



TECHNICAL BULLETIN

DRY SPRINKLER INSULATING BOOT ASSEMBLIES

1. PRODUCT IDENTIFICATION

This document covers the following products:

Dry Sprinkler Insulating Boot.

2. INTENDED USE

The Dry Sprinkler Boot is designed to be used with most models of dry sprinklers including ESFR to help seal the clearance space around the barrel. When properly installed, this seal decreases the potential for leakage of air through the opening in the ceiling or wall and consequent formation of condensate around the sprinkler connection on the system piping. In freezer installations, condensation can lead to ice build-up, which could inhibit sprinkler operation or cause premature sprinkler operation. The Dry Sprinkler Boot Assembly is intended to slow the exchange of air between the inside and outside of the freezer (or any dry sprinkler installation) to help prevent humidity and temperature differential in the area around the sprinkler. The new access hole allows for installation of spray foam insulation without removing the boot.

The rubber seal extends 1/2" beyond the metal rings to allow installation on irregular surfaces and is designed with a material that will not drip when exposed to open flame. This protects the deflector from acquiring material that would impede its water distribution characteristics.



Governmental codes, ordinances, and standards may apply and may differ from one another.

3. LISTINGS AND APPROVALS

Install in accordance with applicable NFPA standards. Refer to Design Criteria for requirements that must be followed.

NOTE: Laboratory approval of dry sprinkler boot assemblies is not required and the use of these assemblies does not alter any of the listings or approvals for Viking dry sprinklers. Refer to the sprinkler technical data pages.

Part Number	Compatible Viking Sprinklers
22087M/W	Dry Sprinklers: VK160, VK184, VK150, VK154, VK158, VK152, VK156, VK162, VK166, VK163, VK164, VK250, VK252, VK254, VK153, VK157, VK161, VK168, VK169, VK172, VK176, VK180, VK174, VK178, VK182, VK173, VK177, VK181, VK275, VK277, VK279, VK282, VK286, VK290, VK284, VK288, VK292, VK186, VK188, VK482
22089M/W	ESFR and ELO Dry Sprinklers: VK502, VK504, VK512, VK544, VK545, VK546, VK547, VK548, and VK549
28648M/W	****NEW 2026**** Includes access hole and installation label ELO and ESFR Dry Sprinklers: VK502, VK504, VK512, VK544, VK545, VK546, VK547, VK548, and VK549
29464	Replacement cap kit, includes 5 plastic caps
NOTE: ELO and ESFR Dry Sprinklers include at least 1 Insulating Boot that comes with the sprinkler; additional boots can be ordered separately.	



