
46	Hose Barb, Hex Adapter	--	2

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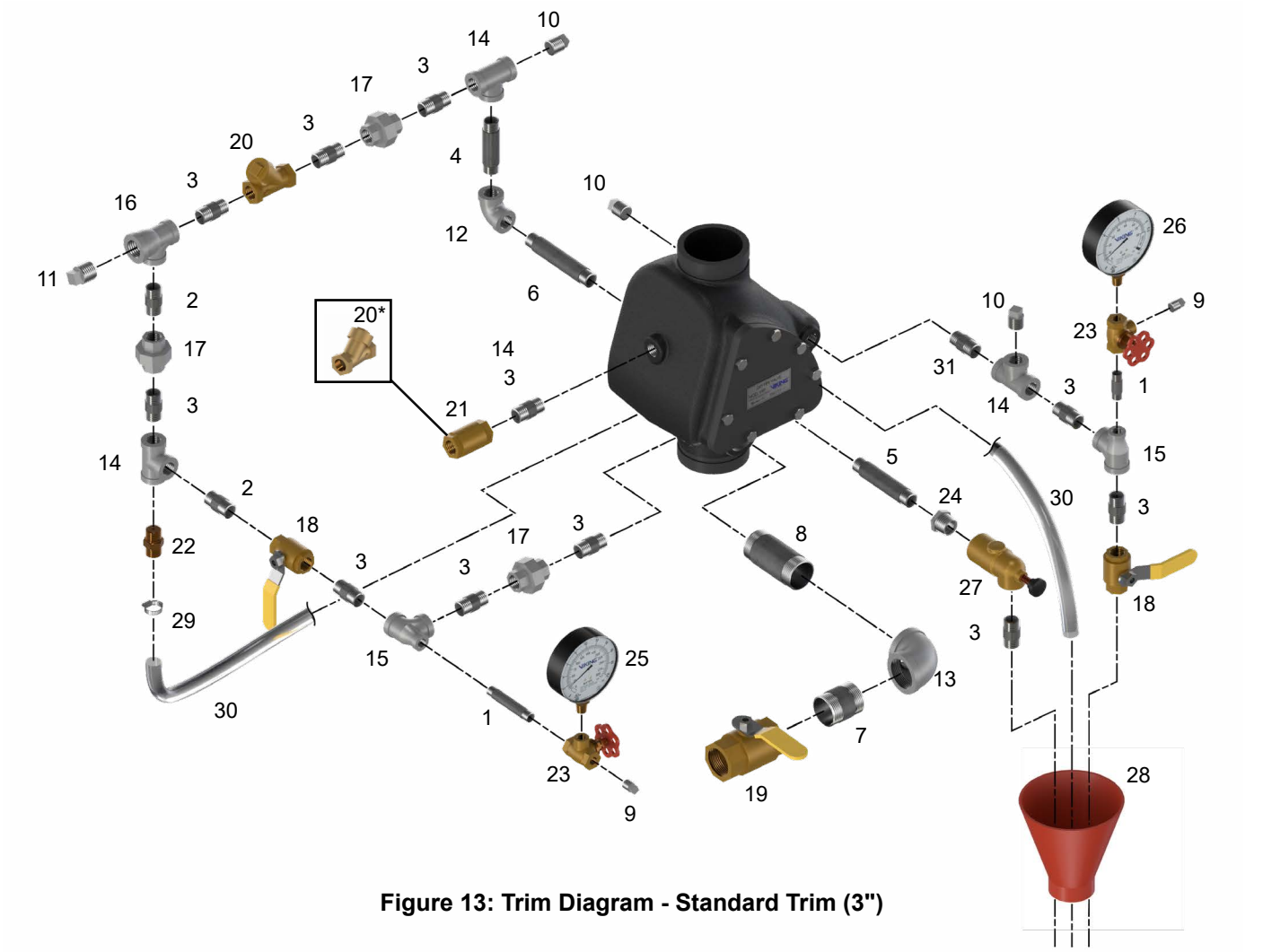


