

# Victaulic® FireLock™ Series FL-SR/ST/CMSA Storage, Standard Response CMSA Upright Sprinklers K25.2 (36.8)



## 1.0 PRODUCT DESCRIPTION

STANDARD RESPONSE STORAGE SPRINKLER	
SIN	V4603
SPRINKLER TYPE	NFPA- CMSA/FM-Standard Response Storage
SPRINKLER RESPONSE	SR
ORIENTATION	Upright
K-FACTOR <sup>1</sup>	25.2 Imp./36.8 S.I.
CONNECTION	1"NPT/25 mm BST/IGS™ Grooved
MAX. WORKING PRESSURE	175 psi (1200 kPa)

AVAILABLE WRENCHES		
SPRINKLER	V46 Open End	3/16 Hex-Bit (V9)
UPRIGHT	■	■

**Factory Hydrostatic Test:** 100% @ 500 psi/3447 kPa/34 bar

**Min. Operating Pressure:** FM: 7 psi/48 kPa/.5 bar

<sup>1</sup> For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

## 2.0 CERTIFICATION/LISTINGS



STANDARD RESPONSE UPRIGHT APPROVALS/LISTINGS		
SIN	cULus (NFPA)	FM
		<b>V4603</b>
Nominal K Factor Imperial		25.2
Nominal K Factor S.I. <sup>2</sup>		36.3
Sprinkler Type	CMSA	Standard Response Storage
System Type		Wet/Dry
Response Type		Standard
Temperature Rating	165°F/74°C 212°F/100°C 286°F/141°C	165°F/74°C 212°F/100°C 286°F/141°C
Maximum Area of Coverage	See NFPA 13	100ft <sup>2</sup> /9.1m <sup>2</sup>
Minimum Area of Coverage	80ft <sup>2</sup> /7.4m <sup>2</sup>	80ft <sup>2</sup> /7.4m <sup>2</sup>
Maximum Slope Ceiling	2 in 12/10.5°	2 in 12/10.5°
Maximum Spacing	See NFPA 13	Datasheet 2-0
Minimum Spacing	8ft/2.4m	8ft/2.4m
Deflector to Ceiling Distance <sup>3</sup>	See NFPA 13	4" – 11"/100mm – 279mm
Minimum Deflector to Top of Storage	3ft/0.9m	3ft/0.9m
Minimum Deflector Distance from Walls	4"/100mm	4"/100mm
Obstruction Criteria	See NFPA 13	Datasheet 2-0
Minimum Aisle Width	See NFPA 13	Datasheet 2-0
Hose Stream Allowance and Duration	See NFPA 13	Datasheet 8-9
<b>Storage Type</b>		
Open Frame (that is, no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	See NFPA 13	Datasheet 8-9
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	See NFPA 13	Datasheet 8-9
Idle Pallet Storage	N/A	Datasheet 8-24
Rubber Tire Storage	N/A	Datasheet 2-0 and 8-3
Rolled Paper Storage (Refer to the standard.)	N/A	Datasheet 8-21
Flammable Liquid Storage (Refer to the standard.)	N/A	Datasheet 7-29
Aerosol Storage (Refer to the standard.)	N/A	Datasheet 7-31
Automotive Components in Portable Racks (Control mode only, refer to the standard.)	N/A	N/A

<sup>2</sup> For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

<sup>3</sup> Distance is taken from the center of the thermal element for FM.

### NOTES

- Listings and approval as of printing.
- V4603 sprinkler may also be used as a control mode specific application sprinkler (CMSA) in accordance the Alternative Sprinkler Systems Design chapter for NFPA 13 (Chapter 24 in the 2019 ed.) based on testing completed at FM Global. Specific Application design criteria is described Section 5.0.

