



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

# VENT-SAF™ EXPLOSION VENTS INSTALLATION INSTRUCTIONS

**BULLETIN  
77-8003I**

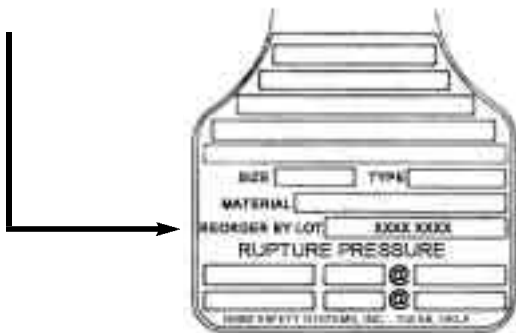
## ◆ NEW INSTALLATIONS

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.

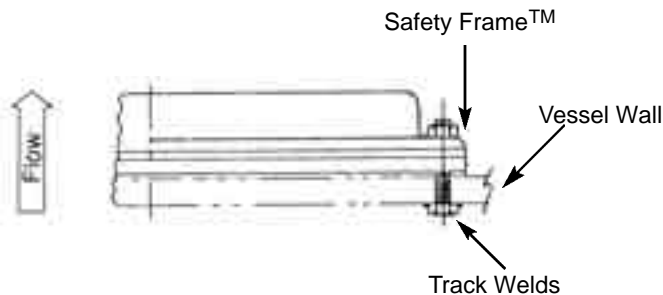
In most cases, installation will be easier using two people. Two people are recommended for handling Vents and Safety Frames for sizes 24" x 30" (rectangular) and 30" (round) or larger.

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

1. Place the inlet of the Safety Frame™ in the desired location but with the seal support bars protruding outward (this is opposite to the way it will be installed). 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.
3. Place the inlet of the Safety Frame™ over the opening, this time with the seal support bars protruding back into 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 except 20" round assembly and smaller. Drill 1/2" diameter holes for these sizes.

## 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™ 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.

## WELDING 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.

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.

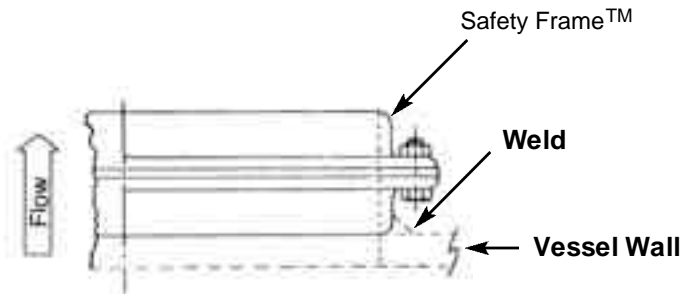
In most cases, installation will be easier using two people. Two people are recommended for handling Vents and Safety Frame™ for sizes 24" X 30" (rectangular) and 30" (round) or larger.

## A. Cutting the Opening in the Vessel

1. Place the inlet of the Safety Frame™ (the one with seal support bars) 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.

## 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.



**FIG. 2 - VENT-SAF™ Assembly Welded To The Customer Structure**

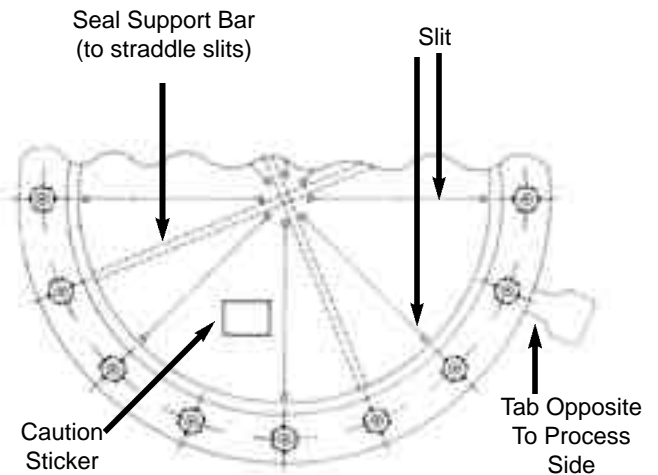
3. Weld the leg of the inlet Safety Frame™ to vessel using the skip weld method and 3/16" welds. Weld 3" long fillets on 18" centers one pass around the outside of the inlet Safety Frame™. Repeat this on the second pass but with the fillets in the center of the skips which were left on the first pass. 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™.

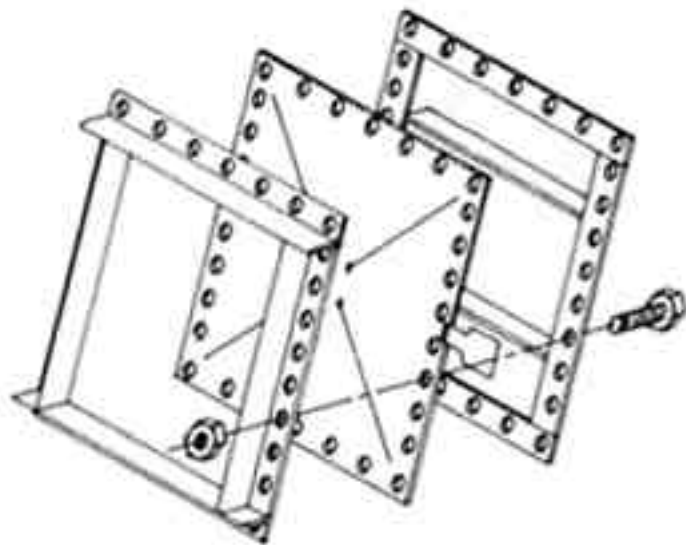
**NOTE: For Round Vents-Explosion Vent slits must straddle the seal support bars of the inlet of the Safety Frame™. See FIG. 4.**

## INSTALLATION OF EXPLOSION VENT

1. Lay the outlet of the Safety Frame™ on the ground with the flat side up.
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.



**FIG. 4 -** On all VENT-SAF™ Assemblies, the name tag and Caution Sticker should be opposite to the process side (on outside of vessel).



**FIG. 3 -** Assembly Configuration

3. Place the Explosion Vent on the outlet of the Safety Frame™, gasket side up.

**For Bolted Installation** - lift the Explosion Vent and the outlet of the Safety Frame™ together and work over the protruding bolts to seat on the inlet of the Safety Frame™

**For Welded Installations** - Put two bolts through the Frame and Explosion Vent 90° apart, straddling what will be the top when installed. Lift the vent and outlet of the Safety Frame™ together holding the bolts in place while placing the outlet of the Safety Frame™ and Explosion Vent over the inlet of the Safety Frame™.

Once the bolts are through the holes on the inlet of the Safety Frame™, add the remaining nuts and tighten hand tight. Add the remaining bolts and tighten nuts to 20-25 ft. lbs.

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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.

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



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BS&B Safety Systems, Inc.  
7455 East 46th Street  
Tulsa, OK 74145  
Telephone: 918-622-5950  
Facsimile: 918-665-3904  
www.bsbsystems.com

or

BS&B Safety Systems Ltd.  
Raheen Business Park  
Raheen, Limerick, Ireland  
Telephone: +353 61 227022  
Facsimile: +353 61 227987  
www.bsb.ie

## ISO 9001 Quality System Certification

