TECHNICAL DATA

MODEL C-1 WINDOW 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
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1 DESCRIPTION



Viking Model C-1 Window Sprinklers are non-automatic, open, “outside” sprinklers intended for protection of windows, walls, and roofs against exposure fires. The directional discharge produces a flat 180° fan-shaped spray pattern. Used to produce a water curtain, they are installed on manual or automatic deluge systems.

2 LISTINGS AND APPROVALS

cULus Listed: Category VOKR

FM Approved: Class 2025

NYC Approved: Calendar Number 219-76-SA, Bulletin No. 30, Vol. LXVI

China Approval: Approved according to China GB standard

NOTE: International approval certificates are available upon request.
Refer to the Approval Charts and Design Criteria Listing Approval requirements that must be followed.

3 TECHNICAL DATA

Specifications:
Available since 1971.
Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to 175 psi (12 bar) water working pressure
Model C-1 Window Sprinklers are installed on fixed fire protection systems, such as deluge systems, where total flooding is required. They produce a flat 180° fan-shaped spray pattern.
They are available in various orifice sizes. The smallest nozzle passage is 1/4” (6 mm) for VK790; 5/16 (8 mm) for VK791; 3/8” (10 mm) for VK792; 7/16” (11 mm) for VK793, 1/2” (13 mm) for VK794, 5/8” (16 mm) for VK795, and 3/4” (19 mm) for VK796.
The orifice size and SIN are stamped on the wrench boss.
Thread size: 1/2” (15 mm) for VK790-VK794, 3/4” (20 mm) NPT for VK795 and VK796
Nominal K-Factors: Refer to the Approval Chart
Overall Length: Refer to the Approval Chart

Spray Nozzle Material Standards:
Nozzle Body: Brass UNS-C36000

Ordering Information: (Also refer to the current Viking price list.)
Order Model C-1 Window Sprinklers by selecting the appropriate part number from the Approval Chart.

Available Finishes: Brass or Chrome
For example, Spray Nozzle VK790 with a Brass finish = Part No. 01320BA

4 INSTALLATION

⚠ WARNING

Viking Model C-1 Window Sprinklers are manufactured and tested to meet the rigid requirements of the approving agency. The nozzles are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the nozzle after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the unit inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

The Approval Chart on page 13 shows listings and approvals of Model C-1 Window Sprinklers for use on water spray systems. The chart shows listings and approvals available at the time of printing. Other approvals are in process. Check with the manufacturer for any additional approvals.

A. **Spray nozzles are to be installed in accordance with the latest edition of Viking technical data, the latest published 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 use of Model C-1 Window Sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.**
B. Window Sprinklers are installed on fixed fire protection systems, such as deluge systems, where total flooding is required.

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C. Handle sprinklers and spray nozzles with care. They must be stored in a cool, dry place in their original shipping container. Never install a sprinkler or spray nozzle that has been dropped or damaged.
D. Corrosion-resistant sprinklers and spray nozzles must be installed when subject to corrosive atmospheres. When installing corrosion resistant nozzles, take care not to damage the corrosion resistant coating.
E. Spray nozzles must be installed after the piping is in place to prevent mechanical damage.
F. Before installing, be sure to have the appropriate model with the correct K-Factor. Window Sprinklers are permanently marked with the orifice size and SIN.
   1. Apply a small amount of pipe-joint compound or tape to the external threads of the spray nozzle only, taking care not to allow a build-up of compound inside the inlet.
   2. Install the nozzle on the fixed piping using a standard crescent wrench applied to the wrench flats. Take care not to overtighten or damage the spray nozzle.
G. Spray nozzles must be protected from mechanical damage. Where open spray nozzles are used, care must be taken to prevent foreign materials from entering the orifice. Foreign materials may accumulate and restrict or plug the waterway and may prevent proper operation of the spray nozzle.
H. From NFPA 13, 2019 edition:
   - 8.7.9.7 - Window sprinklers shall be permitted to cover more than 25 ft^2 (2.3 m^2) of window area per level.
   - 8.7.9.7.1 - The starting pressure shall be calculated based on the application rate over 25 ft^2 (2.3 m^2) of window area as indicated in Table 8.7.9.1.
   - 8.7.9.7.2 - The maximum spacing between window sprinklers shall not exceed 8 ft (2.4 m) unless listed for a greater distance.

