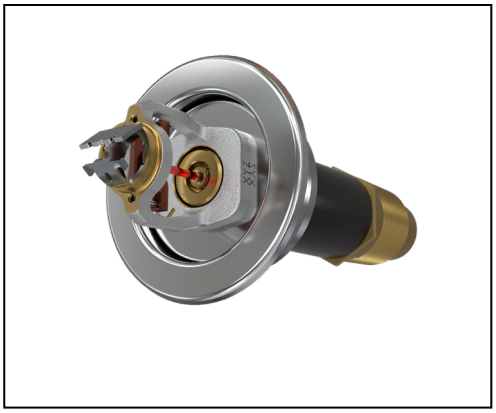
VIKING®	TECHNICAL DATA SHEET	RESIDENTIAL DRY HSW SPRINKLER K4.0 (57.7) VK449

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler": VK449: Fast Response, Residential Horizontal Sidewall, K4.0 (57.7 metric) Sprinklers



2. INTENDED USE

The spinklers are designed for wet systems where it is necessary to prevent water or condensation from entering the supply nipple before sprinkler operation. They may also be installed in spaces subject to freezing and supplied from a wet system in an adjacent heated area. The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements
2. the recognized design and installations standards issued, for example NFPA or FM Global.
3. the latest revisions of all applicable manufacturer’s documentation

Additionally, the provisions of governmental codes, ordinances, and standards may apply.

NOTE: The Installation guidelines and requirements may differ depending on the approval body.

3. LISTINGS AND APPROVALS

Refer to section 6 for requirements that must be followed.

cULus Listed
Refer to the Approval Chart and Design Criteria for Listing and Approval requirements that must be followed.

4. TECHNICAL SPECIFICATIONS

4.1 Ratings and Physical Characteristics

Parameter	Value
Minimum operating pressure	7 psi (0.5 bar)
Maximum rated pressure	175 psi (12 bar)
Factory tested pressure	500 psi (34.5 bar)
Thread size	1" NPT or 25 mm BSPT
Nominal K–factor	4.0 U.S. (57.7 metric)
Minimum temperature rating (glass bulb)	–65 °F (–55 °C)

Available since April 2023.

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

4.2 Markings

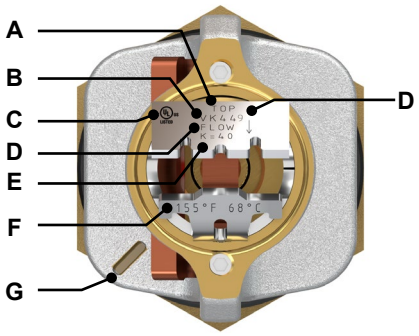


Figure 2: Markings

Ref.	Description	Value
A	Orientation indicator	Text “TOP”
B	Manufacturer’s Sprinkler Identification Number (SIN)	VK449
C	Listing logo	cULus
D	Flow direction indicator	See markings
E	Nominal K-factor	4.0
F	Nominal temperature rating	See marking
G	Frame orientation indicator	See marking; see Figure 6.

4.3 Materials of Construction

Description	Material
Compression screw	18-8 stainless steel
Flow shaper	Brass UNS-C23000 or UNS-C51000
Frame casting	QM brass or brass UNS-C84400
Pip cap adapter	Polytetrafluoroethylene (PTFE)
Pip cap	Brass UNS-C36000
Belleville spring sealing assembly	Nickel alloy, coated on both sides with PTFE tape
Yoke	Phosphor bronze UNS-C51000
Bulb	Glass, nominal (3 mm) diameter
Orifice	Copper UNS-C11000 or UNS-22000
Tube	ERW hydraulic steel tube
Inlet and barrel end	QM brass
Support (internal)	Brass UNS-C36000
Barrel	Steel pipe UNS-G10260, electrodeposited epoxy base finish
Recessed dry escutcheons	Cold rolled steel: UNS-G10080
ENT recessed escutcheons	Stainless steel UNS-S30400

5. INSTALLATION

Refer to appropriate NFPA Installation Standards and Figures 3, 4, 5. and 6.

