TECHNICAL DATA

ANTI-FLOOD DEVICE MODEL B-2
(VdS systems Only)

1. PRODUCT NAME

VIKING MODEL B-2 ANTI-FLOOD DEVICE

Viking Part No. 09391

Available since 1997

2. MANUFACTURER

THE VIKING CORPORATION
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3. PRODUCT DESCRIPTION

An external anti-flood device is required when Viking Model E-1 Accelerators are installed on dry systems according to Viking Model E-1 Accelerator Trim Charts. The Model B-2 Anti-flood Device is for use on Verband der Sachversicherer (VdS) approved trim only. The dry system air supply must be connected as shown on the trim chart for the model dry valve used.

In the SET condition, the Model B-2 Anti-flood Device is designed to prevent system pneumatic pressure from entering the intermediate chamber of the dry valve.

In fire conditions, when the Model E-1 Accelerator operates, the anti-flood device opens to allow system pneumatic pressure to pass directly into the intermediate chamber of the dry valve, causing it to open. After the dry valve has opened, flooding the system with water, the anti-flood device prevents water from entering the Model E-1 Accelerator where it could foul and plug the restricted orifices.

4. TECHNICAL DATA

Viking technical data may be found on The Viking Corporation's Web site at http://www.vikingcorp.com
The Web site may include a more recent edition of this technical data page.

LISTINGS AND APPROVALS

VdS Approved only, for use with the Viking Model E-1 Accelerator. (G4960044, G4960045, G4960046, G4960047)

Factory Tested Working Water Pressure: 175 psi (1 205 kPa)

Shipping Weight: Anti-flood device only: 3 lb. (1,4 kg)

Material Specifications: Refer to Figure 1 on page 124 d.

5. FEATURES

A. Designed for external installation.

B. Prevents system water from entering and contaminating Model E-1 Accelerator.

6. AVAILABILITY & SERVICE

The Viking Model B-2 Anti-flood Device is available through a network of domestic, Canadian, and international distributors. See the Yellow Pages of the telephone directory for a local distributor (listed under "Sprinklers-Automatic- Fire") or contact The Viking Corporation.

7. GUARANTEES

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

8. OPERATION

(Refer to Figure 1 on page 124 d.)

In the SET position, system pressure maintained in the air priming chamber of the anti-flood device, along with pressure provided by spring (10), forces rolling diaphragm (4-5) and piston (9) assembly closed against inlet seat (1).

When the Model E-1 Accelerator operates, relieving pressure from the air priming chamber, pneumatic pressure in the system inlet chamber forces rolling diaphragm piston (9) off seat (1). Dry system pneumatic pressure passes from the "system inlet" of the anti-flood device, through the "outlet", to the intermediate chamber of the dry valve, causing the dry valve to open. Diaphragms (4) and (5) of the anti-flood device, prevent water in the dry valve trim from passing through the Anti-Flood Device and entering the Model E-1 Accelerator.

The following instructions are for use when the Model B-2 Anti-flood Device and a Viking Model E-1 Accelerator are installed according to the VdS Approved Model E-1 Accelerator Trim Chart for the model of dry valve used.

When using the Viking Model E-1 Accelerator, follow INSTALLATION, PLACING IN SERVICE and TESTING & MAINTENANCE instructions provided on the Technical Data provided with the Model E-1 Accelerator to avoid duplication.

9. INSTALLATION

Install the Model B-2 Anti-flood Device in the dry valve trim according to the VdS Approved Model E-1 Accelerator Trim Chart for the model of dry valve used. The external Model B-2 Anti-flood Device is required when the Model E-1 Accelerator is installed on a dry valve with VdS Approved trim.

Air supply should be from an automatic, regulated and restricted source supplied with clean, dry, oil-free air (or nitrogen).

When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the B-2 Anti-flood Device and associated equipment.

The Model B-2 Anti-flood Device must be installed where shown on the trim chart used.

