



TECHNICAL DATA

MODEL VKFD28B BRAIDED FLEXIBLE SPRINKLER DROPS (LPCB APPROVED)

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.

1. DESCRIPTION

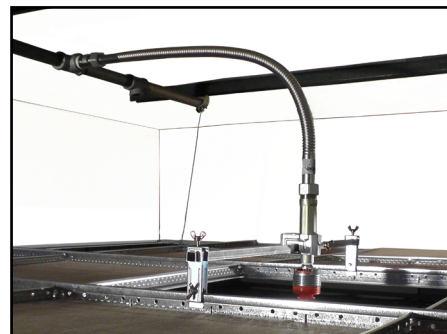
Viking Flexible Sprinkler Drops are a complete assembly intended for installation into commercial suspended ceilings with medium to heavy support tee bars as described in ASTM C635 and C636, or drywall type ceilings. The hose assembly includes a 28 mm diameter flexible steel hose with outer stainless steel braiding for additional strength. The hose assembly includes an inlet nipple 1"/DN25 or 1-1/4"/DN32 BSPT for attachment to the sprinkler system branch piping and a special outlet reducer fitting with straight or 90° angle for attachment of a 1/2"/15mm or 3/4"/20mm sprinkler. Also included is a support bar and brackets, which secure the complete flex sprinkler drop assembly to the suspended or drywall ceiling.

The support bracket system (see Figures 3 and 4) locates and secures the sprinkler in the required position within the ceiling system. Viking Flexible Sprinkler Drops are available in various lengths to minimize the number of installed bends and meet the minimum material requirements of the installation.

The unique assembly of the Viking Flexible Sprinkler Drop to the piping system and the outlet sprinkler fitting is made with a slip nut and seal design that allows assembly after forming the flex hose to proper installation shape, and the inlet and outlet end connections are securely in place. This prevents twisting of the flex sprinkler drop during installation and provides a secure leak-tight assembly. Each assembly comes with suspended ceiling rail support brackets. In addition, drywall/plasterboard support brackets are also available (Figure 4). The mounting bracket system and special outlet fittings provide a generous amount of adjustment both laterally and vertically for flush and precise sprinkler installation. Note: The brackets for suspended ceilings must be attached to the ceiling's main tee bar supports, not to cross support rail members.

Viking Flexible Sprinkler Drops provide several installation or retrofit benefits compared to rigid sprinkler drops:

- More efficient manpower
- Improved performance and installation quality
- Precise and flush sprinkler location
- Flexible installation for seismic or vibrating applications
- Flexible installation for fast track construction projects
- Corrosion resistant materials
- Fewer tools required for installation
- 100% factory tested
- Meets NFPA, EN, and LPC guidelines
- Approved for use with suspended ceilings with medium- and heavy-duty load grids with Tee bar design per ASTM C635 and 636



Model VKFD28B Flexible Sprinkler Drop
(Unbraided version shown with a Viking
Concealed Sprinkler in a suspended ceiling)

2. LISTINGS AND APPROVALS



LPCB Approved: Viking Flex Drop – 28 mm Braided, Certificate No. 096i

3. TECHNICAL DATA

Specifications:

- Hose tube diameter: 28 mm outside diameter
- Lengths available 700mm, 1000 mm, 1200 mm, 1500 mm and 1800mm
- Inlet 1"/DN25 or 1-1/4"/DN32 BSPT male pipe
- Outlet reducer straight with 1/2"/15mm or 3/4"/20mm NPT (suitable for both NPT and BSPT)
- Outlet reducer 90° angle with 1/2"/15mm or 3/4"/20mm NPT (suitable for both NPT and BSPT)
- Corrugated tube is polished and boron treated and annealed after forming to insure relief of all material stresses and removal of all scale
- Stainless steel braiding on exterior of hose
- Maximum Working Pressure = 13.8 bar
- Warning: refer to the sprinkler technical data page, as the temperature rating and maximum pressure rating of the sprinkler maybe different than the Flexible Sprinkler Drop.
- Test Pressure = 20.7 bar
- Approved for wet and dry systems as noted in NFPA 13 and LPC Technical Bulletins



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- Maximum ambient temperature: 149 °C EPDM seal
- Minimum bend radius: 75 mm for LPCB Approval

Material Standards:

Flexible Tube:

