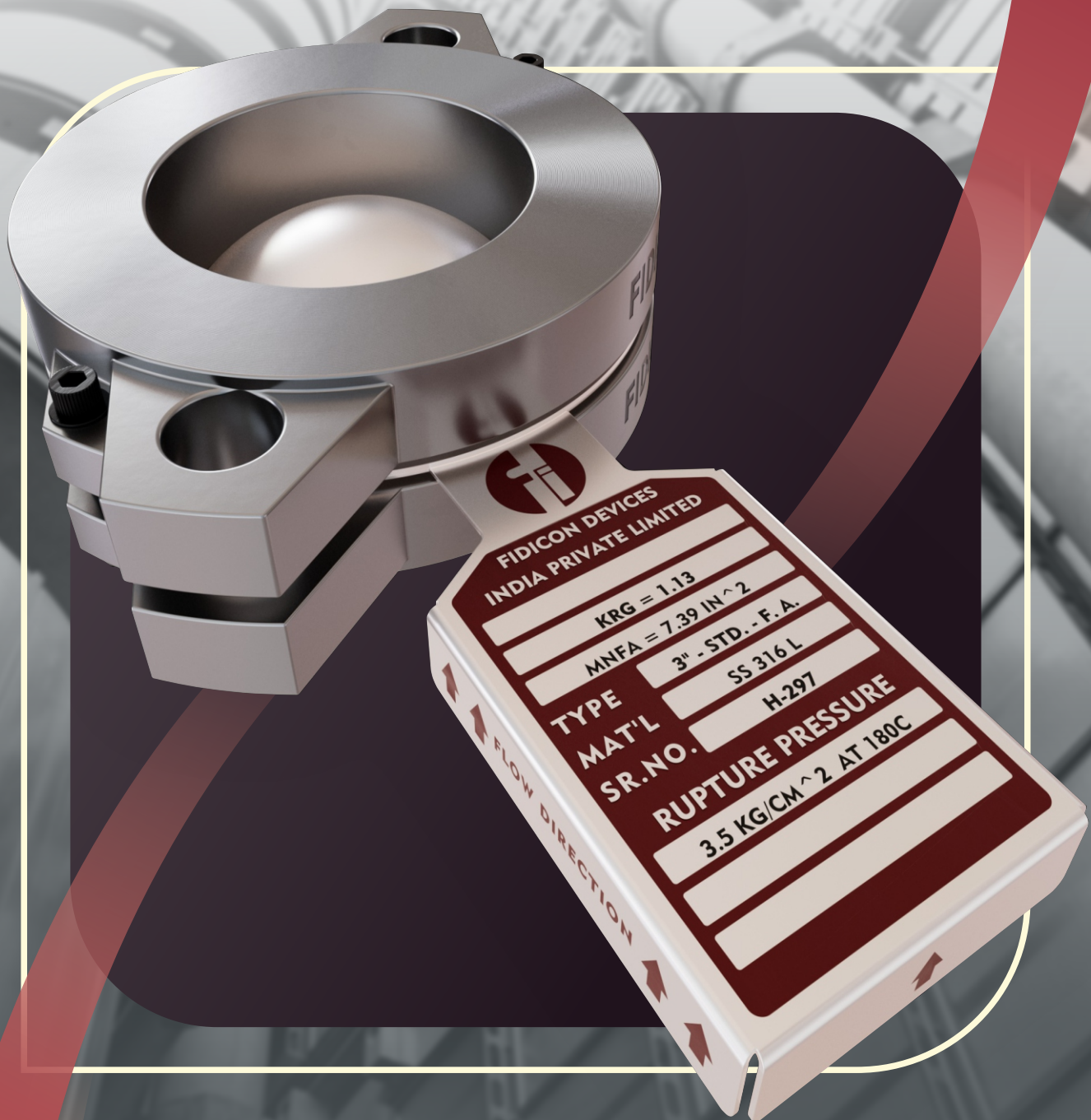


RUPTURE DISC

MODEL : FDI-RD-703



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- ◆ Types & Specification
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INTRODUCTION : RUPTURE DISC

Rupture disc devices are non-reclosing pressure relief devices used to protect vessels, piping and other pressure containing components from excessive pressure and/or vacuum. Rupture discs are used in single and multiple relief devices installations. They are also used as redundant pressure relief devices. With no moving parts, rupture discs are simple, reliable, and faster acting than other pressure relief devices. Rupture discs react quickly enough to relieve some types of pressure spikes because of their light weight, rupture discs can be made from high alloy and corrosion-resistant materials that are not practical in PRV.