Figure 13: Trim Diagram - Standard Trim (3")

#	Description/Specification	Metric Length	Quantity	
			STD	USA
1	1/4" X 1-1/2"	38 mm	2	2
2	1/2" X Close	--	2	2
3	1/2" X 1-1/2"	38 mm	11	11
4	1/2" X 3"	76 mm	1	1
5	1/2" X 4"	102 mm	1	1
6	1/2" X 4-1/2"	115 mm	1	1
7	1-1/4" X 2"	51 mm	1	1
8	1-1/4" X 3-1/2"	89 mm	1	1
9	1/4" Plug	--	2	2
10	1/2" Plug	--	3	3
11	3/4" Plug	--	1	1
12	1/2" Elbow	--	1	1
13	1-1/4" Elbow	--	1	1
14	1/2" Tee	--	3	3
15	1/2" X 1/4" X 1/2" Tee	--	2	2
16	1/2" X 3/4" X 1/2" Tee	--	1	1

#	Description/Specification	Metric Length	Quantity	
			STD	USA
17	1/2" Union	--	3	3
18	1/2" Ball Valve	--	2	2
19	1-1/4" Ball Valve	--	1	1
20	1/2" Swing Check Valve	--	1	2
21	1/2" Inline Check Valve	--	1	0
22	1/8" Restricted Orifice	--	1	1
23	1/4" Side Outlet Valve	--	2	2
24	3/4" X 1/2" Reducer	--	1	1
25	Water Pressure Gauge	--	1	1
26	Air Pressure Gauge	--	1	1
27	Drip Check Valve (Mod.D-3)	--	1	1
28	Drain Cup	--	1	1
29	Drain Hose Clamp	--	1	1
30	Drain Hose	--	1	1
31	1/2" X 2"	51 mm	1	1
*Alternate check valve used in 24100-1USA.				

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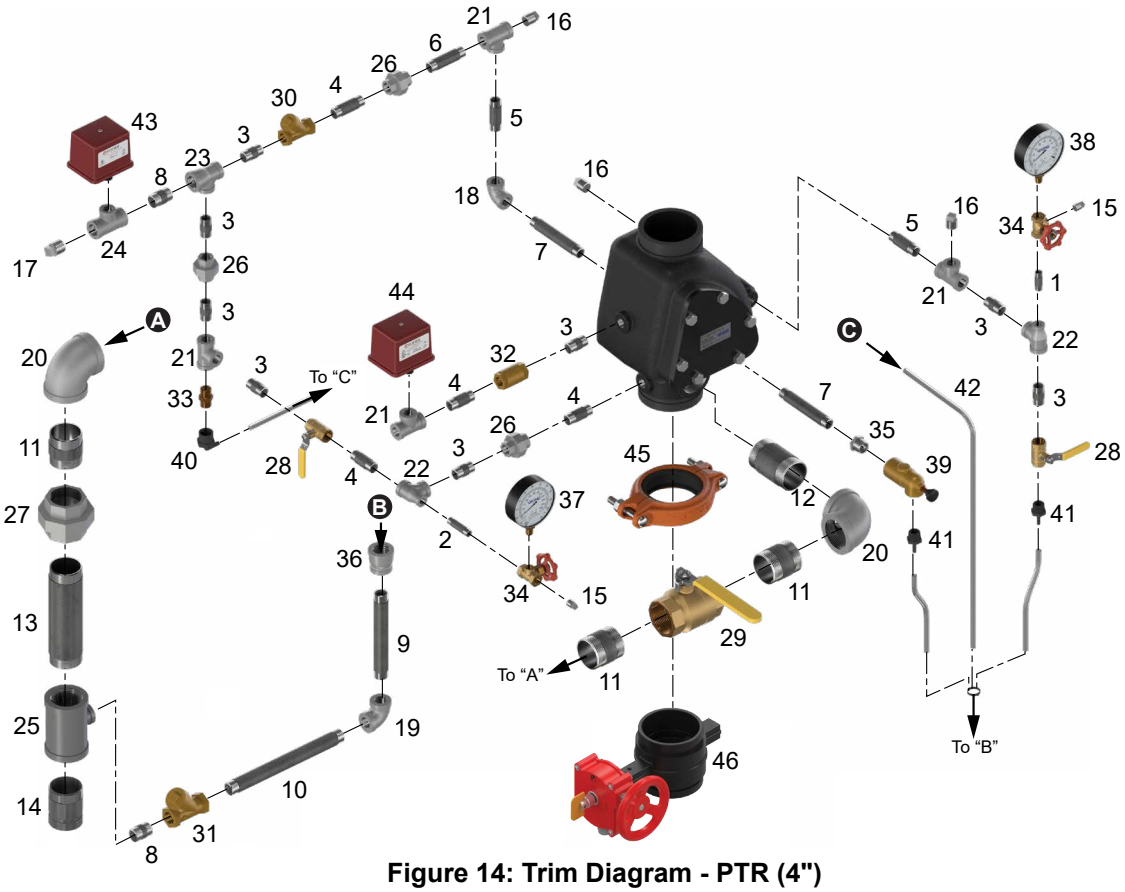