### 3.0 SPECIFICATIONS – MATERIAL

**Deflector:** Bronze

**Load Screw:** Stainless steel

**Pip Cap:** Brass

**Spring Seal:** PTFE coated Beryllium nickel alloy

**Frame:** Brass

**Link:** Nickel

**Lever:** Monel

**Strut:** Monel

**Coupling:** Refer to Victaulic [publication 10.65](#)

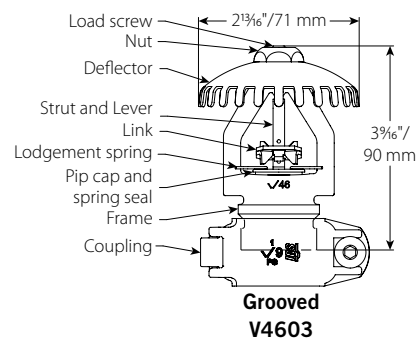
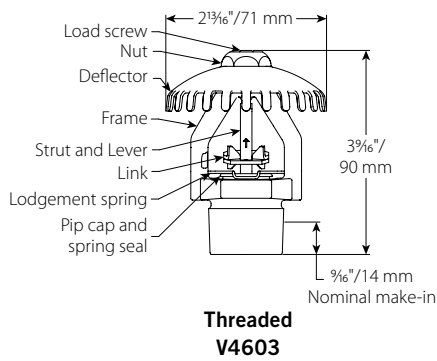
**Installation Wrench:** Ductile iron

**Sprinkler Frame Finishes:** Plain brass

**NOTE**

- For cabinets and other accessories refer to separate sheet.

### 4.0 DIMENSIONS



## 5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

Information taken from FM8-9 as of Jan 1st 2020 be sure to check the most current version of the FM Datasheets, information for reference only.

WET SYSTEMS						
FM Loss Prevention Datasheet 8-9	Table 2	Table 3	Table 4	Table 5	Table 6	
	Solid-Piled, Palletized, Shelf, and Bin-Box Arrangements					
Arrangement	Protection of Class 1, 2, and 3 Commodities	Protection of Class 4 and Cartoned Unexpanded Plastic Commodities	Protection of Cartoned Expanded Plastic Commodities	Protection of Uncartoned Unexpanded Plastic Commodities	Protection of Uncartoned Expanded Plastic Commodities	
Commodity						
Ceiling Height ft (m)	10 (3.0)	9@7 (0.5)	9@7 (0.5)	12 @ 7 (0.5)	12 @ 7 (0.5)	12 @ 7 (0.5)
	15 (4.5)	N/A	10@7 (0.5)	N/A	N/A	N/A
	20 (6.0)	9@7 (0.5)	10@7 (0.5)	12@8 (0.6)	12@8 (0.6)	12@8 (0.6)
	25 (7.5)	10@7 (0.5)	10@7 (0.5)	12@10 (0.7)	12@10 (0.7)	12@10 (0.7)
	30 (9.0)	12@20 (1.4)	12@20 (1.4)	25@10 (0.7)	25@10 (0.7)	N/A

WET SYSTEMS						
FM Loss Prevention Datasheet 8-9	Table 7	Table 8	Table 9	Table 10	Table 11	
	Open-Frame Storage Racks					
Arrangement	Protection of Class 1, 2 and 3 Commodities	Protection of Class 4 and Cartoned Unexpanded Plastic Commodities	Protection of Cartoned Expanded Plastic Commodities	Protection of Uncartoned Unexpanded Plastic Commodities	Protection of Uncartoned Expanded Plastic Commodities	
Commodity						
Ceiling Height ft (m)	10 (3.0)	9@7 (0.5)	9@7 (0.5)	15@7 (0.5)	15@7 (0.5)	15@7 (0.5)
	15 (4.5)	N/A	10@7 (0.5)	15@10 (0.7)	15@10 (0.7)	15@10 (0.7)
	20 (6.0)	12 @ 7 (0.5)	12 @ 7 (0.5)	N/A	N/A	N/A
	25 (7.5)	10@20 (1.4)	12@20 (1.4)	N/A	N/A	N/A
	30 (9.0)	12@20 (1.4)	12@20 (1.4)	N/A	N/A	N/A

