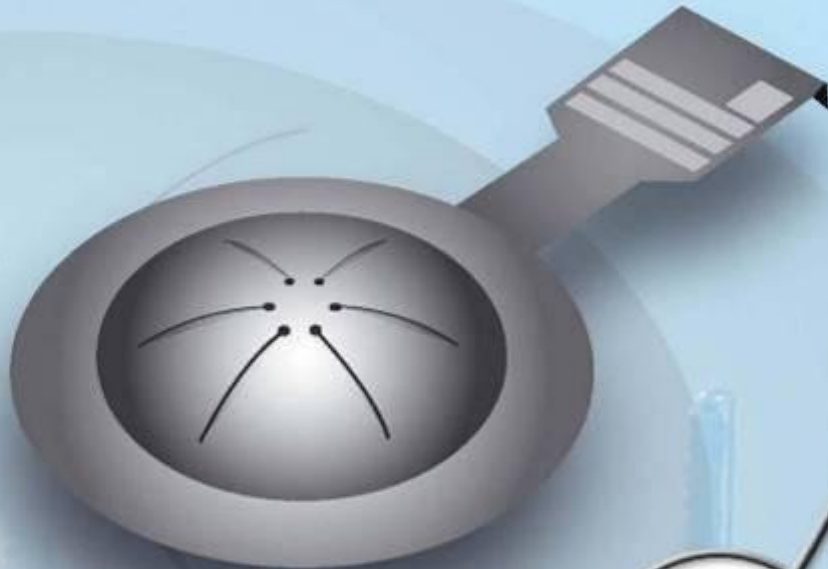


donadon SDD

SAFETY DISCS AND DEVICES



RUPTURE DISCS



PRESSURE RELIEF VALVES



VENTING PANELS



Certified for protection of equipment under pressure according to European Directive 97/23/CE (PED)

Certified Ex II 2, GD for use in potentially explosive atmospheres according to European Directive 94/9/CE (ATEX)

DONADON SDD Srl

Via Franceschelli, 7 – 20011 Corbetta (Milano) - Internet: www.Donadonsdd.com

Tel: 02 90 11 10 01; Fax: 02 90 11 22 10 – Email: donadonsdd@donadonsdd.com

Ed. 01/2009/uk



ITALCERT S.r.l.
Viale Sarca, 336 20126 MILANO
tel +39 0266104876
fax +39 0266101479
www.italcert.it

CERTIFICATO N° 322/08

CERTIFICATE N° 322/08

Si certifica che il

This is to certify that

Sistema di Gestione per la Qualità

Quality Management System

messo in atto dalla Società

implemented by

DONADON SDD S.r.l.

Via Franceschelli, 7 - IT 20011 Corbetta (MI)

nella Sedi Operative di

Operative Unit

Via Franceschelli, 7 - IT 20011 Corbetta (MI)

è conforme alla norma

is in compliance with the standard

UNI EN ISO 9001-2000 (ISO 9001-2000)

per i seguenti Prodotti/Processi/Servizi

concerning the following Class of Products/Processes/Services

Progettazione e costruzione di dischi di rottura, portadischi, pannelli di sfogo, accessori. Commercializzazione valvole di sicurezza

Design, Development and Manufacturing of Rupture Discs, Disc Holders, Venting Panels, and accessories. Commercialization of Pressure Relief Valves

Il presente Certificato è soggetto al rispetto delle condizioni stabilite dal "Regolamento per la certificazione di sistema qualità" e dal "Contratto per la certificazione di sistema qualità" n° 271

This Certificate shall be subject to the requirements established in the "Rules for the certification of Quality System" and to the "Contract for the Certification of Quality System" n° 271

- Per le esclusioni all'applicabilità dei punti di norma si rimanda al Manuale Qualità -

- For possible exclusions to the requirements are given in the Quality Manual -

IL PRESIDENTE

prof. dr. Carlo Tribuno

Data di rilascio

Issue Date

2006-03-09

Data Modifica

Revised date

2008-04-01

Data di scadenza

Expiry date

2009-03-08

Settore EA 17 - 29a

SINCERT

CONFORMITÀ E CERTIFICAZIONE

ITALCERT S.p.A. - Via Sarca, 336 - 20126 Milano
Tel. +39 02 66104876 - Fax +39 02 66101479
www.italcert.it

Organismo notificato n° 0426
Notified Body no.



ITALCERT S.p.A.
Via Savio, 336 - IT 20133 MILANO MI
Tel. +39 02 81 04 176
Fax +39 02 81 04 175
E-mail italcert@italcert.it

CERTIFICATO DI APPROVAZIONE QUALITÀ DELLA PRODUZIONE N. PED009AD001 rev. 8
CERTIFICATE OF APPROVAL OF PRODUCTION QUALITY ASSURANCE NO.
In accordo al modulo D della direttiva 97/23/CE
In accordance with module D of the directive 97/23/EC

Fabbricante: DONADON SDD S.r.l.
Manufacturer: Via Francescoelli, 9 IT 20011 Corbetta MI

Località di fabbricazione: Via Francescoelli, 9 IT 20011 Corbetta MI
Location of manufacturing:

Attrezzatura a pressione Pressure Equipment	DISPOSITIVI DI SICUREZZA A DISCO DI ROTTURA BURSTING DISC SAFETY DEVICES		
Famiglia/Type	C	R	D
Certificato di esame CE di tipo modulo B CE type examination certificate B	ITALCERT PED009AT100 rev.3	ITALCERT PED009AT200 rev.4	ITALCERT PED009AT300 rev.1

Obiettivo di valutazione del sistema qualità in accordo alle disposizioni dell'articolo 11 del modulo D della direttiva 97/23/CE
Aiming performance the quality system assessment in accordance with the provisions of annex D article 11 of the directive 97/23/EC
in accordance with module D of the directive 97/23/EC

Si certifica che il sistema qualità della produzione relative alle attrezzature a pressione sopracitate
We certify that the quality system for the production of pressure equipment listed above
comply with the provisions applicable of the directive 97/23/EC
satisfies the applicable provisions of the directive 97/23/EC

Si autorizza la marcatura
It is authorized the marking

CE 0426

Il presente certificato sarà ritenuto valido e il fabbricante si assicura la conformità del suo prodotto utilizzato, in caso di modifiche apportate all'attrezzatura sopracitate di riferimento, a regolare eventuali infortuni o a prodotti di altro carattere e, in generale, se il fabbricante non risulta uno o più degli obblighi indicati in base alla direttiva 97/23/CE come recepita nella legislazione nazionale applicabile.
This certificate shall be deemed to be valid and the manufacturer shall assure that all components provided to its customer are, in case of modification to the equipment, which they may affect the compliance with the essential safety requirements or the prescribed conditions for use and, generally, when the manufacturer fails to comply with any of his obligations under directive 97/23/EC as transposed in the applicable national laws.

