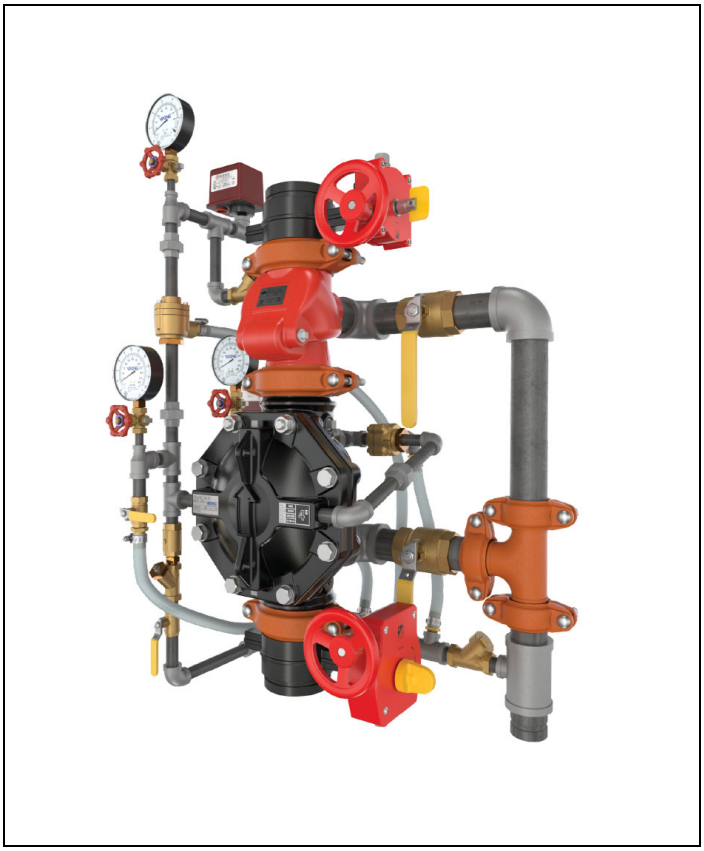
VIKING®	TECHNICAL DATA SHEET	Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly

1. PRODUCT IDENTIFICATION

This document covers the following product(s), hereafter referred to as “Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly”:

Viking Data Center Upgradeable System



2. DESCRIPTION AND INTENDED USE

The Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly utilizes a Viking Model VXD Deluge valve and trim as a dry pipe system. The trim includes the A-1 Differential Valve (with a differential design of approximately 6:1) to control the water supply to the sprinkler system piping that is equipped with closed sprinklers. The system piping is pressurized with compressed air or nitrogen. A riser check valve is included to isolate the system air pressure from the outlet chamber of the deluge valve.

The Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly is intended to be used as a dry pipe system that can be easily converted to a preaction system. The Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly must be used in accordance with:

1. the Listings, Approvals, and associated design requirements.
2. the recognized design and installation standards issued, for example by NFPA.

⚠ WARNING

Installing or servicing fire protection products such as sprinklers, valves, piping, etc. can expose you to chemicals including carbon black, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

cULus Listed: EX.776

NOTE: When shipped, the nameplate on the Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly trim, near the A-1 Differential Valve, supersedes the product identity and control number identified on Viking data plate located on the Model VXD valve.

4. TECHNICAL SPECIFICATIONS

Refer to the technical data for the components or systems used.

5. INSTALLING THE DRY SYSTEM

5.1 Requirements

- For proper operation and approval, the valve must be trimmed in accordance with Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly Trim Charts in this document.
- The Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly must be installed in the vertical position as shown below.
- 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.
- 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 VXD Data Center Upgradeable Pre-Trimmed Riser Assembly and associated equipment.
- Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present.

5.2 Air/nitrogen Supply Installation

- Install the required air/nitrogen supply, using the properly sized compressor, producing the required cubic feet per minute in accordance with "Recommended Air/Nitrogen Pressure Settings" The air/nitrogen supply to the **Dry System** must be clean, dry, and oil free.
- 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.

Table 1 : Recommended 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	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

5.3 Installing the Conversion Kits

⚠ WARNING

Risk of death or serious injury. 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.

NOTE: All conversion kits arrive loosely assembled and require some disassembly/assembly. To ensure leak-tight connections, use appropriate pipe sealants. For kits that contain a solenoid, this part will be packaged separately and must be installed per the manufacturer's instructions and as shown in this document.