Figure 14: Trim Diagram - PTR (4")

#	Description/Specification	Metric Length	Quantity
1	1/4" X 1-1/2"	38 mm	1
2	1/4" X 2"	51 mm	1
3	1/2" X 1-1/2"	38 mm	8
4	1/2" X 2"	51 mm	4
5	1/2" X 2-1/2"	76 mm	2
6	1/2" X 3"	102 mm	1
7	1/2" X 5"	115 mm	2
8	3/4" X 1-1/2"	38 mm	2
9	3/4" X 7"	178 mm	1
10	3/4" X 10-1/2"	267 mm	1
11	2" X 2-1/2"	51 mm	3
12	2" X 4"	89 mm	1
13	2" X 8"	203 mm	1
14	2" X 3" Grooved	76 mm	1
15	1/4" Plug	--	2
16	1/2" Plug	--	3
17	3/4" Plug	--	1
18	1/2" Elbow	--	1
19	3/4" Elbow	--	1
20	2" Elbow	--	2
21	1/2" Tee	--	3
22	1/2" X 1/4" X 1/2" Tee	--	2
23	1/2" X 3/4" X 1/2" Tee	--	1

#	Description/Specification	Metric Length	Quantity
24	3/4" X 3/4" X 1/2" Tee	--	1
25	2" X 2" X 3/4" Tee	--	1
26	1/2" Union	--	3
27	2" Union	--	1
28	1/2" Ball Valve	--	2
29	2" Ball Valve	--	1
30	1/2" Swing Check Valve	--	1
31	3/4" Swing Check Valve	--	1
32	1/2" Inline Check Valve	--	1
33	1/8" Restricted Orifice	--	1
34	1/4" Side Outlet Valve	--	2
35	3/4" X 1/2" Reducer	--	1
36	1" X 3/4" Reducer	--	1
37	Water Pressure Gauge	--	1
38	Air Pressure Gauge	--	1
39	Drip Check Valve (Mod.D-3)	--	1
40	Hose Barb, Hex Elbow	--	1
41	Hose Barb, Hex Adapter	--	2
42	Drain Hose	--	1
43	PS-10 Water Flow Switch	--	1
44	PS-40 High/Low Air Switch	--	1
45	4" Grooved Coupling	--	1
46	4" Butterfly Valve (02G)	--	1