Data di emissione
Date of issue
Milano, 09/03/2008

ITALCERT
Il Direttore
The Director
Prof. Dott. Carlo Tosiolo

Data di scadenza
Expiry date
08/03/2010

Rev. 4 - revisione tecnica. Data 29/03/2009
Rev. 5 - Revisione certificata PED009A1300. Data 20/11/2008

Organismo notificato n° 0426
Notified Body no.



ITALCERT S.p.A.
Via Savio, 336 - IT 20133 MILANO MI
Tel. +39 02 81 04 176
Fax +39 02 81 04 175
E-mail italcert@italcert.it

CERTIFICATO DI ESAME CE DI TIPO
EC TYPE EXAMINATION CERTIFICATE
In accordo al modulo B della direttiva 97/23/CE sulle attrezzature a pressione
In accordance with module B of the Directive 97/23/EC on Pressure Equipment

CERTIFICATO N° PED009AT200 rev.4
Certificate no.

Fabbricante: Donadon SDD S.r.l.
Manufacturer: Via Francescoelli, 9 IT 20011 Corbetta MI

Località di fabbricazione: Via Francescoelli, 9 IT 20011 Corbetta MI
Location of manufacturing:

Attrezzatura a pressione: Pressure Equipment	DISPOSITIVI DI SICUREZZA A DISCO DI ROTTURA BURSTING DISC SAFETY DEVICES	
Famiglia: R	Tipologia: V90 - R40 - SCR	Tipologia:
Family	Type	Type

Si esamina la documentazione tecnica presentata dal fabbricante: doc. n. PED 001 rev. 4
examined the technical documentation submitted by the manufacturer:

effettuate le verifiche e prove appropriate
performed the appropriate tests and verifications

SI CERTIFICA
It is certified

che i tipi di attrezzature a pressione sopracitate, esaminati in conformità con le disposizioni dell'articolo 11 del modulo B della direttiva 97/23/CE, soddisfano le disposizioni applicabili della direttiva stessa.
that the types of pressure equipment listed above, examined in accordance with the provisions of annex B of the directive 97/23/EC, satisfy the relevant provisions of the directive which apply to them.
Il presente certificato sarà ritenuto valido e il fabbricante si assicura la conformità del suo prodotto utilizzato, in caso di modifiche apportate all'attrezzatura sopracitate di riferimento, a regolare eventuali infortuni o a prodotti di altro carattere e, in generale, se il fabbricante non risulta uno o più degli obblighi indicati in base alla direttiva 97/23/CE come recepita nella legislazione nazionale applicabile.
This certificate shall be deemed to be valid and the manufacturer shall assure that all components provided to its customer are, in case of modification to the equipment, which they may affect the compliance with the essential safety requirements or the prescribed conditions for use and, generally, when the manufacturer fails to comply with any of his obligations under directive 97/23/EC as transposed in the applicable national laws.

Data di emissione
Date of issue
Milano, 05/05/2008

ITALCERT
Il Direttore
The Director
Ing. Roberto Casullo

Data di scadenza
Expiry date
30/06/2012

Rev. 1 - 05/05/2008 - revisione tecnica tecnica
Rev. 2 - 10/11/2008 - revisione tecnica tecnica
Rev. 3 - 29/03/2009 - revisione tecnica tecnica
Rev. 4 - 20/11/2008 - approvazione SCR

Organismo notificato n° 0426
Notified Body no.



ITALCERT S.p.A.
Via Savio, 336 - IT 20133 MILANO MI
Tel. +39 02 81 04 176
Fax +39 02 81 04 175
E-mail italcert@italcert.it

CERTIFICATO DI ESAME CE DI TIPO
EC TYPE EXAMINATION CERTIFICATE
In accordo al modulo B della direttiva 97/23/CE sulle attrezzature a pressione
In accordance with module B of the Directive 97/23/EC on Pressure Equipment

CERTIFICATO N° PED009AT100 rev.3
Certificate no.

Fabbricante: Donadon SDD S.r.l.
Manufacturer: Via Francescoelli, 9 IT 20011 Corbetta MI

Località di fabbricazione: Via Francescoelli, 9 IT 20011 Corbetta MI
Location of manufacturing:

Attrezzatura a pressione: Pressure Equipment	DISPOSITIVI DI SICUREZZA A DISCO DI ROTTURA BURSTING DISC SAFETY DEVICES	
Famiglia: C	Tipologia: STD - GCD - DCD - DIF	Tipologia:
Family	Type	Type

Si esamina la documentazione tecnica presentata dal fabbricante: doc. n. PED 801 rev. 3
examined the technical documentation submitted by the manufacturer

effettuate le verifiche e prove appropriate
performed the appropriate tests and verifications

SI CERTIFICA
It is certified

che i tipi di attrezzature a pressione sopracitate, esaminati in conformità con le disposizioni dell'articolo 11 del modulo B della direttiva 97/23/CE, soddisfano le disposizioni applicabili della direttiva stessa.
that the types of pressure equipment listed above, examined in accordance with the provisions of annex B of the directive 97/23/EC, satisfy the relevant provisions of the directive which apply to them.
Il presente certificato sarà ritenuto valido e il fabbricante si assicura la conformità del suo prodotto utilizzato, in caso di modifiche apportate all'attrezzatura sopracitate di riferimento, a regolare eventuali infortuni o a prodotti di altro carattere e, in generale, se il fabbricante non risulta uno o più degli obblighi indicati in base alla direttiva 97/23/CE come recepita nella legislazione nazionale applicabile.
This certificate shall be deemed to be valid and the manufacturer shall assure that all components provided to its customer are, in case of modification to the equipment, which they may affect the compliance with the essential safety requirements or the prescribed conditions for use and, generally, when the manufacturer fails to comply with any of his obligations under directive 97/23/EC as transposed in the applicable national laws.