1. Loosen and separate the unions above and below the A-1 Differential valve.
2. Loosen the clamp and remove the plastic hose from the drain manifold piping.
3. Remove the A-1 Differential along with the attached pipe nipples, fittings, and plastic hose.
4. Remove the remaining pieces of the union.

NOTICE

Verify the Dry Release System nameplate has been removed.

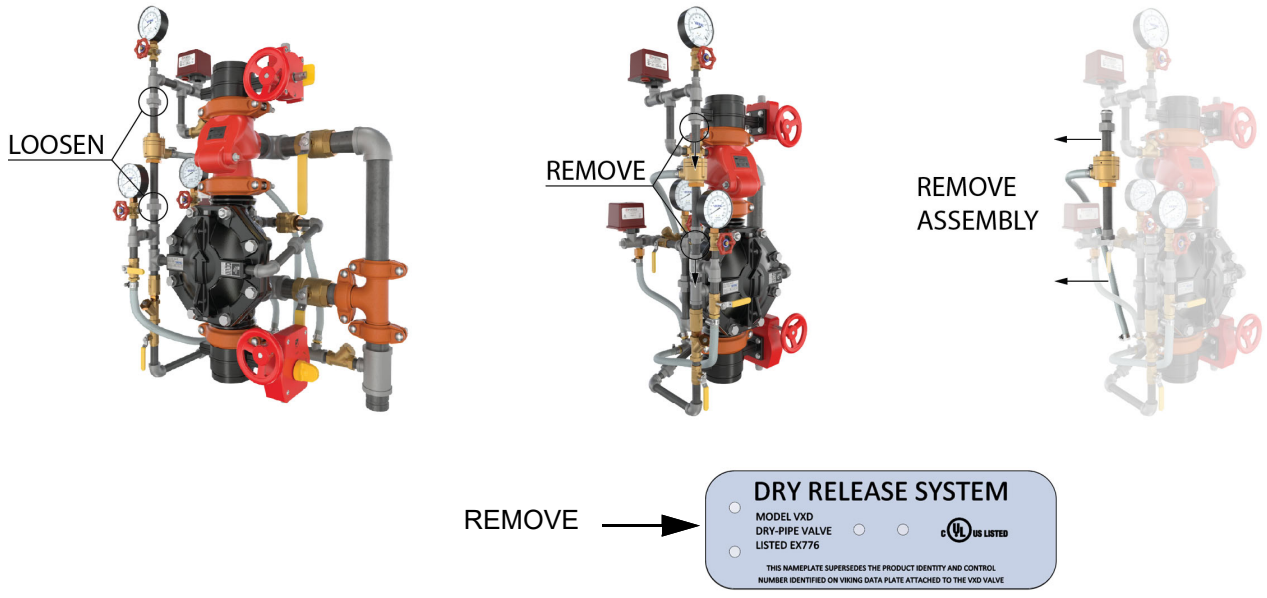


Figure – 1: Removing the A-1 Differential Valve

5. If converting to Single Interlock or Double Interlock with Electric/PneuLectric Release, remove the gauge, globe valve, two nipples, reducing tee, and the union.

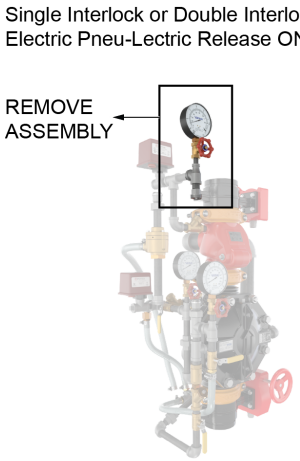
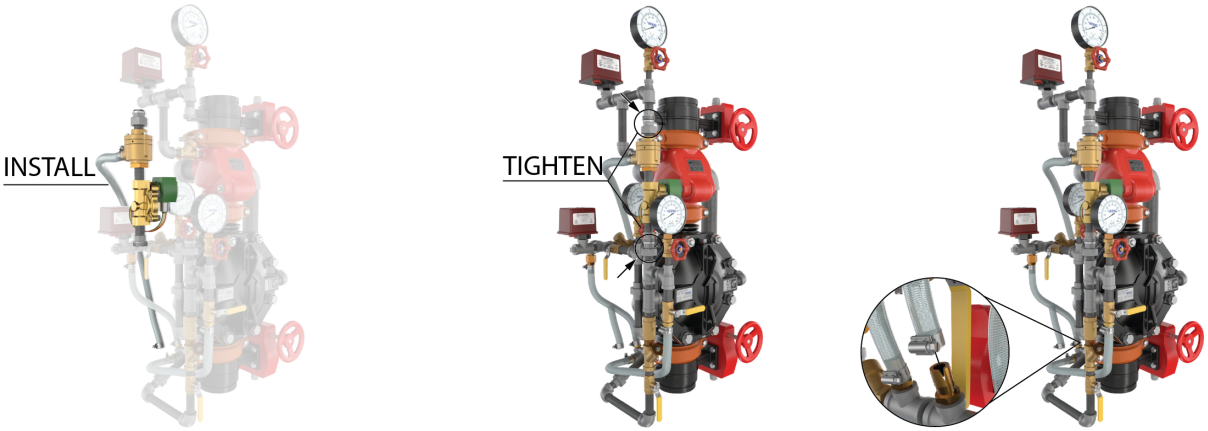