Figure 3: Using the Sprinkler Installation Wrench

Ref	Variable Parameter	Minimum	Maximum
1	Wall opening	2 5⁄16" (54 mm)	2½" (64 mm)
2	Deflector to ceiling distance	4" (102 mm)	12" (305 mm)
3	Deflector to wall distance	1⅜" (35 mm)	2" (51 mm)
Ref	**Fixed Parameter**	**Value**	
4	Escutcheon depth	1 1⁄16" (27 mm)	
5	Escutcheon outer diameter	3 1⁄16" (78 mm)	
6	Top of deflector to centerline	⅝" (16 mm)	

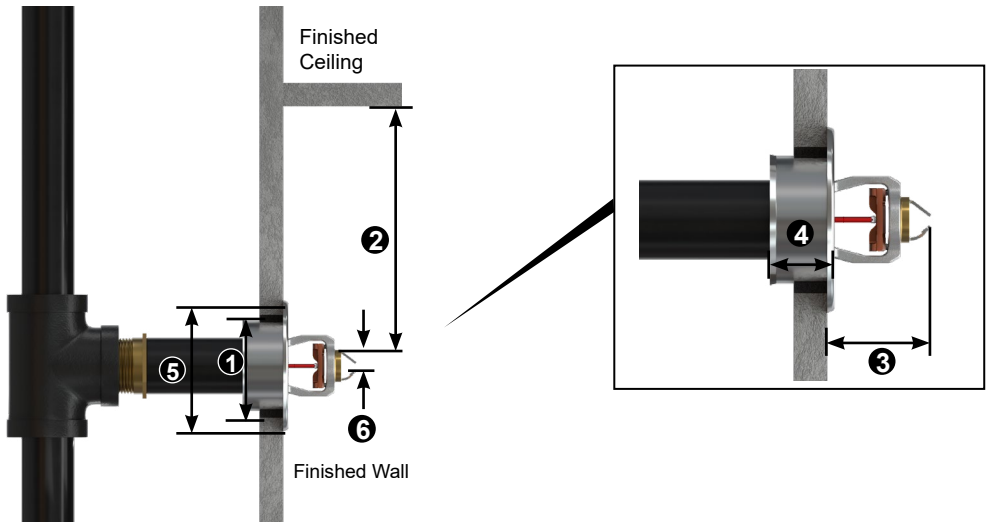


Figure 4: Installation Dimensions with Adjustable Recessed Escutcheon

Ref	Variable Parameter	Minimum	Maximum
1	Wall opening	2⅝" (66 mm)	3¾" (95 mm)
2	Deflector to ceiling distance	4" (102 mm)	12" (305 mm)
*NOTE: The "A" dimension will allow 1/4" (6 mm) adjustment in either direction.			
Ref	**Fixed Parameter**	**Value**	
3	Escutcheon depth	1$^{1}/_{16}$" (27 mm)	
4	Escutcheon outer diameter	4" (102 mm)	
5	Escutcheon outer cup inner diameter	2$^{5}/_{8}$" (16 mm)	
6	Escutcheon rim thickness	⅛" (3 mm)	
7	Escutcheon inner adapter depth	1$^{1}/_{16}$" (^{27} mm)	

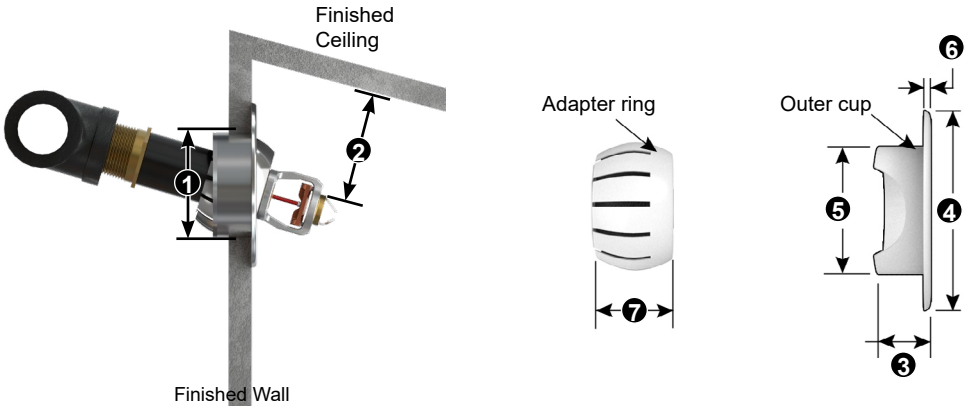


Figure 5: Installation Dimensions with G-1 Escutcheon

Ref	Parameter
A	Top of deflector marked with "TOP"
B	Leading edge of the top of the deflector must be parallel with ceiling
C	Frame arms must be perpendicular to ceiling
D	Ceiling