Data di emissione
Date of issue
Milano, 17/11/2003

ITALCERT
Il Direttore
The Director
Ing. Roberto Casullo

Data di scadenza
Expiry date
10/11/2013

Rev. 1 - revisione tecnico tecnica
Rev. 2 - variazione anodi

Organismo notificato n° 0426
Notified Body no.



ITALCERT S.p.A.
Via Savio, 336 - IT 20133 MILANO MI
Tel. +39 02 81 04 176
Fax +39 02 81 04 175
E-mail italcert@italcert.it

CERTIFICATO DI ESAME CE DI TIPO
EC TYPE EXAMINATION CERTIFICATE
In accordo al modulo B della direttiva 97/23/CE sulle attrezzature a pressione
In accordance with module B of the Directive 97/23/EC on Pressure Equipment

CERTIFICATO N° PED009AT300 rev.1
Certificate no.

Fabbricante: Donadon SDD S.r.l.
Manufacturer: Via Francescoelli, 9 IT 20011 Corbetta MI

Località di fabbricazione: Via Francescoelli, 9 IT 20011 Corbetta MI
Location of manufacturing:

Attrezzatura a pressione: Pressure Equipment	DISPOSITIVI DI SICUREZZA A DISCO DI ROTTURA BURSTING DISC SAFETY DEVICES	
Famiglia: G	Tipologia: GA - CM - CR	Tipologia:
Family	Type	Type

Si esamina la documentazione tecnica presentata dal fabbricante: doc. n. PED G01 rev. 0
examined the technical documentation submitted by the manufacturer

effettuate le verifiche e prove appropriate
performed the appropriate tests and verifications

SI CERTIFICA
It is certified

che i tipi di attrezzature a pressione sopracitate, esaminati in conformità con le disposizioni dell'articolo 11 del modulo B della direttiva 97/23/CE, soddisfano le disposizioni applicabili della direttiva stessa.
that the types of pressure equipment listed above, examined in accordance with the provisions of annex B of the directive 97/23/EC, satisfy the relevant provisions of the directive which apply to them.
Il presente certificato sarà ritenuto valido e il fabbricante si assicura la conformità del suo prodotto utilizzato, in caso di modifiche apportate all'attrezzatura sopracitate di riferimento, a regolare eventuali infortuni o a prodotti di altro carattere e, in generale, se il fabbricante non risulta uno o più degli obblighi indicati in base alla direttiva 97/23/CE come recepita nella legislazione nazionale applicabile.
This certificate shall be deemed to be valid and the manufacturer shall assure that all components provided to its customer are, in case of modification to the equipment, which they may affect the compliance with the essential safety requirements or the prescribed conditions for use and, generally, when the manufacturer fails to comply with any of his obligations under directive 97/23/EC as transposed in the applicable national laws.

Data di emissione
Date of issue
Milano, 07/06/2004

ITALCERT
Il Direttore
The Director
Ing. Roberto Casullo

Data di scadenza
Expiry date
06/09/2014

Rev.1 - variazione anodi



ATTESTATO DI ARCHIVIAZIONE DEL FASCICOLO TECNICO DELLA COSTRUZIONE
DIR. 94/9/CE - DPR 24.3.1998 n. 126 n°542

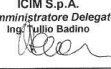
Questo attestato è rilasciato in conformità a quanto prescritto dall'Art.8 par.1 lettera b) capo ii) della Direttiva 94/9/CE

Dati Organismo Notificato	
ICIM S.p.A.	
PIAZZA A. DIAZ, 2 - 20123 - MILANO - ITALIA	
Numero Identificativo CE 0425	
Dati del Fabricante/Mandatario	
FABBRICANTE (nome o marchio)	DONADON SDD S.r.l.
INDIRIZZO	Via Gobetti, 18 20019 Settimo Milanese (MI)
Dati della Macchina	
MODELLO	Pannelli di sfogo serie PS/EX
CARATTERISTICHE DEL MODELLO	Dispositivi di scarico della pressione di tipo non richiudibile, mediante rottura del dispositivo
Classificazione apparecchiatura	Ex II 2 GD
<p>Si attesta il ricevimento per Archiviazione del Fascicolo Tecnico composto dalle seguenti parti:</p> <p>a) Descrizione generale del prodotto b) Valutazione del pericolo di accensione c) Manuale di uso e manutenzione d) Procedure "Identificazione e rintracciabilità", "Ciclo di produzione e controllo pannelli" e "Ciclo di produzione e controllo accessori" e) Elenco materiali f) Progetto di marcatura g) Certificato di prodotto h) Dichiarazione di conformità</p>	
<p>Questo attestato è valido per gli esemplari identici ai modelli indicati. Eventuali varianti da apportare a tali modelli devono essere dichiarate ad ICIM (Organismo Notificato) che comunicherà le misure da prendere.</p>	
NOTE:	
Prima emissione First issue	Emissione corrente Current issue
29/07/2004	29/07/2004
Data di scadenza Expiring date	28/07/2014
 Donat S.p.A. Dott. Ing. Tullio Badino	

ICIM	ATTESTATO DI ARCHIVIAZIONE DEL FASCICOLO TECNICO DELLA COSTRUZIONE DIR. 94/9/CE - DPR 24.3.1998 n. 126	N. 543
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Questo attestato è rilasciato in conformità a quanto prescritto dall'Art.8 par.1 lettera b) capo ii) della Direttiva 94/9/CE