Figure – 2: Removing Gauge (for Single Interlock Conversion Kit Only)

6. Install the desired conversion kit by removing the unions and installing the applicable components as shown in Figure 3.
   - For Single Interlock or Double Interlock with Electric/PneuLectric release, install the gauge and associated trim as shown.
7. Connect the drain hose to the drain manifold and tighten the clamp.

Double Interlock with Electric/Pneumatic Release



Single Interlock with Electric Release or Double Interlock with Electric/PneuLectric Release

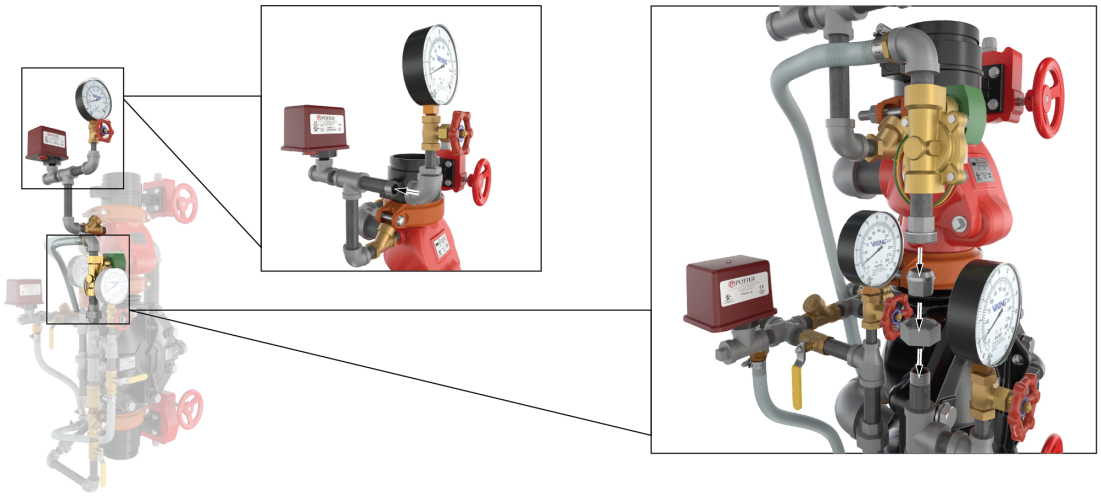


Figure – 3: Installing a Conversion Kit

8. After installing the conversion kit, complete all required testing and verification of system operation according to the type of system being installed. Refer to the technical data sheet for the system type to be used.

NOTICE

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

6. OPERATION

6.1 In the SET condition (Refer to Figure 3):

When air pressure is introduced into the sprinkler piping, the sensing end of the differential valve is pressurized. This pressurization closes the differential valve, preventing the prime water from escaping the prime chamber of the deluge valve. When prime water enters the priming chamber of the deluge valve through the priming line (which includes a normally open priming valve (A), strainer (B), restricted orifice (not shown), check valve (C) and PORV (D)), the diaphragm is forced to close. In the SET condition, water supply pressure is trapped in the priming chamber by check valve (C), A-1 differential valve (E), and the emergency release (F). The pressure in the priming chamber holds the Deluge Valve diaphragm closed, keeping the outlet chamber and system piping dry.