1. Verify that the VdS Approved Model E-1 Accelerator Trim Chart available is for the model of dry valve used.
2. Remove all plastic thread protectors from the openings of the anti-flood device.
3. Apply a small amount of pipe-joint compound or tape to the external threads of all pipe connections required. Take care not to allow any compound, tape, or other foreign matter inside any of the nipples or openings of the anti-flood device.
4. Install the necessary fittings and/or nipples to connect the "system inlet" of the anti-flood device to the ½" (15 mm) NPT opening in the outlet chamber of the dry valve. Refer to VdS Approved trim chart.
5. Install the fittings, nipples, ½" (15 mm) NPT swing check valve, and union required to connect the anti-flood device "outlet" to the opening provided in the trim piping connected to the intermediate chamber of the dry valve. Refer to VdS Approved trim chart.
6. Connect the ½" (15 mm) NPT inlet of the anti-flood device air priming chamber to the air supply piping supplying air or nitrogen to the Model E-1 Accelerator. Refer to VdS Approved trim chart.

10. PLACING THE ANTI-FLOOD DEVICE IN SERVICE

Refer to the VdS Approved Model E-1 Accelerator Trim Chart and Technical Data for the Model E-1 Accelerator and dry valve used for additional procedures for placing the system in service.

When the dry pipe system is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

1. With the water supply main control valve CLOSED, drain all water from the dry pipe system. If the system has operated, open all auxiliary drains and the system test valve. Allow enough time to completely drain the system.
2. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when

the plunger is pushed.

3. Reset the dry valve. (See technical data for the dry valve used.)
4. Close all auxiliary drains, the system test valve, and the priming water level test valve in the dry valve trim.
5. Observe the air pressure gauge on top of the Model E-1 Accelerator. The gauge must read zero before the Model E-1 Accelerator will automatically reset. It may be necessary to loosen, remove and re-install the Model E-1 Accelerator air gauge (use the appropriate wrench) to vent trapped air pressure from the upper chamber (even when the gauge indicates zero, if the air supply is on while performing this step).
6. Pressurize the system in accordance with recommended settings. See technical data for the dry system used. Do not exceed 60 psi (414 kPa).
7. When the air pressure on the Model E-1 Accelerator air gauge equals the system set pressure, perform PRIMING WATER LEVEL TEST described in paragraph 11-B.1 to verify that water is not present above the priming level test valve in the dry valve trim.

If the presence of water is detected, the system may not have been properly drained. To verify that the system has been properly drained, repeat steps 1 through 8 above as required.

Note: This step is required any time water has entered the sprinkler piping. If no water has been allowed to enter the system since the previous priming water level test, this step may not be required.

8. Open the main drain valve (located on the inlet of the dry valve).
9. Slowly open the water supply main control valve.
10. When flow is developed from the main drain, close the main drain valve.
11. Fully open and secure the water supply main control valve supplying the dry valve.
12. Secure all valves in their normal operating position.
13. Notify Authorities Having Jurisdiction and those in the affected area that the system is in service.

11. INSPECTIONS AND TESTS

Prior to performing any work on the system in which the Model B-2 Anti-flood Device is installed, refer to technical data for the dry valve and equipment used.

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

The Viking Model B-2 Anti-flood Device must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.

It is imperative that the system be inspected and tested on a regular basis. 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 supply to the dry system. For minimum maintenance and inspection requirements, refer to the National Fire Protection Association's pamphlet that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

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.

A. INSPECTION

Weekly inspection is recommended.

1. Check for signs of mechanical damage and/or corrosive activity. Perform maintenance as required or, if necessary, replace the device.
2. Verify that the Model E-1 Accelerator, anti-flood device, and trim are adequately heated and protected to prevent freezing and physical damage.

B. TESTS

I. Priming Water Level, Low-Air Alarm, and Non-flow Model E-1 Accelerator test

For dry valves equipped with an Model E-1 Accelerator and Model B-2 Anti-flood Device installed according to VdS Approved Model E-1 Accelerator Trim Charts.

The Priming Water Level Test is recommended quarterly and each time the system is placed in service after water has entered the system. Also, each time the system is placed in service after water has entered the system, it is good practice to repeat the Priming Water Level Test within one week. Testing is used to verify that the system has been properly drained and that no water is present above the priming level test valve in the dry valve trim after draining the system. Any water columning (accumulation of water above the priming level test valve) can slow or even prevent the dry valve clapper from opening when the dry system operates.