Dati dell'Organismo Notificato	
ICIM S.p.A.	
PIAZZA DIAZ, 2 - 20123 - MILANO - ITALIA	
Numero Identificativo CEE 0425	
Dati del Fabricante/Mandatario	
FABBRICANTE (nome o marchio)	DONADON SDD S.r.l.
INDIRIZZO	Via Gobetti 18 20019 Settimo Milanese (MI)
Dati della Macchina	
MODELLO	Dischi di rottura serie C-DCD, C-DIF, C-TCO, C-SCD, R-Y90
CARATTERISTICHE DEL MODELLO	Dispositivi di scarico della pressione di tipo non richiudibile, mediante rottura di un disco di forma piana o bombata montato su apposito portadisco
Classificazione apparecchiatura	Ex II 2 GD
<p>Si attesta il ricevimento per Archiviazione del Fascicolo Tecnico composto dalle seguenti parti:</p> <p>a) Descrizione generale del prodotto b) Valutazione del pericolo di accensione c) Manuale di uso e di manutenzione d) Procedure "Identificazione e rintracciabilità", "Ciclo di produzione e controllo dischi" e "Ciclo di produzione e controllo accessori" e) Elenco materiali f) Progetto di marcatura g) Certificato di prodotto h) Dichiarazione di conformità</p>	
<p>Questo attestato è valido per gli esemplari identici ai modelli indicati. Eventuali varianti da apportare a tali modelli devono essere dichiarate a ICIM (Organismo Notificato) che comunicherà le misure da prendere.</p>	
NOTE: Estensione del certificato n. 473, in data 2.4.2004	

DATA	ICIM S.p.A. Amministratore Delegato Ing. Tullio Badino
28/7/2004	



DNV - MODULO UNO

ATTESTATO DI ESAME CE DEL TIPO

[1] Apparecchiature o Sistemi di Protezione destinati ad essere utilizzati in atmosfere potenzialmente esplosive
Direttiva 94/9/CE

[2] Numero dell'Attestato di Esame CE del tipo:
DNV-MUNO 08 ATEX 3742

[4] Sistema di protezione:
PANNELLO DI SFOGO DELL'ESPLOSIONE

[5] Contraente:
DONADON SDD S.r.l.

[6] Indirizzo:
Via Franceschelli, n. 7 - 20011 Carbetta - IT

[7] Questo sistema di protezione, e le sue eventuali varianti accettate, sono descritti nell'allegato al presente attestato e nei documenti descrittivi, pure riportati in esso.

[8] DNV-MODULO UNO S.c.a r.l., Organismo Notificato n. 0496 in conformità all'articolo 9 della Direttiva 94/9/CE del Consiglio dell'Unione Europea del 23 marzo 1994, certifica che questi sistemi di protezione sono conformi ai requisiti essenziali di sicurezza e salute per il progetto e la costruzione di sistemi di protezione destinati ad essere utilizzati in atmosfere potenzialmente esplosive, definiti nell'Allegato II della Direttiva.

[9] Gli esenti ed i risultati di prova sono registrati nel rapporto a carattere riservato n. CDM.01.REL.01/AX.06_033. La conformità ai Requisiti Essenziali di Sicurezza e Salute è assicurata dalla conformità alle:
EN 1427-1: 2007 ; EN 12463-1:2001 ; EN 14797:2006

[10] Il simbolo "X" posto dopo il numero dell'attestato indica che il sistema di protezione è soggetto a condizioni speciali per un utilizzo sicuro, specificate nell'allegato al presente attestato.

[11] Questo ATTESTATO DI ESAME CE DEL TIPO è relativo soltanto al progetto, all'esame ed alle prove del sistema di protezione, specificate in accordo con la Direttiva 94/9/CE. Ulteriori requisiti di questa Direttiva si applicano al processo di produzione e fornitura dell'apparecchio. Questi requisiti non sono oggetto del presente attestato.

[12] L'apparecchio deve includere almeno i seguenti contrassegni:



Agrate Brianza, 27 Agosto 2008
Per l'Organismo Notificato


 Giuseppe Elia
 Il Coordinatore Tecnico


0496

Dionisio Bucchieri - Responsabile di Area

Questo attestato può essere riprodotto soltanto integralmente e senza apportare alcuna modifica, allegato compreso. Pagina 1 di 4

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DONADON SDD

Rupture discs and Venting panels are the main products of Donadon Safety Discs and Devices Srl (“Donadon SDD”) the absolute specialist with more than 50 years of experience in manufacturing Rupture Discs.

The range of safety devices for protection of equipment from pressure variations manufactured by Donadon SDD includes

- Rupture Discs in Stainless steel, Nickel, Titanium, special alloys, and graphite
- Venting panels for protection of plants with explosion risk
- Rupture indicators also for explosion atmosphere applications

Donadon SDD supply also a wide range of Pressure Relief Valves in order to offer customers an integrated service.



Since January 2008 Donadon SDD 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

Rupture pressure of discs may vary from 10 millibar up to 4000 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 500°C).

Organization and procedures are designed to ensure reliable manufacturing of high quality products in compliance with ISO 9001-2000



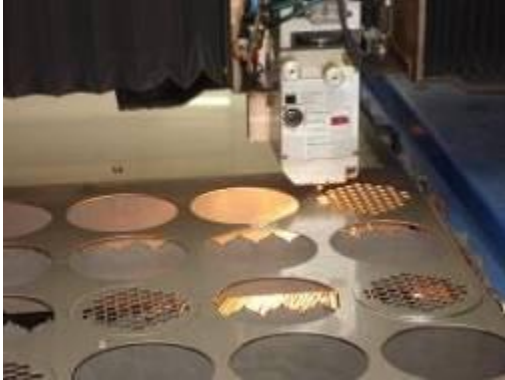
standard. Products are certified according to European Directive 97/23/CE (PED) and European Directive 94/9/CE (ATEX).

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 Donadon SDD Rupture discs

- Custom manufacturing according to client specification – Zero manufacturing range



- High precision, computer controlled 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



Donadon SDD 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

Donadon SDD 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

Donadon SDD 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

Donadon SDD technical service is available to develop the most convenient solutions for non standard requirements. Donadon SDD 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 equipments from high pressure

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

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

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

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.

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. They are normally used at low and medium pressure.