6.2 Loss of Air Pressure (Refer to Figure 3):

When a sprinkler operates or air pressure is lost, the sensing end of the A-1 differential valve (E) loses pressure and it opens. Prime water is drained from the prime chamber, causing the deluge valve diaphragm to open, filling the system piping with water. Additionally, when the deluge valve opens, priming water is drained from the P.O.R.V. (D) inlet. When the 10:1 differential is overcome, the push rod opens, preventing the deluge valve from resetting.

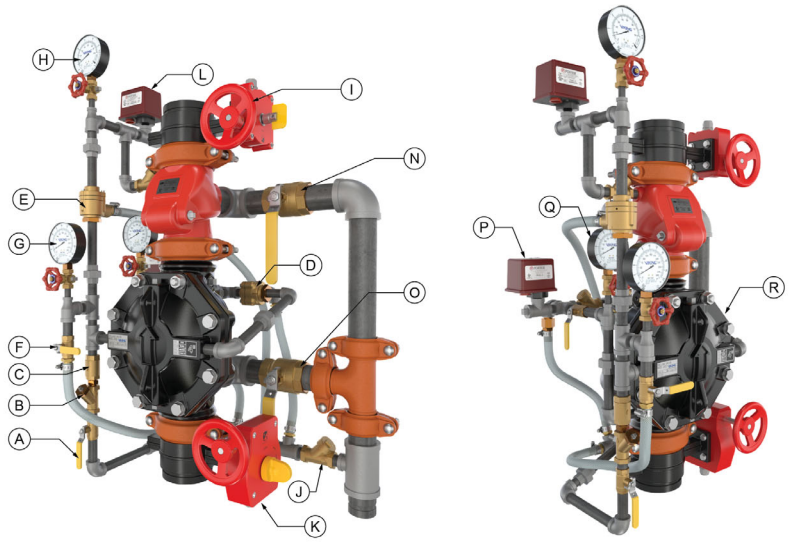


Figure – 4: Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly PreTrimmed Riser (PTR) System Components (4" Version shown)

Table 2 : Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly Components

Reference	Description	Reference	Description
A	Priming line supply valve (normally open)	J	Swing check valve
B	Strainer	K	Water supply control butterfly valve
C	In-line check valve	L	Air pressure switch (PS-40)
D	Pressure Operated Relief Valve (P.O.R.V.)	M	Conversion unions (connection points)
E	A-1 Differential Valve	N	Main drain valve
F	Emergency release valve (normally closed)	O	Flow test valve
G	Prime water pressure gauge	P	Water pressure switch (PS-10)
H	Air pressure gauge (supply)	Q	Water supply pressure gauge
I	Optional isolation valve (normally open)	R	Model VXD Deluge Valve

6.3 A-1 Differential Valve

The differential design of the differential valve allows an air supply of moderate pressure to control a higher water supply pressure. When the air pressure in the dry pipe system is reduced sufficiently upon the differential valve due to a sprinkler head operation to destroy the pressure differential, the differential valve will open and relieve the priming pressure from the internal diaphragm assembly. The internal diaphragm assembly will compress, which will allow water to pass through the body of the valve and center of the internal check valve, entering the sprinkler system piping.

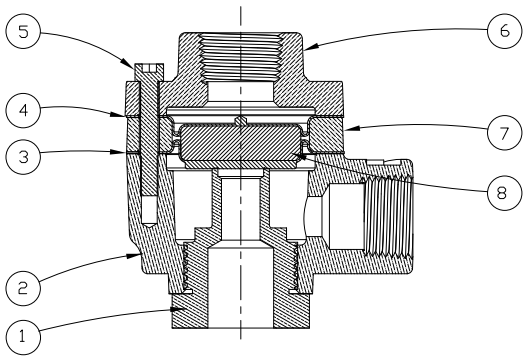


Figure – 5

Table 3 : Model A-1 Differential Valve Replacement Parts

Ref.	Part Number	Description	Material	Quantity
1	15459	Seat	Brass UNS-C36000	1
2	Not available	Body	Brass UNS-C84400	1
3	14948	Diaphragm	Polyester Fabric and EPDM Elastomer	1
4	04735A	Upper Diaphragm	Bellofram	1
5	12470	Screw, #10-24 x 1-1/4” Long	Steel, Zinc Coated	3
6	Not available	Cover	Brass UNS-C84400	1
7	Not available	Spacer	Brass UNS-C84400	1
8	04736A	Piston	Polycarbonate	1
Replacement Valve and Maintenance Kit				
1-8	15461	Replacement Model A-1 Differential Valve		
3-5, 8	15769	Maintenance Kit		

