



BS&B SAFETY SYSTEMS, INC.  
BS&B SAFETY SYSTEMS LTD.

# VENT-SAF™ PLUS EXPLOSION VENTS INSTALLATION INSTRUCTIONS

**BULLETIN  
77-8010I**

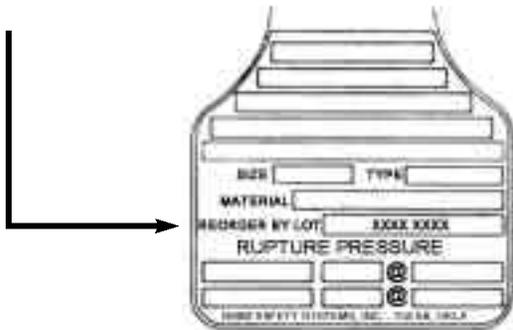
## ◆ NEW INSTALLATIONS

Installing Safety Frames™ and Explosion Vents

## ◆ REPLACEMENT INSTALLATIONS

Installing Explosion Vent

## ◆ ORDER REPLACEMENT EXPLOSION VENTS BY LOT NUMBERS



## BOLTED INSTALLATIONS

### Select Proper Location

### CAUTION - Vent to Safe Area

Check the location where personnel or property could be exposed to discharge upon rupture of vent. During a vented explosion, an extreme hazard exists for 30 feet or more.

In most cases, installation will be easier using two people. Two people are recommended for handling Vents and Safety Frames for sizes 24" x 36" (586 X 920mm) or larger.

### A. Preparing the Vessel for Mounting the Inlet of the Safety Frame

1. Place the inlet of the Safety Frame in the desired location. Scribe a line on the vessel surface around the inside of the inlet Safety Frame.
2. Cut an opening in the vessel along the scribe lines. Flame cutting is recommended only if the vessel is purged of flammable gases and dusts beforehand. If the opening is cut larger than the pattern (beyond the scribed lines) then the vacuum burst pressure may be reduced.
3. Place the inlet of the Safety Frame over the opening, (proper orientation). Using the inlet of the Safety Frame as a template, mark all the bolt locations on the vessel surface. Remove Frame.
4. Drill 5/8" diameter holes in the marked pattern for all sizes.

**Select Proper Location**

**CAUTION - Vent to Safe Area**

Check the location where personnel or property could be exposed to discharge upon rupture of vent. During a vented explosion, an extreme hazard exists for 30 feet or more.

A qualified welder should be employed for the installation process. Welding should be performed in the "short arc" (MIG) mode. Helium, argon and carbon dioxide are all acceptable for the gas shield.

In most cases, installation will be easier using two people. Two people are recommended for handling Vents and Safety Frame for sizes 24" X 36" or larger.

**A. Cutting the Opening in the Vessel**

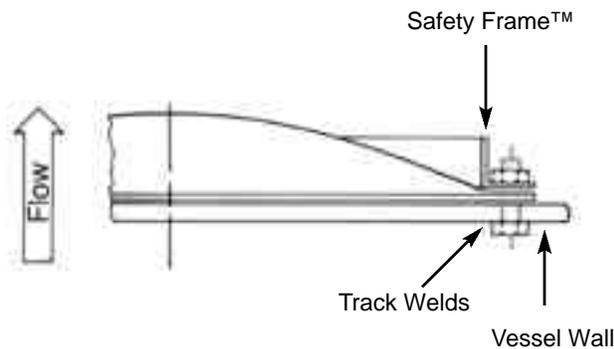
1. Place the inlet of the Safety Frame in the desired location with the angle leg on the vessel surface. Scribe a line on the vessel surface around the inside of the inlet of the Safety Frame. Remove the Safety Frame.
2. Cut an opening in the vessel along the scribe line. Flame cutting is recommended only if the vessel is purged of flammable gases and dusts beforehand. If the opening is cut larger than the pattern (beyond the marked lines), then the vacuum resistance may be reduced.

**B. Installing the Inlet of the Safety Frame**

1. With the Explosion Vent removed, bolt the inlet and outlet Safety Frame together. Tighten the nuts past finger tight (approximately 10 ft. lbs.)
2. Butt the leg of the inlet of the Safety Frame against the outside of the vessel. Lightly tack weld only enough small tacks to hold the frame in place. See FIG. 2.

**B. Installing the Inlet Safety Frame**

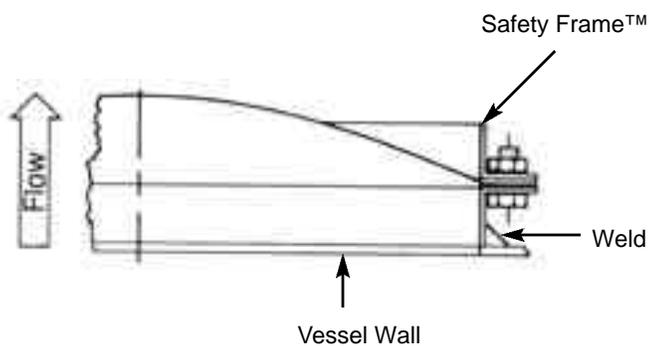
1. Place the inlet of the Safety Frame over the opening in the vessel and align with the bolt holes.
2. Put the bolts through the vessel wall and inlet Safety Frame with bolt heads inside the vessel. Install the outlet of the Safety Frame, add nuts and tighten hand tight.\* Tack weld the bolt heads to the vessel wall. Remove nuts and outlet of the Safety Frame. See Fig 1.



