FireLock® LP-46 Low Pressure Storage Sprinkler

FM ** UL **

SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

Model LP-46 (SIN) V4601, K25, Standard Response Storage Pendent Sprinkler

MODEL LP-46

PENDENT (V4601)

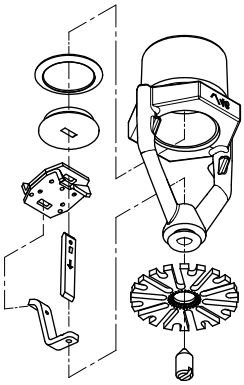
This storage sprinkler was designed for controlling fires in single, double and multiple row rack storage of up to Cartoned, Unexpanded, Group A plastic commodities stored up to 35 feet/10.7 meters in height under a maximum 40 foot/12.2 meter high ceiling without the need for in-rack sprinklers. These sprinklers utilize a standard response, fusible element, stainless steel operating components and a Teflon coated spring seal. The Model LP-46 has a K-Factor of 25.2 imp/36.8 S.I.

** Note: FM design criteria listed on page 2. UL/NFPA 13 design criteria listed on page 4.

SPRINKLER OPERATION:

The operating mechanism is a durable, standard response, fusible solder link. During a fire, the ambient temperature rises causing the solder to melt. When the ambient temperature reaches the rated temperature of the sprinkler, the link fuses. As a result, the waterway is cleared of all sealing parts and water is discharged towards the deflector. The deflector is designed to distribute the water in a pattern that is most effective in controlling rapidly growing storage fires.

TECHNICAL SPECIFICATIONS:



Exaggerated for clarity

Model: LP-46 (SIN V4601)
Style: Pendent
K-Factor: 25.2 Imp/36.8 S.I.^
Nominal Thread Size: 1" NPT/25mm BSPT
Max. Working Pressure: 175 psi/1200 kPa
Factory Hydrostatic Test: 100% @ 500 psi/3450 kPa
Min. Operating Pressure: Application specific
Temperature Rating: See chart on page 2.

MATERIAL SPECIFICATIONS
Deflector: Bronze per UNS C51000
Link: Nickel per UNS N02200
Lever: Monel per UNS N04400
Load Screw: Stainless Steel per UNS S31600
Cap: Stainless steel per UNS S31600
Seal: Teflon* tape
Strut: Monel per UNS N04400
Frame: Proprietary Dezincification Resistant Die-Cast Brass

ACCESSORIES
Installation Wrench:
- Open End: V46

Sprinkler Finishes:
- Plain brass

For cabinets and other accessories, refer to separate sheet.
^ For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0

* Teflon is a registered trademark of Dupont Co.

JOB/OWNER
System No. _____
Location _____

CONTRACTOR
Submitted By _____
Date _____

ENGINEER
Spec Sect _____ Para _____
Approved _____
Date _____

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APPROVALS/LISTINGS

Model	Nominal K-Factor	Response	Deflector Type	FM Approved Temperature Ratings ‡	UL Listed Temperature Ratings ‡
	Imperial S.I.^				
V4601	25.2 36.8	Standard	Pendent	162°F/72°C 212°F/100°C 286°F/141°C	162°F/72°C 212°F/100°C 286°F/141°C

^ For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0.

‡ Listings and approvals as of printing.

TEMPERATURE RATINGS

162°F/72°C rated sprinklers should be used whenever possible. 212°F/100°C temperature rated sprinklers are Listed and Approved for use adjacent to unit heaters or throughout the building when the ceiling temperatures consistantly exceed 100°F/38°C. 286°F/141°C temperature rated sprinklers are Listed and Approved for use adjacent to unit heaters or where required by hazard class.

RATINGS

All links are rated for temperatures from -67°F/-55°C to those shown in table below.

Sprinkler Temperature Classification	Victaulic Part Identification	Temperature – °F/°C		Link Color
		Nominal Temperature Rating	Maximum Ambient Temperature Allowed	
Ordinary	N	162 72	100 38	Black/None
Intermediate	G	212 100	150 65	Black with White Dot/ White arms
High	J	286 141	225 107	Black with Blue Dot/ Blue arms

SYSTEM DESIGN AND LISTING REQUIREMENTS PER FM GLOBAL

FM

LP-46 Pendent (V4601) for Wet Systems Class I - IV and Cartoned Unexpanded Group A Plastic Solid-Piled, Palletized, Shelf or Bin-Box arrangements Open Frame Rack Storage arrangements		
Up to 40 ft/12.2 m high ceiling and up to 35 ft/10.7 m high storage	Number of Sprinklers	12
	Discharge Pressure (psi/kPa)	30/207
	System Demand (gpm/lpm)	1656/6269
Up to 30 ft/9.1 m high ceiling and up to 25 ft/7.6 m high storage	Number of Sprinklers	12
	Discharge Pressure (psi/kPa)	10/69
	System Demand (gpm/lpm)	956/3619
Up to 30 ft/6.1 m high ceiling and up to 15 ft/4.6 m high storage	Number of Sprinklers	12*
	Discharge Pressure (psi/kPa)	7/48*
	System Demand (gpm/lpm)	800/3028*