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

Rupture Discs

Material	Maximum temperature °C	Minimum temperature °C
Stainless Steel AISI 304	280°C	-196°C
Stainless Steel AISI 304L	280°C	-196°C
Stainless Steel AISI 316	315°C	-196°C
Stainless Steel AISI 316L	315°C	-196°C
Stainless Steel AISI 321	315°C	-196°C
Nickel 200	400°C	-196°C
Monel 400	427°C	-196°C
Inconel 600	427°C	-196°C
Hastelloy C276	480°C	-196°C
Titanium	300°C	-60°C
Copper	200°C	-10°C
Aluminium	260°C	-10°C

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

Membranes

Material		USE LIMITS	
Typo	Code	T max.	T min.
Polymer	PTFE	260°C	---
"	FEP	204°C	---
"	MYLAR	110°C	---
Stainless Steel	ASTM A 240 316L	315°C	-196°C
Aluminium	ASTM B 209	260°C	-10°C
Copper	ASTM B 569	200°C	-10°C

DONADON SCD Rupture Disc

Donadon SCD is a concave rupture with micro-scored calibrated section. Special feature of SCD is scoring in 6 sectors instead of 4 as usual in all competitors' discs.

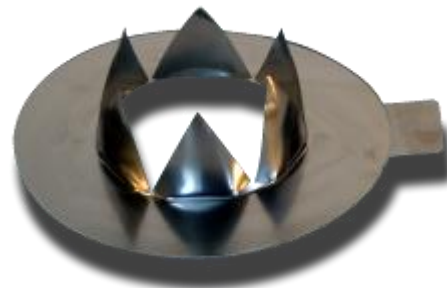


Opening in 6 petals allows a better opening reducing the risk of petal detachment even at high bursting pressure.

It is used with gas and liquids also in cycling and pulsating conditions without reduction of safety margins.

SCD disc reacts to excessive pressure in a few milliseconds without fragmentation.

It is especial



ly suited for protection of pressure relief valves.

SCD disc may operate at 85% of the bursting pressure and has a very good resistance to corrosion due to the thickness of the material employed. Corrosion resistance may be additionally improved by PTFE lining.

Vacuum support is normally not required.

Available in special execution certified Ex II 2GD according to European Directive 94/9/CE (ATEX).

Technical Properties

Model	SCD
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium
Membrane	No
Available dimensions	DN 25 – DN 600
Bursting pressure	2 - 80 bar g (function of material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	up to a 450°C
Operating margin	85 %
Holder	HI o AZ 60 with flat or conical seat; sanitary with flat seat
Fragmentation	No
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Very good
Vacuum support	Available
Rupture indicator	SVT /AT or NAM 03HT or OFI
Linings	Available

DONADON DCD Rupture Disc

Donadon DCD rupture disc is a composite conventional disc 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 disc is particularly suitable to be fitted on equipment and systems.



It reacts to over-pressure in a few thousands of a second with total opening and without fragmentation.

DCD disc is therefore recommended for protection of pressure relief valves.

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

DCD disc may also be used for protecting silos or other

equipment from vacuum.

Available in special execution certified Ex II 2GD according to European Directive 94/9/CE (ATEX).

Technical Properties

Model	DCD
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium Copper
Membrane	PTFE, FEP, Mylar, Stainless Steel, Aluminium, Copper
Available dimensions	DN 15 – DN 900
Bursting pressure	0,01 – 100 bar g (function of material and diameter)
Tolerance	From +/- 5 % to +/- 20%
Operating temperature	Up to 315°C
Operating margin	80 %
Holder	HI o AZ 60 with flat or conical seat; sanitary with flat seat
Fragmentation	No (membrane only)
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Good – may be protected with a membrane
Vacuum support	Available
Rupture indicator	SVT /AT or NAM 03HT or OFI
Linings	Protection membrane

DONADON SCR Rupture Disc

draft

DONADON Y90 Rupture Disc

The Y90 DONADON rupture disc is a compression (or reverse) disc peripherally scored.

The Y90 represents high technology in the sector: the camber of the convex disc is not modified by the operating pressure except on reaching reverse pressure. Therefore this device works with ratios of up to 90% between operating and rupture pressure and withstands thousands of cycles without jeopardising its reliability.



At the moment of reversion the disc bursts in a few thousands of a second rupturing along the scored line without fragments

Y90 disc has lower sensitivity to variations in temperature than conventional discs and therefore is very

useful in applications with large temperature variations.

It is especially suitable for use with gas and liquids, and for protecting pressure relief valves

The wide choice of materials and the thickness used make the Y90 disc very resistant to corrosion. Greater protection can be obtained with a PTFE lining, which can be applied to the process side of the disc.

Vacuum support is normally not required

Available in special execution certified Ex II 2GD according to European Directive 94/9/CE (ATEX)



Technical Properties

Type	Y90
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium Copper
Membrane	No
Available dimensions	DN 25 – DN 400
Bursting pressure	1,3 - 70 bar g (function of material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	Up to 450°C
Operating margin	90 %
Holder	Y90
Fragmentation	No
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Very good
Vacuum support	Not required
Rupture indicator	SVT /AT or NAM 03HT or OFI
Linings	Yes

DONADON STD Rupture Disc

Donadon STD rupture disc is a conventional concave disc with solid calibrated section.



It is a simple and reliable device used with gas and liquids in cyclic and pulsating conditions

STD discs react to excessive pressure in a few thousands of second.

Supports for vacuum and counter-pressure are available

Technical Properties

Model	STD
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium, Copper
Membrane	No
Available dimensions	DN 15 – DN 900
Bursting pressure	6 - 4000 bar g (depending from material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Exercise temperature	Up to 450°C
Operating margin	70 %
Holder	HI or AZ 60 with flat or conical seat; sanitary with flat seat
Fragmentation	Yes
ATEX	No
Use in conjunction with safety valve	No
Corrosion resistance	Very high
Vacuum support	Available
Rupture indicator	SVT / AT
Linings	Available

DONADON DIF Rupture Disc

Donadon DIF rupture disc is a composite conventional disc 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 disc is particularly suitable to be fitted on

equipment and systems.

It reacts to over-pressure in a few thousands of a second with total opening and without fragmentation.

DIF disc is therefore recommended for protection of pressure relief valves.