Outlet Reducer (Straight or Angled): SPPS Steel with yellow zinc plating

Exterior Braiding: AISI 304 Stainless Steel

Inlet Nipple: SPPS Steel with yellow zinc plating

Seal: EPDM

Slip Nut: SS41 Steel with zinc plating

Support Brackets (all): SS41 Steel with zinc plating

Support Bar: SS41 Steel with zinc plating

TABLE 1: PART NUMBERS

Part Number	Length (mm)	Inlet	Outlet
VKFD28B-111	700	25mm BSP	15mm/1/2"
VKFD28B-211	1000	25mm BSP	15mm/1/2"
VKFD28B-311	1200	25mm BSP	15mm/1/2"
VKFD28B-411	1500	25mm BSP	15mm/1/2"
VKFD28B-511	1800	25mm BSP	15mm/1/2"
VKFD28B-112	700	25mm BSP	20mm/3/4"
VKFD28B-212	1000	25mm BSP	20mm/3/4"
VKFD28B-312	1200	25mm BSP	20mm/3/4"
VKFD28B-412	1500	25mm BSP	20mm/3/4"
VKFD28B-512	1800	25mm BSP	20mm/3/4"
VKFD28B-121	700	32mm BSP	15mm/1/2"
VKFD28B-221	1000	32mm BSP	15mm/1/2"
VKFD28B-321	1200	32mm BSP	15mm/1/2"
VKFD28B-421	1500	32mm BSP	15mm/1/2"
VKFD28B-521	1800	32mm BSP	15mm/1/2"
VKFD28B-122	700	32mm BSP	20mm/3/4"
VKFD28B-222	1000	32mm BSP	20mm/3/4"
VKFD28B-322	1200	32mm BSP	20mm/3/4"
VKFD28B-422	1500	32mm BSP	20mm/3/4"
VKFD28B-522	1800	32mm BSP	20mm/3/4"

TABLE 2: PARTS AVAILABLE TO ORDER SEPARATELY

Part Number	Description
14402	75mm (3") bend radius gauge tool
15913	75mm (3") bend radius clip
18725	1/2" 90° outlet fitting
18726	3/4" 90° outlet fitting
14398	1250mm support bar (for larger tile spacing)
49000089	Plasterboard/drywall clip with screw (2pcs)



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TABLE 3: FRICTION LOSS DATA WITH 75mm BEND RADIUS ($\frac{1}{2}$ " or $\frac{3}{4}$ " OUTLET)			
Hose length (mm)	Outlet	Equivalent Length* of 1" Schedule 40 pipe (m)	Maximum number of 90° bends**
700	$\frac{1}{2}$ " or $\frac{3}{4}$ "	3.4	3
1000	$\frac{1}{2}$ " or $\frac{3}{4}$ "	5.8	3
1200	$\frac{1}{2}$ " or $\frac{3}{4}$ "	7.8	3
1500	$\frac{1}{2}$ " or $\frac{3}{4}$ "	8.8	3
1800	$\frac{1}{2}$ " or $\frac{3}{4}$ "	9.6	3

*Equivalent length is for a straight hose with one 90° bend.
 **A 90° outlet elbow (if used) is considered one 90° bend
 ** According to LPCB approval

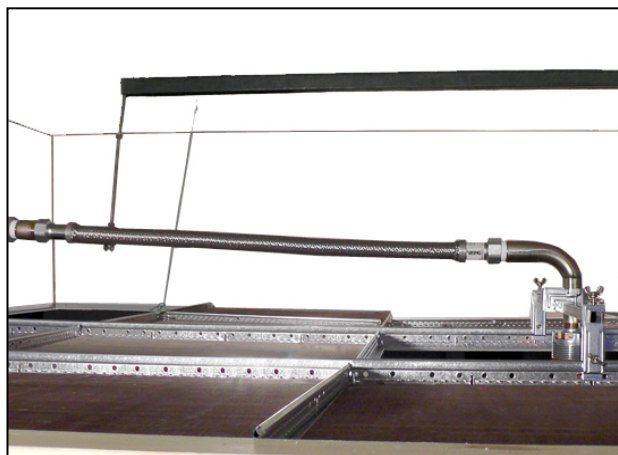
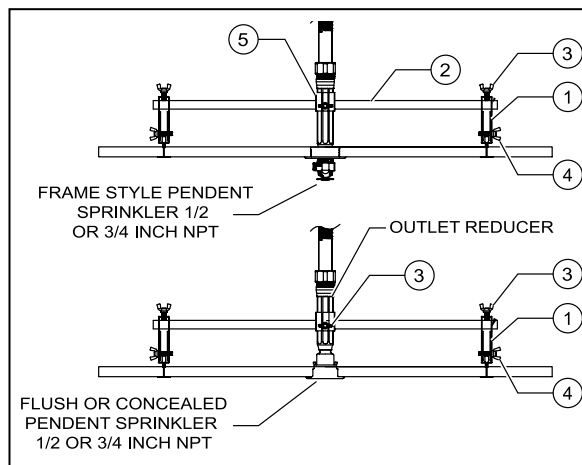


