

INSTALLATION AND MAINTENANCE INSTRUCTIONS

Explosion Vents HI-CV, HI-CV-S, HI-CV-CF

PASSIVE EXPLOSION PROTECTION



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Fike®

SOLUTIONS

- / Fire Protection
- / Explosion Protection
- / Overpressure Protection
- / Pressure Activation

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REVISION HISTORY

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REVISION / DESCRIPTION OF CHANGE	REVISION DATE
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1. GENERAL

Warning: Do not locate the explosion vent assembly where people are exposed to the vent itself or to the area above or in front of the vent as they may be injured by the escaping pressure, fire, noise, chemicals, and/or particles. The location of the explosion vent must be such that the discharge cannot be the ignition source of secondary explosions.

Interfacing equipment and/or machinery must also be protected.

Important: The necessary size of the vents must be calculated e.g. acc. EN 14994 or acc. EN 14491. For the venting efficiency of the vents, please ask Fike.



Figure 1

2. USE OF FIKE HI-TYPE EXPLOSION VENTS

Fike HI-explosion vents have been developed to offer safe opening, when used even with highly violent combustion phenomena. The safe use of the HI-explosion vent is subject to installation/application related conditions, where the user/design engineer needs to consider following conditions:

Standard HI-explosion vents are available for following applications

- Applicable for all types & sizes of HI explosion vents where:
 - $P_{red} \leq 2 \text{ barg}$
 - $K_{St,max} \leq 300 \text{ bar.m.s}^{-1}$, HI-CV-CF larger than DN1100 limited to 250 bar.m.s^{-1}
 - $K_G \leq 100 \text{ bar.m.s}^{-1}$

The user/design engineer needs to ensure that special conditions are communicated to Fike in cases where the application fits the below specified conditions:

- Applicable for all sizes HI-CV & HI-CV-S and HI-CV-CF with sizes $\leq \text{DN800/32"}$ where
 - $1 < P_{red} < 2 \text{ barg}$, and
 - $300 < K_{max} \leq 435 \text{ bar.m.s}^{-1}$

The explosion vents are suitable for use on explosion diverters that are built and used in accordance to EN16020. According to the standard EN 16020 the explosion vents must be tested as integral parts of the explosion diverter.

Important:

- HI-type explosion vents must be used in combination with a (Fike or customer supplied) hold-down (Light Angular Frame or standard welding-neck type flange according to EN 1092, ANSI, JIS or NFE 29-203.
- HI-type explosion vents with sizes $\geq \text{DN800/32"}$ used in applications where $P_{red} > 1 \text{ barg}$ or $K_{max} > 300 \text{ bar.m.s}^{-1}$ are suitable only when used in combination with DIN/ANSI/JIS or UNI flanges.
- HI-type explosion vents used with $P_{red} > 2 \text{ barg}$ and $K_{max} > 435 \text{ bar.m.s}^{-1}$: consult Fike Europe. For such conditions of use additional safety measures are necessary.

3. BURST INDICATOR

The Fike explosion vents can have as an option an integrated electric burst indicator designed for intrinsically safe service. Alternatively Fike can supply a magnetic reed switch burst indicator.

Caution: Unacceptably high voltage or currents will permanently damage the electrical system and the use of a non approved intrinsically safe power supply may even be the eventual ignition source of a dust or gas explosion. All burst indicators must be installed in an intrinsically safe circuit which conforms to the applicable national standard.

Warning: Do not bend the electrical cable at any angle at a distance of less than 20 cm from the mechanical bracing part and do not lift the explosion vent by the electrical circuit.

Warning: The maximum torque values as mentioned on the nameplate must not be exceeded as this will permanently damage the electrical circuit.

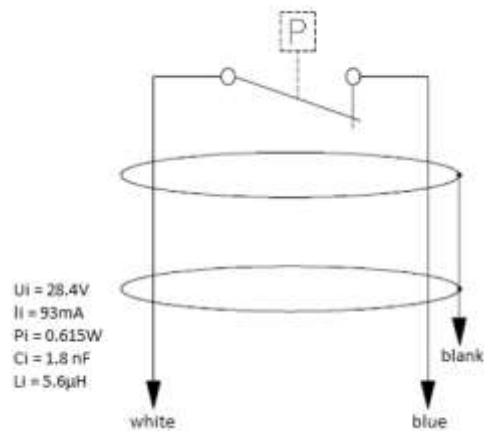


Figure 2

4. INSULATION

Fike explosion vents can be supplied with optional types of insulation. Consult factory for details.