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

DIF disc may also be used for protecting silos or other equipment from vacuum.

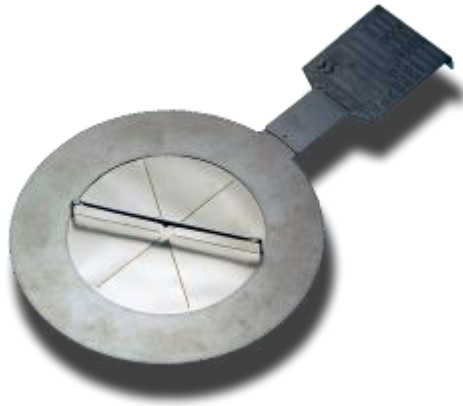
Available in special execution certified Ex II 2GD according to European Directive 94/9/CE (ATEX).

Technical Properties

Model	DIF
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium Copper
Membrane	PTFE, FEP, Mylar, Stainless Steel, Aluminium, Copper
Available dimensions	DN 15 – DN 900
Bursting pressure	0,01 – 5 bar g (function of material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	Up to 315°C
Operating margin	80 %
Holder	Not required (directly mounted between flanges)
Fragmentation	No (membrane only)
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Good – may be protected with a membrane
Vacuum support	Available
Rupture indicator	SVT /AT or NAM 03HT or OFI (with spacer)
Linings	Protection membrane

DONADON LPD Rupture Disc

Donadon LPD rupture disc is a composite conventional disc formed by four parts:



- A slotted, perforated metal part
- A seal membrane (usually in PTFE)
- A protection section
- A calibration ring with blades to

improve membrane opening

Designed to protect processing and storage tanks, atmospheric vessels and silos against implosion or overpressure conditions

It reacts to over-pressure in a few thousands of a second with total opening and without fragmentation.

LPD discs are a simple, reliable, accurate and economical solution for applications requiring

extremely low positive and/or negative pressure protection.

Their primary use is in storage tanks with low design pressures in applications where contamination is unacceptable.

Donadon SDD model LPD discs offer non-fragmenting opening and avoid product contamination.

The disc will attain full relief within 1 second from the start of rupture and allows for instantaneous system relief at ultra low pressures.

LPD discs may be installed directly between flanges avoiding the requirement for holders with blades and can be offered to meet a broad range of non standard specifications and applications.

LPD discs can be provided with:

- Dual protection (vacuum / pressure)
- Vacuum / counter-pressure support
- Burst detector, ATEX approved, giving immediate indication of burst occurrence

Technical Properties

Model	LPD
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Titanium, Copper
Membrane	PTFE
Available dimensions	DN 50 – DN 900
Bursting pressure	0,01 – 0,5 bar g (function of material and diameter)
Tolerance	from +/- 10 % to +/- 25%
Operating temperature	Up to 260°C
Operating margin	80 %
Holder	Not required (directly mounted between flanges)
Fragmentation	No (membrane only)
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Good
Vacuum support	Available
Rupture indicator	OFI (with spacer)
Linings	Yes

DONADON TCD Rupture Disc

Donadon TCD rupture disc is a composite conventional disc 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 specifically to be mounted on rail or road tankers transporting liquids or gases in static or pulsating conditions. It reacts to over-pressure in a few thousands of a second with total opening and without fragmentation.

TCD disc is therefore recommended for

protection of pressure relief valves.

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

Available in special execution certified Ex II 2GD according to European Directive 94/9/CE (ATEX).

Technical Properties

Model	TCD
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Copper
Membrane	PTFE, FEP, Mylar, Stainless Steel, Aluminium, Copper
Available dimensions	DN 50 – DN 65 – DN 80
Bursting pressure	3,75 and 4,84 bar g at 20°C
Tolerance	From +/- 5 % to +/- 20%
Operating temperature	Up to 450°C
Operating margin	80 %
Holder	HI o AZ 60 with flat or conical seat; sanitary with flat seat
Fragmentation	No (membrane only)
ATEX	Yes
Use in conjunction with safety valve	Yes
Corrosion resistance	Good – may be protected with a membrane
Vacuum support	Available
Rupture indicator	SVT /AT or NAM 03HT or OFI (with spacer)
Linings	Protection membrane

DONADON SU Rupture Disc

SU/M



SU/T



Donadon SU rupture disc is a sealed unit formed by a conventional disc with solid calibrated section mounted in a threaded connector.

This unit has been designed in order to make easy and reliable mounting small discs in plant environment and to simplify the handling without need of specialized manpower.

The disc may be soldered to a single piece connector or inserted in a two piece threaded holder (sealed and tested in our factory)

SU disc is suitable for use with gases and liquids in static or pulsating conditions.

It reacts to over-pressure in a few thousands of a second and is recommended for protection of plants, equipments and containers

Technical Properties

Model	SU/T and SU/M
Materials	Stainless Steel, Aluminium, Nickel, Hastelloy, Inconel, Monel, Copper
Membrane	No
Available dimensions	DN 3 – DN 40
Bursting pressure	20 - 4000 bar g (function of material and diameter)
Tolerance	from +/- 5 % to +/- 20%
Operating temperature	Up to 450°C
Operating margin	80 %
Holder	Included
Fragmentation	Yes
ATEX	No
Use in conjunction with safety valve	No
Corrosion resistance	Very good
Vacuum support	No
Rupture indicator	No
Linings	Yes

ATEX certified rupture discs



Donadon SDD manufactures rupture discs in special executions according to European Directive 94/9/EC (ATEX), certified Ex II 2 GD. Therefore these discs may be used in locations where the presence of explosive atmospheres is probable (locations classified as category 1, 21, 2 and 22).

Rupture discs available in ATEX certified execution are the following models: SCD, DCD, DIF, TCD and Y90.

For these applications we recommend the rupture indicators supplied by Donadon SDD and certified according to European Directive 94/9/EC (ATEX).

