READ BEFORE USE

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

Installation Instructions

Bulletin 77-4008AI

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GFR-S™ & GLR-S™ Rupture Disks
GR-C™ Safety Head

Warning: Rupture disks are intended to provide a pressure relief opening. This rupture disk is designed to burst at a specified temperature and pressure, thereby relieving excess pressure or preventing excessive vacuum in a system. It is imperative that this rupture disk be properly installed and safely vented in order to avoid bodily injury, damage to property, pollution and loss of product. BS&B Safety Systems, Inc. and BS&B Safety Systems Ltd. supply disks selected by their customers, which are manufactured in reliance upon information and specifications supplied by the customer. BS&B Safety Systems, Inc. and BS&B Safety Systems Ltd. are not liable for any damage resulting from improper installation, improper system design, unsafe venting, or other factors beyond BS&B Safety Systems, Inc. and BS&B Safety Systems Ltd. control. Do not locate the rupture disk device where personnel, equipment or property will be exposed to released product and pressure through the disk. Handle carefully, disk and tag may have sharp edges.

Order Replacement Disk by Lot Number (Shown on disk tag)
Before you install a Rupture Disk

Inspect Safety Head

1. Inspect Safety Head's mating surfaces for foreign material. Pits, dirt or grit can damage the rupture disk affecting disk performance or cause leakage. If surfaces are rough, polish with a fine emery cloth. Clean if necessary. Do not machine, safety head dimensions are critical.
2. The safety head size and rating must match the companion flange size and rating. The rupture disk burst pressure must not exceed the safety head and flange rating. Safety head and rupture disk materials should be compatible with your process. Ensure that appropriate adjustments are made for temperature when reviewing flange rating compatibility.
3. The rupture disk and safety head must not bemachined or modified in any way except with the approval of BS&B Safety Systems, Inc. or BS&B Safety Systems Ltd. Failure to obtain such approval voids the warranty on this product.

Inspect Pipe Ferrules

1. Clean seating surfaces of both ferrules before installing the assembly.

Inspect the Pipe Flanges

1. Ensure that the pipe flanges are parallel to a sufficient standard that will permit proper function of both the rupture disk device and the chosen pipe flange to safety head gaskets

Inspect the Rupture Disk

1. Handle the rupture disk carefully holding the disk by the tag and the perimeter only. Examine both sides of the disk, checking the seating and domed surfaces for nicks, dents, scratches and foreign material, which can damage the disk, cause leakage or affect the burst pressure. Do not install a damaged disk. Installation of a damaged disk may result in a premature bursting of the disk. If damaged, the type GFR-S™ and GLR-S™ disks will open at a maximum of 1.0 times the marked burst pressure. This is called the damage safety ratio. Trained and qualified personnel must carry out the installation of the rupture disk. Note: Corrosion and process conditions may deteriorate disk performance and necessitate frequent replacement.

Safety Precautions

- Consider recoil. Provide adequate support for piping and connections to absorb recoil/reaction forces when the disk ruptures. Recoil is the force the system will experience upon disk rupture. Recoil (lbs.) is approximately twice the disk rating (psig) times the relief area (in.2).
- Do not remove rupture disks or safety heads from packaging for inspection until ready to install unless the package is damaged.
- The rupture disk and safety head should not be subjected to excessive structural bending stresses.
- If disks are liquid cleaned, and a high velocity coarse particle spray or jet is used, be careful not to damage the disk.
- Do not locate the disk where it may be subjected to thermal shock. Moisture, rain, condensation or snow may cause a thermal shock to the disk causing the disk to burst below its marked burst pressure. A protector is recommended for temperature above 212° F (100° C), consult BS&B Safety Systems, Inc. or BS&B Safety Systems Ltd.
- When the disk ruptures, the resulting shock wave may affect the operating performance of downstream equipment.
- Do not reinstall a disk that has been removed from the piping system unless used in a pretorqued safety head, even if the disk has not ruptured. When stresses in the disk are relieved by unbolting, the disk can never resume its original installed condition, which can affect disk performance if reinstalled.
- Only pretorqued safety heads with the contained rupture disk may be removed from service and re-installed provided the pretorqued capscrews are not removed and the disk is in good condition.

Assemble Rupture Disk in GR-C, FM-C, FT-C, FX-C, or Between Standard Ferrules (See Figures 1 through 4)

1. Arrange safety head outlet in position shown.
2. Place undamaged rupture disk on inlet fitting. The convex side of the disk, the dome, faces the inlet.
3. Carefully place safety head outlet in position shown in Figures 1 through 4. Ensure that the disk gasket's larger seal bead (types GFR-S, GFR-SE, GFR-SS and GLR-S) mates properly with the outlet groove.
   Ensure flow arrows on the disk tag end on the safety head outlet point in the same direction.

In case of type GFR-SM and GFR-SMS, the seal bead has a symmetric gasket configuration on both sides of the disk and fits between standard Tri-Clamp" (or equivalent) ferrules.

4. Assemble unit with sanitary clamp. Ensure sealing of rupture disk in safety head by applying the torque value to the hexagon nut (or steel bolts in Tri-Clamp MHP model) provided with the Tri-Clover clamp. Hexagon nuts are available from BS&B Safety Systems, Inc or BS&B Safety Systems Ltd.