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4. TECHNICAL DATA

4.1 Components and Dimensions

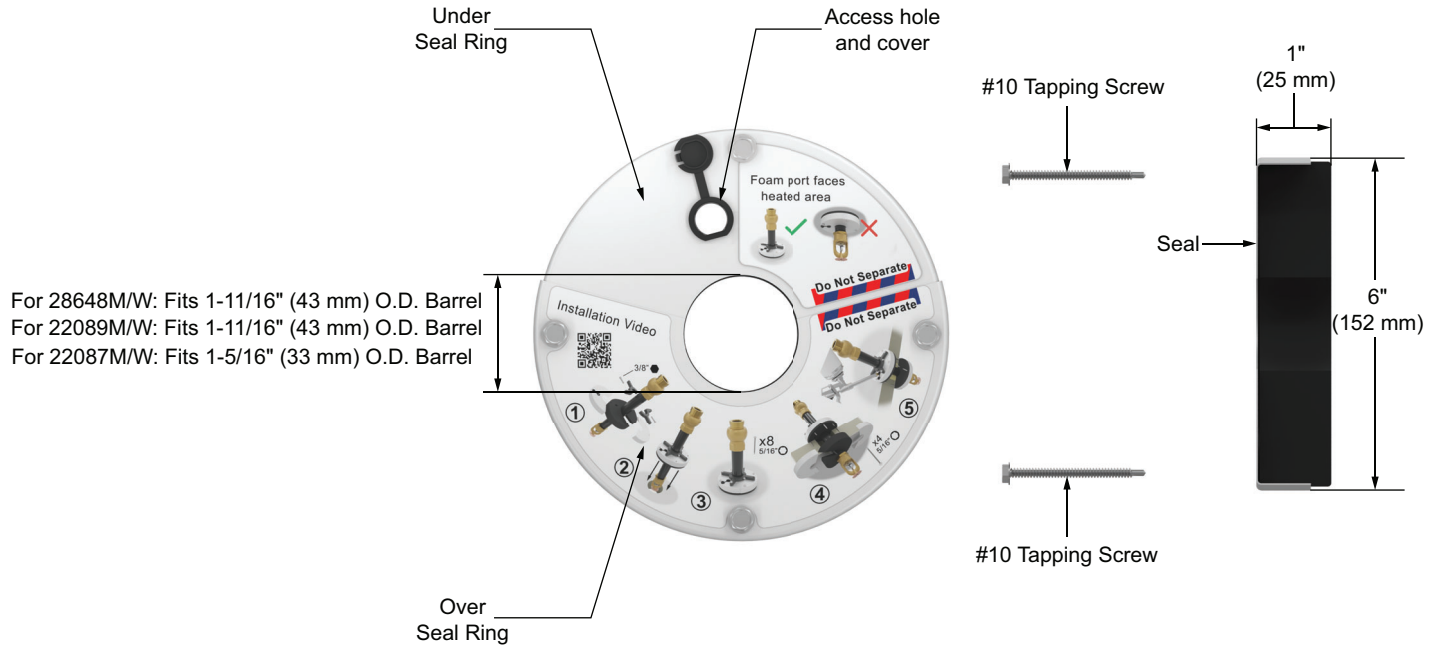


Figure – 1: Components and Dimensions

4.2 Materials of Construction

Item	Material
Seal	ASTM D1056: 2A0/1 4015-EL EPDM-Butyl-PE foam rubber OR 2A1 Neoprene/EPDM/SBR OR 2C1 Neoprene/EPDM
Over and Under seal rings	Cold rolled steel with clear chromate over zinc plating, coated with white paint
Screws	#10 X 2-1/2" self tapping stainless steel



4.3 Installation Requirements:

- Install in accordance with applicable NFPA standards.
- Dry Sprinkler Boot Assembly 22087M/W is designed for use with all Viking dry sprinklers, except Dry Concealed Sprinklers. NOT for use with Viking dry concealed sprinklers or any non-dry type sprinkler.
- Dry Sprinkler Boot Assemblies 22089M/W and 28648M/W (boot with access hole) are designed for use with Viking Dry ELO and ESFR sprinklers.
- Minimum Barrel Length: Refer to Table 1 and Figure 6 (below) for the required minimum dry sprinkler barrel exposure length between the face of the sprinkler tee to the outside surface of the ceiling or wall.
- Sprinkler Fitting: Install the dry sprinkler into the outlet of malleable iron tee fittings per ANSI B 16.3 (Class 150) or cast iron threaded tee fittings per ANSI 16.4 (Class 125) only.
- Compatible flexible hose connection options available.
- Clearance Opening Diameter: Refer to Figure 2. When using the labeled boot with access hole, the clearance opening must be a minimum of 3-3/4" (95 mm) to allow for insulation to be installed. Use a small tool (pencil, screwdriver or similar) to check alignment before securing.