7. ORDERING PROCEDURE

7.1 Ordering Information

Order a Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly using the part numbers below. For conversion kits, refer to Table 5 :Ordering Information - Conversion Kits

Figure – 6: Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly Riser (4" shown)

Table 4 : Ordering Information - Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly

Nominal Size	PreTrimmed Dry System Risers		Description
	Without Isolation Butterfly Valve[1]	Including Isolation Butterfly Valve[1]	
1.5"	27960	28384	The Model VXD Data Center Upgradeable Pre-Trimmed Riser Assembly include all items shown in Figure 4 with variances in the layouts based on nominal size. The A-1 Differential valve is isolated by unions which allow conversion kits to be installed. See Table 5 :Ordering Information - Conversion Kits
2"	27961	28385	
2.5"	27962	28386	
3"	27963	28387	
4"	27964	28388	
6"	27965	28389	
8"	27966	28390	
1. The isolation butterfly valve is optional.			

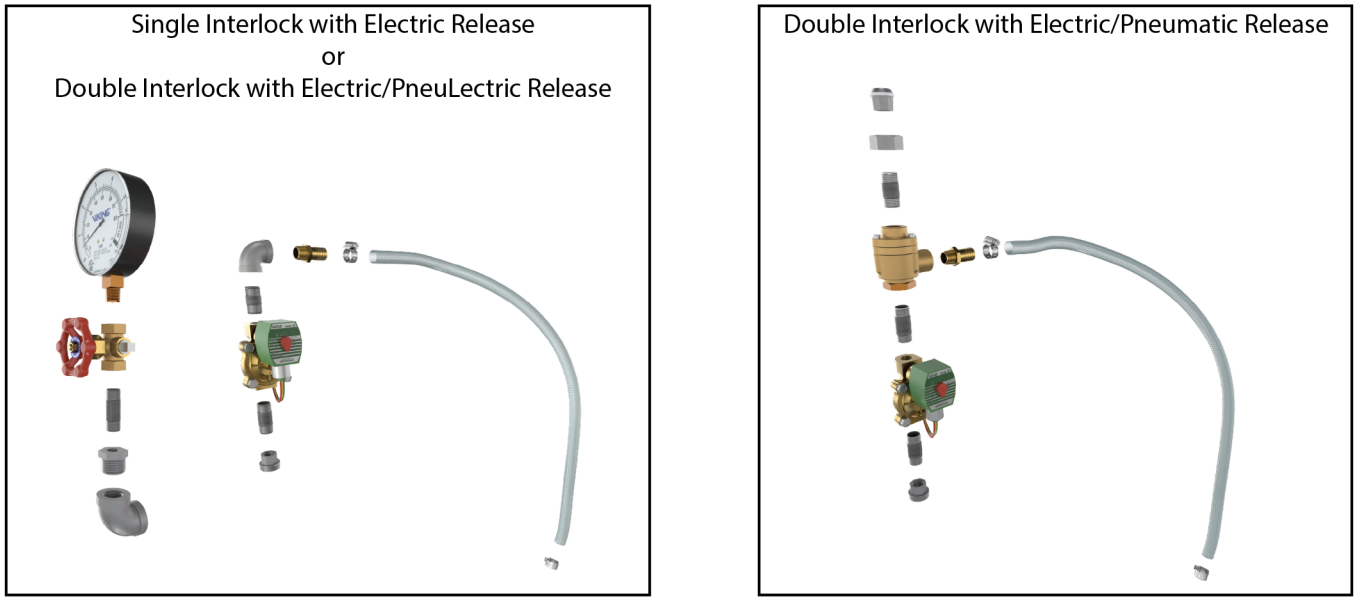


Figure – 7: Conversion Kits

Table 5 : Ordering Information - Conversion Kits

Nominal Size	Conversion Kit Part Numbers		Description
	Single Interlock with Electric Release OR Double Interlock with Electric Pneu-Lectric Release	Double Interlock with Electric/Pneumatic Release	
1.5"	27946	27951	The conversion kits include all the necessary components to upgrade the system as indicated by the kit type. The kits come partially assembled and require some dissassembly/assembly to install. Refer to “Installing the Conversion Kits”
2"			
2.5"	27947	27952	
3"		27953	
4"		27954	
6"			
8"			

8. CONTACT

The Viking Data Center Upgradeable System and Conversion Kits are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

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