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EXTREME PRODUCT CUSTOMIZATION



ESTREMA FLESSIBILITA' DI PROGETTAZIONE

**FOR YOUR SAFETY, CHOOSE THE DONADONSDD RUPTURE DISCS!**

**PER LA VOSTRA SICUREZZA, SCEGLI I DISCHI DI ROTTURA DONADONSDD!**



Certified for protection of equipment under pressure according to European Directive 2014/68/EU (PED)



Korea Obligation Safety Certification Mark



Certified EX II 2 GD for use in potentially explosive atmospheres according to European Directive 2014/34/EU (ATEX)



Certified on behalf of the German nuclear power plant operators E.ON Kernkraft GmbH



Design, development and manufacture of rupture discs and disc holders for the aerospace sector



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## DonadonSDD

Rupture discs and Venting panels are the main products DonadonSDD the absolute specialist with more than 60 years of experience in manufacturing Rupture Discs.

**The range of safety devices for protection of equipment from pressure variations manufactured by DonadonSDD includes:**

- Rupture Discs in Stainless steel, special alloys, Nickel, Titanium, Tantalum, and graphite;
- Venting panels for protection of plants with explosion risk;
- Rupture indicators also for explosion atmosphere applications;
- DonadonSDD supply also a wide range of Pressure Relief Valves in order to offer customers an integrated service.

**Since January 2008 DonadonSDD is established in a new plant with new production and testing equipment that allow to:**

- Ensure maximum quality level
- Develop new models with advanced technology
- Offer a very high level service (customized orders delivered in 2 weeks and rush spare parts orders in a few days)
- Increase production capacity in line with market requirements
- Continue to quote very competitive prices



In following years DonadonSDD has continued to invest in development of **new manufacturing technologies and especially in production with a totally laser based process of the new NS nanoscored rupture disc series**. This process is a breakthrough innovation positioning DonadonSDD on the world front line of rupture disc technology.

**DonadonSDD Srl**

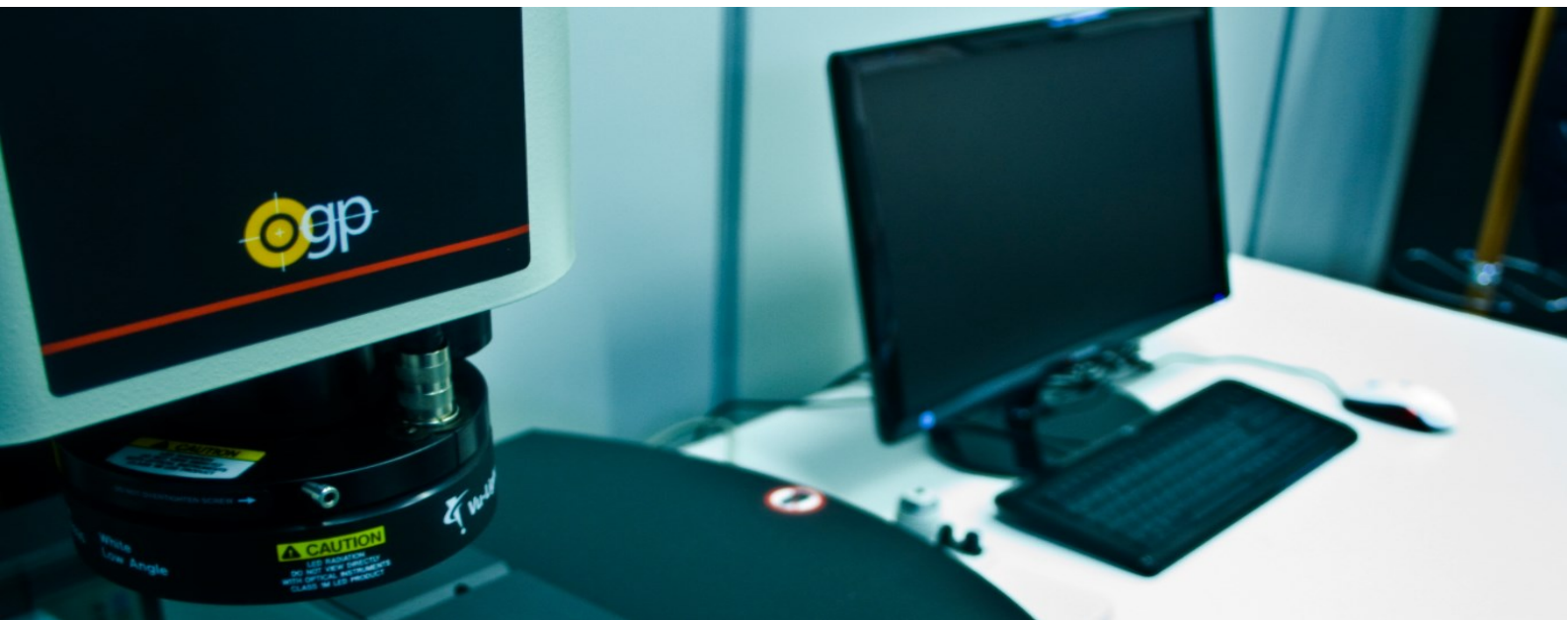
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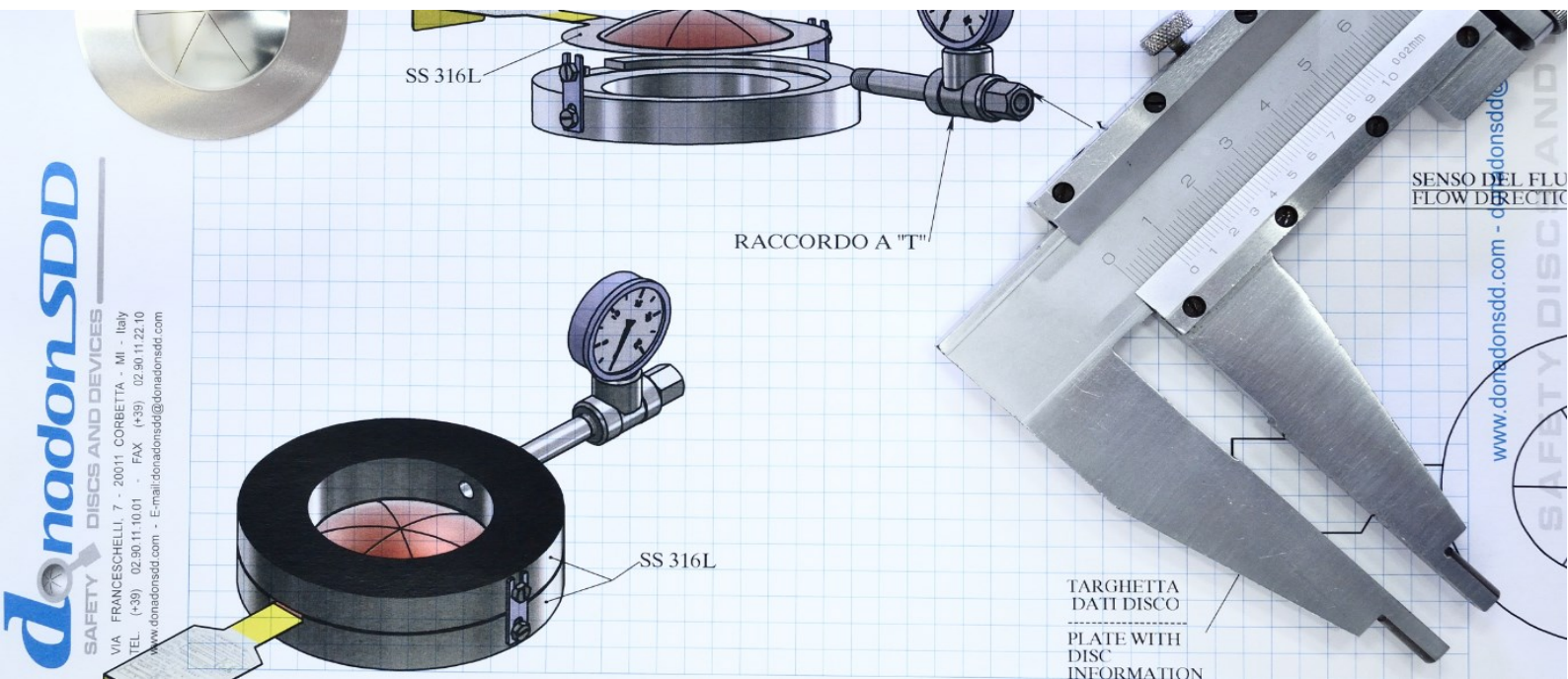
DonadonSDD has also invested in new up to date manufacturing equipment and modern development and measurement tools like Solidworks drawing equipment and an OGP microscope able to measure and take picture with 1 micron definition.