Data based upon FM Global Loss Prevention Data Sheet 8-9
10ft x 10ft/3m x 3m deflector spacing, 12"/305mm deflector to ceiling distance

Operating Area and Hose Stream Demand Requirements		
Number of Sprinklers	Hose Demand (gpm/lpm)	Duration (minutes)
12	250/946	60
13 - 15	500/1893	90
16 or more	500/1893	120

* One sprinkler for every 100 sq. ft/30.5 sq. m
Data based upon FM Global Loss Prevention Data Sheet 8-9

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SYSTEM DESIGN AND LISTING REQUIREMENTS PER FM GLOBAL

FM

LOSS PREVENTION RECOMMENDATIONS

Install the Victaulic V4601 K25.2 (K360) pendent automatic sprinkler in accordance with the following guidelines:

Application: This FM Approved pendent automatic sprinkler may be used to protect Class 1 through 4, and cartoned (unexpanded) Group A plastic commodities under ceilings up to and including 40 ft/12 m high. This sprinkler may also be used to protect other commodity hazards with limited ceiling heights. It may be used to protect any storage arrangement outlined in FM Global Data Sheet 8-9, however portable racks must meet the guidelines required to be considered open-frame racks. Maintain a minimum clearance of 3 ft/0.9 m between the top of storage and the sprinkler deflector.

Temperature Rating – The Victaulic V4601 K25.2 (K360) pendent sprinkler is available in nominal temperature ratings of either 162°F/72°C, 212°F/100°C or 286°F/141°C. Use the nominally rated 162°F/72°C sprinkler for all wet sprinkler system applications unless the ambient temperature of the protected occupancy requires the temperature rating to be 212°F/100°C.

Hydraulic Design:

Solid-Piled, Palletized, Shelf or Bin-Box and Open-Frame Racks: Base the sprinkler system design for this automatic sprinkler using a minimum pressure of 7psi/0.5 Bar for solid-piled, palletized, shelf or bin-box and 10psi/0.7 Bar for open-frame racks, as outlined in FM data sheet 8-9.

Storage Racks Equipped With Solid Shelves: Base the design of the ceiling sprinkler system as outlined above for open-frame racks, however base the need for, as well as the design of, in-rack sprinkler protection.

Commodity Hazards Other Than Class I- IV and Cartoned Plastics: The Victaulic V4601 K25.2 (K360) pendent sprinkler can be used to protect any commodity hazard that can be protected by the K16.8 (K240) upright CMSA sprinkler. Base the design for the K25.2 (K360) pendent sprinkler using the same design required for the K16.8 (K240) sprinkler, however base the required pressure using the following chart.

Commodities other than Class I-IV and Cartoned Plastics	
Design Pressure of K16.8 sprinkler*	Corresponding Design Pressure of LP-46 K25.2 Sprinkler*
psi/kPa	psi/kPa
15/103	7/48
20/138 or 22/152	10/69
35/241	15/103

* One sprinkler for every 100 sq. ft/30.5 sq. m

Data based upon FM Global Loss Prevention Data Sheet 8-9

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FM

Shape of Operating Area: This sprinkler is not permitted in buildings having a ceiling slope over 10° unless the ceiling sprinkler is supplemented with in-rack sprinkler protection.
Base the number of sprinklers in the Operating Area parallel to the branchline based on the following equation:

Number of AS in operating area parallel to branchline = (shape factor / on-line AS spacing) x (Number of AS x area spacing of sprinklers)$^{0.5}$.

Round this equation to the nearest whole number using standard rounding methods (i.e. round down if the resulting fraction is 0.49 or less and round up if the resulting fraction is 0.50 or greater).

System Types: Wet-pipe sprinkler systems or pre-action sprinkler systems, whose sprinkler protection design can be based on the equivalent of a wet-pipe system, are acceptable.