5 OPERATION

Model C-1 Window Sprinklers are open sprinklers used to produce a water curtain. They are installed on manual or automatic deluge systems to protect windows against outside exposing fires.

6 INSPECTIONS, TESTS AND MAINTENANCE

NOTICE

The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the NFPA standard (e.g., NFPA 25) 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.

A. Sprinklers and spray nozzles must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Where open spray nozzles are installed, verify that foreign materials (such as dust, dirt, etc.) do not restrict or plug the waterspray. The frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.
B. Sprinklers and spray nozzles that have been painted or mechanically damaged must be replaced immediately. Nozzles showing signs of corrosion shall be tested and/or replaced immediately as required. When replacing spray nozzles, use only new spray nozzles.
   1. Using a standard crescent wrench, remove the old spray nozzle and install the new unit. Care must be taken to ensure that the replacement spray nozzle is the proper model with the correct K-Factor. The nozzle orifice size and SIN are stamped on the wrench boss.
C. The spray nozzle discharge pattern is critical for proper fire protection. Therefore, nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. All obstructions must be immediately removed or, if necessary, additional nozzles installed.
D. Fire protection systems that have been subjected 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. Spray nozzles that have been exposed to corrosive products of combustion or high ambient temperatures, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

7 AVAILABILITY

The Viking Model C-1 Window 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.

VIKING®

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Approval Chart
Model C-1 Window Sprinklers

Part Number[1]	SIN[2]	NPT Thread Size		Nominal K-Factor		Orifice Size[2]		Overall Length		Hex Wrench Boss Size		Listings and Approvals[4] (Refer also to Design Criteria.)				
		Inches	mm	U.S.	metric[3]	Inches	mm	Inches	mm	Inches	mm	cULus[5]	NYC[6]	FM	China Approval[8]	VdS
01320B	VK790	1/2	15	1.5	21.6	1/4[7]	6	1-3/4	44	1	25	Yes	Yes	Yes[7]	--	--
15583	VK790	1/2	15	1.5	21.5	1/4[7]	6	1-3/4	44	1	25	Yes	--	Yes[7]	--	Yes
19889[9]	VK790	1/2	15	1.5	21.5	1/4[7]	6	1-3/4	44	1	25	Yes	--	Yes	Yes	--
01321B	VK791	1/2	15	2.1	30.3	5/16[7]	8	1-3/4	44	1	25	Yes	Yes	Yes[7]	--	--
19890[9]	VK791	1/2	15	2.1	30.3	5/16[7]	8	1-3/4	44	1	25	Yes	--	Yes	Yes	--
01322B	VK792	1/2	15	3.0	43.2	3/8	10	1-3/4	44	1	25	Yes	Yes	Yes	--	--
19891[9]	VK792	1/2	15	3.0	43.2	3/8	10	1-3/4	44	1	25	Yes	--	Yes	Yes	--
01323B	VK793	1/2	15	4.3	62	7/16	11	1-3/4	44	1	25	Yes	Yes	Yes	--	--
19892[9]	VK793	1/2	15	4.3	62	7/16	11	1-3/4	44	1	25	Yes	--	Yes	Yes	--
01324B	VK794	1/2	15	5.8	83.6	1/2	13	1-15/16	49	1-1/4	32	Yes	Yes	--	--	--
19893[9]	VK794	1/2	15	5.8	83.6	1/2	13	1-15/16	49	1-1/4	32	Yes	--	--	Yes	--
01325B	VK795	3/4	20	7.3	105.2	5/8	16	2-1/16	52	1-1/4	32	Yes	Yes	--	--	--
01326B	VK796	3/4	20	8.1	116.8	3/4	19	2-3/16	56	1-1/4	32	Yes	Yes	--	--	--