Linings and Special executions

Donadon SDD offers also a wide range of special executions and linings:

- Fluoropolymer coating of discs and holders
- Holders in reinforced PTFE
- Discs and holders in special materials
- Special executions tangent to external diameter of flanges
- Pre-assembled disc + holder sets
- Tested and certified tightness

In addition Donadon SDD technical service is fully available to customers in order to develop personalized solutions to special requirements



DONADON GM Rupture Disc



The DONADON GM of monoblock graphite rupture disc is versatile and suitable for numerous applications. It may be directly inserted between flanges

Graphite discs are very resistant to aggressive fluids, even at high temperature.

Bursting pressure has low sensitivity to temperature variations. GM disc is made



of high purity graphite impregnated with phenolic resins in order to make the product non porous

Opening is total but with fragmentation.

Vacuum support is required for rupture pressures below 1.7 barg. At higher calibrations the disc is self-supporting.

Technical Properties

Model	GM
Materials	Graphite
Membrane	No
Available dimensions	DN 15 – DN 600
Bursting pressure	0,07 – 10 bar g (in function of diameter)
Tolerance	from +/- 5 % to +/- 10%
Operating temperature	Up to 370°C
Operating margin	80 %
Holder	Included
Fragmentation	Yes
ATEX	No
Use in conjunction with safety valve	No
Corrosion resistance	Good
Vacuum support	Available
Rupture indicator	SVT / AT (with spacer)
Linings	Yes

DONADON GR Rupture Disc

The DONADON replaceable “GR” graphite rupture disc is mounted on a graphite or metal holder.



This disc is versatile and suitable for numerous applications.

It is available in metric measurements and in inches and can be inserted between relative flanges.

Graphite discs are very resistant to aggressive fluids, even at high temperature.

Bursting pressure has low sensitivity to temperature variations.

GR disc is made of high purity graphite impregnated with phenolic resins in order to make the product non porous

Opening is total but with fragmentation.

Vacuum support is required for rupture

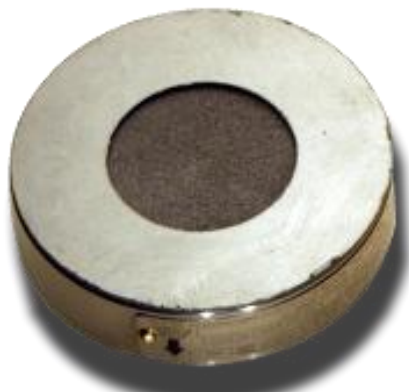
pressures below 1.7 barg. At higher calibrations the disc is self-supporting.

Technical Properties

Model	GR
Materials	Graphite
Membrane	No
Available dimensions	DN 25 – DN 200
Bursting pressure	0,07 – 10 bar g (in function of diameter)
Tolerance	from +/- 5 % to +/- 10%
Operating temperature	Up to 150°C
Operating margin	80 %
Holder	GR
Fragmentation	Yes
ATEX	No
Use in conjunction with safety valve	No
Corrosion resistance	Good
Vacuum support	Available
Rupture indicator	SVT / AT
Linings	Yes

DONADON GA Rupture Disc

The DONADON replaceable GA graphite rupture disc is mounted on a Stainless steel (or other metal) ring and may be directly inserted between flanges.



This disc is very versatile because has both the robustness of a metal holder and the performance of a graphite disc (very resistant to aggressive fluids, even at high temperature, low sensitivity of bursting pressure to temperature variations)

It is available in metric measurements and in inches
GA disc is made of high purity graphite impregnated with phenolic resins in order to make the product non porous

Opening is total but with fragmentation.

Vacuum support is required for rupture pressures below 1.7 barg. At higher calibrations the disc is self-supporting.



Technical Properties

Model	GA
Materials	Graphite
Membrane	No
Dimensions	DN 25 – DN 300
Rupture pressure	0,07 – 13 bar g (function of diameter)
Tolerance	from +/- 5 % to +/- 10%
Operating temperature	Up to 300 °C
Operating ratio	80 %
Holder	Included
Fragmentation	Yes
ATEX	No
Downstream a PSV	No
Corrosion resistance	Good
Vacuum support	Available
Rupture indicator	SVT / AT
Linings	Yes

HOLDERS

Donadon holders are designed in order to ensure maximum performance and reliability to Donadon rupture discs



Models designed to be mounted between flanges (HI, Y90 e GR) have an internal diameter sized in order to allow full opening of the disc and total availability of the minimal discharge area; external diameter is tangent to the bolts in order to centre easily the holder between the flanges
Y90 holder has also the thickness sized in order to allow full opening of the disc reaching the vertical position

Standard materials are:

Carbon steel, Stainless

steel, Nickel, Monel, Inconel, Hastelloy. Special executions are available with PTFE lining or glass fibre reinforced PTFE.

All holders ha two stainless steel assembly plates

AZ 60 holder is designed to be fitted directly on the piping; it is composed by two flanged parts, complete with steel bolts and may

have various kinds of couplings can be fitted to its end:

- male and female threaded NPT or Gas
- butt welding
- socket welding



Sanitary holder (Clamp) in stainless steel with high

accuracy internal finishing ($<0,6 Ra$) allows minimum particle contamination, low turbulence and low pressure loss. It is recommended for food, milk, cosmetics and pharmaceutical industries.



GR holder in graphite is designed for the GR replaceable graphite discs

TECHNICAL PROPERTIES

Type	Disc	DN	PN	Seat	Accessories
HI	STD, SCD, DCD, TCD	15 - 900	6 - 160	Flat or conical	Nipples, T connectors, excess flow valve
AZ60	STD, SCD, DCD, Y90	6 - 100	Up to 400 bar	Flat or conical	Nipples, T connectors, excess flow valve
Y90	Y90	25 - 200	6 - 100	Flat	Nipples, T connectors, excess flow valve
GR	GR	25 - 200	6 - 10	Flat	-
Sanitary	STD, SCD, DCD		6	Flat	-

Vacuum and Counter-pressure Supports



1

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3



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When the rupture disc may be subjected to conditions of vacuum or counter-pressure a support of adequate design and resistance may be required

Selection of support type is guided by disc type and operation conditions

Vacuum / counter-pressure supports supplied by Donadon SDD are of 5 types

1. Flat grid
2. Convex grid
3. Finned
4. Slotted in sectors
5. Slotted along the circumference

Technical Properties

Type	Grid	Finned	Slotted
Materials	Stainless steel, Nickel, Hastelloy, Inconel, Monel.		
Dimensions	15 - 900	32 - 400	15 - 800
Opening	Reduced	Reduced	Total

PS/R e PS/C type explosion vent panels

Donadon PS/R (rectangular) and PS/C (circular) explosion vent panels are composite tension panels composed of three parts:



- A slotted, perforated metal part
- A seal membrane (usually in PTFE)
- A protection section

In addition vacuum support is available

Suitable for use with gas in static, pulsating and cyclic conditions. PS explosion vent panels are available in square, rectangular or circular models. They usually have very low vent or vacuum

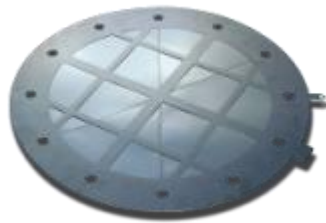
pressures.