**Note:** Highlighted cells have a 250 gpm 1 hour duration for hose stream.

DRY-PIPE AND SIMILAR SPRINKLER SYSTEMS							
FM Loss Prevention Datasheet 8-9	Table 2	Table 3	Table 4	Table 5	Table 6		
	Solid-Piled, Palletized, Shelf, and Bin-Box Arrangements						
Arrangement	Protection of Class 1, 2, and 3 Commodities	Protection of Class 4 and Cartoned Unexpanded Plastic Commodities	Protection of Cartoned Expanded Plastic Commodities	Protection of Uncartoned Unexpanded Plastic Commodities	Protection of Uncartoned Expanded Plastic Commodities		
Commodity							
Ceiling Height ft (m)	10 (3.0)	16@7 (0.5)	16@7 (0.5)	16@7 (0.5)	16@7 (0.5)	20 @ 7 (0.5)	
	15 (4.5)	N/A	16@7 (0.5)	N/A	N/A	N/A	
	20 (6.0)	16@7 (0.5)	16@7 (0.5)	16@8 (0.6)	16@8 (0.6)	20 @ 8 (0.6)	
	25 (7.5)	20 @ 7 (0.5)	16@7 (0.5)	20 @ 10 (0.7)	20 @ 10 (0.7)	20@10 (0.7)	
	30 (9.0)	25@10 (0.7)	30@10 (0.7)	30@10 (0.7)	30@10 (0.7)	N/A	
	35 (10.5)	For Ceiling Heights over 35 ft see table below for detailed design information					
	40 (12.0)						
45 (13.5)							

DRY-PIPE AND SIMILAR SPRINKLER SYSTEMS							
FM Loss Prevention Datasheet 8-9	Table 7	Table 8	Table 9	Table 10	Table 11		
	Open-Frame Storage Racks						
Arrangement	Protection of Class 1, 2 and 3 Commodities	Protection of Class 4 and Cartoned Unexpanded Plastic Commodities	Protection of Cartoned Expanded Plastic Commodities	Protection of Uncartoned Unexpanded Plastic Commodities	Protection of Uncartoned Expanded Plastic Commodities		
Commodity							
Ceiling Height ft (m)	10 (3.0)	16@7 (0.5)	16@7 (0.5)	20 (1.4)@7 (0.5)	20 @ 7 (0.5)	25@7 (0.5)	
	15 (4.5)	N/A	20 @ 7 (0.5)	N/A	N/A	N/A	
	20 (6.0)	16@7 (0.5)	20 @ 7 (0.5)	20 @ 10 (0.7)	20 @ 10 (0.7)	25@10 (0.7)	
	25 (7.5)	20 @ 7 (0.5)	20 @ 13 (0.9)	N/A	N/A	N/A	
	30 (9.0)	25@10 (0.7)	30@20 (1.4)	N/A	N/A	N/A	
	35 (10.5)	For Ceiling Heights over 35 ft see table below for detailed design information					
	40 (12.0)						
45 (13.5)							

## 5.0 PERFORMANCE (CONTINUED)

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

Information taken from FM8-9 as of Jan 1st 2020 be sure to check the most current version of the FM Datasheets, information for reference only.

CEILING-LEVEL SPRINKLER SYSTEM DESIGNS FOR CLASS 1 AND 2 COMMODITIES PROTECTED BY DRY-PIPE AND SIMILAR SPRINKLER SYSTEMS							
Max. Ceiling Height, ft (m)	Storage Arrangement	Ceiling- Level Sprinkler	Min. Rack Aisle Width, ft (m)	Sprinkler System Design, No. of AS @ Min. Pressure, psi (bar)	Max. Water Delivery Time	Hose Demand, gpm (L/min)	System Duration, minutes
35 (10.5)	Solid Piled, Palletized, Shelf, Bin-Box	K25.2 (K360)	DNA	20 @ 7 (0.5)	40	500 (1900)	120
40 (12.0)	Solid Piled, Palletized, Shelf, Bin-Box and Open-Frame Racks	K25.2 (K360)	4 (1.2)	24 @ 15 (1.0)	25	500 (1900)	120
			6 (1.8)	12 @ 50 (3.5)	20	500 (1900)	90
45 (13.5)	Solid Piled, Palletized, Shelf, Bin-Box and Open-Frame Racks	K25.2 (K360)	6 (1.8)	12 @ 50 (3.5)	20	500 (1900)	90

CEILING-LEVEL SPRINKLER SYSTEM DESIGNS FOR CLASS 3 COMMODITIES PROTECTED BY DRY-PIPE AND SIMILAR SPRINKLER SYSTEMS							
Max. Ceiling Height, ft (m)	Storage Arrangement	Ceiling- Level Sprinkler	Min. Rack Aisle Width, ft (m)	Sprinkler System Design, No. of AS @ Min. Pressure, psi (bar)	Max. Water Delivery Time	Hose Demand, gpm (L/min)	System Duration, minutes
35 (10.5)	Solid Piled, Palletized, Shelf, Bin-Box	K25.2 (K360)	DNA	20 @ 7 (0.5)	40	500 (1900)	120
40 (12.0)	Solid Piled, Palletized, Shelf, Bin-Box and Open-Frame Racks	K25.2 (K360)	4 (1.2)	24 @ 15 (1.0)	25	500 (1900)	120
			6 (1.8)	12 @ 50 (3.5)	20	500 (1900)	90
45 (13.5)	Solid Piled, Palletized, Shelf, Bin-Box and Open-Frame Racks	K25.2 (K360)	6 (1.8)	12 @ 50 (3.5)	20	500 (1900)	90


