



## Installation Instructions for Type SLP-S™, SLP-SM™, SLP-SS™, SLP-SMS™ Rupture Disks & GR-C™ Safety Heads.

**WARNING** - Rupture disks are non-reclosing pressure relief devices and are intended to provide a pressure relief opening in the event of a rapid rise in pressure. Rupture disks are designed to open at a specified pressure and temperature, thereby relieving the excessive pressure or excessive vacuum in the structure to be protected. **It is imperative that the rupture disk device utilised be properly installed and safely vented in order to avoid bodily injury, damage to property, pollution and loss of product.** BS&B Safety Systems L.L.C. and BS&B Safety Systems Limited supply rupture disk devices selected by their customers, which are manufactured in reliance upon information and specifications supplied by the customer. BS&B Safety Systems L.L.C. and BS&B Safety Systems Limited are not liable for any damage resulting from improper installation, improper system design, unsafe venting, or other factors beyond BS&B Safety Systems L.L.C. and BS&B Safety Systems Limited control. Do not locate the rupture disk where personnel, equipment or property will be exposed to released product, pressure and temperature through the activated rupture disk. Handle carefully; rupture disk and or sensor device tag may have sharp edges. Final determination of the size and suitability of BS&B products for the use contemplated by the buyer is the sole responsibility of the buyer.

### ORDER REPLACEMENT OF DISKS / DISKS & SENSOR ASSEMBLIES BY LOT NUMBER (shown on disk tag).

#### Before Installing 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. Clean if necessary.
2. The rupture disk and Safety Head must not be machined or modified in any way except with the approval of BS&B Safety Systems L.L.C. or BS&B Safety Systems Ltd. Failure to obtain such approval voids the warranty on this product.

##### Inspect the Rupture Disk

###### For SLP-S™, SLP-SM™

Handle the rupture disk carefully holding the disk by the tag and the perimeter only. Examine seating and domed surfaces for nicks, dents, scratches and foreign material which can damage the disk or 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. The SLP-S™ series uses SAF™ technology (Structural Apex Forming) and the designed precision indentation in the centre of the disk is present in all cases to assist operating accuracy.

###### For SLP-SS™, SLP-SMS™

Do not remove disk and sensor assembly from its package until it is required for installation. Handle the assembly with care, disk and tag may have sharp edges, holding the assembly by the perimeter only. Examine the sensor checking the membrane and gasket for tears, scratches and foreign material that can damage the sensor, cause leakage, lead to false signals or otherwise affect the electrical or mechanical performance of the sensor.

- Do not install a damaged disk and sensor assembly, for example, if the wire circuit mounted on the orange Kapton support has been severed, or if there is any damage to the Kapton. Installation of a damaged disk and sensor assembly may result in a false signal or leakage.
- Do not rub the sensor membrane. Clean using only a damp cloth.

- Do not fold, twist or stretch the sensor as this may break or weaken the conductive circuit and cause a false signal.
- Handle carefully, disk and sensor assembly and tag may have sharp edges.
- The disk and sensor assembly does not produce excessive surface temperatures, infra-red, electromagnetic or ionizing radiation when appropriately powered according to these instructions.
- Do not subject the disk and sensor assembly to excessive structural bending stresses through ferrule connections.
- Select gasket materials appropriate to the service conditions.
- Check that the performance characteristics of the disk and sensor assembly match that required by the application.

#### Safety Precautions

**CAUTION:** Provide adequate support for piping and connections to absorb recoil/reaction forces when the disk ruptures.

The rupture disk and Safety Head should not be subjected to bending stresses.



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 L.L.C or BS&B Safety Systems Ltd.



When the disk ruptures, the resulting shock wave may affect the operating performance of downstream equipment.

Handle carefully, disk and tag may have sharp edges.

**Note:** Corrosion and process conditions may affect disk deterioration and necessitate more frequent replacement. The installation of the rupture disk must be carried out by trained and competent personnel.

### For SLP-SS™, SLP-SMS™

- Competent trained personnel should install the disk and sensor assembly devices in accordance with these installation instructions and user electrical requirements.
- Do not locate where the disk and sensor assembly membrane may be exposed to snow, ice, and heavy rain. This may break the sensor wire.
- Do not locate where the sensor to cable connection may be damaged from bending or stress.
- The disk and sensor assembly is not designed for dust service conditions.
- Check that all the disk and sensor assembly materials are compatible with the process conditions to avoid false signal generation due to corrosive attack on the disk.
- The sensor assembly should not be installed in contact with conductive process media as this may cause a false signal.
- Ensure that the opening of the disk and sensor assembly does not affect the performance of downstream equipment.
- The sensor **must not** be modified in any way except with the approval of BS&B Safety Systems L.L.C or BS&B Safety Systems Ltd. Unapproved modification may affect pressure containment and/or disk and sensor performance. Failure to obtain such approval voids the warranty on this product.
- Do not reinstall a disk and sensor assembly that has been used between ferrules even if the conductor has not broken. Each disk and sensor assembly is provided with integral gaskets. Do not remove or modify gaskets before use as this may affect sealing to the pressure system and damage the disk and sensor assembly.
- For assistance or advice on the compatibility of process media with the 'disk and sensor assembly', contact BS&B Safety Systems L.L.C or BS&B Safety Systems Ltd.

