1. DESCRIPTION
Viking Freedom® Residential Flush Pendent Sprinkler VK420 is a small, flush, high-sensitivity solder link and lever residential sprinkler. Designed for use with concealed piping, the units are mounted flush to the ceiling with the fusible link exposed. The sprinkler orifice design, with a K-Factor of 3.8 (55 metric*), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

The sprinklers are available with a Polished Chrome or White painted finish. The two-piece design of the sprinkler and ceiling ring allows installation and testing of the sprinkler prior to ceiling installation. The ceiling ring allows for up to 1/2" (13 mm) of vertical adjustment and can be removed and re-installed, allowing access above removable ceiling panels without shutting down the sprinkler system and removing the sprinkler.

2. LISTINGS AND APPROVALS
- **cULus Listed:** Category VKKW
- **FM Approved:** Class 2030

cULus Listings apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems. VK420 SPRINKLERS MANUFACTURED AFTER JULY 12, 2002 ARE NOT CULUS LISTED FOR USE IN NEW SYSTEMS. Refer to the Approval Charts and Design Criteria for cULus Listing and FM Approval requirements that must be followed.

3. TECHNICAL DATA
   **Specifications:**
   - Available since 1995.
   - Minimum Operating Pressure: 175 psi (12 bar). Factory tested pneumatically to 95 psi (6.55 bar).
   - Thread size: 1/2" (15 mm) NPT
   - Nominal K-Factor: 3.8 U.S. (55 metric*)

   * Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

   - Overall Length: 2-9/16" (65.1 mm)
   - Nominal Temperature rating: 165 °F (74 °C) - Ordinary; the temperature rating is stamped on the sprinkler body.
   - Maximum Ambient Ceiling Temperature: 100 °F (38 °C)

   **NOTE:** Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

   **Material Standards:**
   - Sprinkler Body: Brass UNS-C84400
   - Body Cap: Brass UNS-C26000
   - Cover: Stainless Steel UNS-S43000
   - Deflector: Copper UNS-C19500
   - Deflector Pins: Stainless Steel UNS-S30300
   - Button: Brass UNS-C31400
   - Compression Screw: Brass UNS-C36000
   - Element Assembly: Beryllium Nickel and Eutectic Solder
   - Levers: Stainless Steel UNS-S31600
   - Lever Bar: Copper Alloy UNS-C72500
   - Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
   - Ceiling Ring: Cold Rolled Steel UNS-G10080

   **Ordering Information:** Refer to Table 1.

4. INSTALLATION
   Refer to appropriate NFPA Installation Standards.

5. OPERATION
   The concealed deflector is held inside the body of the sprinkler until the eutectic metal solder link is fused.

6. INSPECTIONS, TESTS AND MAINTENANCE
   Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.
7. AVAILABILITY
Viking Sprinkler VK420 is available through a network of domestic and international distributors. See The Viking Corporation website 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.

### TABLE 1: SPRINKLER ORDERING INFORMATION

**NOTE:** The sprinkler and ceiling ring must be ordered separately.

**Instructions:** Using the base part number, add the suffix for the desired Finish.

<table>
<thead>
<tr>
<th>SIN or</th>
<th>Base Part</th>
<th>Size</th>
<th>1: Available Finishes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Number</td>
<td>NPT Inch</td>
<td>Description</td>
<td>Suffix</td>
</tr>
<tr>
<td>VK420</td>
<td>09458-C</td>
<td>1/2</td>
<td>Polished Chrome</td>
<td>F</td>
</tr>
<tr>
<td>Ceiling Ring</td>
<td>09390</td>
<td>--</td>
<td>White Polyester</td>
<td>M-/W</td>
</tr>
</tbody>
</table>

**Accessories**

**Sprinkler Wrenches:**
- A. Heavy Duty Part Number: 08336W/B¹
- B. Light Duty Wrench Part Number: 10366W/B²

**Sprinkler Cabinet:**
Holds up to 6 sprinklers: Part number 01731A (available since 1971).

**Footnotes**

¹ Requires a ½” ratchet (not available from Viking)
² Ideal for sprinkler cabinets

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**Figure 1:** Sprinkler Installation and Correct Use of Wrench
Approval Chart 1 (UL)

Residential Flush Pendent Sprinkler VK420

<table>
<thead>
<tr>
<th>Sprinkler Base Part Number</th>
<th>Ceiling Ring Base Part Number</th>
<th>SIN</th>
<th>NPT Thread Size</th>
<th>Nominal K-Factor</th>
<th>Maximum Water Working Pressure</th>
<th>Overall Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>09458</td>
<td>09390</td>
<td>VK420</td>
<td>1/2</td>
<td>15</td>
<td>3.8</td>
<td>55</td>
</tr>
</tbody>
</table>