The Rupture Disc is also a temperature sensitive device. Burst pressures can vary significantly with the temperature of the rupture disc device. This temperature may be different from the normal fluid operating temperature. As the temperature at the disc increases, the burst pressure usually decreases. The Rupture Disc can be specified for systems with vapour (gas) or liquid pressure relief requirements. Rupture disc designs are available for high viscous fluids. The use of rupture disc devices in liquid service should be carefully evaluated to ensure that the design of the disc is suitable for liquid service. They respond very quickly to pressure and can be used to implement pressure relief in many different applications. They are used to protect against the dangers resulting from excessive over pressure or vacuum within a process, for the protection of Plant, People, the environment and machinery. Rupture discs are used upstream of PRVs to seal the system to meet emissions standards, to provide corrosion protection for the valve, and to reduce valve maintenance.

When a rupture disc device is installed at the inlet of a PRV, the devices are considered to be close coupled, and the specified burst pressure and set pressure should be the same nominal value.

When installed in liquid service it is especially important for the disc and valve to be close coupled to reduce shock loading on the valve. The space between the rupture disc and the PRV shall have a free vent, pressure gauge, try-cock, or suitable telltale indicator as required in UG-127 of the ASME Code. A non-vented space with a pressure gauge without alarms or other devices is not recommended as a suitable telltale indicator. Users are warned that a rupture disc will not burst in tolerance if back-pressure builds up in a non-vented space between the disc and the PRV, which will occur should leakage develop in the rupture disc due to corrosion or other cause. A rupture disc device may be installed on the outlet of a PRV to protect the valve from atmospheric or downstream fluids. Consideration should be given to the valve design so that it will open at its proper pressure setting regardless of any backpressure that may accumulate between the valve and rupture disc. See UG-127 of the ASME Code for other requirements and considerations.



TYPES & SPECIFICATION

There are several classification of Rupture disc but mainly it's classified by:

- ★ Forward-acting, Tension Loaded
- ★ Reverse-acting, Compression Loaded
- ★ Graphite, Shear Loaded

USE OF RUPTURE DISC

- ★ Provide Protection to Personnel, Equipment and Plant.
- ★ Passive non-mechanical devices. No Moving parts.
- ★ Bubble-tight “Zero Leakage”
- ★ Extremely fast opening providing instantaneous relief
- ★ Available in a wide variety of corrosion resistant materials
- ★ Protects safety relief valves against corrosion, Plugging and Leakage.

INDUSTRIES USE OF RUPTURE DISC

- ★ Chemical Plants
- ★ Utilities / Power Generation
- ★ Nuclear
- ★ Oil and Gas
- ★ Aerospace
- ★ Aviation
- ★ Railway
- ★ Shipping
- ★ Food Processing
- ★ Pharmaceutical
- ★ Synthetics / Rubber
- ★ Pulp and Paper



BURST TOLERANCE

In accordance with ASME Code, a tolerance is applied to the rated or stamped burst pressure of a rupture disc. The rated (stamped) burst pressure is established after the rupture disc has been manufactured, by testing a minimum of two rupture discs from a lot and averaging the pressure at which the rupture discs burst. This average is the rated (stamped) burst pressure. The applicable tolerance is then applied to this pressure to determine the maximum expected burst pressure variation. As per ASME Code, the Standard Rupture Disc is designed with a burst tolerance of ± 2 psig (0,138 barg) for pressures up to and including 40 psig (2,76 barg) and $\pm 5\%$ for burst pressures above 40 psig (2,76 barg). Burst tolerances for Standard Rupture Discs rated below 15 psig (1,03 barg) are outlined in Table III. The burst tolerance applies only to the rated (marked) burst pressure on the rupture disc.

BURST PRESSURE TOLERANCE-UG-134(E)

All products are manufactured to a specified tolerance and Rupture Discs are no exception. ASME UG-134(e) specifies that “the burst pressure tolerance for rupture disc devices at the specified disc temperature shall not exceed ± 2.0 psi of marked burst pressure up to 40 psi and $\pm 5\%$ of marked burst pressure 40 psi and over”. Simply put, the burst pressure tolerance is the range of pressure over which a rupture disc is expected to burst.

CAUTION: The burst pressure tolerance does not consider the Manufacturing Design Range (MDR) and is not cumulative with the MDR. In fact it is possible to have a disk fail to burst within the burst pressure tolerance while bursting within the MDR as per the illustration above. In this case the lot would be considered scrap.

PRODUCT GENERAL SPECIFICATIONS

★ **Model No.**

FDI- RD - 703
RUPTURE DISC

★ **Material of Construction:**

ASTM A216 GR. WCB (CS), SS 304, SS 316, Hastelloy C, PTFE, etc. as per Standards and Customer Request.