## Installation

1. For SLP-SS™, SLP-SMS™, install the disk and sensor assembly in the pipeline before connecting the electrical monitoring equipment. When uninstalling a rupture disk and sensor assembly, disconnect the electrical monitoring equipment prior to removal of the sensor from the piping system.
2. Arrange safety head outlet in position shown.
3. Place undamaged rupture disk on inlet fitting. The convex side of the disk, the dome, faces the inlet.
4. Carefully place Safety Head outlet in position shown in Figure 1. Ensure that the disk gasket's larger seal bead (Type: SLP-S™) mates properly with the outlet groove.

**Ensure flow arrows on the disk tag and on the Safety Head outlet point in the same direction.**

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

5. Assemble unit with sanitary clamp. Ensure sealing of rupture disk in Safety Head by applying the torque value to the hexagon nut as shown below. Hexagon nuts are available from BS&B Safety Systems L.L.C or BS&B Safety Systems Ltd.

Sanitary Fittings and Nominal Disk Size		Torque	
inch	mm	in. lbs.	Nm
1.5	40	40	5
2	50	50	6
3	80	60	7

**CAUTION:** Un-even or under-torqueing can cause leakage. Excessive torqueing cause damage to the sensor and rupture disk.

## Disk and Safety Head Types

Disk Types	Safety Head
SLP-S™, SLP-SS™	GR-C™
SLP-SM™, SLP-SMS™	Between standard ferrules

Assemble Rupture Disk in GR-C™ Safety Head, or between standard ferrules.

## Sanitary Fittings

As the dimensions of the internal bore and groove are critical to the performance of the rupture disk, Tri-Clamp® ferrules and clamps are recommended. A Tri-Clamp 13 MHHS (or equivalent) sanitary clamp is recommended. Consult manufacturers for ferrule and clamp pressure and temperature service ratings.

### GR-C™ Safety Head with SLP-S™ Rupture Disk



## Temperature Range

Suitable for process temperatures -40°F (-40°C) to a maximum of 450°F (232°C).

**NOTE:** For European CE marked Disk and sensor assembly, certification classification is dependent on the ambient temperature at the sensor location, ensure that the correct temperature classification has been ordered.

**CAUTION:** Do not locate cable on or near hot surfaces.

Cable maximum operating temperature specification is:

- Standard Cable: -4°F (-20°C) to 167°F (75°C).
- High Temperature Cable: -85°F (-65°C) to 392°F (200°C).

## Electrical Specification

- Maximum Current: 250mA (500mA without ATEX or IECEx)
- Maximum Voltage: 30 V DC
- Maximum Power: 3W (for ATEX & IECEx)

Lower values shall be required where Intrinsically Safe conditions are to be maintained. Sensors are designed to function at a few microwatts of power.

## CE (ATEX & IECEx) Marked Sensors

The rupture disk and sensor assembly is deemed "simple apparatus" and where certified complies with EN/IEC 60079-0 & EN/IEC 60079-11, "Explosive Atmospheres - Equipment Protection by Intrinsic Safety" and the ATEX Directive 2014/34/EU and IECEx Standard under the following marking codes:

$\text{Ex}$  II 1 G D

Ex ia IIC T6 Ga	EX ia IIIC T85°C Da	-40°C ≤ Ta ≤ +75°C
Ex ia IIC T5 Ga	EX ia IIIC T100°C Da	-40°C ≤ Ta ≤ +90°C
Ex ia IIC T4 Ga	EX ia IIIC T135°C Da	-40°C ≤ Ta ≤ +125°C
Ex ia IIC T3 Ga	EX ia IIIC T200°C Da	-40°C ≤ Ta ≤ +190°C
Ex ia IIC T232°C Ga	EX ia IIIC T232°C Da	-40°C ≤ Ta ≤ +217°C

**NOTE:** All electrical equipment should be installed and maintained to a recognized national standard.

## Marking

Each disk and sensor assembly is marked with the following information;

- Rupture Disk and Sensor Assembly Type.
- Rupture Disk and Sensor Assembly nominal size and corresponding pipe flange rating.
- Lot number.

In addition, for European CE Marked Disk and Sensor Assembly, where certified the following additional marking is applied to the sensor tag;

- CE mark and notified body number "2460".
- Electrical certification code markings.
- Certificate number "Presafe 16 ATEX 8940X" & IECEx PRE 16.0085X".
- Warning of possible Electrostatic Risk.
- Year of Manufacture.

## Replacement Sensors

Do not attempt to repair damaged or burst disk and sensor assembly.

Order replacement sensors by lot number, which can be taken from the sensor tag.



# INSTRUCTION MANUAL

II-TX-5001 - Rev B

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