SPRINKLER SPACING

Ceiling Height (Up To and Including)		
30 ft/9m	Minimum Linear Distance Between Sprinklers	Maximum Linear Distance Between Sprinklers
	8 ft/2.4m	12 ft/3.6m
	Minimum Area of Coverage	Minimum Area of Coverage
	80 ft²/ 7.5m²	100 ft²/ 9.3m²
above 30 ft/9m and up to 40 ft/12.3m	Minimum Linear Distance Between Sprinklers	Maximum Linear Distance Between Sprinklers
	8 ft/2.4m	10 ft/3m
	Minimum Area of Coverage	Maximum Area of Coverage
	80 ft²/ 7.5m²	100 ft²/ 9.3m²

Sprinkler Location from Walls: Locate the automatic sprinkler with respect to walls, measured perpendicular to the wall, as follows:

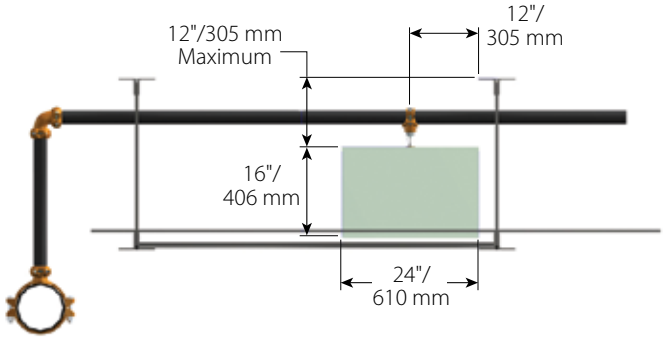
- Minimum Horizontal Distance: 4"/100mm
- Maximum Horizontal Distance unless indicated otherwise in either the FM Global occupancy specific data sheet or the FM Approval Guide:
  (a) Wall Angle Greater Than 90°: 5ft/1.5m
  (b) Wall Angle Equal to or Less Than 90°: 7ft/2.1m

Sprinkler Location from Ceilings: Locate the centerline of the thermal sensing element of the automatic sprinkler with respect to the vertical distance below ceilings as follows:

- Minimum Vertical Distance: 2"/50mm for smooth ceilings or 4"/100mm for non-smooth ceilings.
- Maximum Vertical Distance: Standard Response sprinklers or extended coverage sprinklers 12"/300mm for all ceiling heights.

Obstructions: Use the obstruction guidelines outlined in FM Global Data Sheet 2-0 for this sprinkler, except that an individual object up to a maximum width of 1.25"/31mm can be tolerated less than 12"/300mm horizontally away from the sprinkler as long as the object is located at least 16"/400mm vertically below the sprinkler.

All other design details, should be in accordance with FM Global Data Sheet 8-9.



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MODEL LP-46

SYSTEM DESIGN AND LISTING REQUIREMENTS PER UNDERWRITER'S LABORATORIES, INC. (UL)

SCOPE
The Victaulic K25.2 (K360) pendent sprinkler (SIN V4601) has been UL Listed as a Control Mode Specific Application (CMSA) sprinkler for installation on 1"/25mm npt pipe thread fittings

UL, NFPA 13 Applications

Commodity: Up to cartoned, unexpanded group A plastic
Storage Arrangement: Single, double or multi-row, open-shelf rack storage, minimum 4 ft aisles

Height: 40ft/12.2m ceiling maximum, 35ft/10.7m storage maximim
Design Discharge: 15 most remote sprinklers at a minimum discharge pressure of 23 psi/159 kPA

or

Height: 30ft/9.1m ceiling maximum, 25ft/7.6m storage maximum
Design Discharge: 15 most remote sprinklers at a minimum discharge pressure of 10 psi/69 kPA

Hose Stream and Duration: per NFPA 13 for CMSA sprinklers
Installation Per: NFPA 13 for CMSA sprinklers
Obstruction Rules: NFPA 13 for ESFR sprinklers

UL Design Criteria – Palletized, solid pile, Bin-Box, Single-, Double-, and Multiple Rack Storage (without solid shelves) storage of class I-IV and plastic commodities for storage maintained under ceiling heights up to and including 40ft/12.2m using Control Mode Specific Application pendent sprinkler LP-46.

Configuration	Commodity Class	Maximum Ceiling/ Roof Height		Number of Design Sprinklers	Minimum Operating Pressure	
Palletized and Solid Piles, Shelf or Bin-Box, and Open Frame (no open-top containers or solid shelves)	Class I-IV and Cartoned Unexpanded Plastics	30 ft*	9.1 m	15 most remote	10 psi	69 kPa
		40 ft*	12.0 m	15 most remote	23 psi	159 kPa

*Hose Stream allowance and water supply duration per NFPA 13 for Control Mode Specific Application sprinklers

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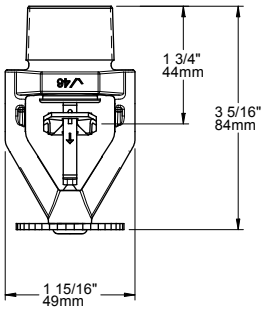
DIMENSIONS

Standard Pendent – LP-46 (SIN V4601)