Maximum Areas of Coverage

<table>
<thead>
<tr>
<th>Maximum Areas of Coverage</th>
<th>Minimum Water Supply Requirements</th>
<th>Listings and Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed below ceilings with slopes up to and including a 2/12 (9.5°) pitch</td>
<td>12 ft. x 12 ft. (3.7 m x 3.7 m) 10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar) 10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar) A1 A1 --</td>
<td>cULus NYC NSF</td>
</tr>
<tr>
<td>Installed below ceilings with slopes up to and including a 6/12 (26.6°) pitch</td>
<td>16 ft. x 16 ft. (4.9 m x 4.9 m) 16 gpm @ 17.7 psi (76 L/min @ 1.23 bar) 17 gpm @ 20 psi (65 L/min @ 1.38 bar) A1 A1 --</td>
<td>cULus NYC NSF</td>
</tr>
<tr>
<td></td>
<td>18 ft. x 18 ft. (5.5 m x 5.5 m) 20 gpm @ 27.7 psi (76 L/min @ 1.91 bar) 17 gpm @ 20 psi (65 L/min @ 1.38 bar) A1 A1 --</td>
<td>cULus NYC NSF</td>
</tr>
</tbody>
</table>

Sprinkler Temperature Rating

<table>
<thead>
<tr>
<th>A - 165 °F (74 °C)</th>
</tr>
</thead>
</table>

Finish

<table>
<thead>
<tr>
<th>1 - Polished Chrome or Painted White</th>
</tr>
</thead>
</table>

Footnotes

1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
2. Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
3. 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.
4. Listed by Underwriter’s Laboratories for use in the U.S. and Canada. Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 15. cULus Listings and NYC Approvals apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems.
5. Listings are for residential occupancies with smooth, flat, horizontal ceilings. Includes ceilings with slopes up to and including a 2/12 (9.5°) pitch.
6. For areas of coverage smaller than shown, use the “Minimum Water Supply Requirement” for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the “Minimum Water Supply Requirement” used.
7. Listings are for residential occupancies with ceilings sloped between a 0/12 (0°) pitch and a 6/12 (26.6°) pitch. Areas under sloped ceilings must be measured along the ceiling slope. Refer to Figure 4, Installation Notes on page 145f. Actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area of coverage.

DESIGN CRITERIA- UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

cULus Listings apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems. VK420 SPRINKLERS MANUFACTURED AFTER JULY 12, 2002 ARE NOT cULus LISTED FOR USE IN NEW SYSTEMS.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.
FREEDOM™ RESIDENTIAL 
FLUSH PENDENT 
SPRINKLER VK420 (K3.8)

TECHNICAL DATA

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

Approval Chart 2 (FM)
Residential Flush Pendent Sprinkler VK420
Sprinkler VK420 is FM Approved for use in new residential sprinkler systems 
as well as a replacement in existing residential sprinkler systems.

<table>
<thead>
<tr>
<th>Sprinkler Base Part Number¹</th>
<th>Ceiling Ring Base Part Number²</th>
<th>SIN</th>
<th>NPT Thread Size</th>
<th>Nominal K-Factor</th>
<th>Maximum Water Working Pressure</th>
<th>Overall Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>09458</td>
<td>09390</td>
<td>VK420</td>
<td>1/2</td>
<td>15</td>
<td>3.8</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inches</td>
<td>mm</td>
<td>U.S.</td>
<td>metric²</td>
</tr>
</tbody>
</table>

Maximum Areas of Coverage ¹

<table>
<thead>
<tr>
<th>Single Sprinkler</th>
<th>Two or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ft x 12 ft (3.7 m x 3.7 m)</td>
<td>14 gpm @ 13.6 psi (53 L/min @ 0.93 bar)</td>
</tr>
<tr>
<td>14 ft x 14 ft (4.3 m x 4.3 m)</td>
<td>20 gpm @ 27.7 psi (76 L/min @ 1.91 bar)</td>
</tr>
<tr>
<td>16 ft x 16 ft (4.9 m x 4.9 m)</td>
<td>26 gpm @ 46.8 psi (99 L/min @ 3.24 bar)</td>
</tr>
</tbody>
</table>

Sprinkler Temperature Rating:
A - 165 °F (74 °C)

Finishes
1 - Polished Chrome, Brass, or Painted White

Footnotes
1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
2. Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
3. This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
4. For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed.

DESIGN CRITERIA- FM
(Also refer to Approval Chart 2 above.)

FM Approval Requirements:
Flush Pendent Sprinkler VK420 is FM Approved as a quick response Special Protection residential flush pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

Figure 2: Sprinkler Dimensions and Ceiling Ring Installation
**Notes:**

1. Listed areas of coverage correspond to areas measured along ceiling slope. (For sloped ceiling installations, actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area.)

2. Actual installations may require multiple sprinklers. A single sprinkler installation has been shown for clarity.

3. For “cathedral” ceiling applications, install sprinklers in a symmetrical mirror-image of Figure 4.

4. For sloped ceilings over areas with access openings to adjacent upper level rooms or lofts, refer to Figure 3.

5. For areas of coverage between 16’ x 16’ and 18’ x 18’, with slopes between a 2/12 (9.5°) pitch and a 6/12 (26.6°) pitch, use the Minimum Water Supply Requirements for the next larger listed “sloped” installation. Refer to the Approval Charts.