Figure 1: Angle Outlet



REF#	PART #	DESCRIPTIONS	QTY.
1	19253	RAIL CLIP	2
2**	14397	RECTANGULAR BAR, 650 mm	1
3	14400	WING BOLT, M6 X 15 mm	3
4	18287	WING BOLT, M6 X 25 mm	2
5	19695	OUTLET REDUCER SUPPORT BRACKET	1

NOTE: When installing, attach the brackets to the ceiling's main tee bar supports. Do not attach to cross support rail members.

** For long bar 1250 mm, order Part No. 14398 kit separately (10 bars per kit)

Figure 3: LPCB Approved Only Support System for Suspended Ceilings - Angle or Straight Outlet Fittings



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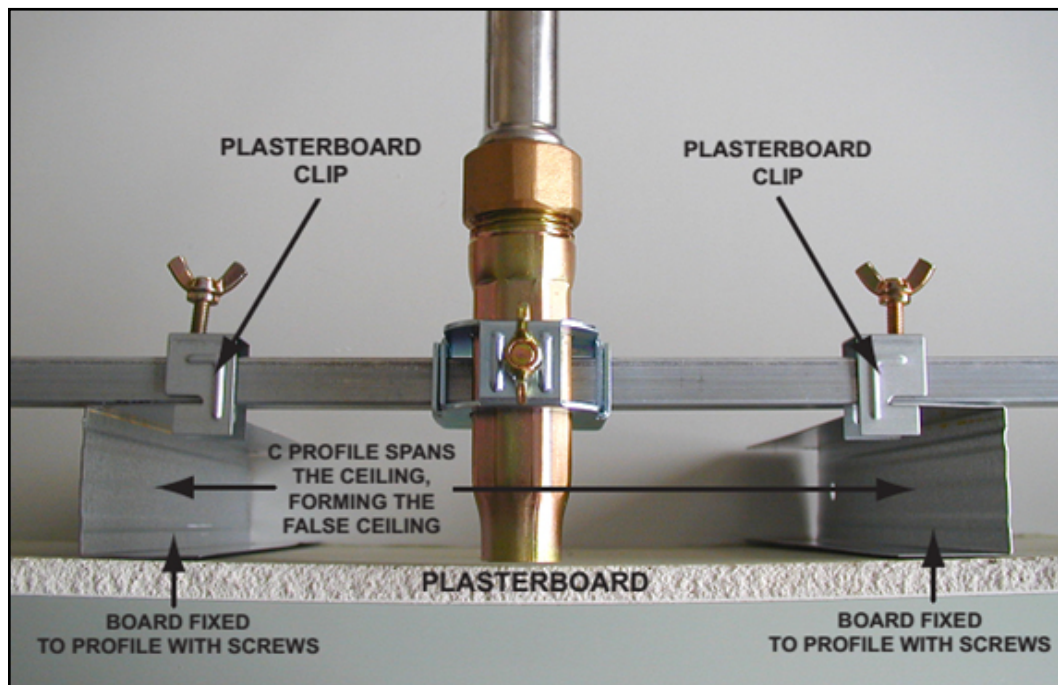


Figure 4: Support System for Drywall Type Ceilings

Ordering Information: (Also refer to the current Viking price list.)

The VKFD Flexible hose ships in boxes of 10 with support bar and clips, centre bracket and datasheet.

4. INSTALLATION

Viking Flexible Sprinkler Drops are manufactured and tested to meet the latest rigid requirements of the approving agencies. They are designed and tested to be installed in accordance with the Approved and Listed installation instructions as provided with the product and the recognized installation standards. Deviations from these standards or any alterations to the support system or sprinkler after leaving the factory including, but not limited to painting, plating, coating or modification may render the sprinkler inoperative or the support system non-compliant, automatically nullifying the approvals and any guarantee made by The Viking Corporation. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

For complete installation instructions for this product, please refer to the Viking Flex Drop Installation and Design Manual, Form No. F_040115.

NOTE: *Keep sprinklers with protective shields or caps contained within the shields or caps during installation and testing, and any time the sprinkler is shipped or handled.*

Remove plastic protective sprinkler caps or bulb shields after the 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. To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS OR BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!** Retain a protective cap or shield in the spare sprinkler cabinet.

