

# Bursting Discs

## What Is A Bursting Disc?

A Bursting Disc, also known as a Rupture Disc, is an 'engineered weak spot' within a pressurised system which can be made to burst at a pre-determined pressure and temperature.

It is a non-re-closing, one time device used to protect a system from overpressure damage or imploding due to excessive positive or vacuum (negative) pressures in liquid or gaseous systems.

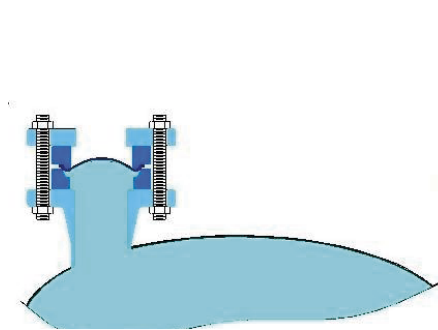
Bursting discs are available in various designs and materials. The disc type/design is determined by the process conditions the disc will see.

## Bursting Disc Applications

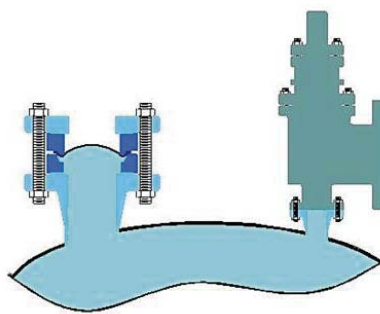
Bursting discs have many advantages over other methods of pressure relief:

- Low cost
- Leak tight
- Instantaneous response
- Reliable operation
- Virtually maintenance free

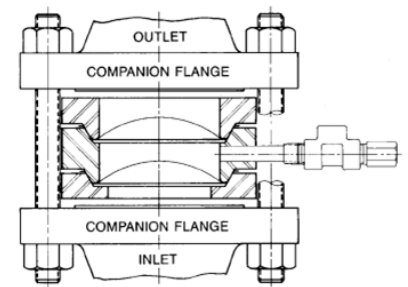
A bursting disc can be used in various ways, please see examples shown below:



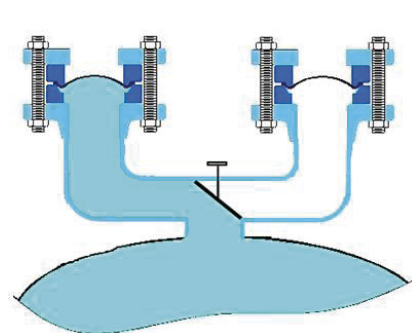
Primary Relief



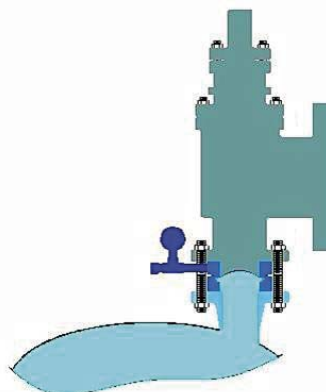
Secondary Relief



In Series



In Parallel



### Relief Valve Protection

- Prevents leakage past the valve eliminating product loss and fugitive emissions
- Protects the valve from corrosive or viscous media
- Protects the valve from malfunction due to product buildup
- Enables simpler valve maintenance

### How Long Will A Bursting Disc Last?

Bursting discs are made from very thin materials that have been selected by actual trial and not by calculation. As a result, the strength is exactly what is required and there is no 'corrosion allowance' or other safety factor. The service life of the disc depends on many factors which could cause the disc to burst prematurely, some of these being:

#### Pulsating Conditions

A bursting disc can become fatigued in pulsating type conditions. Some disc designs are better than others for this type of duty i.e. 'Reverse Acting' (Reverse Buckling) type discs.

#### Temperature Effect

Temperature can have an effect on the burst pressure of the disc. For example, if the bursting disc is ordered at a particular pressure and temperature, any temperature variance in the process conditions will effect the burst pressure of the disc. It will be progressively weaker as the temperature rises and progressively stronger as the temperature decreases. The effect will vary depending on the disc design and materials.