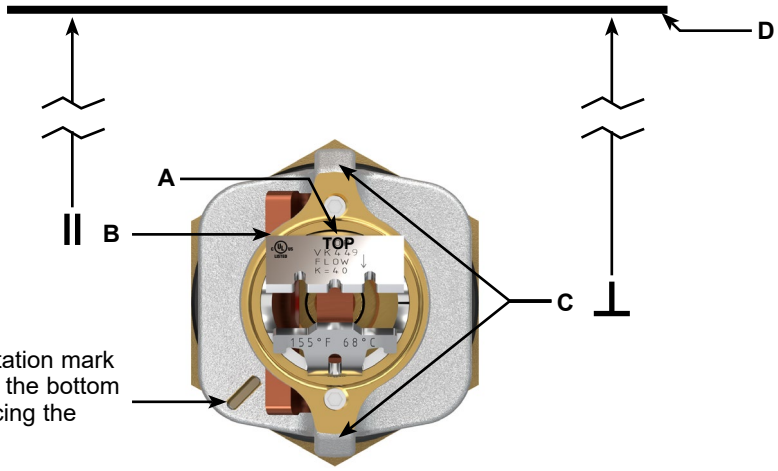


Figure 6: Sprinkler Orientation

6. LISTING AND APPROVAL DESIGN REQUIREMENTS

All sprinklers are to be installed in accordance with the latest revisions of all applicable manufacturer's documentation, installation standards, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

6.1 cULus Listing Requirements

Residential Dry Horizontal Sidewall Sprinklers are cULus Listed as Indicated in the Approval Chart for Installation in accordance with the latest edition of NFPA 13, 13R, or 13D for residential sprinklers.

For systems designed to NFPA 13, The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in the Approval Chart for NFPA 13D and NFPA13R applications for each listed area of coverage **OR**
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with NFPA 13.

In addition, the following criteria apply:

- Designed for use in Residential occupancies in accordance with NFPA 13.
- Minimum spacing allowed is 8 ft. (1.8 m).
- Deflector must be positioned between 4" and 12" (102 mm and 305 mm) below the ceiling. Keep the leading edge of the deflector and the centerline axis of the sprinkler frame oriented parallel with the ceiling.
- Locate no less than 4" (102 mm) from end walls.
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for residential sprinklers must be followed.

6.2 Corrosion Resistant Coatings

The white polyester and black polyester finishes are cULus listed as corrosion resistant. Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

6.3 Listing and Approval Specifications

Table 6.3: Approval Chart
Viking VK449, 4.0K-Factor Dry Residential Horizontal Sidewall Sprinkler
For Wet Pipe systems designed to NFPA 13D or NFPA 13R. For Wet Pipe systems designed to NFPA 13, refer to the design criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D.

Sprinkler Base Part Number [1]	Style	SIN	Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Lengths				
			NPT	BSPT	U.S.	Metric		Increments Inches	Minimum Inches (mm)		Maximum Inches (mm)	
24961	Recessed	VK449	1”	--	4.0	57.7	175	1/4"	3¾	(95)	24	(610)
25556	Recessed	VK449	--	25 mm	4.0	57.7	175	1/4"	3¾	(95)	24	(610)

Footnotes

1. Part number shown is the base part number. For complete part number, refer to Viking’s current price schedule.
2. Listed by Underwriter’s Laboratories, Inc. for use in the United States and Canada.
3. Approved Finishes are: chrome, ENT, white polyester, and black polyester.
4. Sprinklers with the white and black polyester finishes are cULus listed as corrosion resistant.
5. Other paint colors are available on request with the same cULus listings as the standard finish colors.

6.4 Hydraulic Design Criteria

Table 6.4: Hydraulic Design Criteria[1]
Viking VK449, 4.0K-Factor Dry Residential Horizontal Sidewall Sprinkler
For Wet Pipe systems designed to NFPA 13D or NFPA 13R. For Wet Pipe systems designed to NFPA 13, refer to the design criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D.