Footnotes

1. Base part number is shown. For complete part number, refer to Viking's current price schedule.
2. The nozzle orifice size and SIN are stamped on the wrench boss.
3. Metric K-Factor shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-Factor shown by 10.0.
4. This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
5. Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
6. Approved by the NYC Board of Standards and Appeals, MEA No. 219-76-SA, Bulletin No. 30, Vol. LXVI.
7. Orifice diameter is less than 3/8" (9.4 mm) for Model C-1 Window Sprinklers with K-Factors of 2.1 and 1.5. A pipeline strainer with a 1/8" (3.2 mm) or less perforation is required for FM Approval.
8. Approved according to China GB standard.
9. Only avaialble in Brass.

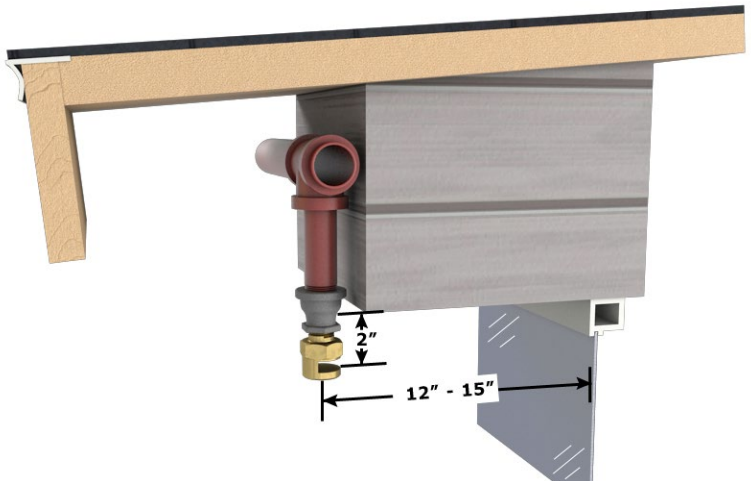


Figure 1: Installation of a Model C-1 Window Sprinkler

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From NFPA 13, 2019 edition: Table 8.7.9.1 Exposure Protection							
Section A - Wall and Window Sprinklers							
Exposure Severity	**Guide Number**	**Level of Wall or Window Sprinklers**	**Minimum Nominal K-factor**	**Discharge Coefficient (K-factor)**		**Minimum Average Application Rate over Protected Surface**	
				U.S.	**(metric)**	**gpm/ft²**	**mm/min**
Light	1.50 or less	top 2 Levels	2.8 (40)	2.8 (40)		0.20	8.1
		Next lower 2 levels	1.9 (27)	1.9 (27)		0.15	6.1
		Next lower 2 levels	1.4 (20)	1.4 (20)		0.10	4.1
Moderate	1.5-2.20	top 2 Levels	5.6 (80)	5.6 (80)		0.30	12.2
		Next lower 2 levels	4.2 (60)	4.2 (60)		0.25	10.2
		Next lower 2 levels	2.8 (40)	2.8 (40)		0.20	8.1
Severe	>2.20	top 2 Levels	11.2 (161)	11.2 (161)		0.40	16.3
		Next lower 2 levels	8.0 (115)	8.0 (115)		0.35	14.3
		Next lower 2 levels	5.6 (80)	5.6 (80)		0.30	12.2

DESIGN CRITERIA

(Also refer to the Approval Chart on page 13.)

cULus Listing Requirements:

Model C-1 Window Sprinklers are intended for protection of windows, walls, and roofs against exposure fires. Refer to the installation standards, such as NFPA 13, for minimum water supply requirements, nozzle pressure, and installation guidelines.

FM Approval Requirements:

Consult FM Approval Guide for acceptable applications. For installation in accordance with the latest applicable FM Loss Prevention Data Sheets and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and distance below the ceiling.

Pipline Strainers

Orifice diameter is less than 3/8” (9.4 mm) for Model C-1 Window Sprinklers with K-Factors of 2.1 and 1.5. A pipeline strainer with a 1/8” (3.2 mm) or less perforation is required for FM Approval.