Quarterly testing of low-air alarms is recommended.

Semi-annual testing of Model E-1 Accelerators is recommended. Conduct Non-Flow Test when Partial Flow Test or Full-Flow Test is not required. (See paragraph 11-B.2 for instructions pertaining to Partial Flow Testing and Full- Flow Testing.)

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Close the water supply main control valve supplying the dry valve.
3. Open the main drain valve (located on the inlet of the dry valve).

Note: Performing steps 4 or 5 of this test will cause the Model E-1 Accelerator to operate. A burst of air from the vent in the bottom of the Model E-1 Accelerator will indicate operation of the Model E-1 Accelerator. With the water supply main control valve CLOSED, and the main drain valve OPEN, operation of the Model E-1 Accelerator should not trip the dry valve.

4. Dry Valve Priming Water Level Test:
   a. Verify that the water supply main control valve is closed and the main drain valve is open.
   b. Close the air supply.
   c. Fully open the priming level test valve in the dry valve trim to check for the presence of water. If the presence of water is detected, the system may not have been properly drained. Perform steps 1 through 7 of paragraph 10: "PLACING THE ANTI-FLOOD DEVICE IN SERVICE".
   d. When test is complete (if/when no water is detected), open the air supply and continue to step 6.
5. Low-Air Alarm Test, and Non-Flow Model E-1 Accelerator 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 in the trim of the dry valve to simulate operation of the dry system
      aa. Observe and record the pressure at which the low air alarm operates.
      ab. Observe the vent in the bottom of the Model E-1 Accelerator. A burst of air from the vent in

VIKING®

TECHNICAL DATA

ANTI-FLOOD DEVICE MODEL B-2
(VdS systems Only)

the bottom of the Model E-1 Accelerator indicates that the Model E-1 Accelerator has operated. No water should flow from the vent. A spurt of water from the vent may indicate that the air supply is not being dried adequately or that the spring loaded check valve (located between the Model E-1 Accelerator and the air inlet to the dry valve) is leaking. Make repairs or replace equipment as required.

c. When test is complete, continue to step 6.

6. Close the Priming Level Test Valve. Note: Air will continue to flow from the Model E-1 Accelerator after it has operated until step 7 is performed.
7. Loosen (use the appropriate wrench) and remove the Model E-1 Accelerator air gauge to release pressure from the upper chamber of the Model E-1 Accelerator, allowing it to reset.
8. Re-install (using the appropriate wrench) and tighten the Model E-1 Accelerator air gauge.
9. Allow pressure to be restored to the dry pipe system and Model E-1 Accelerator.
10. When air pressure on the Model E-1 Accelerator air gauge equals the system set pressure, verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
11. When testing is complete, return the system being tested to service. Perform steps 8 through 13 of paragraph 10: "PLACING THE ANTI-FLOOD DEVICE IN SERVICE".

II. Flow Testing on Dry Valves for dry valves equipped with a Model E-1 Accelerator and a Model B-2 Anti-flood Device installed according to VdS Approved Model E-1 Accelerator Trim Charts.

Partial Flow Tests are conducted with the water supply main control valve (supplying the dry valve being tested) partially closed to minimize the amount of water entering the system during the test. The water supply control valve is closed immediately after the dry valve operates to keep water from filling the system piping. A Partial Flow Test may verify operation of equipment and devices, but it does not simulate operation of the system in fire conditions.

Full Flow Tests are conducted with the water supply main control valve fully open. The dry valve is operated by opening the system Test Valve to simulate the opening of a sprinkler in fire conditions.

Conduct a Partial Flow Test during warm weather at least annually. Conduct a Full Flow Test during warm weather at least once every three years. More frequent testing may be required by the Authority Having Jurisdiction.

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

Caution: Performing step 2 of this test procedure will cause the dry valve to open. The Model E-1 Accelerator will operate, the dry valve will trip, and water will enter the sprinkler system piping.