AVAILABLE WRENCHES

Sprinkler Type	Open End
LP-46 (SIN V4601) Pendent	V46

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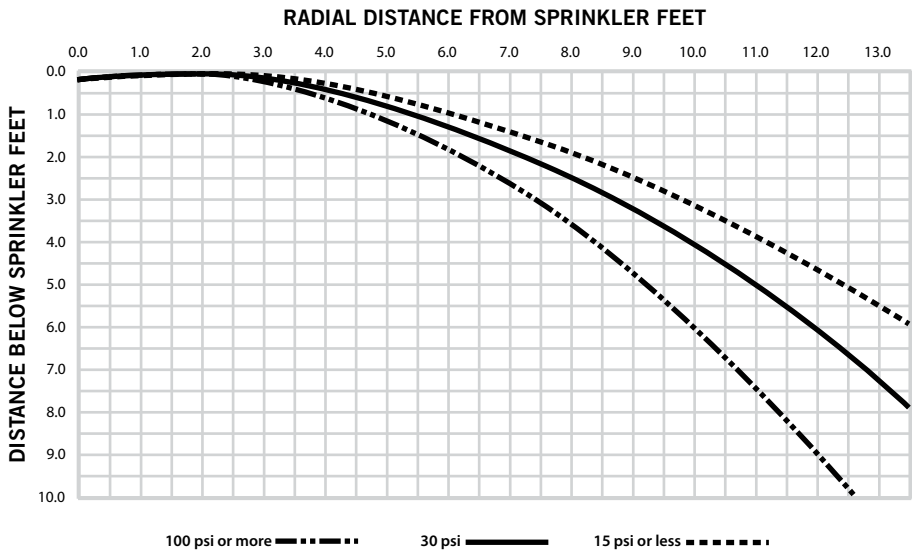
MODEL LP-46

NOMINAL WETTING PATTERNS

Model LP-46 (SIN V4601)
Pendent Spray Pattern

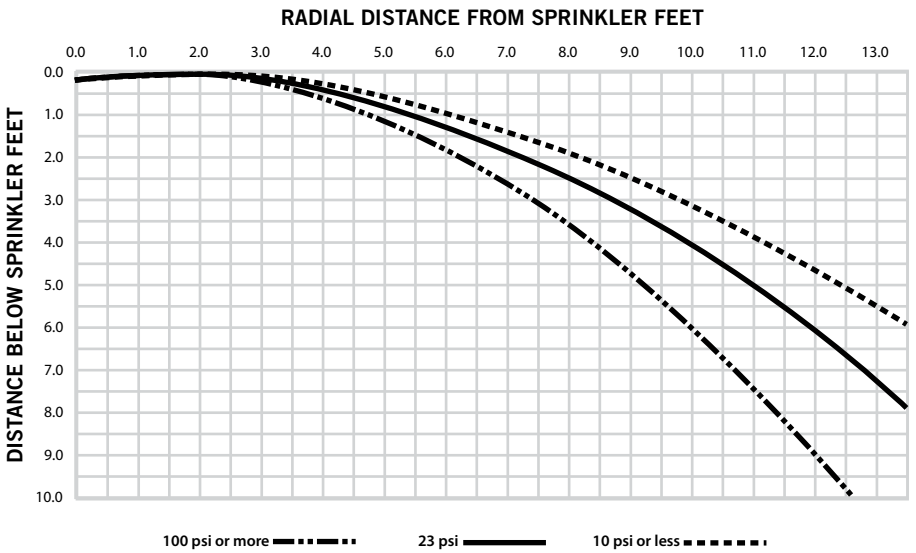


NOTES:

1 Data shown is approximate and can vary due to differences in installation.

2 These graphs illustrate approximate wetting patterns for these specific Victaulic FireLock Automatic Sprinklers. They are provided as information for guidance and should not be used as minimum sprinkler spacing rules for installation. Sprinkler location shall be in accordance with FM Global Engineering Bulletin and/or Data Sheets or NFPA 13. Failure to follow these guidelines could adversely affect the performance of the sprinkler and will void all Listings, Approvals and Warranties.

3 All patterns are symmetrical to the waterway.



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ORDERING INFORMATION

Please specify the following when ordering:

Sprinkler Model Number	
Style	
Temperature Rating	
K-Factor	
Thread Size	
Quantity	
Sprinkler Finish	
Escutcheon Finish	
Wrench Model Number	

WARNING

⚠ WARNING

- **Always read and understand installation, care, and maintenance instructions, supplied with each box of sprinklers, before proceeding with installation of any sprinklers.**
- **Always wear safety glasses and foot protection.**
- **Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.**
- **Installation rules, especially those governing obstruction, must be strictly followed.**
- **Painting, plating, or any re-coating of sprinklers (other than that supplied by Victaulic) is not allowed.**

Failure to follow these instructions could result in serious personal injury and/or property damage.

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 current National Fire Protection Association 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.

If you need additional copies of this publication, or if you have any questions about the safe installation of this product, contact Victaulic World Headquarters: P.O. Box 31, Easton, Pennsylvania 18044-0031 USA, Telephone: 001-610-559-3300.

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WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.