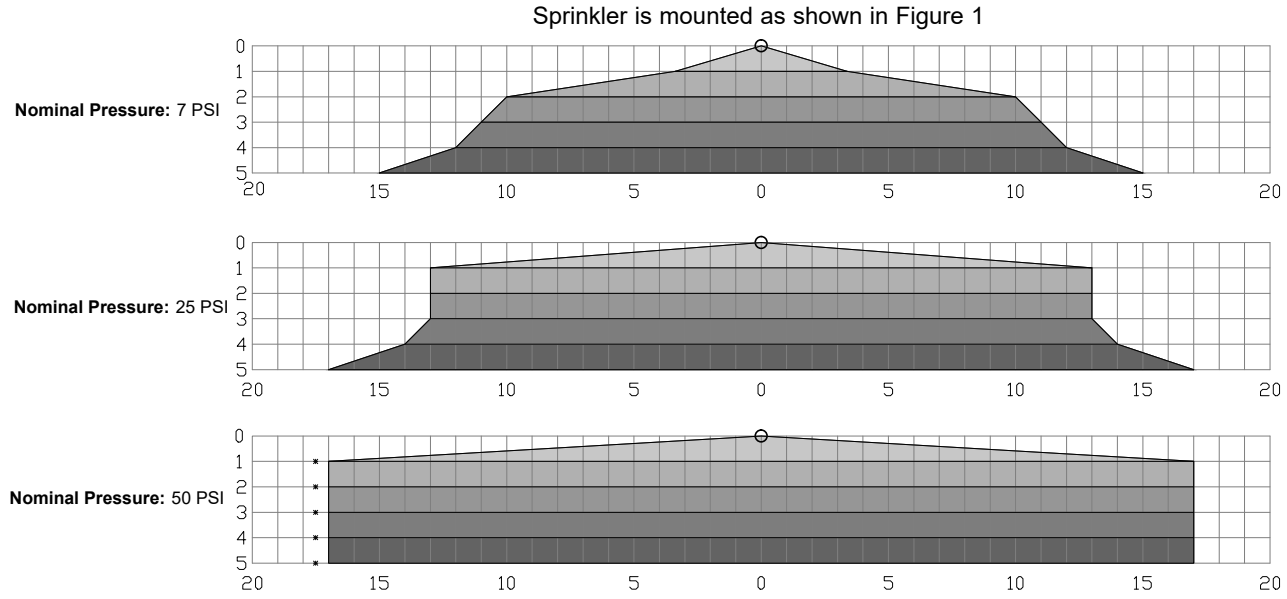
NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Viking window 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.

