FlamQuench II™

Explosion Protection Component Sheet #3747

Description

FlamQuench II is the second version of a flameless venting device produced by Fike Corporation. The first version tested by Dr. Ing. Bartknecht, was marketed exclusively in Europe beginning in 1992. The improved FlamQuench II offers a higher efficiency and provides solutions to applications that could not be effectively protected before. The FlamQuench II is available worldwide and has been tested to global standards. During normal explosion venting, an explosion is allowed to freely discharge through an open explosion vent. This allows flames, burnt dust and unburned dust to exit the process vessel being protected. In the event the process vessel is located indoors, the generally accepted practice is to provide a vent duct to safely convey the explosion flame and dust outside the building. However the cost of implementing such ducts and the fact that the venting efficiency is dramatically decreased, limits the practical use of t vent ducts. Furthermore, a safe restricted area after the vent (duct) is required and the risk for secondary explosions must be addressed. The Flamquench II eliminates the need for explosion vent ducts by extinguishing the flame from the vent and retaining the dust.

The Flamquench II consists of various layers of high temperature stainless steel mesh in the shape of a cylinder with one end closed and a welded stainless steel frame with integral lifting/support rings. The open end of the cylinder contains a flange to accommodate a standard circular Fike explosion vent (CV, CV-S, CV-CF, and CV-H). The Flamquench II along with a Fike explosion vent are bolted onto the process vessel being protected. The explosion vent with burst indicator (refer to separate component sheets) are ordered separately.

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Operation

In the event of a deflagration inside the process vessel, the Fike Explosion Vent will fully open into the FlamQuench II cylinder at the specified burst pressure. As the explosion expands, flame, burnt and unburned dust will discharge through the open vent into the FlamQuench II cylinder. The dust is retained inside the cylinder. In addition, the flame from the explosion is extinguished as it *travels through the* stainless steel *mesh* because of heat absorption. The temperature of the flame is decreased below the ignition temperature necessary to continue flame propagation in the dust cloud. The FlamQuench II will only allow the discharge of post-combustion gases from the explosion.

After the explosion, the FlamQuench II is easily refurbished in the field. Refurbishment kits consisting of replacement stainless steel filter assemblies are available within 24 hours and can be ordered along with a replacement vent.

Technical Specifications

Explosion Vents: Circular Fike Models CV, CV-S, CV-CF, CV-H must be ordered separately.

Materials of Construction: Stainless Steel

Operating Conditions: Device is not exposed to process conditions. Choose explosion vent to match operating conditions.

Environmental Conditions: Ambient Pressures and Temperatures (–40° - 130°F). Keep device free of deposits.

Hazard: Non-metallic organic dusts with flame temperatures of 1500 C or less and Kst of 300 bar m/sec or less. Not to exceed a Pred of 1 bar.

Safe Distances: 8 ft for personnel, 2 ft for equipment.

TABLE 1 FLAMQUENCH II SPECIFICATIONS (Ref. Figure 2)

FQ II Size	P	OD	BC	F	BOLT QTY	TORQUE +/-(FT-LBS.)
8"	8 1/8	10 5/8	9 1/2	3/8	8	30
12"	12 3/16	15 3/16	13 13/16	7/16	12	30
14"	14 3/16	17 3/16	15 13/16	7/16	12	30
16	16 1/4	19 1/4	18 1/8	7/16	16	30
20"	20 1/4	23 1/4	22 1/8	7/16	20	30
24"	24 1/4	27 1/4	26 1/8	7/16	20	30
30"	30 1/4	34 1/4	32 1/2	9/16	28	50
36"	26 1/4	40 1/4	38 1/2	9/16	32	50
40"	40 1/4	44 1/4	42 1/2	9/16	36	50

NOTE: All specifications are subject to change and should be used for reference only.

NOTE: Flange stub torque values are based on using 1/8" GARLOCK 3600 gasket material and lubricated threads.

FQ II SIZE	L	W	A	WT LBS.	GASKET INSIDE DIA	GASKET OUTSIDE DIA
8"	23 1/2	13	1 3/4	44	8 1/8	10 5/8
12"	26 1/4	19	1 3/4	80	12 3/16	15 3/16
14"	31 1/2	22 1/4	2 1/2	113	14 3/16	17 3/16
16"	35 1/2	25	2 1/2	168	16 1/4	19 1/4
20"	37 1/2	28 1/2	2 1/2	199	20 1/4	23 1/4
24"	57 3/4	32 1/2	2 1/2	402	24 1/4	27 1/4
30"	86 1/4	38 3/4	2 1/2	635	30 1/4	34 1/4
36"	88 1/4	46 1/4	2 1/2	804	26 1/4	40 1/4
40"	88 1/4	49 3/4	2 1/2	965	40 1/4	44 1/4

All specifications are subject to change without notice.

FIGURE 2. FLAMQUENCH II SPECIFICATIONS
8” THROUGH 40” SIZES