Rupture pressure of discs may vary from 5 millibar up to 1150 bar, taking also into account size and material. Testing equipment allow to certify discs up to DN 900 and to perform testing both at low temperature (down to -196°C) and at high temperature (up to 480°C).

**Organization and procedures are designed to ensure reliable manufacturing of high quality products** in compliance with ISO 9001-2000 standard. Products are certified according to European Directive 2014/68/UE (PED) and European Directive 2014/34/UE (ATEX), and rupture discs are also built, tested and certified in accordance with ASME Directives, Section VIII, Division 1, and bear the matching UD stamp. The high quality of DonadonSDD's rupture discs has been also recognized by the Korea Occupational Safety and Health Agency ( KOSHA ).



Technical and Commercial services are able to support client requirements and develop the best technical and economical solutions. Compact company organization, fully dedicated to pressure protection equipment, is highly flexible and able to satisfy both specialized requirements and mass-produced products.



### Key advantages of DonadonSDD Rupture discs

- Custom manufacturing according to client specification – Zero manufacturing range
- High precision, computer controlled laser manufacturing
- Low tolerance also for low bursting pressure
- 2 – 3 weeks standard delivery
- Rush spare parts deliveries in a few days
- Full range of diameters and burst pressures
- Worldwide deliveries
- Competitive pricing

### Technical Service

#### Model selection for Rupture discs, Explosion vent panels and Rupture indicators

DonadonSDD technical service, taking into account customer's requirements, develops the best technical solution and suggests the most effective model of Rupture disc, explosion vent panel and Rupture indicator

#### Material selection for Rupture discs, Explosion vent panels and accessories

DonadonSDD offers Rupture discs and accessories in a wide range of materials and is able to suggest the materials with best compatibility with process fluids

### Sizing

DonadonSDD supports customers in sizing Rupture discs and Explosion vent panels according to the equations specified in the relevant international standards. However the customer is responsible for defining the correct parameters to use in the calculation

### Special executions

DonadonSDD technical service is available to develop the most convenient solutions for non standard requirements. DonadonSDD is also available design and fabricate special parts in cooperation with customers



## Rupture Discs as Safety Devices

Chemical plants, tanks, reactors, silos and any other equipment working under pressure may be damaged or destroyed by non-controlled pressure rises. Protection of personnel and equipment from this risk is achieved with safety devices that provide an adequate fluid outlet, venting the excess pressure. In the same way protection from depression is achieved. **Rupture discs and relief valves are the safety devices used more frequently. Their design and performance are widely different but both types protect the equipment from high pressure.** The rupture disc (or bursting disc) is a very versatile device and is extremely useful at very low and very high running pressure, in contact with toxic or expensive fluids when leaks are not allowable. It is a very reliable device without maintenance problems notwithstanding its low cost.



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# Rupture discs and Pressure safety valves

Rupture discs and safety valves may be used independently as primary safety devices or in conjunction.

Main properties of the two devices are compared in the following table

EQUIPMENT	RUPTURE DISC	SAFETY VALVE
Type of device	Simple	Mechanical
Mounting position	Any position	Only vertical
Behaviour when overpressure ceases	It does not re-close the disc must be replaced	It closes again
Does it give protection from overpressure	Yes	Yes
Does it give protection from vacuum	Yes	No
Periodical check of calibration	Not Required	Required
Is it possible to change calibration	No	Yes
Calibration lower than 0.1 bar	Yes	No
Calibration higher than 500 bar	Yes	No
Availability of diameters	Large selection	Limited
Availability of materials	Large selection	Limited
Maintenance	Minimum	High
Costs	Minimum	High
Leaks during operation	No	Possible

Possible combinations are:

### **Rupture disc and Safety valve in parallel**

Rupture disc is a second level of protection (usually set at a pressure slightly above that of the valve). Typical application: protection of liquefied gas tanks.

### **Rupture disc downstream the valve:**

The disc shields the valve from corrosive fluids eventually present in the discharge duct

### **Rupture disc upstream the valve:**

This solution combines the positive properties of both devices: leak tight seal of the disc and re-closure of the pressure relief valve. In addition the disc protects the valve from corrosive or scaling products and reduces the maintenance requirement of the more expensive and sensitive equipment. Key advantages are:

- Protect the valve from corrosive or scaling products
- Avoid leakage due to corrosion or scaling of valve seat (very important for dangerous fluids)
- Reduce valve maintenance cost (cleaning and calibration)
- Possibility to test the correct performance of the valve without shutting down the plant and dismantling the valve

The disc is normally set at the same pressure as the valve; pressure build up in the space between the two devices must be monitored and avoided by providing a venting port

# Rupture disc models

## Rupture discs belong to 3 families:

- Metal
  - Conventional or forward acting
  - Compression or reverse acting
- Graphite

## Disc selection depends from exercise conditions of the equipment to be protected:

- Conventional discs have a flat or concave surface exposed to the pressure. Bursting happens when the pressure (or depression) overcomes the mechanical resistance of the material, after having gradually increased the camper of the disc.
- Reverse acting discs have a convex surface exposed to the pressure. The shape of the disc does not change until the pressure reaches the bursting point.
- Graphite discs are recommended at low exercise pressure in contact with aggressive fluids.