★ **Pressure Setting:**

as per customer requirements.

★ **Construction:**

Corrosion Resistant Construction
Cast Body / Manufactured Smooth Surface.

★ **Available Sizes:**

1/2" to 24"+ and different sizes as per customer request.

★ **Connection Type:**

Flanged ANSI B 16.5 #150, #300, #600, Clip on and other as per customer requirements.

★ **Product Sizing:**

Design / Vent Sizing are as per:

API 2000 7th Edition, API 520, API 526, API 527

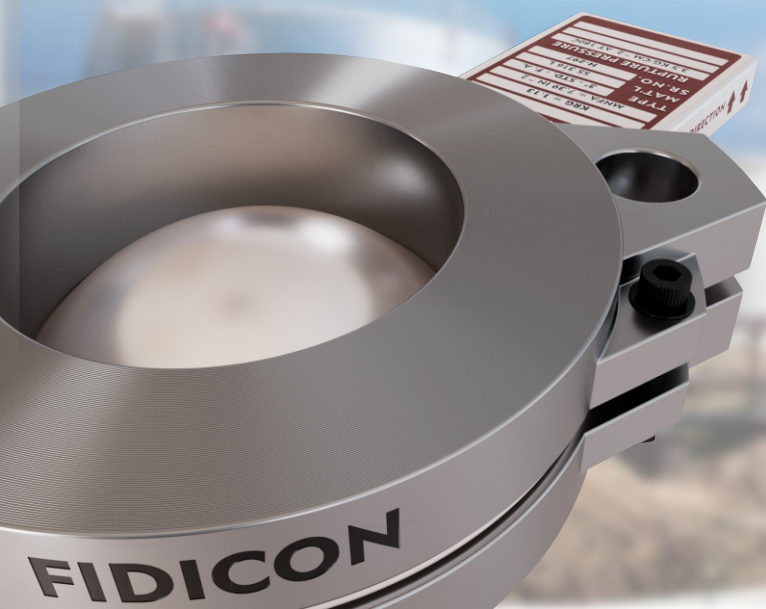
★ **Other Types:**

Forward Acting, Reverse Acting, Compact, etc.
Contact Sales Team for More Information.

PRODUCT TESTING

We offer Following Product Tests,

- ★ Dimensional Checks
- ★ Air Leakage Test
- ★ Performance Test, F.A.T etc.
- ★ Other Test as per API Std.