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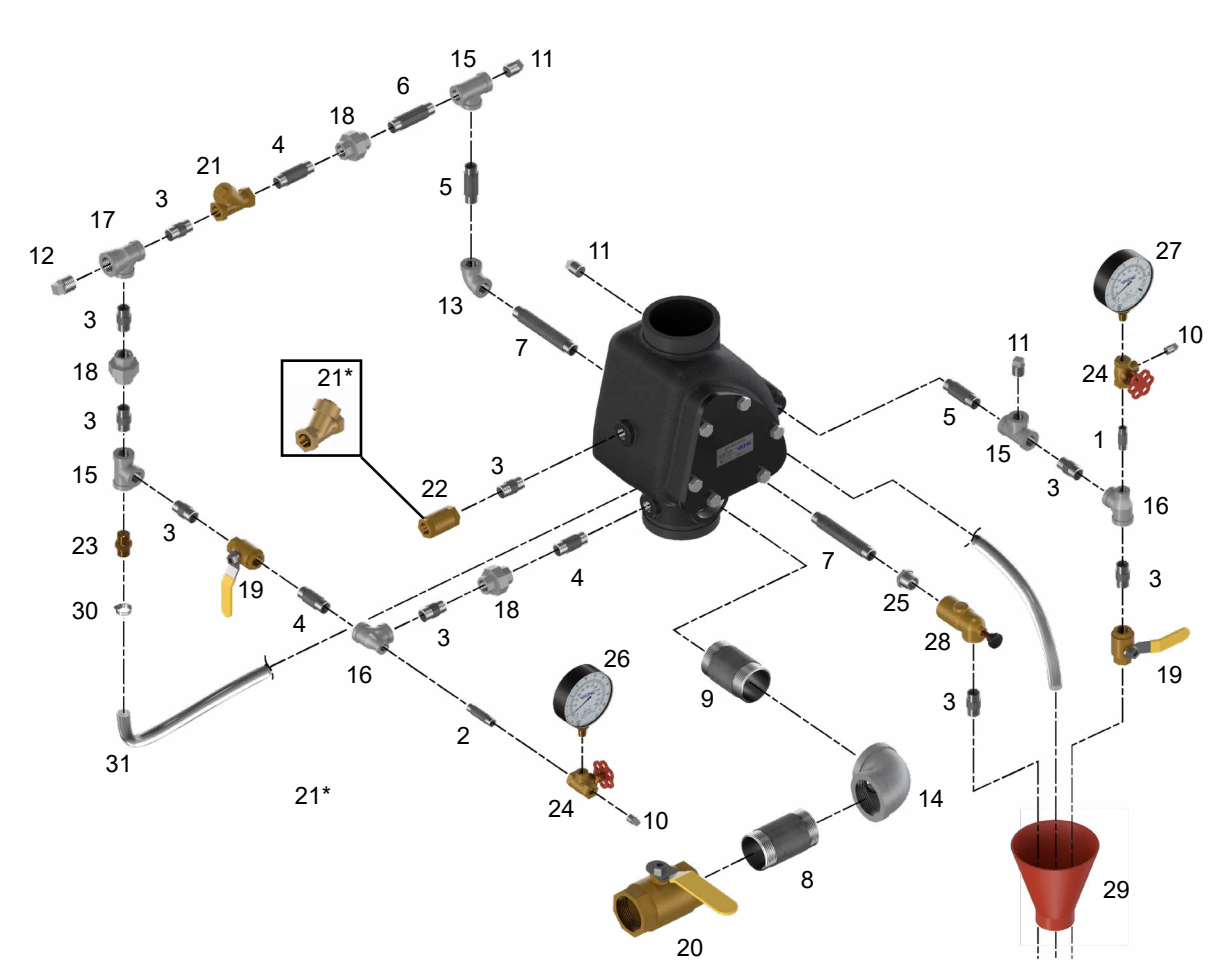


Figure 15: Trim Diagram - Standard Trim (4")

#	Description/Specification	Metric Length	Quantity	
			STD	USA
1	1/4" X 1-1/2"	38 mm	1	1
2	1/4" X 2"	51 mm	1	1
3	1/2" X 1-1/2"	38 mm	9	9
4	1/2" X 2"	51 mm	3	3
5	1/2" X 2-1/2"	76 mm	2	2
6	1/2" X 3"	102 mm	1	1
7	1/2" X 5"	115 mm	2	2
8	2" X 2-1/2"	51 mm	1	1
9	2" X 4"	89 mm	1	1
10	1/4" Plug	--	2	2
11	1/2" Plug	--	3	3
12	3/4" Plug	--	1	1
13	1/2" Elbow	--	1	1
14	2" Elbow	--	1	1
15	1/2" Tee	--	3	3
16	1/2" X 1/4" X 1/2" tee	--	2	2