Rupture Disk and Safety Head Types	
Rupture Disk Types	Safety Head Types
GFR-S	GR-C
GFR-SS	GR-C
GFR-SM	Between standard ferrules
GFR-SMS	Between standard ferrules
GFR-SE	FM-C, FT-C, FX-C
GLR-S	GR-C, FM-C, FT-C, FX-C

GFR-S, GFR-SS, GFR-SM, GFR-SMS, GFR-SE Torque

Nominal Disk Size		Torque* Operating Temperature			
		Below 100º F		Above 101º F	
IN	MM	IN. LBS.	NM	IN. LBS.	NM
1	25	40	4.5	120	13.6
1.5	40	40	4.5	120	13.6
2	50	70	7.9	70	7.9
3	80	75	8.5	75	8.5

*Tri-clamp 13 MHHS clamp is recommended with a hexagonal nut for these torque values.

GLR-S Torque

Nominal Disk Size		GLR-S Torque* Operating Temperature			
		Below 100º F		Above 101º F	
IN	MM	IN. LBS.	NM	IN. LBS.	NM
1.5	40	180	4.5	180	13.6

*Tri-clamp 13 MHP clamp is recommended with stainless steel bolts for these torque values.

Figure 1
GR-C Safety Head with GFR-S Rupture Disk

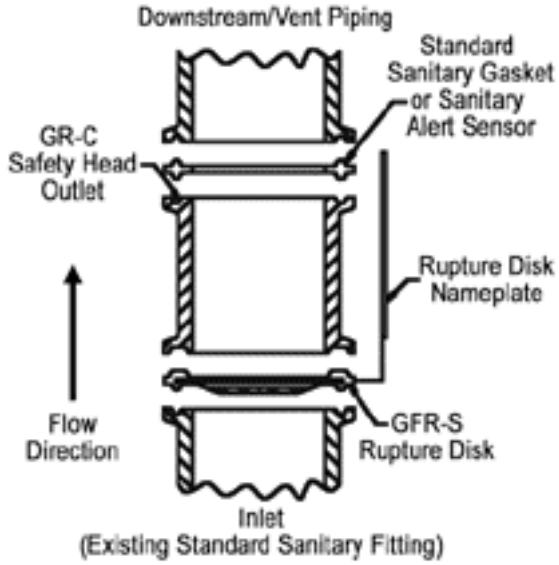


Figure 2
FM-C Safety Head with GFR-SE Rupture Disk

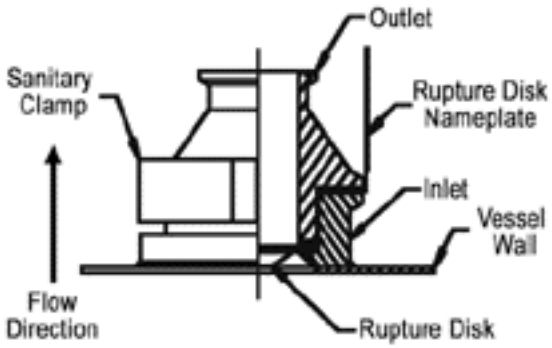


Figure 3
FT-C Safety Head with GFR-SE Rupture Disk

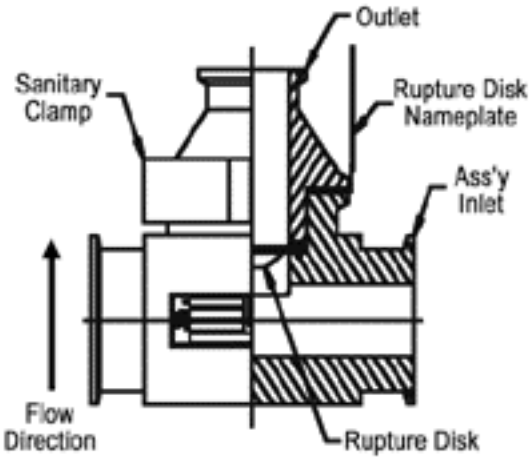
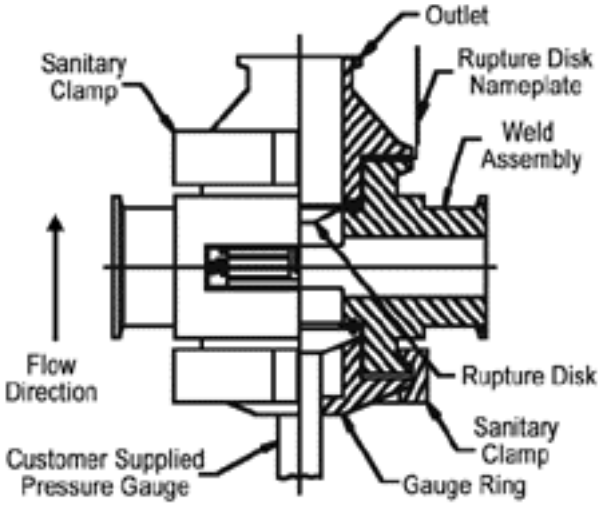


Figure 4
FX-C Safety Head with GFR-SE Rupture Disk



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BS&B SAFETY SYSTEMS, INC.
7455 East 46th Street
Tulsa, OK 74145
Telephone: 918-622-5950
Facsimile: 918-665-3904
Email: sales@tul.bsbsystems.com
www.bsbsystems.com

BS&B SAFETY SYSTEMS LTD
Raheen Business Park
Raheen, Limerick, Ireland
Telephone: +353 61 227022
Facsimile: +353 61 227987
www.bsb.ie

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