

## **3.2**

## **Rupture Disks**

### **RUPTURE DISK TECHNICAL AND APPLICATION INFORMATION**

*Rupture disks are metal disks that are designed to rupture within a specific pressure range to provide emergency pressure relief. They are common in extrusion, on pressure vessels and in a variety of other industries.*

*In polymer extrusion machinery, the rupture disk is permanently attached to an "extruder" body by silver solder or welding to produce a complete unit that can be inserted and removed from the extruder. This unit is typically called a burst plug, blow plug, or soft plug.*

*All "ECS" blow plugs have the following characteristics unless otherwise specified:*

- 303 Stainless Body and Inconel Disk
- Made in USA
- All units factory tested to ASME standards
- Lot # marked on body for traceability to original factory testing (except -618 and resized models)
- +/- 5% accuracy of specified pressure range
- 70% non-diminishing usable range
- 900°F max operating temperature
- Minimum pressure of 1250 psi for standard construction.  
*Ranges down to 800 psi can be special ordered, please call for details*
- Hastelloy disk and bodies available for corrosive applications

*Special orders available. Please call.*

### **TESTING AND ACCURACY**

*All of our rupture disk ratings are based on ASME testing standards. A number of disks in each batch are blown at room temperature (72°F) to establish a baseline pressure and then derated to establish a value at a temperature that is more typical of extruder operating conditions. Each batch or lot is assigned a specific lot number to ensure traceability back to this testing.*

*Rupture disks are not precision devices. Using industry standard construction methods, rupture disks are designed to burst within +/- 5% of published pressure rating.*

### **TEMPERATURE EFFECTS**

*The construction of our blow plugs is designed for operating temperatures up to a maximum of 900°F. The 900 degree limit is a limitation of the joining method used to mount the actual rupture disk on the body. All of our blow plugs can be used up to 900°F with minimal derating required.*

*The inconel disk provides very consistent pressure ratings over the temperature range of most polymer extrusion processes (300° - 750°F). In this range (300° - 750°F), the actual burst pressure is expected to remain within 1% of the +/- 5% range for our blow plugs which are rated at 550° or 600°F.*

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## Rupture Disks

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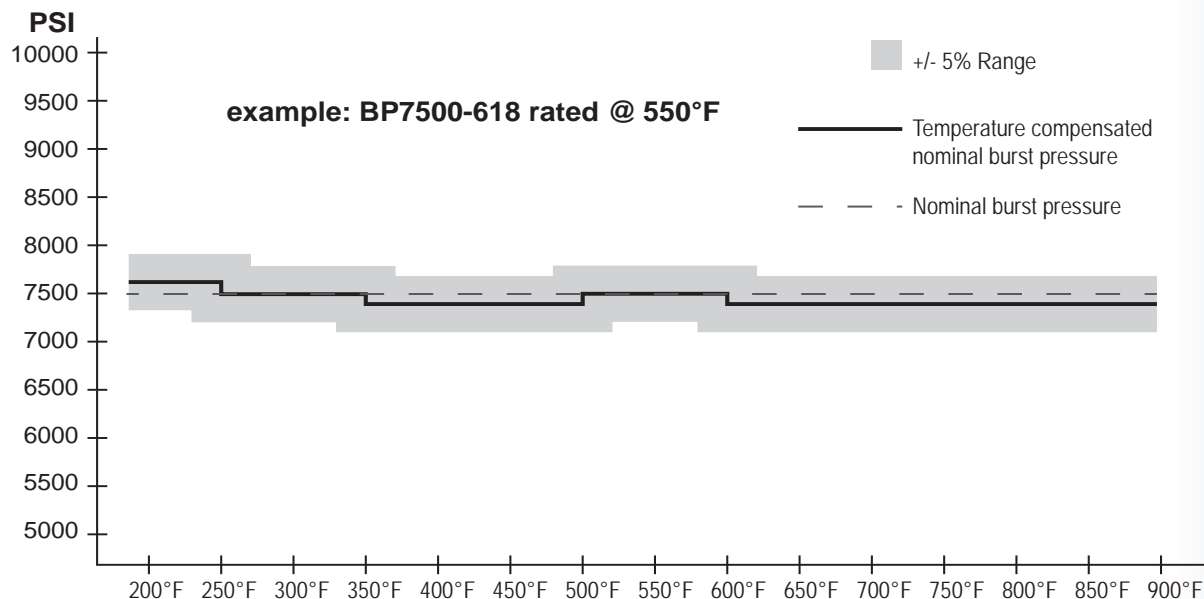
### Understand Rupture Disk Technology

*and save money!*

**Three common issues lead to wasted \$\$\$ in rupture disk purchases.**

- ◆ Having a small lot run at a particular temperature instead of buying a stock unit. (Ratings will vary by 1% or less of range at typical extruder temps)
- ◆ Operating pressures are in the upper 30% of pressure range (leads to metal fatigue and premature failure)
- ◆ Mounting holes are dirty, malformed, or poorly machined. (units are damaged before they even start to operate) See page 3.16 for cleaning tools, shims and spacers.

### TEMPERATURE EFFECTS (CONTINUED)



### FATIGUE EFFECTS

Our extruder rupture disks, as well as most sold, are designed for maximum life if pressure does not exceed 70% of rated value. Blow plugs run at greater than 70% of rated value will have reduced life due to metal fatigue of the disk.

### DISK SELECTION EXAMPLES

1. Barrel rated at 10,000 psi  
Normal operating pressure 3,000 psi at 400°F  
 $3000/0.7 = 4285$  psi minimum Next closest std blow plug value is 5000 psi  
Choose BP5000-XXX to give adequate protection and avoid premature failure due to fatigue.
2. Barrel rated at 10,000 psi  
Normal operating pressure 8,000 psi at 450°F  
 $8000/0.7 = 11,428$  exceeding barrel rating  
Choose BP10,000-XXX to stay within barrel rating. Expect diminished life of rupture disk.

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