TOP HOLDER

WASHER &
FASTENER

DISC

TAG PLATE

FLANGED HOLDER

IMAGE : RUPTURE DISC
FDI - RD - 703

NOTE: HOLDERS ARE AVAILABLE IN
CLIP ON TYPE & FLANGED TYPE



**RUPTURE
DISC
PLANNER TYPE**

**PRESSURE
GAUGE**

BURST SENSOR



BURST SENSOR

**PRESSURE
GAUGE**

TAG PLATE

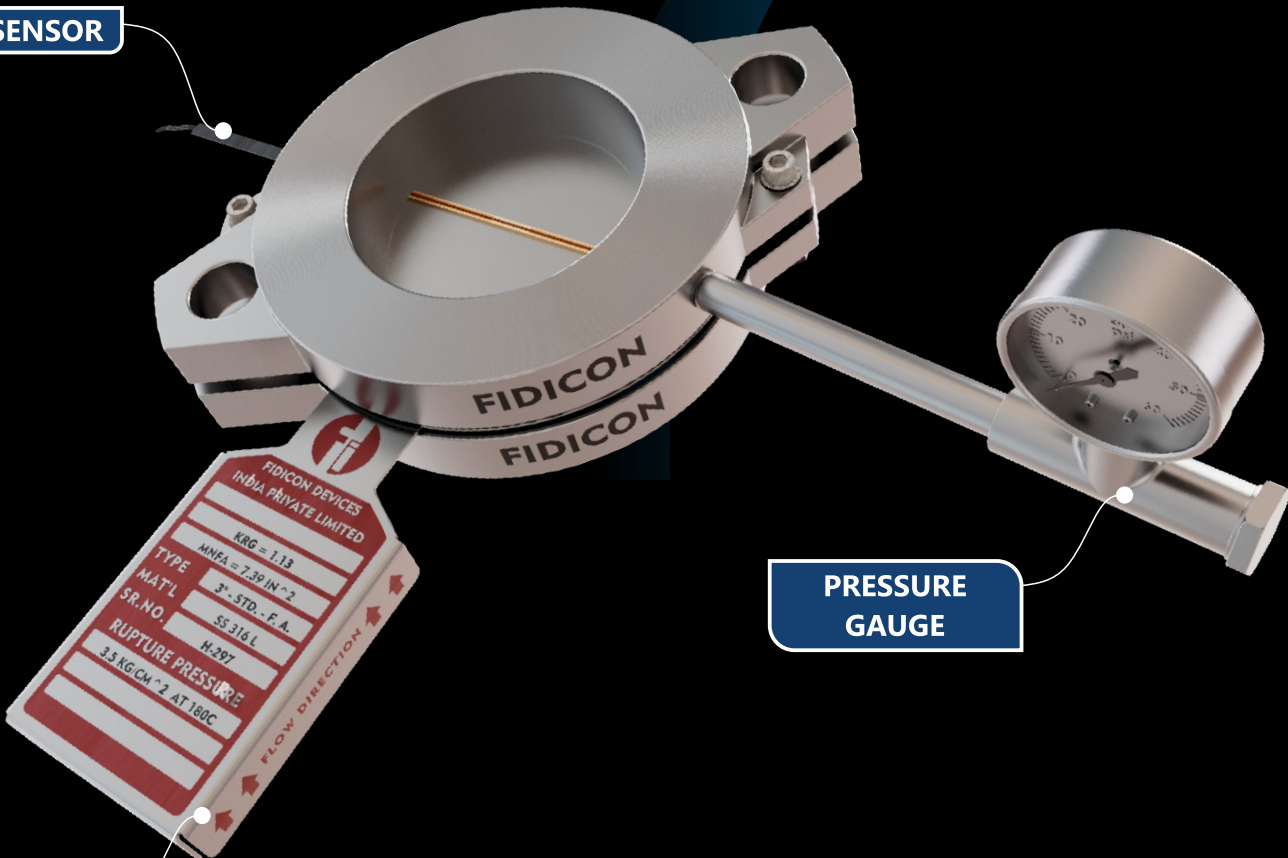


IMAGE : RUPTURE DISC
FDI - RD - 703

NOTE: ADDITIONAL FEATURES
BURST SENSOR (NO/NC) INDICATOR,
PRESSURE GAUGE MOUNTING

INSTALLATION

SAFETY PRECAUTIONS BEFORE INSTALLATION

The rupture disc is a precision instrument and must be handled with extreme care. Rupture discs should be installed only by qualified personnel familiar with rupture discs and proper piping practices.

The score on the concave side of the rupture disc dome is a factory installed precision score.

Do not install rupture disc if there is any damage in the dome area. A damaged rupture disc is any rupture disc with visible nicks or dents in the dome.

Fidicon does not recommend reinstalling a rupture disc that has been removed from the holder as reinstallation may adversely affect the joint sealing capabilities and/or performance of the rupture disc.

See rupture disc tag to verify set pressure, operating temperature, and all other operating parameters.

TYPES OF EXPLOSIONS

- 1 Rupture Disc Bursting
- 2 Steam Explosion
- 3 Chemical Explosion During Thermite Triggering

In order to avoid damage and injuries due to explosions, sufficient precautions need to be taken which is,

- 1 To avoid the rupture disc bursting explosions, it is better to connect the test section directly to the furnace.
- 2 The thermite experiments are better to be conducted in large open grounds with no manpower present in minimum 100 m radius.
- 3 The trigger mixture quantity should be just enough to start the thermite reaction.

INSTALLATION

PREPARATION OF HOLDERS FOR INSTALLATION

NEW INSTALLATION

Clean all foreign material from the rupture disc sealing area of both the holder inlet and outlet.

REPLACEMENT INSTALLATION

- ★ If the Burst Disc Indicator (B.D.I.®) Alarm System is used, disconnect the alarm strip from the monitor by unplugging the B.D.I. connector from the lead wire connector.
- ★ Remove the holder from the system and place on a flat surface.
- ★ Disassemble the holder by loosening the pre-assembly screws or by removing the cap screws on the holder outlet. For pre-torque holders, remove the flange screws. Lift the holder outlet up and set aside; then remove the burst rupture disc.
- ★ Clean the rupture disc sealing area of both the holder inlet and outlet. These surfaces must be completely clean and free of all rust, corrosion, and foreign material to ensure a proper seal. Use of solvents, steel wool, or fine emery cloth is permissible. Do not re-machine. Do not use scraper or abrasives.
- ★ Inspect the rupture disc sealing area for nicks, scratches, or pitting. If any of these conditions are present, consult the factory for repair.
- ★ Remove any adhered gasket material from previous installation.