## Minimum and maximum bursting pressures are dependent from:

- Disc model
- Dimension
- Material

## Minimum and maximum working temperatures are dependent from disc material as in following table:

Material	T max.	T min.
Stainless Steel AISI 316L	454°C	-196°C
Alloy 201	400°C	-196°C
Alloy 400	425°C	-196°C
Alloy 600	475°C	-196°C
Alloy 625	600°C	-196°C
Alloy C276	575°C	-196°C
Titanium	316°C	-60°C

## Working temperature of discs with a lining is also dependent from lining material:

MATERIAL		USE LIMITS	
Type	Code	T max.	T min.
Polymer	PTFE	260°C	---
Polymer	PFA	260°C	---
Stainless Steel	ASTM A 240 316L	454°C	-196°C
Aluminium	ASTM B 209	260°C	-10°C



## DonadonSDD NS NanoScored series rupture discs



DonadonSDD introduces the new NS NanoScored series rupture discs, a further development of its breakthrough technology. DonadonSDD has also been awarded both a US patent and an Italian for the innovative NS NanoScored rupture disc manufacturing method.

NS NanoScored series rupture discs are fully metallic and adequate for all applications. The NS Nanoscored rupture disc

series includes tension rupture discs (forward acting) like SCD discs and compression discs (reverse buckling) like SCR discs (petals) or Y90 and KR D (opening on circumference).

The new manufacturing technology developed by DonadonSDD allows for rupture discs as follows:

- Fully metallic (Stainless steel, Nickel, Inconel, Monel, Hastelloy, Titanium, Tantalum)
- Full range of diameters from DN 1/2" (15) to DN 36" (900)
- Absolute reproducibility given that there is no deterioration of tools
- Resistance to fragmentation even for high rupture pressures
- Resistance to absolute vacuums without need for supports
- Characterised by full design flexibility
- For bursting pressures below 0.5 bar g (7 psi g) also for DN 1"1/2(40)
- High accuracy at all rupture pressures
- Reduced rupture tolerance according to customer requirements
- Suitable for insertion in standard or sanitary (Tri-clamp) disc holders

The new manufacturing technology developed by DonadonSDD allows for the manufacturing of scored rupture discs also with very low thickness materials (basically with every industrially available thickness), ensuring high reliability and strict tolerance. It is therefore possible to extend the range of bursting pressure available to lower bursting pressure than normally available.

# DONADONSDD KRD rupture discs



The DonadonSDD KRD rupture discs obtained with NS Nanoscored technology are compression or reverse circumference micro-scored discs.

KRD discs make use of the latest sector technology: the camber of the convex disc is not modified by the operating pressure except on reaching reverse pressure. This device works with ratios of up to 95% between operating and rupture pressure and withstands thousands of cycles without jeopardising its reliability.

At the moment of reversion, the disc ruptures in a few thousandths of a second along the scored line without fragments and with full opening. KRD discs have lower

sensitivity to variations in temperature with respect to conventional discs and therefore are very useful in applications with large temperature variations.

Thanks to their innovative design, KRD discs can be used in the presence of liquids only, in cycling and pulsating conditions without reduction of safety margins. In addition, they are especially suitable for isolating safety valves. The wide choice of materials and the thickness used make KRD discs very resistant to corrosion. Greater protection can be obtained using a PTFE lining, which can be applied to the process side of the disc.

Vacuum support is not required and they are able to resist high counter-pressures.

Model	KRD
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy C276, Titanium, Tantalum
Dimensions	DN 1”(25) – DN 36”(900)
Rupture pressure	0,41 bar g (6 psi g)- 137 bar g (2000 psi g) (depending on material and diameter)
Kr l	0.48
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	From – 196°C up to 480°C
Operating margin	90% - Able to reach 95% depending on the conditions of service
Fragmentation	No
Use under valve	Yes
Corrosion resistance	Very good
Linings	Yes
Container	HR/A, HR/P, HR/F, HTC
Rupture sensor	Electrical, Magnetic, Inductive, Optical
ASME Certification [UD STAMP]	Available
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

# DonadonSDD SCR rupture discs



DonadonSDD SCR Rupture discs obtained with NS Nanoscored technology are compression or reverse discs with micro-scored calibrated sections opening in petals, characterised by the presence of 4, 6 or more radial scoring.

This allows for better opening reducing the risk of petal detachment.

This makes DonadonSDD SCR rupture discs suitable both at high and at low bursting pressure and can be used only with gas and liquids (with the presence of a special gas cushion) also in cycling and pulsating conditions without reduction of safety margins. SCR discs react to excessive pressure in a few milliseconds without fragmentation.

They are especially suited for protection of pressure relief valves.

DonadonSDD SCR Nanoscored rupture discs allow for a ratio between operating and bursting pressure up to 95% and have a very good resistance to corrosion. Corrosion resistance may be additionally improved with PTFE lining. In addition, SCR discs can be subject to absolute vacuum conditions without need for supports.

Model	SCR
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium, Tantalum
Dimensions	DN 1”(25) – DN 36”(900)
Rupture pressure	0,41 bar g (6 psi g)- 137 bar g (2000 psi g) (depending on material and diameter)
Kr g	0.48
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	From – 196°C up to 600°C
Operating margin	90% - Able to reach 95% depending on the conditions of service
Fragmentation	No
Use under valve	Yes
Corrosion resistance	Very good
Linings	Yes
Container	HR/A, HR/P, HR/F, HTC
Rupture sensor	Electrical, Magnetic, Inductive, Optical
ASME Certification [UD STAMP]	Available
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

# DonadonSDD Y90 rupture discs



The DonadonSDD Y90 rupture discs obtained with NS Nanoscored technology are compression or reverse circumference micro-scored discs.

The camber of the convex disc is not modified by the operating pressure except on reaching reverse pressure. This device works with ratios of up to 95% between operating and rupture pressure and withstands thousands of cycles without jeopardising its reliability.

At the moment of reversion, the disc ruptures in a few thousandths of a second along the scored line without fragments and with full opening. Y90 discs have lower sensitivity to variations in temperature with respect to

conventional discs and therefore are very useful in applications with large temperature variations.

They are especially suitable for use with gas and liquids (with the presence of a special gas cushion) and for protecting pressure relief valves. The wide choice of materials and the thickness used make Y90 discs very resistant to corrosion. Greater protection can be obtained using a PTFE lining, which can be applied to the process side of the disc.

Vacuum support is not required.

Model	<b>Y90</b>
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium, Tantalum
Dimensions	DN 1”(25) – DN 8”(200)
Rupture pressure	0.2 - 70 bar g (depending on material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	From – 196°C up to 600°C
Operating margin	90% - Able to reach 95% depending on the conditions of service
Fragmentation	No
Use under valve	Yes
Corrosion resistance	Very good
Linings	Yes
Container	HR/A, HR/P, HR/F, HTC
Rupture sensor	Electrical, Magnetic, Inductive, Optical
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

# DonadonSDD SCD rupture discs



DonadonSDD SCD Rupture discs obtained with NS Nanoscored technology are discs with micro-scored calibrated sections opening in petals, characterised by the presence of 4, 6 or more radial scoring.

This allows for better opening reducing the risk of petal detachment. This makes DonadonSDD SCD rupture discs especially suitable at high bursting pressure. They are used with gas and liquids also in cycling and pulsating conditions without reduction of safety margins.