#	Description/Specification	Metric Length	Quantity	
			STD	USA
17	1/2" X 3/4" X 1/2" Tee	--	1	1
18	1/2" Union	--	3	3
19	1/2" Ball Valve	--	2	2
20	2" Ball Valve	--	1	1
21	1/2" Swing Check Valve	--	1	2
22	1/2" Inline Check Valve	--	1	0
23	1/8" Restricted Orifice	--	1	1
24	1/4" Side Outlet Valve	--	2	2
25	3/4" X 1/2" Reducer	--	1	1
26	Water Pressure Gauge	--	1	1
27	Air Pressure Gauge	--	1	1
28	Drip Check Valve (Mod.D-3)	--	1	1
29	Drain Cup	--	1	1
30	Drain Hose Clamp	--	1	1
31	Drain Hose	--	1	1
*Alternate check valve used in 24107-1USA.				

TECHNICAL DATA

MODEL VXR DRY SYSTEM RISERS

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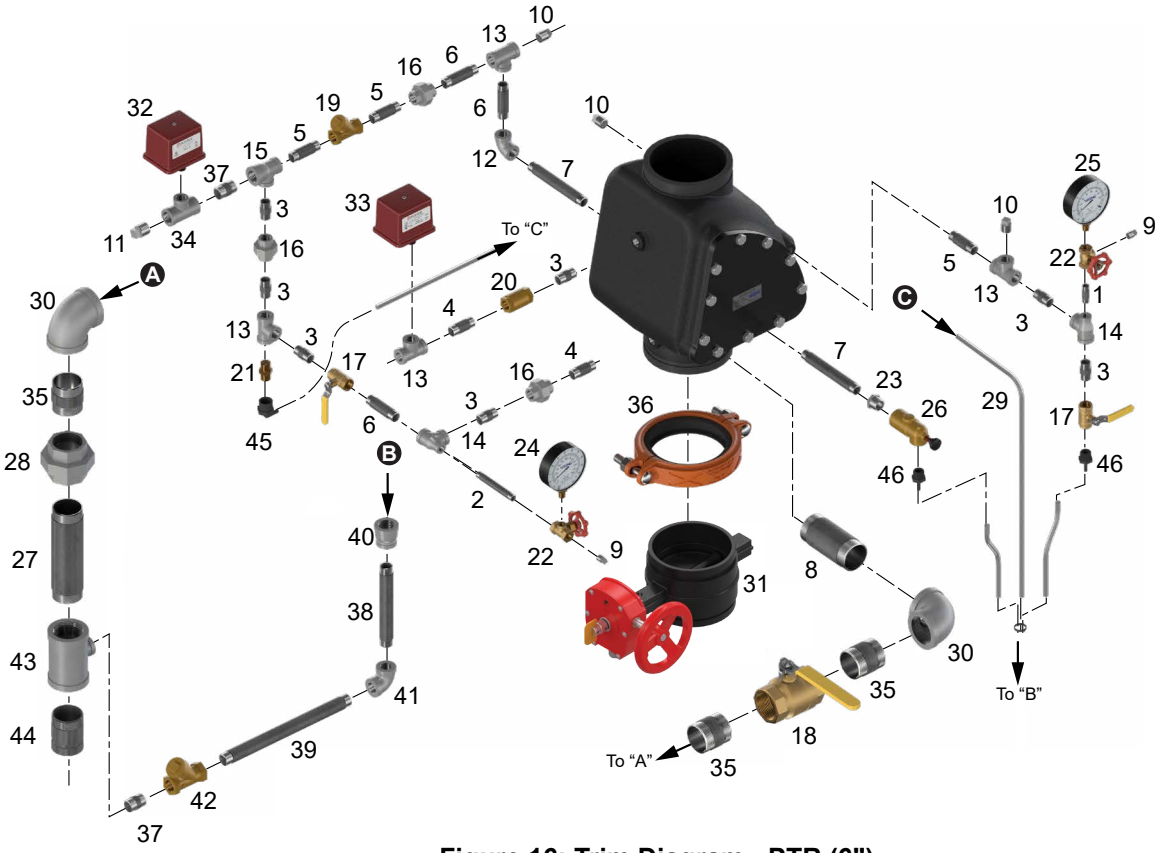