2. Operate the Model E-1 Accelerator by performing the steps indicated below for the test procedure desired.
   a. For Full Flow Test:
      aa. With the water supply main control valve open, fully open the main drain. Allow the flow to continue long enough to flush any foreign material from the water supply piping.
      ab. Close the main drain.
      ac. Open the system test valve to simulate operation of a sprinkler.
      ad. Close the water supply main control valve after the Model E-1 Accelerator operates and test is complete. Proceed to step 4.
   b. For Partial Flow Test:
      ba. With the water supply main control valve fully open, open the main drain. Allow the full flow to continue long enough to flush any foreign material from the water supply piping.
      bb. With the main drain fully open, slowly close the water supply main control valve until flow from the main drain is reduced as far as possible while maintaining the full flow from the main drain.
      bc. Close the main drain.
      bd. Fully open the priming level test valve to simulate operation of a sprinkler.
      be. Close the water supply main control valve IMMEDIATELY after the Model E-1 Accelerator operates and the dry valve trips.
4. Record operating times as required by the Authority Having Jurisdiction.
5. When operation time testing is complete, return the system being tested to service. Perform steps 1 through 13 of paragraph 10: PLACING THE ANTI-FLOOD DEVICE IN SERVICE, and technical data for the dry valve and equipment used.

12. ANTI-FLOOD DEVICE MAINTENANCE

(Refer to Figure 1 on page 124 d.)

To remove the Model B-2 Anti-flood Device for inspection and/or maintenance, refer to the trim chart and technical data for the Model E-1 Accelerator and dry valve used.

1. Close the water supply main control valve and open the main drain (located on the inlet of the dry valve), placing the system out of service.
2. Turn off the air supply to the Model E-1 Accelerator and remove the pressure from the piping in which the Model E-1 Accelerator and anti-flood device are installed.
3. Remove Model E-1 Accelerator, trim piping, and fittings as required to remove the anti-flood device from the system.

Note: Air supply may be restored to place the dry system back in service without the Model E-1 Accelerator and anti-flood device.

Plug and/ or cap openings created in trim piping by removal of the Model E-1 Accelerator and anti-flood device.

DO NOT install the Viking Model E-1 Accelerator without the Model B-2 Anti-flood Device.

Notify all Authorities Having Jurisdiction if the dry system is temporarily returned to service with the Model E-1 Accelerator removed. To place the dry system in service without the Model E-1 Accelerator, refer to the technical data for the dry valve used.

TECHNICAL DATA

ANTI-FLOOD DEVICE MODEL B-2
(VdS systems Only)

Disassembly

1. Using a 5/16" (8 mm) wrench, loosen the three #10-24 hex head screws (6). Hold cover (7) down to overcome the internal spring pressure to remove screws.
2. With the cover (7) removed, spring (10), spring pad (3), upper diaphragm (5), spacer (8), piston (9), and lower diaphragm (4) can be removed for inspection and cleaning.
3. Check the sealing surface of brass seat (1). If foreign matter, pitting or roughness is present, clean or replace the seat as required.
4. If it is necessary to remove the seat:
   a. Place the body (2) in a vice.
   b. Use a wrench applied to the 1-1/2" (38 mm) hex flats of seat (1) to turn seat (1) counter-clockwise to remove it from body (2).

Reassembly

Place body (2) on bench with screw holes facing up.

1. Locate lower diaphragm (4). Position the surface with the 1-5/16" (33,3 mm) diameter depression facing up, onto body (2), taking care to align the screw openings over screws (6).
2. Place Piston (9) into the 1-5/16" (33,3 mm) diameter depression molded into the surface of lower diaphragm (4).
3. Align screw openings of spacer (8) and place the spacer down against lower diaphragm (4).
4. Locate upper diaphragm (5). Position the surface of upper diaphragm (5), containing the 1-5/16" (33,3 mm) diameter depression in the center, downward, over piston (9). Take care to align the screw openings with the screw openings in the spacer (8).
5. Place spring pad (3) over the 9/16" (14,3 mm) diameter boss on upper diaphragm (5) with burr (rough edge) away from upper diaphragm (5).
6. Place Spring (10) on top of spring pad. Note that the spring has a conical shape. The small-diameter end of the spring should rest on the spring pad.
7. Place Cover (7) over assembly taking special care not to mis-align spring (10). Align screw holes in cover with the rest of the assembly. Hold cover (7) down to overcome spring pressure.
8. Drop the three screws (6) into the screw openings in cover (7) and using a 5/16" (8 mm) wrench, tighten the three #10-24 hex head screws (6). Do not over-tighten.
9. To replace seat (1) into body (2):
   a. Place body (2) in a vice.
   b. Apply a small amount of pipe dope to the external threads of the seat.
   c. Thread seat (1) into the internal threads of body (2) finger tight.
   b. Using a wrench applied to the 1-1/2" (38 mm) hex flats of seat (1), turn seat (1) clockwise until tight (2). Do not over-tighten.