For concealed style sprinklers, the cover plate assembly can now be installed onto the sprinkler:

- Remove the cover from the protective box, taking care not to damage the cover plate assembly.
- From below the ceiling, gently place the base of the cover plate assembly over the sprinkler protruding through the ceiling opening.
- Push the cover plate assembly onto the sprinkler until the unfinished brass flange of the cover plate base touches the ceiling.



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- Available cover plate adjustment is 12.7 mm +/- 6.4 mm.

For frame style sprinklers with the Model E-1, E-2, or F-1 Escutcheon, press on or thread on the outer escutcheon cup until the flanges touch the surface of the ceiling.

- With the Model E-1 or E-2 escutcheon, the maximum recess is 12.7 mm.

NOTE: *The face of the escutcheon adapter may extend up to 8.7 mm beyond the edge of the escutcheon cup, resulting in 21.4 mm total adjustment range.*

If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See section 6. INSPECTIONS, TESTS AND MAINTENANCE and follow all warnings and instructions.

5. OPERATION

Refer to the sprinkler technical data page for the sprinkler model used with the Flexible Sprinkler Drop.

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 latest edition of Viking technical data and the applicable installation design standard that describes care and maintenance of sprinkler systems. The Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

A. Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.

B. Sprinklers that have been field painted or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require sprinklers to be tested and, if necessary, replaced after a specified term of service. Refer to the installation standards (e.g., NFPA 25) and the Authority Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Sprinklers that have operated cannot be reassembled or re-used, but must be replaced. When replacement is necessary, use only new sprinklers.

C. The sprinkler 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 sprinklers installed.

D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.

1. Remove the system from service, drain all water, and relieve all pressure on the piping.
2. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the appropriate orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose.
3. Place the system back in service and secure all valves. Check for and repair all leaks.

E. Sprinkler 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. Sprinklers that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

7. WARRANTY

For warranty details please refer to the latest edition of the Viking list price schedule or contact your local Viking office.



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DESIGN CRITERIA

General Approval Requirements:

- Approved for use in suspended ceilings with medium and heavy load grids (ASTM C635 and C636).
- Compatible with Viking CPVC BlazeMaster® sprinkler systems.
- Meets NFPA 13, NFPA 13D and NFPA 13R guidelines, EN12845, and the LPC sprinkler rules.
- Intended for use in wet or dry systems.

Hydraulic calculations for NFPA systems must include the values in Table 3 on page 3 using the maximum number of bends that includes the inlet and outlet fittings as indicated. Authorities Having Jurisdiction will require proper hydraulic calculations and inspect for proper bend radii and maximum quantity of bends as indicated in the tables.

LPCB Approval Requirements:

These products have been approved as a Type 2 hose in accordance with LPS 1261.

1. Viking Flexible Sprinkler Drops are approved for use in the following applications.

TABLE 4				
Hose Diameter	Length	Pre-Calculated		Fully Hydraulically Calculated
		Town's	Pumped	
28 mm	700 mm	Yes	Yes	Yes
	1000 mm	Yes	Yes	Yes
	1200 mm	Yes	Yes	Yes
	1500 mm	Yes	Yes	Yes
	1800 mm	Yes	Yes	Yes

All pipework supplying Viking Flexible Sprinkler Drops in pre-calculated systems shall be sized as distribution mains.

The above restrictions apply to Viking Flexible Sprinkler Drops with any configuration of inlet and outlet fittings and apply with up to three 90° bends (including a 90° angled outlet nipple).

2. In suspended ceilings, Viking Flexible Sprinkler Drops must be installed in accordance with Viking Flex Drop Installation and Design Manual, Form No. F_040115.
3. The outlet reducer must be secured to the ceiling support system with the brackets supplied.

NOTE: Refer to the specific sprinkler data page for the sprinkler model used with the Flexible Sprinkler Drop.

CAUTIONS:

- Minimum Inside Bend Radius: 3" (75 mm)
- Maximum Sprinkler K-Factor: 5.6 U.S. (80 metric) for the 1/2" outlet, 14.0 U.S. (202 metric) for the 3/4" outlet.
- Maximum Number of Bends per Hose: Refer to Table 3.
- Repeated bending of one portion of the flexible tube before installation may cause breakage or loss of resisting pressure.
- When using concealed sprinklers, they must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers and Flexible Sprinkler Drops are designed to be installed in accordance with the latest edition of Viking technical data, the latest 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 certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.