#### Corrosion Conditions

It is important that the material for the disc is checked to be compatible with the service duty. Any corrosion of the disc membrane will effect the burst pressure of the disc. A bursting disc can be made from a variety of materials. E.g. 316SS, Nickel, Inconel, Monel, Aluminium, Hastelloy-C276, Tantalum and Graphite etc.

#### Uneven or Over-Torquing of the Disc Assembly

Not all disc assemblies are non-torque sensitive. Incorrect torquing can result in the disc not bursting within its specified burst range.

#### Orientation of the Bursting Disc Assembly

It is very important that the bursting disc and holder assembly are installed in the correct way. If the disc or complete assembly is installed upside down, the bursting disc could be many times stronger than the actual burst pressure stamped on the disc tag. The results of the disc not bursting when required could be disastrous. There are 'Flow Arrows' on both the disc and the holder tag showing the direction of the flow to assist with the correct orientation of the disc and holder assembly.

#### Handling and Storage of the Bursting Discs

It is very important that the discs are stored and handled correctly. The membranes of the discs are very delicate. Any damage to the dome or seat of the disc while storing, handling or installing the disc will affect the burst pressure. Many disc designs are designed to be 'Fail Safe' and will fail low if the dome is damaged. Also some single membrane design discs, which are made to withstand full vacuum conditions, will fail under vacuum conditions if the membrane/dome of the disc is damaged in transit or installation.

**The cost of replacing a disc that has burst prematurely can be very high, particularly if the system must be shut down to do it. Accordingly, we recommend all discs be replaced periodically even if they appear to be in good condition. A convenient time to do this would be when the system is shut down for other reasons.**

# Bursting Discs

## Storage Tank Fittings

### Some Examples Of Industries Which Use Bursting Discs:

#### Pharmaceutical Industry

Normally use Graphite - due to Non-Contamination  
Temperature stability on batch reaction  
Corrosion resistance

#### Chemical Industry

Mixing Vessels  
Reactor Vessels  
Autoclaves  
Resin Kettles - Exothermic  
Distillation Columns  
Storage Tanks  
Flue Gas Scrubbers  
Hydrogenators  
Dehydrogenators  
PVC Polymerisers

#### Electrical Generating Industry

High Voltage Distribution  
Transformers - SF6 Gas  
Steam Turbo Alternators

#### Aviation Industry

Protection of the Fuel Tanks, Tyres

#### Heating and Ventilation Industry

Calorifiers  
Centrifugal Refrigeration Units  
Closed Circuit Air Conditioning Systems

#### Agricultural Industry

Protection of Silos from Methane Build-up  
Agrochemical Manufacture

#### Engineering Industry

Inert Gas Furnaces  
Gas Storage Tanks

#### Textile Industry

Spinning Machine Pre-Heaters  
Pressure Vessels  
Sulphinators

#### Shipping Industry

On Board Compressors  
Calorifiers  
Gas or Chemical Storage Tanks

#### Fire Protection Industry

Petrol Tank Farms

#### High Pressure Equipment

Compressors  
Pressure Vessels  
Extruder Machines and Equipment  
Hydraulic Accumulators  
High Pressure Water Power Cleaning Systems  
Gas Cylinders

#### Cryogenic Industry

Use OT-U Type Bursting Disc Assemblies

#### Offshore Industry

Oil & Gas Production  
Down Hole Tools

#### Breweries

Production and Fermentation Vessels

#### Transportation Industry

Protection of Intermodal and Over The Road Tankers  
Rail Cars

#### Automotive Industry

On Nitrogen Cylinders for stamping of parts, etc.

#### Adhesive Manufacturers

#### Pulp & Paper Mills

#### Water & Sewage Processing

#### Food & Beverage Industry

#### We Also Offer A Range Of Vent/Explosion Panels Used On:

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Blenders, Mixers, Crushers  
Grinders, Pulversisers, Driers  
Ovens & Furnaces, Ducts, Bins  
Silos, Grain Elevators  
Fire Extinguishers  
or On Any Application Where  
Deflagrations Are Possible

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