SCD discs react to excessive pressure in a few milliseconds without fragmentation. They are especially suited for protection of pressure relief valves. DonadonSDD SCD rupture discs allow for a ratio between operating and bursting pressure up to 85% and have a very good resistance to corrosion. Corrosion resistance may be additionally improved with PTFE lining.

In addition, SCD discs can, in many cases, be subject to absolute vacuum conditions without need for supports.

Model	SCD
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium, Tantalum
Dimensions	DN 1”(25) – DN 36”(900)
Rupture pressure	2 bar g (30 psi g) - 413 bar g (6000 psi g) (depending on material and diameter)
Kr gl	1.33
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	From – 196°C up to 600°C
Operating margin	up to 85%
Fragmentation	No
Use under valve	Yes
Corrosion resistance	Very good
Linings	Yes
Container	HI/A, HI/P, HI/F, HTC
Rupture sensor	Electrical, Magnetic, Inductive, Optical
ASME Certification [UD STAMP]	Available
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

## DonadonSDD NS NanoScored rupture discs for sanitary applications



Donadon NS NanoScored rupture discs are very well suited for sanitary application in Pharmaceutical, Food and Biotech industries, for plants with C.I.P. (cleaning in place) and S.I.P. (steaming in place) technology and productions according to Good Manufacturing Practices (GMP).

DonadonSDD NS NanoScored rupture discs can be installed in Clamp type connectors (sanitary, Tri-Clamp, Tank Collection) and are completely made of metal (Stainless Steel AISI 316L or other alloys according to customer specifications) and have a smooth process contact surface.

NS NanoScored technology is suitable for manufacturing rupture discs with a wide range of rupture pressure for all diameters.

In many cases, DonadonSDD NS NanoScored discs can be manufactured with built-in full vacuum resistance, without need of vacuum supports. A very important aspect is disc availability for non-PED applications (pressure lower than 0.5 barg) with vacuum resistance for diameters 1" ½ (DN 40) and above.

NS NanoScored series for Clamp connectors include both traditional rupture discs (tension) like the SCD model and reverse discs (compression) like models SCR, Y90 and KRD. They fully open in all cases without fragmentation.

Standard seals are in FDA-certified PTFE. NS NanoScored rupture discs can be supplied upon request with seals certified in accordance with UPS class VI regulations.



## DonadonSDD STD rupture discs



DonadonSDD STD rupture discs are conventional concave solid discs. This is a simple and reliable system used with gas and liquids in cyclic and pulsating pressure conditions. STD discs react to excessive pressure in a few milliseconds. Supports may be provided for vacuum or counter-pressure protection.

Model	STD
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium, Tantalum
Dimensions	DN ½”(15) – DN 24”(600)
Rupture pressure	5 - 1150 bar g (depending on material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	up to 600 °C
Operating margin	up to 70%
Fragmentation	Yes
Use under valve	No
Corrosion resistance	Very good
Linings	Yes
Container	SU/M, SU/T, HI/A, HI/P, HI/F
PED Certification [CE STAMP]	Available

# DonadonSDD DCD rupture discs



DonadonSDD DCD rupture discs are composite conventional discs formed by three parts:

- a slotted, perforated metal part
- a seal membrane (usually in PTFE but also available in many other metallic or non-metallic materials)
- a protection section

It is excellent for use with gas and liquids in static conditions and excellent for low pressures. DCD discs react to excessive pressure with total opening in a few milliseconds without

fragmentation. They are therefore recommended for valve protection. Supports may be provided for vacuum or counter-pressure protection.

Composite DonadonSDD rupture discs may also be used for simultaneous protection from pressure and vacuum.

Model	DCD
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium
Membrane	PTFE, PFA, Stainless steel, Aluminium
Dimensions	DN ½”(15) – DN 40”(1000)
Rupture pressure	0.01 - 110 bar g (depending on material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	membrane in PTFE/PFA max 265°C , up to 480°C (depending on the membrane)
Operating margin	up to 80%
Vacuum support	Available
Fragmentation	No (membrane only)
Use under valve	Yes
Corrosion resistance	Good - can be protected with a PTFE membrane
Linings	Yes
Container	HI/A, HI/P, HI/F, HTC
Rupture sensor	Electrical, Magnetic, Inductive, Optical
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available



# DonadonSDD LPD rupture discs



DonadonSDD LPD model discs are a simple, reliable, accurate and economical solution for applications requiring extremely low pressure protection (positive or negative).

Their primary use is to protect processing and storage tanks, atmospheric vessels and silos with low design pressures, and therefore only able to withstand slight pressures and vacuums, against implosion or rupture. A specially interesting application is in the protection of biogas digesters. DonadonSDD LPD rupture discs are flat composite discs formed by four parts:

- a slotted, perforated metal part
- a seal membrane (usually in PTFE but also available in many other metallic or non-metallic materials)
- a protection section
- a calibration ring with blades to improve membrane rupture

DonadonSDD LPD discs open without fragmentation to prevent product contamination and can be customised to meet a broad range of non-standard specifications and applications.

LPD discs can be designed:

- for dual pressure and vacuum protection
- to resist vacuum or counter-pressure conditions
- complete with a burst detector

Model	LPD
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium
Membrane	PTFE, PFA
Dimensions	DN 2"(50) – DN 20"(500)
Rupture pressure	5 - 500 millibar g (depending on material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	up to 265 °C
Operating margin	up to 60%
Vacuum support	Available
Fragmentation	No (membrane only)
Use under valve	Yes
Corrosion resistance	Good - can be protected with a PTFE membrane
Linings	Yes
Container	Mounted between flanges
Rupture sensor	Electrical, Magnetic, Inductive, Optical
ATEX EX II 2 GD Certification	Available

# DonadonSDD DIF rupture discs



DonadonSDD DIF rupture discs are composite conventional discs formed by four parts:

- a slotted, perforated metal part
- a seal membrane (usually in PTFE but also available in many other metallic or non-metallic materials)
- a protection section
- a calibration ring

This disc has been designed to be mounted between flanges. It is excellent for use with gas and liquids in static conditions

and excellent for low pressures.

DIF discs react to excessive pressure with total opening in a few milliseconds.

They are therefore recommended for valve protection. Supports may be provided for vacuum or counter-pressure protection.

Composite DonadonSDD rupture discs may also be used for simultaneous protection from pressure and vacuum.

Model	DIF
Materials	Stainless steel, Alloy 201, Alloy 400, Alloy 600, Alloy 625, Alloy C276, Titanium
Membrane	PTFE, PFA, Stainless steel, Aluminium
Dimensions	DN 2”(50) – DN 40”(1000)
Rupture pressure	0.5 - 5 bar g (depending on material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	membrane in PTFE/PFA max 265°C , up to 480°C (depending on the membrane)
Operating margin	up to 70%
Vacuum support	Available
Fragmentation	No (membrane only)
Use under valve	Yes
Corrosion resistance	Good - can be protected with a PTFE membrane
Linings	Yes
Container	Mounted between flanges
Rupture sensor	Electrical, Magnetic, Inductive, Optical
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

# DonadonSDD TCD rupture discs



- DonadonSDD TCD rupture discs are composite discs formed by four parts:
- a slotted, perforated metal part
  - a seal membrane (usually in PTFE but also available in many other metallic or non-metallic materials)
  - a protection section
  - a calibration ring

This disc has been designed especially to be mounted on road or rail tankers containing liquids and gas in static, cycling and pulsating conditions. TCD discs react to excessive pressure with total opening in a few milliseconds. They are therefore recommended for valve

protection. Supports may be provided for vacuum or counter-pressure protection.