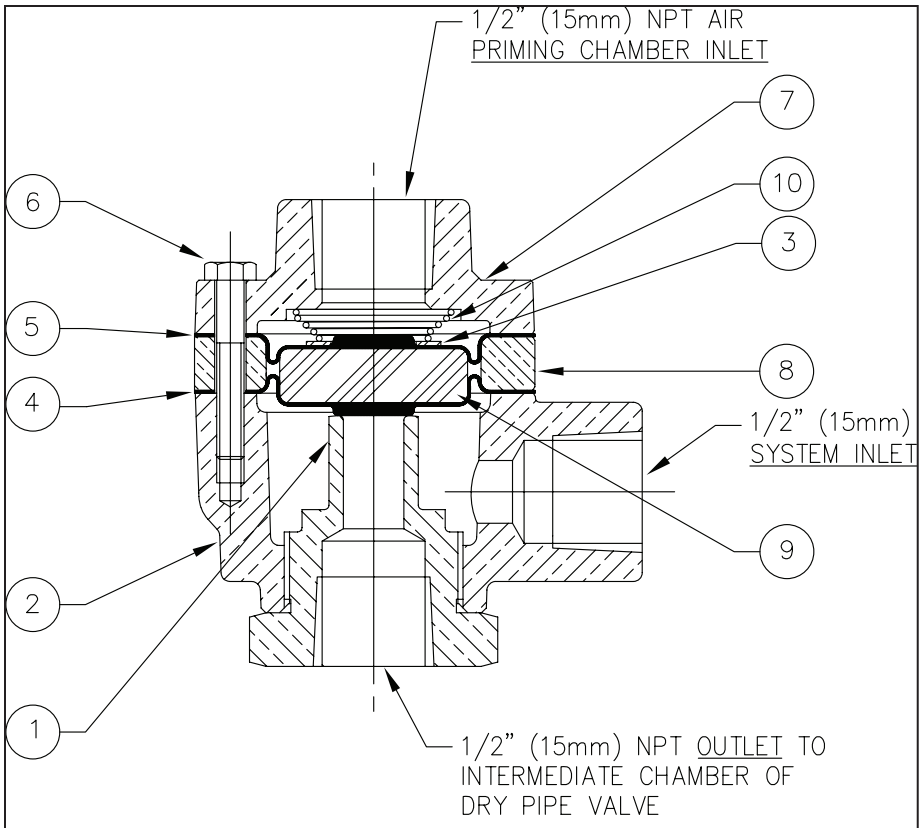

Figure 1: Model B-2 Anti-Flood Device for use with VdS Approved Model E-1 Accelerator Trim ONLY

ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	NO. REQ'D
1	8062	Seat	Brass: UNS-C36000	1
2	–	Body	Brass: UNS-C84400	1
3	04739A	Spring Pad	Stainless Steel UNS-S30400	1
4	04861A	Lower Diaphragm	Polyester/EPDM Fabric	1
5	04861A	Upper diaphragm	Polyester/EPDM Fabric	1
6	–	Screw, M.H.K. #10-24 x 1-1/4" (32 mm)	Steel, Zinc Plated	3
7	9392	Cover	Brass: UNS-C84400	1
8	04740B	Spacer	Brass: UNS-C84400	1
9	04736A	Piston	Polycarbonate	1
10	8049	Spring	Stainless Steel: UNS-S30200	1

Note: --Indicates replacement part not available.