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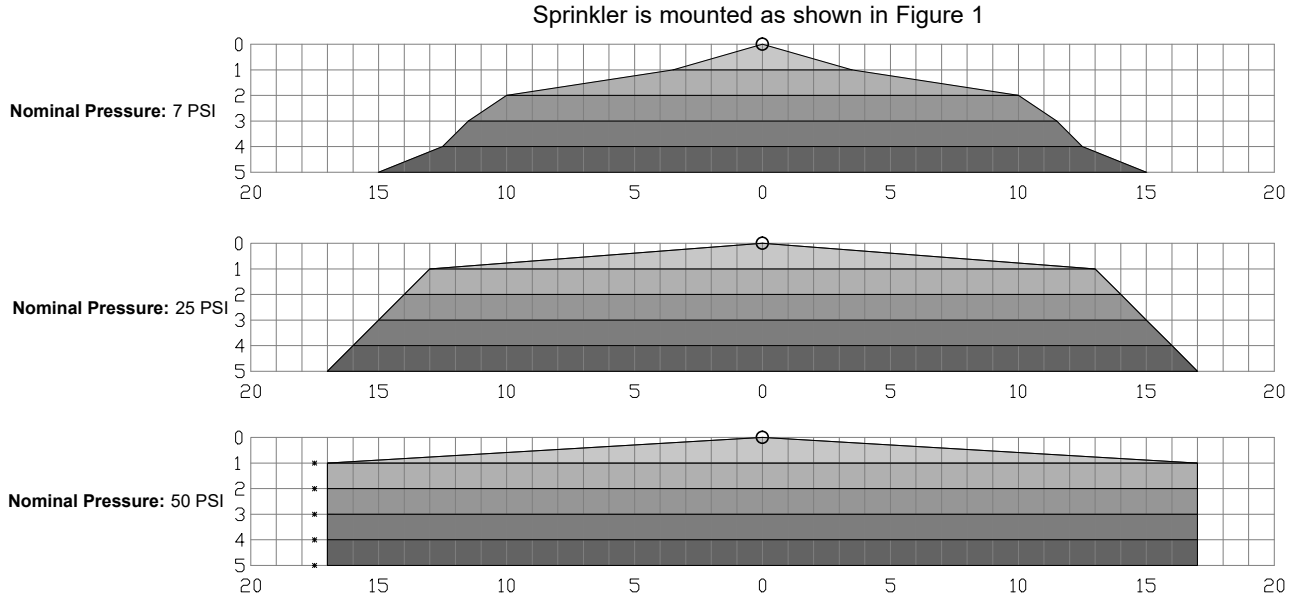
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WINDOW SPRINKLER MODEL: VK790
BASE P/N: 01320B
K-FACTOR: 1.5 U.S. (21.6 METRIC)

* SPRAY COVERAGE EXTENDS BEYOND AN AREA THAT COULD BE ACCURATELY MEASURED.
SCALE: EACH SQUARE EQUALS ONE FOOT.

Figure 2: VK790 Distribution Coverage



WINDOW SPRINKLER MODEL: VK791
BASE P/N: 01321B
K-FACTOR: 2.1 U.S. (30.3 METRIC)

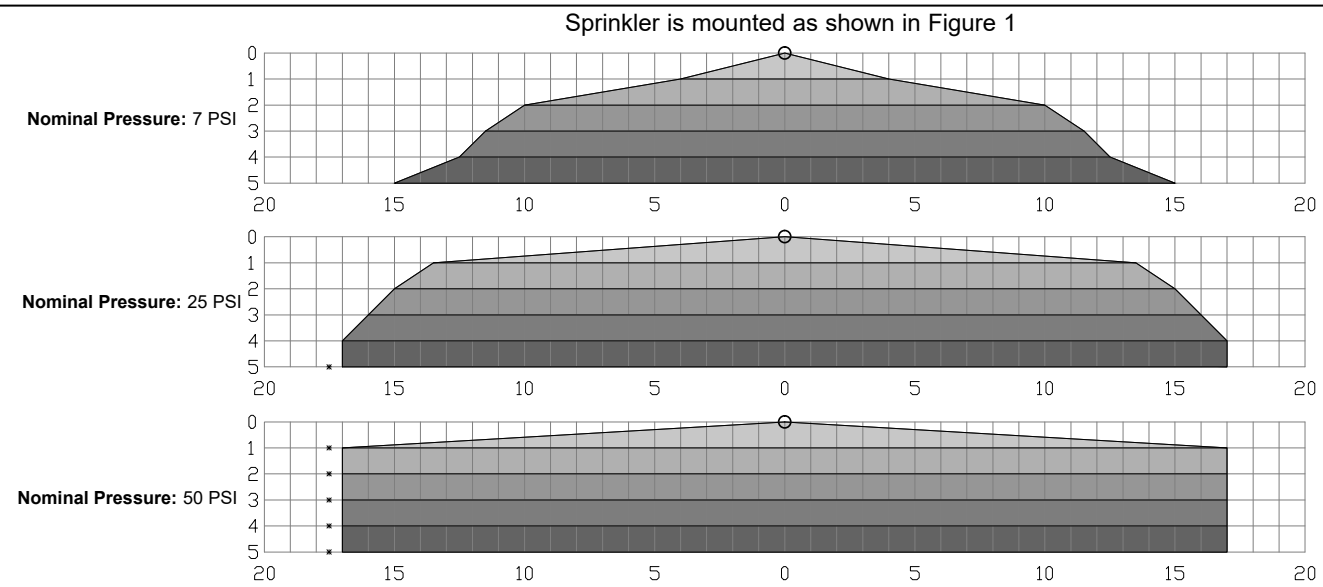
* SPRAY COVERAGE EXTENDS BEYOND AN AREA THAT COULD BE ACCURATELY MEASURED.
SCALE: EACH SQUARE EQUALS ONE FOOT.