Model	TCD
Materials	Stainless steel
Membrane	PTFE, PFA
Dimensions	DN 2"(50) – DN 2"1/2(65) – DN 3"(80)
Rupture pressure	from 3 to 5 bar g
Tolerance	+/- 5 %
Operating temperature	up to 265 °C
Operating margin	up to 80%
Vacuum support	Available
Fragmentation	No (membrane only)
Use under valve	Yes
Corrosion resistance	Good - can be protected with a PTFE membrane
Linings	Yes
Container	Directly mounted
Rupture sensor	Electrical, Magnetic, Inductive, Optical
PED Certification [CE STAMP]	Available
ATEX EX II 2 GD Certification	Available

## DonadonSDD SU/T sealed units



DonadonSDD SU/T sealed units are formed by a threaded connector containing a calibrated rupture disc. The rupture disc is welded to the connector. These units have been designed to make small disc mounting in plants easy and reliable, to simplify handling without need of specialised personnel.

SU/T sealed units are suitable for use with gases and liquids in cycling and pulsating conditions. SU/T sealed units react to over-pressure in a few milliseconds and are recommended for protection of plants, plant equipment and containers.



Model	<b>SU/T</b>
Materials	<b>Stainless steel</b>
Dimensions	<b>from DN 3 to DN 40</b>
Rupture pressure	<b>20 - 1150 bar g (depending on material and diameter)</b>
Tolerance	<b>from +/- 5 % to +/- 10%</b>
Operating temperature	<b>Up to 480 °C</b>
Operating margin	<b>80%</b>
Vacuum support	<b>No</b>
Fragmentation	<b>Yes (Without fragmentation in special execution)</b>
Use under valve	<b>No</b>
Corrosion resistance	<b>Very good</b>
Container	<b>Included, direct mounting</b>
PED Certification [CE STAMP]	<b>Available</b>

## DonadonSDD SU/M sealed units



DonadonSDD SU/M sealed units are formed by a threaded connector, formed by two pieces, containing a calibrated rupture disc. The rupture disc is inserted in the threaded and sealed container. These units have been designed to make small disc mounting in plants easy and reliable, to simplify handling without need of specialised personnel.

SU/M sealed units are suitable for use with gases and liquids in cycling and pulsating conditions. SU/M sealed units react to over-pressure in a few milliseconds and are recommended for protection of plants, plant equipment and containers.

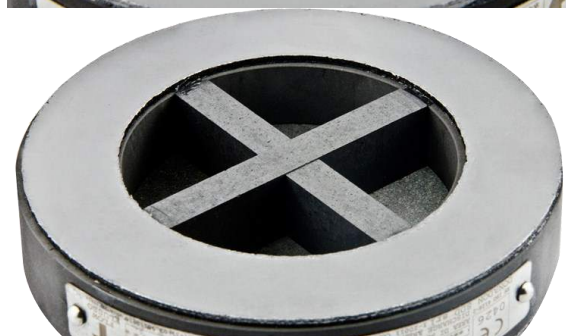
Model	<b>SU/M</b>
Materials	<b>Stainless steel</b>
Dimensions	<b>from DN 3 to DN 40</b>
Rupture pressure	<b>20 - 1150 bar g (depending on material and diameter)</b>
Tolerance	<b>from +/- 5 % to +/- 10%</b>
Operating temperature	<b>Up to 480 °C</b>
Operating margin	<b>80%</b>
Vacuum support	<b>No</b>
Fragmentation	<b>Yes (Without fragmentation in special execution)</b>
Use under valve	<b>No</b>
Corrosion resistance	<b>Very good</b>
Container	<b>Included, direct mounting</b>
PED Certification [CE STAMP]	<b>Available</b>

# DonadonSDD G-GM rupture discs



DonadonSDD GM monoblock graphite rupture discs are versatile and suitable for numerous applications and can be directly inserted between flanges.

Graphite rupture discs are very resistant to aggressive fluids and low bursting pressure sensitivity to temperature variations. Discs are made of very high purity graphite impregnated with phenolic resins in order to make the product impermeable.



Opening is total but with fragmentation. Vacuum support is required for rupture pressures below 1.7 barg. Discs are self-supporting at higher calibrations.

Model	G-GM
Materials	Graphite
Dimensions	DN 25 – DN 600
Rupture pressure	0.017 – 15 bar g (depending on diameter)
Tolerance	from +/- 10 % to +/- 20%
Operating temperature	from -60 °C to 180 °C
Operating margin	up to 75%
Vacuum support	Available
Fragmentation	Yes
Use under valve	No
Corrosion resistance	Very good - can be protected with a PTFE membrane
Linings	No
Container	Included, mounted between flanges
Seals	Available in graphite
Rupture sensor	Electrical
PED Certification [CE STAMP]	Available

## DonadonSDD G-GR rupture discs



DonadonSDD replaceable GR graphite rupture discs are mounted on graphite (available for pressures up to 10 bar g) or metal (up to 15 bar g) holders. These discs are versatile and suitable for numerous applications.

Graphite rupture discs are very resistant to aggressive fluids and low bursting pressure sensitivity to temperature variations. Discs are made of very high purity graphite impregnated with phenolic resins in order to make the product impermeable.

Opening is total but with fragmentation. Vacuum support is required for rupture pressures below 1.7 barg. Discs are self-supporting at higher calibrations.

Model	<b>G-GR</b>
Materials	Graphite
Dimensions	DN 25 – DN 200
Rupture pressure	0.07 - 15 bar g (depending on diameter and disc holder used)
Tolerance	from +/- 10 % to +/- 20%
Operating temperature	from -60 °C to 180 °C
Operating margin	up to 75%
Vacuum support	Available
Fragmentation	Yes
Use under valve	No
Corrosion resistance	Very good - can be protected with a PTFE membrane
Linings	No
Container	GR , HIA
Seals	Available in Graphite and Cork
Rupture sensor	Electrical
PED Certification [CE STAMP]	Available

## DonadonSDD G-GA rupture discs



DonadonSDD replaceable GA graphite rupture discs are mounted on a stainless steel ring that can be directly inserted between flanges.

This disc is very versatile because it combines the mechanical robustness of a steel holder and the characteristics of graphite discs (resistant to aggressive fluids and low bursting pressure sensitivity to temperature variations).

Disc material is high purity graphite. Opening is total but with fragmentation. Vacuum support is required for rupture pressures below 1.7 barg. Discs are self-supporting at higher calibrations.