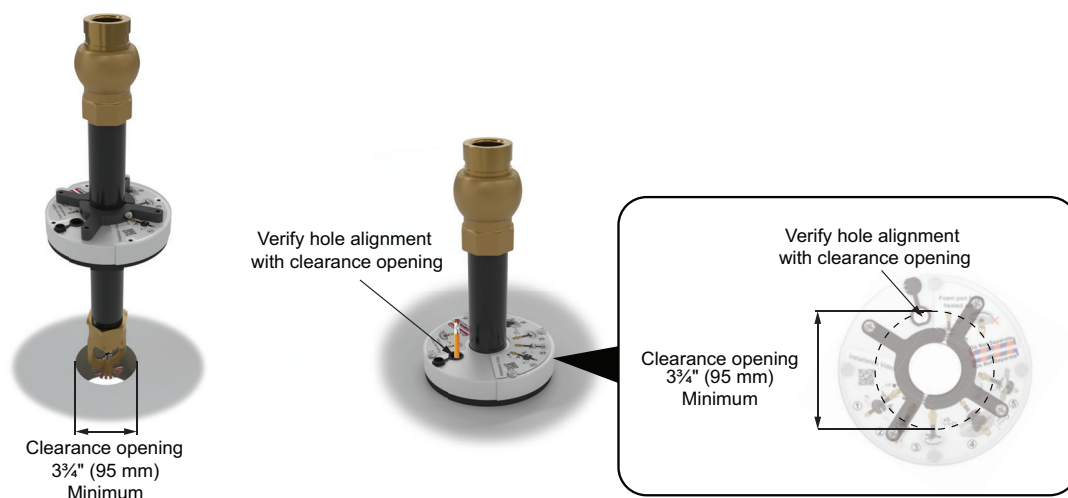


Figure – 2: Ceiling Clearance Hole Dimension Requirement

5. INSTALLATION

5.1 Pre-installation Instructions

- Install all piping and applicable upstream devices.
- Prepare the ceiling structure and installation opening for the dry sprinkler. (Example: Clean the contact surfaces of the dry sprinkler seal and the wall or ceiling surface.)
- Determine the appropriate deflector distance from the ceiling, then measure and mark the boot's location and (if applicable) the cold storage bracket's location on the dry sprinkler barrel.
- If applicable, install a flexible sprinkler connection into the branch line. Consider using the cold storage bracket to increase stability and rigidity of the installation.
- Orient the sprinkler frame arms to be parallel with the piping, then install the dry sprinkler inlet onto the flexible sprinkler connection.

NOTE: ESFR sprinkler barrels have a white marking near the inlet to indicate where the sprinkler frame arms are located (ELO sprinkler barrels do not have this marking.)

- Temporarily secure the sprinkler assembly in place to avoid damage.



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5.2 Installation Instructions

The images in the procedure below show a VK512 sprinkler.

NOTICE

When installing sprinklers compatible with the labeled boot with access hole (VK502, VK504, VK512, VK544, VK545, VK546, VK547, VK548, and VK549), the labeled boot with access hole shall always be used on top of the deck or ceiling to allow insulation to be properly installed.

1. With the sprinkler assembly secured, twist the rubber boot (1) open and slip it over the dry sprinkler barrel (2) and slide downward until it rests against the surface. The boot location marking (refer to Section 5.1-c above) should appear just above the boot.
2. Place the under-seal cover (3) and over-seal cover (4) onto the rubber boot.

NOTE: When using the labeled boot with access hole, the clearance opening MUST be a minimum of 3-3/4" (95 mm) to allow insulation to be installed. Use a small tool (pencil, screwdriver or similar) to check alignment before securing.

3. If using the cold storage bracket, loosely install it on top of the boot. Refer to technical bulletin F_110424.
4. If installing into a metal ceiling, use a #29 drill to make pilot holes.
5. Install the screws (5) in into the boot assembly in a cross pattern.

NOTE: When installing on irregular surfaces, be sure that the air gap is sealed before proceeding. The screws may be tightened additionally if necessary to achieve an adequate seal.

6. If using the cold storage bracket, use a hex key to tighten the screws on both sides (6), then install the 4 screws (7) through the boot into the surface.