Max. Coverage Area [1] Width X Length Ft. X Ft. (m X m)	Max. Spacing Ft. (m)	Temperature Rating				Top of Deflector to Ceiling
		155 °F (68 °C)		200 °F (93 °C)		
		Flow [2] GPM (L/min)	Pressure [2] PSI (bar)	Flow [2] GPM (L/min)	Pressure [2] PSI (bar)	
12 X 12 (3.7 X 3.7)	12 (3.7)	13 (49.2)	10.6 (0.73)	13 (49.2)	10.6 (0.73)	4 to 6 inches (100 to 150 mm)
14 X 14 (4.3 X 4.3)	14 (4.3)	14 (53.0)	12.3 (0.85)	14 (53.0)	12.3 (0.85)	
16 X 16 (4.9 X 4.9)	16 (4.9)	18 (68.1)	20.3 (1.40)	18 (68.1)	20.3 (1.40)	
16 X 18 (4.9 X 5.5)	16 (4.9)	21 (79.5)	27.6 (1.90)	21 (79.5)	27.6 (1.90)	
16 X 20 (4.9 X 6.1)	16 (4.9)	25 (94.6)	39.1 (2.70)	25 (94.6)	39.1 (2.70)	
12 X 12 (3.7 X 3.7)	12 (3.7)	13 (49.2)	10.6 (0.73)	14 (53.0)	12.3 (0.85)	6 to 12 inches (101 to 300 mm)
14 X 14 (4.3 X 4.3)	14 (4.3)	15 (56.8)	14.1 (0.97)	15 (56.8)	14.1 (0.97)	
16 X 16 (4.9 X 4.9)	16 (4.9)	19 (71.9)	22.6 (1.56)	19 (71.9)	22.6 (1.56)	
16 X 18 (4.9 X 5.5)	16 (4.9)	21 (79.5)	27.6 (1.90)	21 (79.5)	27.6 (1.90)	
16 X 20 (4.9 X 6.1)	16 (4.9)	25 (94.6)	39.1 (2.70)	25 (94.6)	39.1 (2.70)	

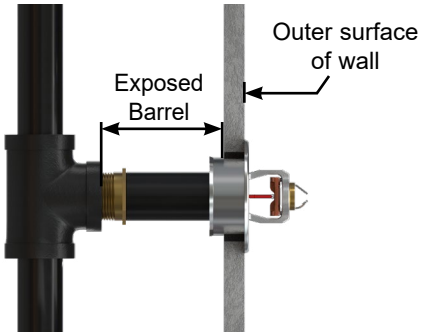
1. This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. Refer also to Design Criteria.
2. For areas of coverage smaller than shown, use the “Flow” and “Pressure” for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum “Flow” and “Pressure” used.

6.5 Minimum Exposed Barrel Lengths

Residential Dry Horizontal Sidewall Sprinklers are to be installed into a 1" NPT or 25 mm BSPT outlet of a tee fitting only, with a minimum exposed barrel length that is in accordance with the latest edition of NFPA 13 (refer to Figure 7).
The minimum exposed length shall be measured along the length of the dry sprinkler from the face of the fitting to which the dry sprinkler is installed to the inside surface of the insulation, or wall leading to the cold space, whichever is closest to the fitting.

NOTES:

- **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.**
- **The minimum required barrel length is not the same as the "A" dimension. Refer to Figure 8 for the "A" Dimension.**
- **Exposed minimum barrel lengths are inclusive up to 30 mph wind velocities.**



Ambient Temperature of the Protected Area* at the Discharge End of the Sprinkler	Exposed Barrel Ambient Temperature		
	40 °F (4 °C)	50 °F (10 °C)	60 °F (16 °C)
	Exposed Minimum Barrel Length** Face of the Tee to the Outer Surface of the Wall		
	Inches (mm)	Inches (mm)	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)

Figure 7: Minimum Barrel Length Based on Ambient Temperature in the Protected Area

7. ORDERING PROCEDURE

7.1 Sprinkler

When ordering the sprinkler, the “A” dimension must be known. The “A” dimension is the distance as measured from the face of the fitting in which the sprinkler will be installed to the face of the finished surface in the protected area. See Figure 7 to determine this dimension.

1. Based on desired escutcheon model, determine the “A” dimension as shown in Figure 8; measure from the centerlines of the tee and hole.
2. Round to the nearest 1/4” (16 mm) between 3-3/4” (83 mm) and 24” (610 mm).