Model	G-GA
Materials	Graphite and Stainless steel
Dimensions	DN 25 – DN 300
Rupture pressure	0.07 – 15 bar g (depending on diameter)
Tolerance	from +/- 10 % to +/- 20%
Operating temperature	from -60 °C to 300 °C
Operating margin	up to 75%
Vacuum support	Not Available
Fragmentation	Yes
Use under valve	No
Corrosion resistance	Very good - can be protected with a PTFE membrane
Linings	No
Container	Included, mounted between flanges
Seals	Available in Graphite
Rupture sensor	Electrical
PED Certification [CE STAMP]	Available



## DonadonSDD HI/A and HR/A disc holders



DonadonSDD disc holders are designed in order to ensure maximum reliability to DonadonSDD rupture discs.

Disc holders designed to be mounted between flanges such as HI/A and HR/A have:

- an internal diameter sized in order to allow full opening of the disc and total transmission on the minimal discharge area
- an external tangent diameter to the bolts in order to facilitate centring between flanges

Standard DonadonSDD disc holder materials: Carbon steel, Stainless steel (316L), Alloy 201, Alloy 400, Alloy 600, Alloy C276. Special executions are available in Titanium or Tantalum or with PTFE or glass fibre reinforced PTFE lining.

DonadonSDD disc holders are also provided with two stainless steel assembly plates.

Reverse acting (or compression) discs, like for example models SCR, Y90 and KRD, are installed in HR/A holders sized in order to protect the dome of the disc and allow correct opening of the disc.

Type	HI/A	HR/A
Discs	STD, DCD, SCD, GR	SCR, Y90, KRD
Dimensions	From ½”(15) to 40”(1000)	From ½”(15) to 40”(1000)
Accessories	Nipples, T connectors, excess flow valve, pressure gauge	Nipples, T connectors, excess flow valve, pressure gauge

## DonadonSDD HI/P and HR/P disc holders



DonadonSDD disc holders are designed in order to ensure maximum reliability to DonadonSDD rupture discs.

HI/P and HR/P pre-tightened disc holders offer the following advantages:

- Easy to install even where access to the pipes is horizontal
- Allow for verification of proper installation

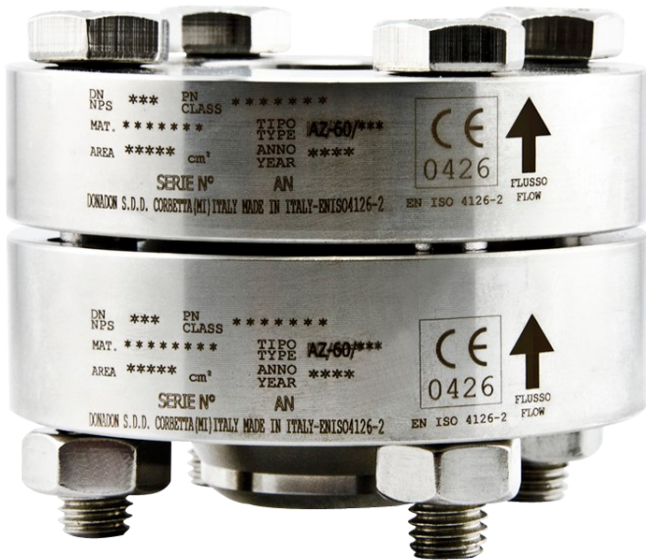
Upon request, HI/P and HR/P disc holders can be verified in our laboratories and supplied pre-assembled with their own rupture discs, ready for direct insertion in the plant.

Standard DonadonSDD disc holder materials: Carbon steel, Stainless steel (316L), Alloy 201, Alloy 400, Alloy 600, Alloy C276. Special executions are available in Titanium or Tantalum or with PTFE or glass fibre reinforced PTFE lining.

Reverse acting (or compression) discs, like for example models SCR, Y90 and KRD, are installed in HR/P holders sized in order to protect the dome of the disc and allow correct opening of the disc. Therefore the size of HR/P disc holders can be larger.

Type	HI/P	HR/P
Discs	STD, DCD, SCD	SCR, Y90, KRD
Dimensions	From 1”(25) to 40”(1000)	From 1”(25) to 40”(1000)
Accessories	Nipples, T connectors, excess flow valve, pressure gauge	From 1”(25) to 40”(1000)

## DONADONSDD HI/F and HR/F disc holders



DonadonSDD disc holders are designed in order to ensure maximum reliability to DonadonSDD rupture discs.

HI/F and HR/F flanged disc holders, previous code AZ-60, have been designed to be fitted directly on the piping. They are composed of two flanged parts, complete with steel bolts.

HI/F and HR/F models are fully customisable and can be supplied with different types of couplings that can be fitted with one another:

- female or male threaded NPT, Gas, or in accordance with other international standards
- butt welding
- socket welding

Standard DonadonSDD disc holder materials: Carbon steel, Stainless steel (316L), Alloy 201, Alloy 400, Alloy 600, Alloy C276. Special executions are available in Titanium or Tantalum or with PTFE or glass fibre reinforced PTFE lining.

Reverse acting (or compression) discs, like for example models SCR, Y90 and KRD, are installed in HR/F holders sized in order to protect the dome of the disc and allow correct opening of the disc.

Type	HI/F	HR/F
Discs	STD, DCD, SCD	SCR, Y90, KRD
Dimensions	From 3/4"(20) to 4"(100)	From 3/4"(20) to 4"(100)
Accessories	Nipples, T connectors, excess flow valve, pressure gauge	Nipples, T connectors, excess flow valve, pressure gauge

## DonadonSDD HTC sanitary disc holders



DonadonSDD disc holders are designed in order to ensure maximum reliability to DonadonSDD rupture discs.

HTC standard Sanitary or Clamp holders are stainless steel (AISI 316) with high accuracy internal finishing (<0.6 Ra), allowing minimum particle contamination, low turbulence and low pressure loss.

Clamp disc holders are available with measurements from 1" to 6" and are composed of clamps and sockets.



The indicated sanitary disc holders are suitable for food, dairy, cosmetics and pharmaceutical industries and are commonly used in C.I.P. & S.I.P. processes thanks to their easy installation.

Compact design connections can be supplied upon request for clamped disc holder installation on tanks. This special model is characterised by a finishing of Ra<0.5 mm or better. When using these disc holders, the installed clamp seal will be flush inside the tank wall, thus preventing the so-called "dead leg" on standard clamp sockets. Available from 1" to 4" in stainless steel (AISI 316L).

Type	HTC
Discs	DCD, SCD, SCR, Y90, KRD
Dimensions	From 1" to 6"

## DonadonSDD GR disc holders



DonadonSDD disc holders are designed in order to ensure maximum reliability to DonadonSDD rupture discs.

GR disc holders in graphite have been designed for GR replaceable graphite disc mounting. The GR model has been designed to be fitted directly on piping and is:

- composed of two flanged graphite parts
- characterised by resistance to aggressive fluids
- complete with Graphite and Cork seals

Type	GR
Discs	G-GR
Dimensions	From 25 to 200

## DonadonSDD IRA rupture indicators



DonadonSDD IRA rupture sensors are simple and efficient instruments for recording the bursting of a rupture disc.

The IRA detector can be installed directly over the rupture disc or inside the disc holder.

The IRA sensor is also available in special execution for clamps.

The alarm indicator cables are connected to the plant safety system with an intrinsically safe barrier that conforms to the electrical characteristics of the sensor (max voltage 24V DC and max current 50 mA) and the hazardous area classification.