Figure 16: Trim Diagram - PTR (6")

#	Description/Specification	Metric Length	Quantity
1	1/4" X 1-1/2"	38 mm	1
2	1/4" X 3-1/2"	89 mm	1
3	1/2" X 1-1/2"	38 mm	7
4	1/2" X 2"	51 mm	2
5	1/2" X 2-1/2"	64 mm	3
6	1/2" X 3"	76 mm	3
7	1/2" X 6"	153 mm	2
8	2" X 4-1/2"	114 mm	1
9	1/4" Plug	--	2
10	1/2" Plug	--	3
11	3/4" Plug	--	1
12	1/2" Elbow	--	1
13	1/2" Tee	--	4
14	1/2" X 1/4" X 1/2" Tee	--	2
15	1/2" X 3/4" X 1/2" Tee	--	1
16	1/2" Union	--	3
17	1/2" Ball Valve	--	2
18	2" Ball Valve	--	1
19	1/2" Swing Check Valve	--	1
20	1/2" Inline Check Valve	--	1
21	1/8" Restricted Orifice	--	1
22	1/4" Side Outlet Valve	--	2
23	3/4" X 1/2" Reducer	--	1

#	Description/Specification	Metric Length	Quantity
24	Water Pressure Gauge	--	1
25	Air Pressure Gauge	--	1
26	Drip Check Valve (Mod.D-3)	--	1
27	2" X 8"	203 mm	1
28	2" Union	--	1
29	Drain Hose	--	1
30	2" Elbow	--	2
31	6" Butterfly Valve (02G)	--	1
32	PS-10 Water Flow Switch	--	1
33	PS-40 High/Low Air Switch	--	1
34	3/4" X 1/2" X 3/4" tee	--	1
35	2" X 2-1/2"	64 mm	3
36	6" Grooved Coupling	--	1
37	3/4" X 1-1/2"	38 mm	2
38	3/4" X 7"	178 mm	1
39	3/4" X 12"	305 mm	1
40	1" X 3/4" Reducer	--	1
41	3/4" Elbow	--	1
42	3/4" Swing Check Valve	--	1
43	2" X 2" X 3/4" Tee	--	1
44	2" X 3"	76 mm	1
45	Hose Barb, Hex Elbow	--	1
46	Hose barb, Hex Adapter	--	2