ASSEMBLY OF THE RUPTURE DISC & HOLDER

- ★ Carefully remove and discard any shipping protectors furnished with rupture discs or holder. **DO NOT INSTALL A SHIPPING PROTECTOR IN A HOLDER ASSEMBLY.** Place the holder inlet on a flat surface with the alignment pins pointing up.
- ★ Place the rupture disc over the pins with the dome side down.
- ★ Position the holder outlet carefully onto the alignment pins as shown, ensuring that the rupture disc is not damaged.
- ★ Fasten the assembly together by tightening the pre-assembly screws or by replacing and tightening the pre-assembly cap screws.
- ★ For Bolted type Holders Fasten the assembly together by installing lightly oiled, free running flange screws to finger tightness. Using a cross torquing pattern, torque each screw with a calibrated torque wrench a 20% increments of recommended torque value. Repeat 20% increments and cross torquing pattern until final torque value is achieved. Recheck all screws in rotational sequence at final torque value. These values are based on using the alloy steel flange screws provided which have a minimum yield strength of 158,000 psi. The use of screws with lower strength will prove unsatisfactory.

PREVENTIVE MAINTENANCE

Risk assessment and an annual rupture disc replacement are recommended. Rupture disc service life is determined by system operating conditions. The effects of severe pressure / vacuum cycles, corrosion, temperature variations, or other adverse conditions must be evaluated by the user through actual service experience to determine optimal service life.

If the Rupture Disc is not Replaced Periodically When Exposed to these conditions, premature failure of the Rupture Disc may occur, thereby discharging the process media.

To avoid extended downtime, maintain three spare rupture discs in stock at all times for each holder in use. The number of spares required ultimately will be determined by service conditions.

RECOMMENDED DISPOSAL

- ★ Give it back to us & we will take care of recycling & possible disposal.
- ★ User can dis-assemble the product in multiple stage
- ★ The above may be handed over (state pollution board), authorized re-cycler item-wise.





ENQUIRY SPECIFICATIONS:

- [1] Service Media Details.
- [2] Tank Volume, Type, MOC of Tank, Dimensions for Fire Exposure.
- [3] Pump Flow (In-Charge, Discharge Flow Rate)
- [4] Product Design Condition (Normal Vent / Fire)
- [5] N₂ Blanketing System Available (If Yes, Flowrate / No)
- [6] System Operating and Design Pressure.
- [7] System Operating and Design Temperature.
- [8] Burst Pressure Requirements.
- [9] Material Specifications (Body, Internal)

RECOMMENDED SPARES

- [1] Rupture Disc Without Holder

OTHER RANGE OF PRODUCTS

- [1] Flame Arrester
- [2] Breather Valve
- [3] Level Indicator
- [4] Metal Tube Rotameter
- [5] Emergency Relief Vent
- [6] Gauge Hatch
- [7] Pressure Reducing Valve
- [8] Safety Relief Valve
- [9] Variable Area Flow Meter, etc.

Any Query?

Contact us to Discuss,

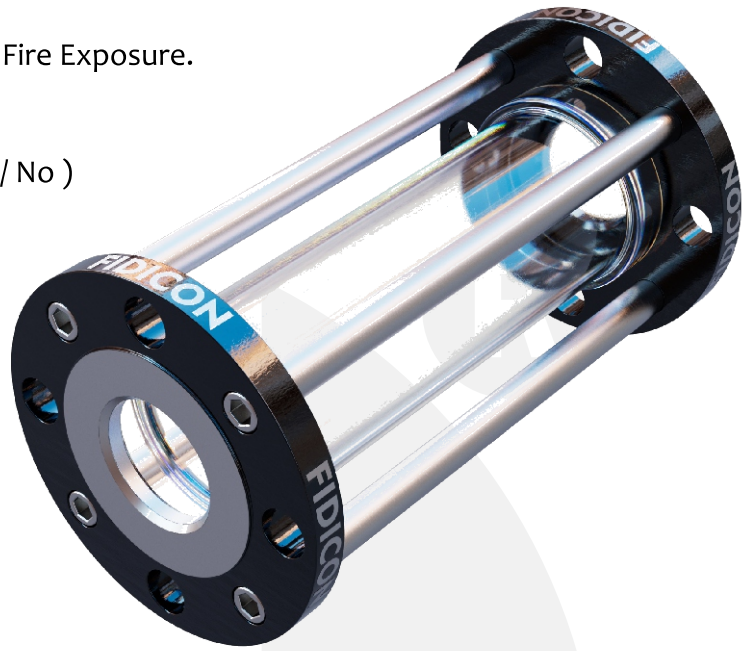
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