The detector is composed of an electric sensor simply mounted on a target made up of:  
- a stainless steel ring

When the disc bursts, the copper circuit of the IRA alarm system opens and as a result of this the flow of current is cut off, allowing the connected equipment to signal that the disc has opened.

The IRA sensor is classified as “basic electrical material” and is certified according to European Directive 2014/34/UE (ATEX). Zone installation depends on barrier type:

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

Installation must be according to standard EN 60079-14.

Model	IRA
Operating temperature	From -20°C up to +300°C
Encapsulating membrane	Polyimide (Kapton®)
Printed Circuit	Copper
Max supply voltage	24 V DC
Max supply current	50 mA
Cable	Standard, 2 m
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KRD, GM, GA, GR

## DonadonSDD IRE rupture indicators



DonadonSDD IRE rupture sensors are simple and efficient instruments for recording the bursting of a rupture disc.

The detector is installed between the container on the discharge side and the flange downstream from the safety device replacing the traditional seal. The IRE sensor is also available in special execution for clamps. The alarm indicator cables are connected to the plant safety system with an intrinsically safe barrier that conforms to the electrical characteristics of the sensor (max voltage 24V DC and max current 50 mA) and the hazardous area classification.

The detector is composed of an electric sensor simply mounted on a target made up of:

- a stainless steel ring
- a perforated PTFE membrane
- seals: standard aramid fibre available also in graphite, PTFE

When the disc bursts, the copper circuit of the IRE alarm system opens and as a result of this the flow of current is cut off, allowing the connected equipment to signal that the disc has opened.

The IRE sensor is classified as “basic electrical material” and is certified according to European Directive 2014/34/UE (ATEX). Zone installation depends on barrier type:

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

Installation must be according to standard EN 60079-14.

Model	IRE
Operating temperature	From -20°C up to +265°C (depending on the seal used)
Encapsulating membrane	Polyimide (Kapton®)
Printed Circuit	Copper
Max supply voltage	24 V DC
Max supply current	50 mA
Cable	Standard, 2 m
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KR D, GM, GA, GR

## DonadonSDD IRL rupture indicators



DonadonSDD IRL rupture sensors are simple and efficient instruments for recording the bursting of a rupture disc.

The detector is installed between the container on the discharge side and the flange downstream from the safety device replacing the traditional seal. The alarm indicator cables are connected to the plant safety system with an intrinsically safe barrier that conforms to the electrical characteristics of the sensor (max voltage 24V DC and max current 50 mA) and the hazardous area classification.

The detector is composed of an electric sensor simply mounted on a target made up of:

- a stainless steel ring
- a PTFE membrane
- seals: standard aramid fibre available also in graphite, PTFE

When the disc bursts, the copper circuit of the IRL alarm system opens and as a result of this the flow of current is cut off, allowing the connected equipment to signal that the disc has opened. The IRL sensor also detects any rupture disc leaks thanks to the non-perforated membrane.

The IRL sensor is classified as “basic electrical material” and is certified according to European Directive 2014/34/UE (ATEX). Zone installation depends on barrier type:

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

Installation must be according to standard EN 60079-14.

Model	IRL
Operating temperature	From -20°C up to +265°C (depending on the seal used)
Encapsulating membrane	Polyimide (Kapton®)
Printed Circuit	Copper
Max supply voltage	24 V DC
Max supply current	50 mA
Cable	Standard, 2 m
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KR, GM, GA, GR



# DonadonSDD IRC type rupture indicator



The DonadonSDD IRC type rupture indicator is a simple and effective instrument for the detection of rupture disc fracture.

The detector is installed on the drain side, downstream from the spacer fitting. The alarm indicator cables are connected to the plant safety system by means of an intrinsic safety barrier in compliance with the electrical characteristics of the sensor (maximum voltage 24V CC and maximum current 50mA) and zone classification.

IRC rupture indicators essentially consist of a copper track encapsulated between two insulating layers of Kapton (flexible printed circuit board), connected electrically to a cable that allows remote connection to an electrical continuity indicator. The circuit is encased between two layers of PTFE and the safety device is provided complete with PTFE seals compatible for installation between hygienic connections.

Upon disc rupture, the copper circuit of the IRC indicator is opened and the flow of the current is interrupted as a result, allowing the connected equipment to signal the effective opening of the rupture disc.

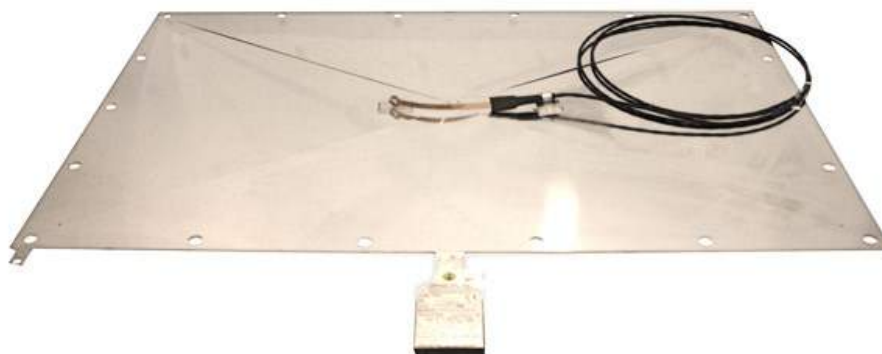
The IRC sensor is classified as a "simple electrical construction" and complies with European Directive 2014/34/UE (ATEX). The zone in which it can be installed depends on the type of barrier:

- barrier Ex ia > zones 0, 20, 1, 21, 2, 22
- barrier Ex ib > zones 1, 21, 2, 22

Installation must comply with standard EN 60079-14

Model	IRC
Operating temperature	From -20°C to +260°C (depending on the seal used)
Encapsulation membrane	Polyimide (Kapton®)
Printed Circuit Board	Copepr
Max supply voltage	24 V CC
Max supply current	50 mA
Cable	Standard, 2 m
Rupture discs	DCD, SCD, SCR, Y90, KRD

## DonadonSDD IRP rupture indicators



Donadon IRP rupture indicators are simple and efficient instruments for detecting the bursting of an explosion venting panel.

The detector is installed during manufacturing of the panel and has a 2 metre cable. The alarm indicator cable must be connected to the plant safety system with an intrinsically safe barrier that conforms to the electrical characteristics of the sensor (max tension 24V DC and max intensity 50 mA) and the hazardous area classification.

When the panel bursts, the IRP indicator electrical circuit is interrupted, allowing the connected equipment to signal that the safety device has opened.

The IRP indicator is classified as “basic electrical material” and is certified according to European Directive 2014/34/UE (ATEX). Zone installation depends on barrier type:

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

Installation must be according to standard EN 60079-14.

Model	IRP
Operating temperature	From -20°C to +300°C
Encapsulating membrane	Polyimide (Kapton®)
Printed Circuit	Copper
Max supply voltage	24 V DC
Max supply current	50 mA
Cable	Standard, 2 m
Venting panels	PS/C, PS/R

## DonadonSDD NAM 03/HT rupture indicators



Donadon magnetic NAM 03/HT rupture indicators are recommended for use with our rupture discs. The NAM 03/HT indicator is composed of:

- a magnetic proximity type sensor installed in the corresponding threaded housing downstream in the rupture disc holder to detect opening
- a target with a permanent magnet supplied with the disc

When the disc opens the magnet is displaced and the sensor activates. Replacement discs are supplied with a new target.