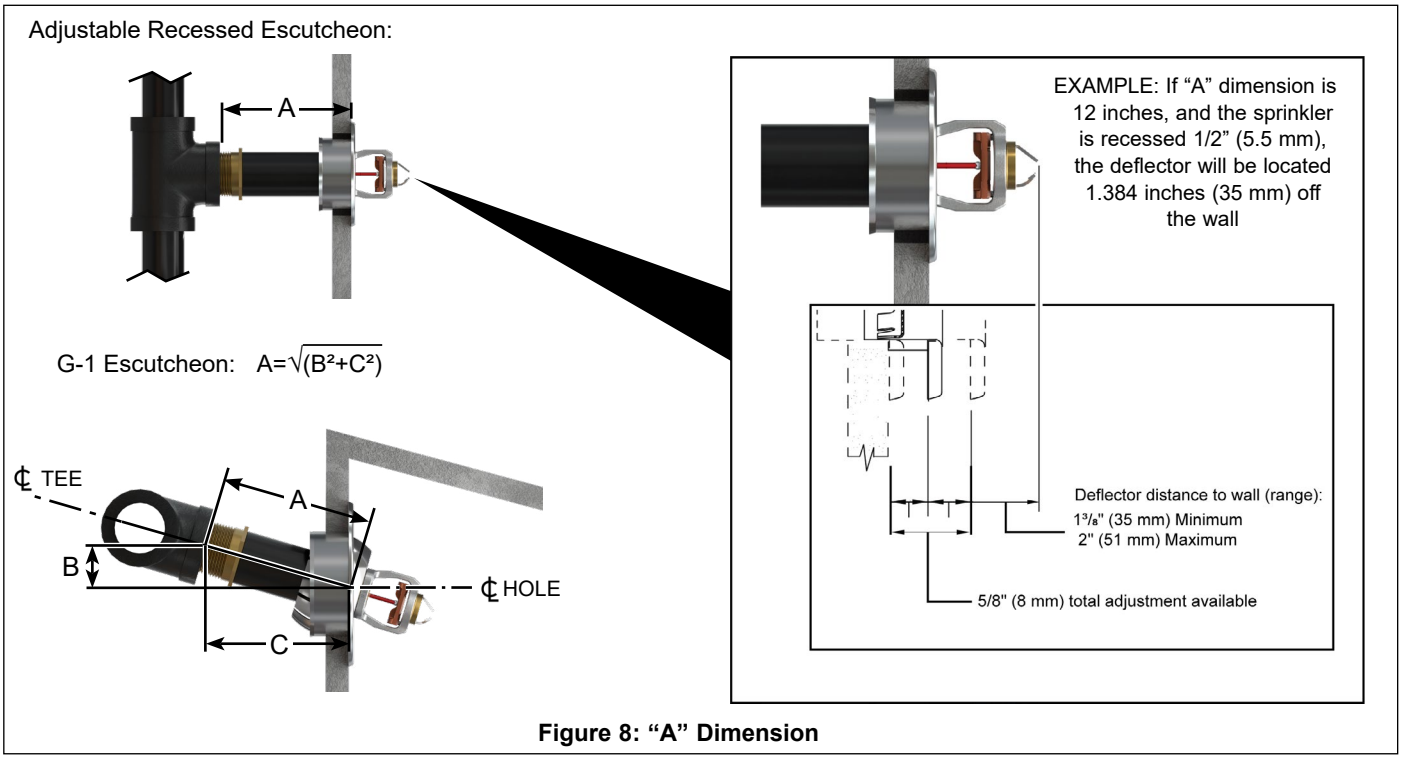


Figure 8: “A” Dimension

3. From below, choose a sprinkler base part number with the required thread size and listing or approval (refer to section 6). **NOTE: If the Model G-1 escutcheon is desired, add the suffix “Y”. See Figure 5.**
4. Add the suffix for the desired finish.
5. Add the suffix for the desired temperature rating.
6. Add the number that indicates the “A” dimension.

NOTE: Where a dash (–) is shown in the finish suffix designation, insert the desired temperature rating suffix.