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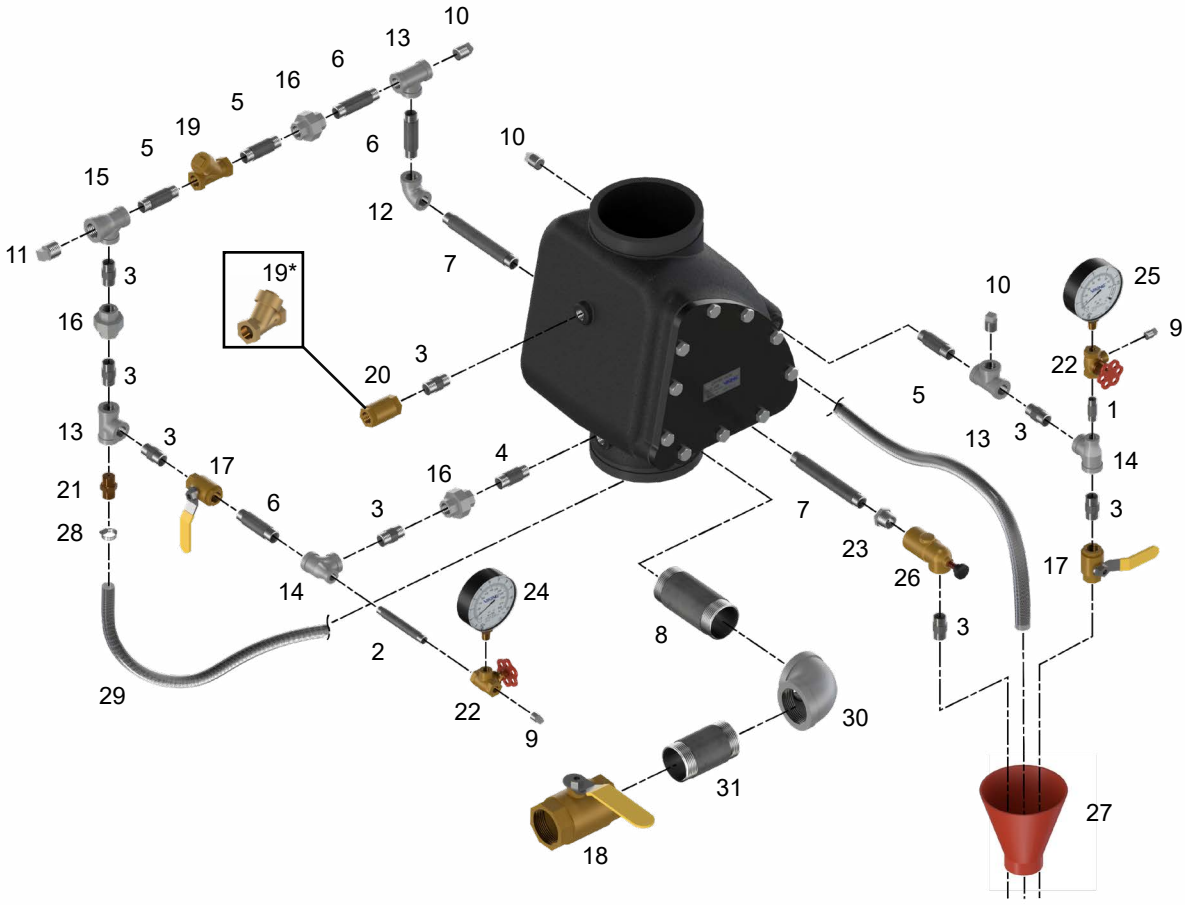


Figure 17: Trim Diagram - Standard Trim (6")

#	Description/Specification	Metric Length	Quantity	
			STD	USA
1	1/4" X 1-1/2"	38 mm	1	1
2	1/4" X 3-1/2"	89 mm	1	1
3	1/2" X 1-1/2"	38 mm	8	8
4	1/2" X 2"	51 mm	1	1
5	1/2" X 2-1/2"	64 mm	3	3
6	1/2" X 3"	76 mm	3	3
7	1/2" X 6"	153 mm	2	2
8	2" X 4-1/2"	114 mm	1	1
9	1/4" Plug	--	2	2
10	1/2" Plug	--	3	3
11	3/4" Plug	--	1	1
12	1/2" Elbow	--	1	1
13	1/2" Tee	--	3	3
14	1/2" X 1/4" X 1/2" Tee	--	2	2
15	1/2" X 3/4" X 1/2" Tee	--	1	1
16	1/2" Union	--	3	3

#	Description/Specification	Metric Length	Quantity	
			STD	USA
17	1/2" Ball Valve	--	2	2
18	2" Ball Valve	--	1	1
19	1/2" Swing Check Valve	--	1	2
20	1/2" Inline Check Valve	--	1	0
21	1/8" Restricted Orifice	--	1	1
22	1/4" Side Outlet Valve	--	2	2
23	3/4" X 1/2" Reducer	--	1	1
24	Water Pressure Gauge	--	1	1
25	Air Pressure Gauge	--	1	1
26	Drip Check Valve (Mod.D-3)	--	1	1
27	Drain Cup	--	1	1
28	Drain Hose Clamp	--	1	1
29	Drain Hose	--	1	1
30	2" Elbow	--	1	1
31	2" X 2-1/2"	64 mm	1	1
*Alternate check valve used in 24110-1USA.				