NAM 03/HT is an intrinsic safety device certified

ATEX II 2GD Ex mb II T4/T6

Ex tD A21 IP67 T135°C/T85°C

ATEX II 1GD Ex ia IIB T3/T6

Ex iaD 20 T200°C/T85°C

It can therefore may be used in locations where potentially explosive atmospheres are continually present (classified zones 0, 20 and 1, 21 and 2, 22 according to European Directive 2014/34/UE (ATEX)). NAM 03/HT is normally supplied with 2 metres of bipolar cable. The cables of the alarm system must be connected to the plant's safety system through an adequate safety barrier.

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

Model	NAM 03 HT
Storage temperature	From -40°C to +200°C in accordance with ATEX certification
Material in contact with process fluid	Same as disc and disc holder
Max switching voltage	60 VDC
Max switching current	0.4 A
Cable	2 x 0.2 mm <sup>2</sup> , ø 3.4 mm, 200°C, Class C2
Degree of protection	IP 67
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KRD

## DonadonSDD NAM 05 rupture indicators



NAM 05 inductive rupture alarm systems are recommended for installation on rupture discs and explosion vent panels. The NAM 05 indicator is composed of:

- an inductive proximity sensor installed downstream the disc or panel
- a target supplied with the disc or panel

When the disc opens, the target is moved and the sensor sends a signal to the plant safety system. The discs

or panels are supplied with a new target.

NAM 05 is an intrinsic safety device certified:

ATEX II 1G Ex ia IIC T6  
ATEX II 1D Ex iaD 20 T 108°C

It can therefore may be used in locations where potentially explosive atmospheres are present (classified zones 0, 20, 1, 21, 2, 22 according to European Directive 2014/34/UE (ATEX)). Zone installation also depends on barrier type:

- Ex ia barrier zone 0; 20 ; 1; 21; 2; 22
- Ex ib barrier zone 1; 21; 2; 22

NAM 05 is normally supplied with 2m bipolar cable that must be connected to the plant's safety system through an intrinsic safety barrier.

Installation must be according to standard EN 60079-14.

Model	<b>NAM 05</b>
Storage temperature	From -40°C to +100°C
Nominal supply voltage	8.2 V
Cable	2 m in PVC
Degree of protection	IP 66/67
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KRD
Venting panels	PS/C, PS/R

## DonadonSDD PS-R vent panels



DonadonSDD PS/R rectangular vent panels are composite tension panels composed of three parts:

- a calibrated metal part
- a seal membrane (usually in PTFE)
- a metal protection section

Vacuum supports are also available.

Explosion vent panels are suitable for use with gas and/or dust in static, pulsating and cyclic conditions. They usually have very low vent pressures (standard 0.1 bar g). Panels are mainly fitted to dust manifolds, dryers, troughs, silos, separators, mixers, boosters,

air purifiers, sieves and filters.

They can be fitted between welded frames or non-machined profiles in carbon or stainless steel. Machined frames or expensive containers are not necessary.

Panels can be supplied in ATEX (PS/EX) execution and EX II GD and EX II D certified. They can therefore be installed in locations with presence of explosive atmospheres (zones classified as category 0, 20, 1, 21, 2, and 20 according to European Directive ATEX 2014/34/UE).

Model	<b>PS/R</b>
Materials	Stainless steel
Membrane	PTFE
Dimensions	Min 365X645 – Max 920X920
Rupture pressure	0.1 bar g
Tolerance	from +/- 10 % to +/- 20%
Operating temperature	Up to 260°C
Operating margin	50%-70%
Vacuum support	Available
Fragmentation	No (membrane only)
Corrosion resistance	Good - can be protected with a PTFE membrane
Rupture indicator	Electrical, Inductive
Linings	Yes

## DonadonSDD OFI 04 and OFI 07 rupture indicators



Optical rupture indicators Donadon OFI 04 and OFI 07 are very simple and reliable instruments for detecting bursting of discs. The terminals of the optical fibres are installed in the disc holder in a suitable position and are connected to an amplifier. Light transmission between the two optical fibres is interrupted by the bursting of the disc and a signal is sent to the plant's safety system.

If the amplifier is in an ATEX classified zone 1, 21, 2, 22, it must be installed inside an Ex d certified box.

There are no electrical or moving parts in contact with the equipment to be controlled and therefore OFI indicators are not an ignition source.

OFI 04 and OFI 07 indicators are not damaged by the opening of the disc and therefore do not need to be replaced. Cleaning protection slides is recommended.

OFI 04 and OFI 07 indicate the opening of the disc for any maintenance or replacement.

Zone installation depends on barrier type:

- Ex ia barrier --> zone 0; 20; 1; 21; 2; 22
- Ex ib barrier --> zone 1; 21; 2; 22

### Technical optical fibre properties

Model	OFI 04	OFI 07
Optical fibre	Plastic	Glass with steel protection
Operating temperature	From -55 to +70°C/+105°C	From -40°C to +250°C
Minimum bending radius	R25	R23

### Technical amplifier properties

Amplifier supply power	12-24 VDC	12-24 VDC
Amplifier consumption	45 mA max	45 mA max
Ampl. operating temperature	From -10°C to +60°C	From -10°C to +60°C
Feedback time	1 msec	1 msec
Degree of protection	IP64	IP64
Amplifier material	ABS	ABS
Rupture discs	DCD, DIF, LPD, SCD, SCR, Y90, KRD	DCD, DIF, LPD, SCD, SCR, Y90, KRD

## DonadonSDD PS-C vent panels



DonadonSDD PS/C circular vent panels are composite tension panels composed of three parts:

- a calibrated metal part
- a seal membrane (usually in PTFE)
- a metal protection section

Vacuum supports are also available.

Explosion vent panels are suitable for use with gas and/or dust in static, pulsating and cyclic conditions. They usually have very low vent pressures (standard 0.1 bar g). Panels are mainly fitted to dust manifolds, dryers,

troughs, silos, separators, mixers, boosters, air purifiers, sieves and filters.

They can be fitted between welded frames or non-machined profiles in carbon or stainless steel. Machined frames or expensive containers are not necessary.

Panels can be supplied in ATEX (PS/EX) execution and EX II GD and EX II D certified. They can therefore be installed in locations with presence of explosive atmospheres (zones classified as category 0, 20, 1, 21, 2, and 20 according to European Directive ATEX 2014/34/UE).

Model	PS/C
Materials	Stainless steel
Membrane	PTFE
Dimensions	Min DN 250 – Max DN 900
Rupture pressure	0.1 bar g
Tolerance	from +/- 10 % to +/- 20%
Operating temperature	Up to 260°C
Operating margin	50%-70%
Vacuum support	Available
Fragmentation	No (membrane only)
Corrosion resistance	Good - can be protected with a PTFE membrane
Rupture indicator	Electrical, Inductive
Linings	Yes