EXAMPLE: 24961MB/W12 is a VK449 with a white polyester finish and a 155 °F (68 °C) temperature rating with “A” dimension of 12 inches. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

3. Sprinkler		
IMPORTANT: See Section 5		
SIN	Part Number	Size
VK449	24961	1" NPT
VK449	25556	25 mm BSPT

4. Finish	
Description	Suffix
Chrome	F
White Polyester	M–/W
ENT	JN

5. Temperature Rating			
Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
155 °F (68 °C)	Red	100 °F (38 °C)	B
200 °F (93 °C)	Green	150 °F (65 °C)	E

7.2 Sprinkler Accessories

	Part Number	Description
	24689M/B	Heavy duty metal socket wrench
	05459AF	Recessed dry escutcheon cup, chrome finish
	05459AM/W	Recessed dry escutcheon cup, white polyester finish
	05459AM/B	Recessed dry escutcheon cup, black polyester finish
	07529JN	Recessed dry escutcheon cup, ENT finish
	20133	Replacement G-1 escutcheon assembly (white shown, for other colors or finishes, contact customer service)
	22087M/W	Dry barrel seals

8. CONTACT

The sprinkler and accessories 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**

Manufacturer:
The Viking Corporation
5150 Beltway SE
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Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
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VIKING

BULLETIN

CARE AND HANDLING OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

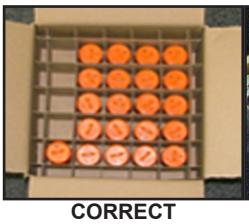
Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

  Maximum Torque:
  1/2" NPT: 14 ft-lbs. (19.0 N-m)
  3/4" NPT: 20 ft-lbs. (27.1 N-m)
  1" NPT: 30 ft-lbs. (40.7 N-m)

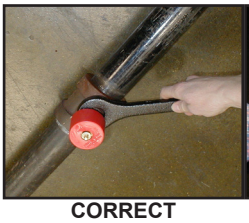
CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)

CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)

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

⚠ WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.

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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

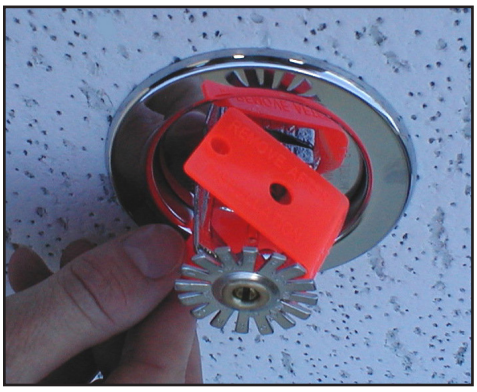

Figure 1: Sprinkler shield being removed from a pendent sprinkler.

Figure 2: Sprinkler cap being removed from a pendent sprinkler.

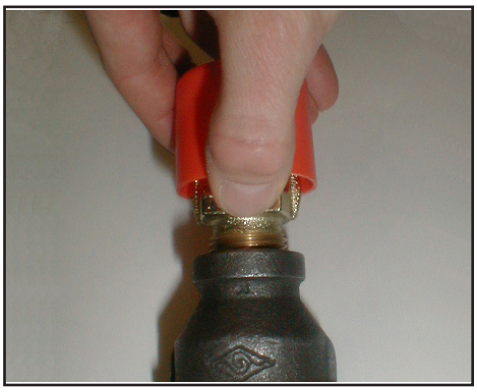

Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

⚠WARNING Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

*** Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.**

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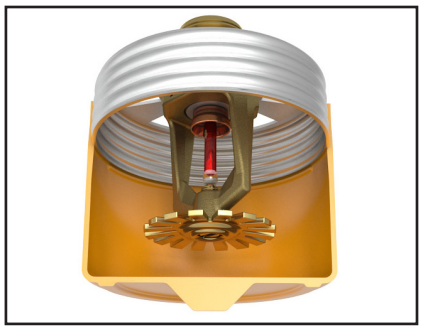
CAUTION CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter Assembly with Protective Cap

Concealed Sprinkler and Adapter Assembly (Protective Cap Removed)

Cover Plate Assembly (Pendent Cover 12381 shown)

GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
  -- Use original shipping containers.
  -- Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

VIKING

BULLETIN

CARE AND HANDLING OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature[1]	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

[1] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

⚠WARNING Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

TECHNICAL DATA — SPRINKLER OVERVIEW

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1. DESCRIPTION

Viking fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.

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

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word “Viking”, the sprinkler identification number (SIN) consisting of “VK” plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSU” (Standard Sprinkler Upright) or “UPRIGHT” on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSP” (Standard Sprinkler Pendent) or “PENDENT” on the deflector.

Viking Technical Data may be found on The Viking Corporation’s Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

CONVENTIONAL SPRINKLER: An “old style” sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS. Marked “C U/P” (Conventional Upright/Pendent) on the deflector.