**Note:** Highlighted cells have a 250 gpm 1 hour duration for hose stream.

### NFPA 13 Specific Application Criteria

Storage Type	Specific Application Criteria	Specific Application Criteria	Specific Application Criteria
Sprinkler Type	Storage, CMSA	Storage, CMSA	Storage, CMSA
Temperature Rating	162F°/72°C, 212F°/100°C, 286F°/141°C	286F°/141°C	286F°/141°C
Response Type	Standard Response	Standard Response	Standard Response
System Type	WET	DRY	DRY
Maximum Area of Coverage	100 ft <sup>2</sup> (9.3m <sup>2</sup> )	100 ft <sup>2</sup> (9.3m <sup>2</sup> )	100 ft <sup>2</sup> (9.3m <sup>2</sup> )
Minimum Area of Coverage	80 sq. ft. (7.4m <sup>2</sup> )	80 sq. ft. (7.4m <sup>2</sup> )	80 sq. ft. (7.4m <sup>2</sup> )
Maximum Slope Ceiling	2/12 pitch	2/12 pitch	2/12 pitch
Maximum Spacing	10' (3.0m)	10' (3.0m)	10' (3.0m)
Minimum Spacing	8' (2.4m)	8' (2.4m)	8' (2.4m)
Deflector to Top of Storage	Minimum 3' (900mm)	Minimum 3' (900mm)	Minimum 3' (900mm)
Deflector Distance	12" Maximum	12" Maximum	12" Maximum
Maximum Ceiling Height	30' (10.7m)	35' (10.7m)	40' (10.7m)
Maximum Storage Height	25' (9.1m)	40' (9.1m)	45' (9.1m)
Storage Arrangement	Storage arrangements as outlined in Chapter 21 (2013, 2016 ed.) or Chapter 24 (2019 ed.) of NFPA 13 for CMSA upright Standard Coverage Sprinklers		
Commodity	Class I-IV commodities and Cartoned Unexpanded plastics		
Sprinkler System Design	12 @ 20 psi	24 @ 15 psi	12 @ 50 psi
Obstruction Criteria	In accordance with Chapter 21 (2013, 2016 ed.) or Chapter 24 (2019 ed.) of NFPA 13 for Standard Coverage Sprinklers		
Minimum Aisle Width	N/A	N/A	N/A
Hose Stream Allowance and Duration	250 gpm with a 60 minute duration	500 gpm with a 90 minute duration	250 gpm with a 60 minute duration
Water Delivery Time	N/A	25 Second Water Delivery	20 Second Water Delivery

\*Note: CMSA criteria is based on the original FM Approval for the V4603 sprinkler, which is included in Chapter 21 (2013, 2016 ed.) and Chapter 24 (2019 ed.) of NFPA 13. Additional design criteria for the Model V4603 sprinkler may be found in FM Global Property Loss Prevention Data Sheet 8-9. The Model V4603 sprinkler is described as a standard-response K25.2 upright storage sprinkler in FM Global Data Sheet 8-9.

## 6.0 NOTIFICATIONS

<b>⚠ WARNING</b>	
	<ul style="list-style-type: none"> <li>• Read and understand all instructions before attempting to install any Victaulic products.</li> <li>• Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.</li> <li>• Wear safety glasses, hardhat, and foot protection.</li> </ul> <p>Failure to follow these instructions could result in death or serious personal injury and property damage.</p>
<ul style="list-style-type: none"> <li>• These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.</li> <li>• The installer shall understand the use of this product and why it was specified for the particular application.</li> <li>• The installer shall understand common industry safety standards and potential consequences of improper product installation.</li> <li>• It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.</li> <li>• The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.</li> </ul> <p>Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.</p>	

## 7.0 REFERENCE MATERIALS

[1-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions](#)

[1-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions](#)

### User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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### 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.

### Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at [www.victaulic.com](http://www.victaulic.com).

### Warranty

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

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