Connected piping or flexible hoses not shown

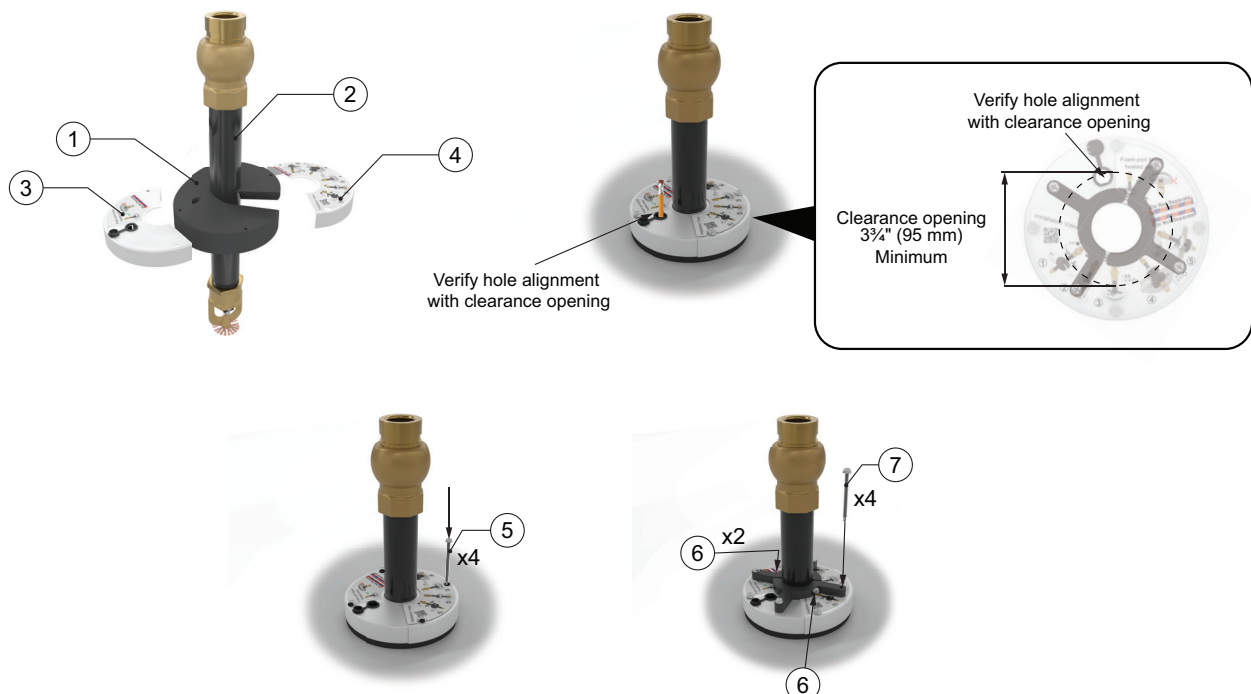


Figure – 3: Installing the Boot (Labeled version with access hole shown)

7. Install the second boot assembly in the same manner as the first. Verify that the non-labeled version without an access hole is used.

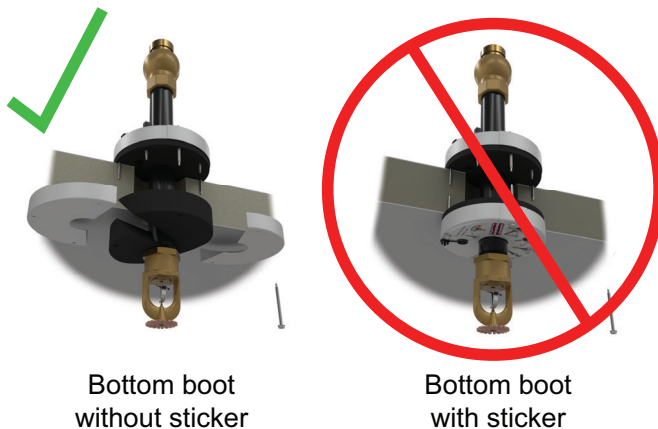


Figure – 4: Installing the Second Boot

8. Prepare the insulation applicator nozzle for use per the manufacturer's instructions.
9. Insert the insulation applicator nozzle into the foam port and install the insulation medium.
10. Close the access hole cap.