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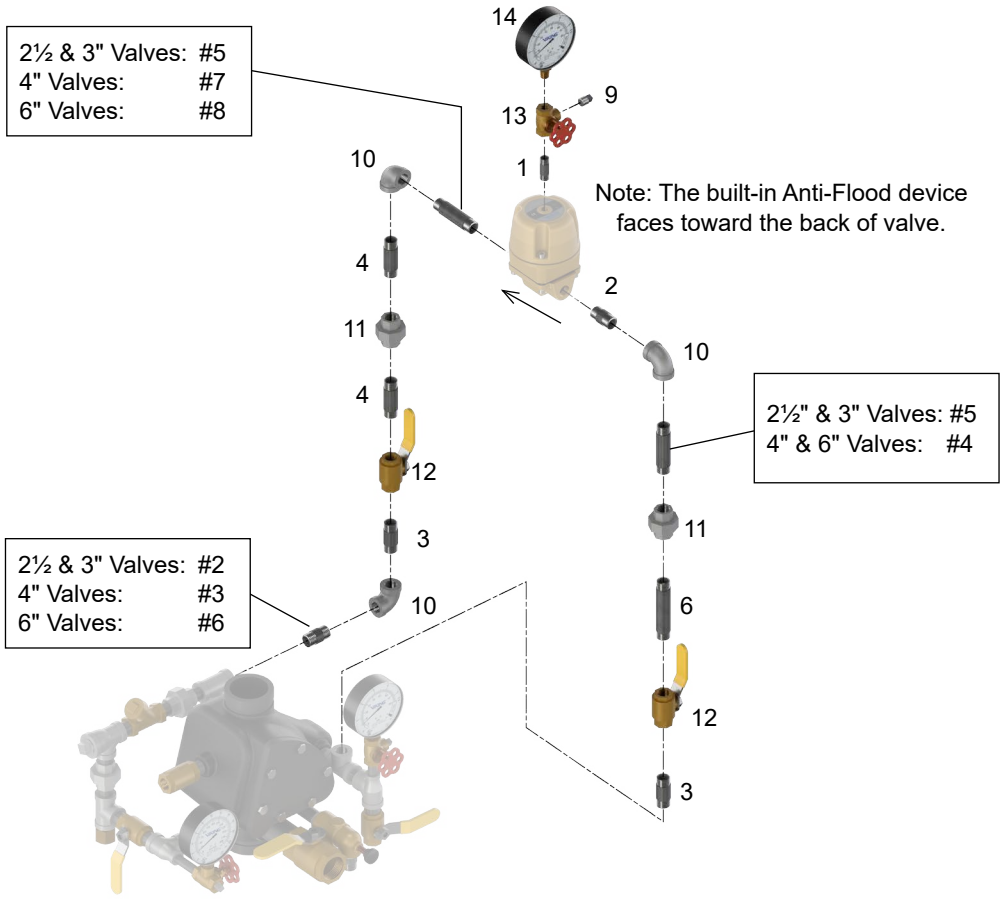


Figure 18: Accelerator (Model D-2) Trim Diagram - 2½" Shown

#	Description/Specification	Metric Length	Quantity
1	1/4" X 1-1/2"	38 mm	1
2	1/2" X 1-1/2"	38 mm	1
3	1/2" X 2"	51 mm	2
4	1/2" X 2-1/2"	64 mm	2
5	1/2" X 3"	76 mm	-
6	1/2" X 4"	102 mm	1
7	1/2" X 4-1/2"	114 mm	-
8	1/2" X 5-1/2"	140 mm	-
9	1/4" Plug	--	1
10	1/2" Elbow	--	3
11	1/2" Union	--	2
12	1/2" Ball Valve (normally open)	--	2
13	1/4" Side Outlet Valve	--	1
14	Air Pressure Gauge	--	1
* Not all items listed are used on each size trim. See notes on image.			