Figure 3: VK791 Distribution Coverage

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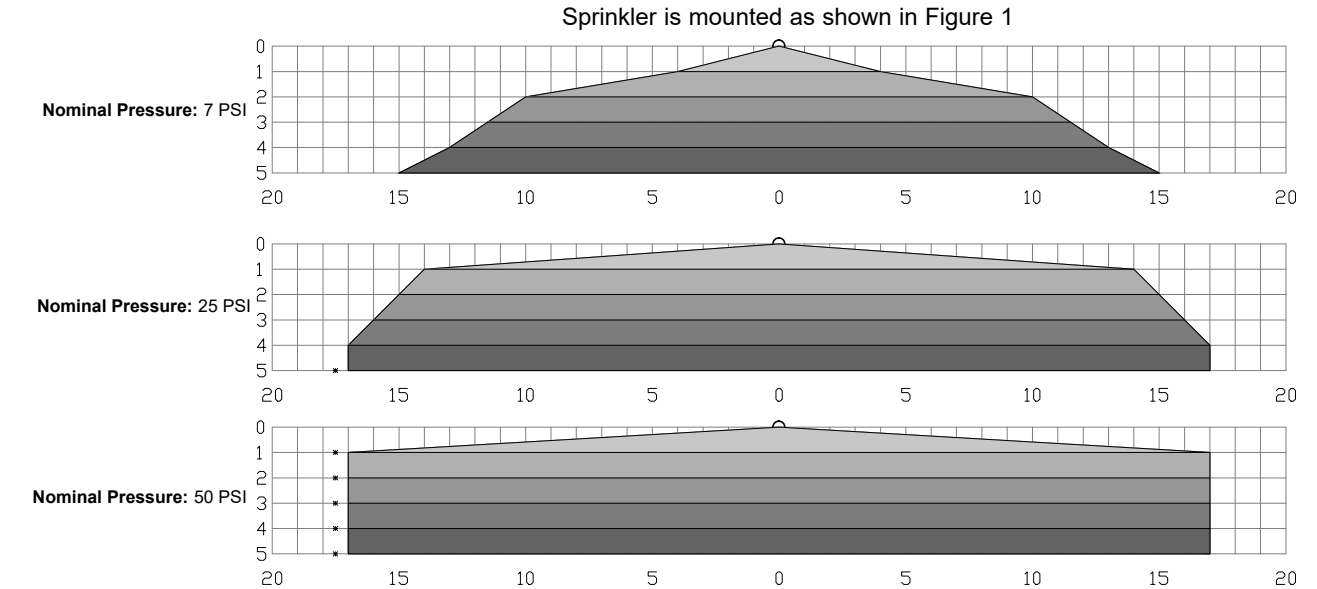
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WINDOW SPRINKLER MODEL: VK792
BASE P/N: 01322B
K-FACTOR: 3.0 U.S. (43.2 METRIC)

* SPRAY COVERAGE EXTENDS BEYOND AN AREA THAT COULD BE ACCURATELY MEASURED.
SCALE: EACH SQUARE EQUALS ONE FOOT.

Figure 4: VK792 Distribution Coverage



WINDOW SPRINKLER MODEL: VK793
BASE P/N: 01323B
K-FACTOR: 4.3 U.S. (62.0 METRIC)

* SPRAY COVERAGE EXTENDS BEYOND AN AREA THAT COULD BE ACCURATELY MEASURED.
SCALE: EACH SQUARE EQUALS ONE FOOT.

Figure 5: VK793 Distribution Coverage