Figure – 5: Installing the Insulation

5.3 Exposed Barrel Lengths for Dry Sprinklers

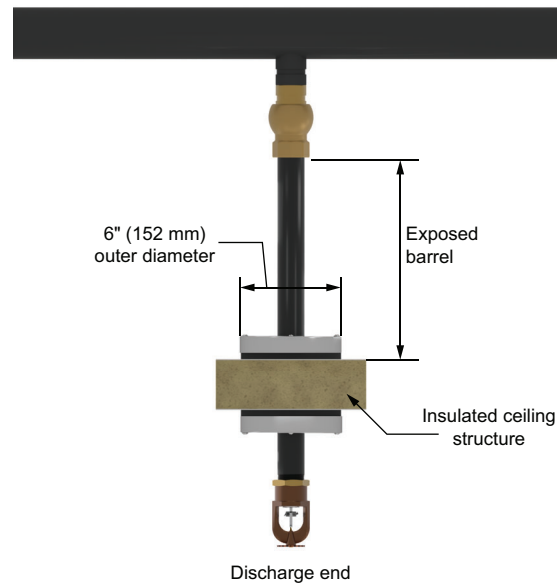


Figure – 6: Exposed Barrel Length Diagram

Table 1: NFPA Exposed Barrel Lengths for Dry Sprinklers

Ambient Temperature of the Protected Area ¹ at the Discharge End of the Sprinkler	Exposed Barrel Ambient Temperature		
	40 °F (4 °C)	50 °F (10 °C)	60 °F (16 °C)
	Minimum Exposed Barrel Lengths ² (based on ambient temperatures above) Inches (mm)		
40 °F (4 °C)	0	0	0
30 °F (-1 °C)	0	0	0
20 °F (-7 °C)	4 (100)	0	0
10 °F (-12 °C)	8 (200)	1 (25)	0
0 °F (-18 °C)	12 (300)	3 (75)	0
-10 °F (-23 °C)	14 (350)	4 (100)	1 (25)
-20 °F (-29 °C)	14 (350)	6 (150)	3 (75)
-30 °F (-34 °C)	16 (400)	8 (200)	4 (100)
-40 °F (-40 °C)	18 (450)	8 (200)	4 (100)
-50 °F (-46 °C)	20 (500)	10 (250)	6 (150)
-60 °F (-51 °C)	20 (500)	10 (250)	6 (150)
1. The “protected area” refers to the area below the ceiling. The ambient temperature is the temperature at the discharge end of the sprinkler. For protected area temperatures that occur between the values listed, use the next cooler temperature. 2. The minimum barrel length is not the same as the “A” dimension.			



6. INSPECTIONS, TESTS AND MAINTENANCE

⚠ WARNING

Risk of death due to fire. Any system maintenance that involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. A sprinkler system that has been taken out of service will not operate. When replacing existing sprinklers, the system must be removed from service.

- Refer to the appropriate system description and/or valve instructions.
- Prior to proceeding, notify all Authorities Having Jurisdiction.
- Consideration should be given to employment of a fire patrol in the affected areas.

⚠ WARNING

Risk of death due to fire. A sprinkler system that has been subject to a fire must be returned to service as soon as possible.

- The entire system must be inspected for damage and repaired or replaced as necessary.
 - Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced.
 - Refer to the Authorities Having Jurisdiction for minimum replacement requirements.
1. Remove the system from service, drain all water, and relieve all pressure on the piping.
 2. Remove the dry sprinkler boot assembly.
 3. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose.
 4. Install a new Dry Sprinkler Boot Assembly.
 5. Place the system back in service and secure all valves. Check the replaced sprinklers and repair all leaks.

6. CONTACT

The Viking Dry Sprinkler Insulating Boots 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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