**FIG.1** - VENT-SAF™ PLUS Assembly Bolted to the Customer Structure

\*Installing the outlet of the Safety Frame at this time and tack welding bolts is unnecessary if there is access to the vessel interior other than the opening for the Explosion Vent. One person located inside the vessel when the Explosion Vent is installed can use a backup wrench to prevent bolt heads from turning during the final tightening.

3. Weld the leg of the inlet Safety Frame to vessel using the skip weld method and 3/16" welds. Weld 3" long fillets on 18" centers one pass around the outside of the inlet Safety Frame. Repeat this on the second pass but with the fillets in the center of the skips which were left on the first pass. Allow the weld areas to cool.
4. Fill in the remaining skips with 3/16" fillets to produce a continuous seal weld around the outside of the inlet of the Safety Frame. Refrain from welding adjacent skips in order to limit local heat buildup and subsequent warpage.
5. Unbolt and remove the outlet of the Safety Frame.



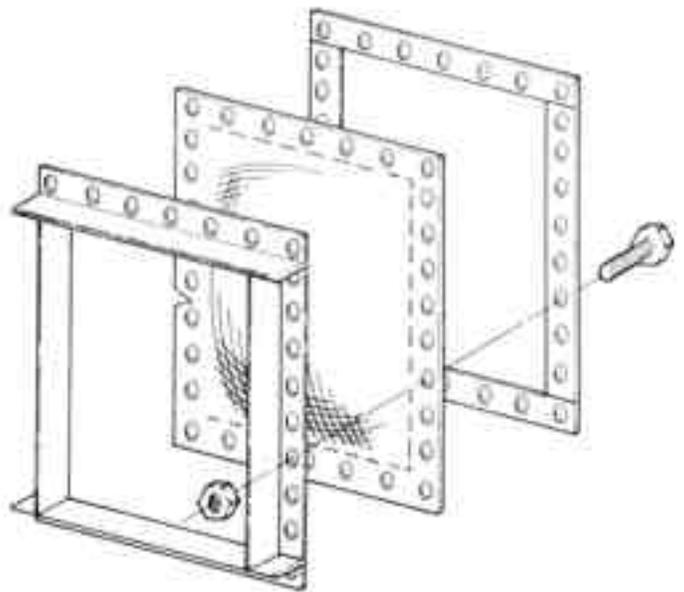
**FIG. 2** - VENT-SAF™ Assembly Welded to the Customer Structure

## INSTALLATION OF EXPLOSION VENT

1. If the VENT-SAF PLUS is installed in a frame that has support bars (in the inlet frame, then the vacuum burst pressure may be extremely high and vacuum opening will be partial.
2. Gripping the opposite sides, carefully remove the Explosion Vent from the crate (CAUTION! Edges of the Explosion Vent are sharp!) Avoid excessive flexure of the Explosion Vent while handling.
3. Place the Explosion Vent over the protruding bolts or bolt holes to seat on the inlet of the Safety Frame. Install outlet frame. The dome must protrude outward, or the panel will not open at the rated burst pressure.

Install bolts and nuts and tighten hand tight. Tighten nuts to 20-25 ft. lbs.

When venting occurs the Explosion Vent opens along three sides. A V-notch on the vent indicates the non-opening hinge side.



**FIG. 3** - Assembly Configuration

**WARRANTY** - The Expressed warranties hereinafter given by BS&B Safety Systems, Inc. are exclusively and in lieu of all warranties expressed or implied, by operation of law or otherwise, including, without limitation any implied warranty of merchantability or of fitness for a particular purpose. BS&B Safety Systems, Inc. warrants its products against defective workmanship and material under normal and proper use in service for twelve (12) months of the date of shipment when owned by the original purchaser and only when subjected to normal operating conditions outlined by purchaser when order is placed: except that, Explosion Vents are not guaranteed except to burst within specified pressure ranges at temperatures specified at time of sale.

Where the products involved include an Explosion Vent Inside a Safety Frame™ each must be of the proper type to be utilized with its mating part as otherwise recommended by and manufactured by BS&B. Substitution of either an Explosion Vent or Safety Frame™ not manufactured by BS&B voids the aforementioned warranty and BS&B specifically disclaims any and all liability for damages, either direct or indirect, incidental or consequential arising from the use of assemblies not wholly comprised of BS&B manufactured products.

Except for the express warranty set forth herein, BS&B shall have no obligations or liabilities connected with or resulting from the sale, installation or use of the equipment supplied by BSB and final determination of the suitability of the products for the use contemplated by the Buyer is the sole responsibility of the Buyer.

There is no guarantee against corrosion or erosion caused by acids, chemicals, their fumes, or the like.



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## ISO 9001 Quality System Certification