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VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked “SIDEWALL” on the deflector with an arrow and the word “FLOW”. (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked “UPRIGHT” or “PENDENT”.)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked “SIDEWALL” and “TOP” with an arrow and the word “FLOW”.

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked “EC”.

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast- actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked “QREC”.

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the “B” dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the “A” dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of “large” water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked “HIGH CHALLENGE” and “UPRIGHT”.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked “ESFR” and “UPRIGHT” or “PEND”.

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.

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Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

BULLETIN

BEST PRACTICES FOR RESIDENTIAL SPRINKLER HANDLING & INSTALLATION

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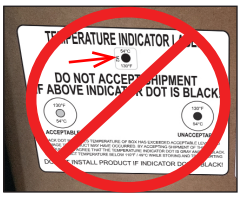
Visit the Viking website for the latest edition of this technical data page.

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

- Always keep sprinklers in a cool dry place.
- Protect sprinklers during storage, transport and handling as well as before, during and after installation. Refer to Viking's Care and Handling of Sprinklers Bulletin Form No. F_091699[2].
- Proper transit, storage and installation of sprinklers in a high-heat environment is a must. Care should be taken to prevent sprinklers from being exposed to ambient heat conditions in excess of those referenced in installation standards.
- Do not stage or store sprinklers on the job site in advance in a non-conditioned space prior to installation.
- Keep sprinklers in the original packaging and check temperature indicators on box label prior to installation. If the indicator has turned black, DO NOT install any product contained in the box. Refer to Viking product return policies.
- Temperatures exceeding the maximum ambient temperature of the sprinkler temperature-rating during storage, transport, handling and installation must be avoided.
- Per NFPA standards 13, 13R, and 13D, sprinklers installed where maximum ambient temperatures are at or over 101 °F (38 °C) through 150 °F (66 °C) shall be intermediate temperature-rated sprinklers. Additionally, if sprinklers are installed in an unventilated concealed space under an uninsulated roof or in an unventilated attic, they shall be of intermediate temperature classification.
- Sprinklers installed where ambient temperatures are at or below 100 °F (38 °C) may be either ordinary or intermediate temperature-rated sprinklers. Refer to NFPA standards 13R 6.2.3.1 and 13D 7.5.6.1.
- Rough-in of sprinkler piping during hot weather conditions should not include the installation of sprinklers unless reasonable ambient temperatures can be maintained. Ambient temperatures that are considered when choosing the temperature rating for a sprinkler should take into account the range of ambient temperatures that are expected from installation through establishment and maintenance of temperature in a conditioned space. Appropriate insulation may be considered. **Example**: An ordinary temperature sprinkler should not be exposed to maximum ambient temperature higher than 100 °F (38 °C) or more. Refer to NFPA 13, Table 6.2.5.1, NFPA 13R, 6.2.3.1 and NFPA 13D, 7.5.6.1.
- CPVC fire sprinkler products exposed to high ambient temperatures (e.g. installed in unventilated, concealed spaces such as attics) should be insulated to maintain a cooler environment. Refer to Viking Plastics Installation and Design Manual, Form No. F_080712[2], for care and handling procedures.
- Protect all sprinklers and connecting CPVC piping in attic spaces and unvented concealed spaces from excessive heat exposure above 100 °F (38 °C). To separate excessive attic heat, properly tent and fully insulate all pipe in unconditioned spaces.
- Pressure relief valves should be installed on wet sprinkler systems where there is a risk of over-pressurization of a checked water supply, due to thermal expansion. Refer to NFPA 13, 7.1.2.1 and NFPA 13D, A.5.2.2.2.
- Fire sprinkler systems should be installed per current referenced editions of building codes and installation standards adopted in the jurisdiction where work is being performed.



INCORRECT
(Heat exposure)

INCORRECT
(Unconditioned at rough-in)

INCORRECT
(Exposed piping)

INCORRECT
(No pressure relief valve)

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

[1]Hot weather condition is defined as temperatures that can reach the maximum ambient temperature-rating of the sprinkler.
[2]Clicking on blue hyperlink will open referenced document.

⚠ WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.

BULLETIN

REGULATORY AND HEALTH WARNINGS

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Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herin as they relate to legally mandated jurisdictional regions.

⚠ WARNING

STATE OF CALIFORNIA, USA

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titaninum dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to **www.P65Warnings.ca.gov**

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at **www.vikinggroupinc.com** or contact Viking directly.