5. INSTALLATION

HI-type explosion vents are available for mounting in the lightweight angular frames or weldneck flanges in accordance with DIN/EN or ANSI standards. Explosion vent frames can be supplied by Fike or can be constructed by customer, in which case Fike will supply construction drawings. Frames are available in different configurations and can be bolted or welded to the system.

Important: When explosion vents are installed horizontally with a lightweight angular frame and are directed towards the atmospheric side, the use of drainage holes (width: 5 mm) in the holddown frame is required to prevent water ingress.

In case of use of a flat top frame, drainage holes must also be foreseen to prevent water ingress, as shown on Figure 3.



Figure 3

Warning: the risk of flame breakthrough through the flanges shall be considered when drain holes are in place.

When installing HI-CV vents support/safety bars placed across the vessel opening flush with the mounting flange are to be considered to prevent the risk of persons falling through the opening and increase the service life of the vent.

Warning: Provisions have to be taken that personnel can stand or walk on explosion vents. Furthermore, it must be prevented that goods or products can be left on top of explosion vents.

Warning: A safety distance needs to be observed due to intense pressure and flame escape at the event of an explosion. The determination of the safety distance depends on multiple application parameters and needs to be calculated according to EN 14491 or NFPA 68.

Installation:

Use base of explosion vent frame as template to indicate placement of explosion vent on vessel to be protected. After cutting relief area and drilling mounting holes, bolt the base into place. If using studs, be sure the threads are clean and are not damaged. Place the vent carefully on the base; position holddown frame on vent.

Fit nuts or fit bolts and nuts. Studs and nuts should be free running and coated with high temperature light oil or grease. Torque to values specified on the explosion vent tagplate (fig.1). Apply a criss-cross pattern (fig. 5) to tighten the flange bolts.

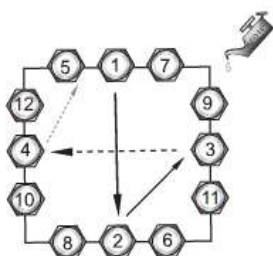


Figure 5



Figure 4

The explosion vent tagplate should always be placed to the atmospheric side. If the explosion vent is equipped with a vacuum support, the bulged side is the atmospheric side. When the system operates at other than atmospheric pressure, it is recommended that sealant material (gasket) or other means be used to prevent leakage. The gasket should be dimensioned so that it is flush with the inside edge of the frame.

The recommended gasket material is to be selected in accordance with the process requirements and should have similar compression characteristics as provided by non-asbestos material.

Welded installation: Similar to above except base is welded to vessel. Fike HI-explosion vents are manufactured in 2 executions: the standard execution is suitable for most applications, where a special execution is available for severe explosion venting user is to verify if supplied design suits the specific application.

Caution: Handle explosion vent with extreme care. Do not bend, poke or in any way distort the vent membrane.

6. REPLACEMENT OF EXPLOSION VENTS

Inspect the explosion vent carefully. Check that the tag number and data on the tagplate (fig.1) correspond with location and system specifications. Place the new vent carefully on the base, replace the holddown frame on vent. Fit nuts to studs or fit bolts and nuts. Torque to values specified on the explosion vent tagplate (fig.1). When using a gasket or sealant material, it should be placed between the vent and the base. All torque values are based on new free running studs coated with light oil. Torque should be applied crosswise and in at least two steps. It is recommended that after initial start-up and system is brought to working pressure and temperature, the studs are retorqued to the values shown. Care must be taken during installation that flange or frame faces are brought down at an equal rate and that faces are parallel.

Caution: The maximum torque values should not be exceeded as this may possibly affect the burst pressure.

When reordering explosion vents always indicate vent lot number (see tagplate fig. 1).

7. MAINTENANCE

The explosion vent assembly is maintenance-free due to its basic design and concept. Maintenance could consist of periodic visual inspections, consistent with the operating parameters and severity of service.

Note: Severe service is defined as rapid changes in pressure, high pressure, high temperature, or corrosive process. Explosion vents should be replaced if they appear damaged, corroded, or leaking.

Notes:



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