PS/R and PS/C explosion vent panels are mainly fitted to dust manifolds, dryers, troughs, silos, separators, mixers, boosters, air filters and sieves.

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

Explosion vent panels may be supplied in ATEX execution,

certified Ex II 2 GD. Some models may also be certified Ex II GD and may therefore be installed in locations with presence of explosive atmospheres (locations classified as category 0,20, 1, 21, 2 and 22) according to European Directive 94/9/EC (ATEX).



Explosion vent panels available in ATEX certified execution are both the rectangular (PS/Ex/R) and circular (PS/Ex/C) models. For these applications we recommend the intrinsic safety alarm system IRP certified Ex ia IIC T6 according to European Directive 94/9/EC (ATEX).

Technical Properties

Model	PS/R e PS/C
Materials	Stainless steel, Aluminium, Nickel, Hastelloy, Inconel, Monel
Membrane	PTFE, FEP, Mylar, Stainless steel, Aluminium
Dimensions	PS/R: Min: 300x300 - Max: 1120x1750 PS/C: Min: 250 - Max: 1100
Rupture pressure	0,05 – 0,5 bar g
Tolerance	from +/- 10 % to +/- 20% function of rupture pressure
Operating temperature	Up to 315°C
operating margin	50 - 70 %
Fragmentation	No (membrane only)
ATEX	Yes
Corrosion resistance	Good – may be protected with a membrane
Vacuum support	Available
Alarm system	IRP
Linings	Protection membrane

Standard sizes and performances

Rectangular explosion vent panels PS/R

Nominal dimensions		Vent area	Vent area with vacuum support	Rupture pressure	
mm	mm	m ²	m ²	Minimum Bar g	Maximum Bar g
300	300	0,09	0,07	0,05	0,2
300	460	0,14	0,11	0,05	0,2
300	610	0,18	0,15	0,05	0,2
460	460	0,21	0,17	0,05	0,2
365	645	0,24	0,19	0,05	0,2
310	780	0,24	0,19	0,05	0,2
460	610	0,28	0,22	0,05	0,2
490	590	0,29	0,23	0,05	0,2
450	710	0,32	0,26	0,05	0,2
645	645	0,42	0,33	0,05	0,2
710	710	0,50	0,40	0,05	0,2
586	920	0,54	0,43	0,05	0,2
675	875	0,59	0,47	0,05	0,2
1000	710	0,71	0,57	0,05	0,2
890	928	0,83	0,66	0,05	0,2
920	920	0,85	0,68	0,05	0,2
920	1000	0,92	0,74	0,05	0,2
1000	1000	1,00	0,80	0,05	0,2
1120	1120	1,25	1,00	0,05	0,2
1120	1750	1,96	1,57	0,05	0,2

Circular explosion vent panels PS/C

Nominal dimensions		Vent area	Vent area with vacuum support	Rupture pressure	
inches	mm	m ²	m ²	Minimum Bar g	Maximum Bar g
10	250	0,05	0,04	0,05	0,2
12	300	0,07	0,06	0,05	0,2
16	400	0,13	0,10	0,05	0,2
20	500	0,20	0,16	0,05	0,2
24	600	0,28	0,23	0,05	0,2
28	700	0,38	0,31	0,05	0,2
32	800	0,50	0,40	0,05	0,2
36	900	0,64	0,51	0,05	0,2

(Other dimensions and rupture pressures on request)

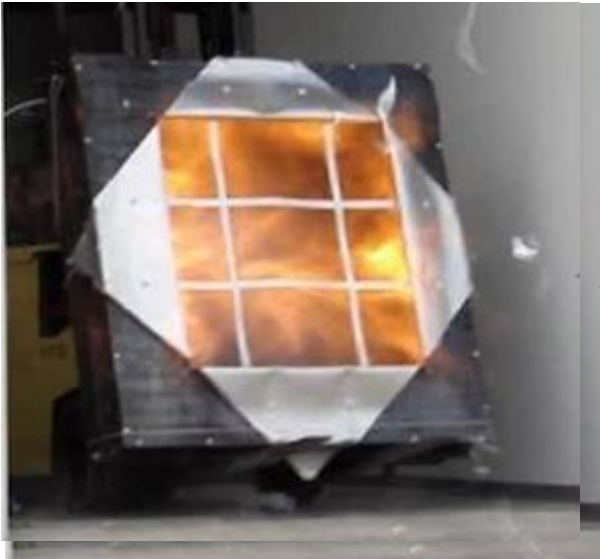
ATEX certified explosion vent panels



Donadon SDD manufactures venting panels in special executions according to European Directive 94/9/EC (ATEX), certified Ex II 2 GD and Ex II GD. The latter may be used in locations with presence of explosive atmospheres (locations classified as category 0,20, 1, 21, 2 and 22) according to European Directive 94/9/EC (ATEX).

Both rectangular venting panels (PS/Ex/R) and circular venting panels (PS/Ex/C) are available in ATEX certified execution

For these applications we recommend the intrinsic safety alarm system IRP certified Eex ia IIC T6 according to European Directive 94/9/EC (ATEX).



Donadon SVT/AT rupture indicator



The SVT/AT alarm system is a simple and efficient instrument for recording the bursting of a rupture disc.

The detector is installed between the container on the discharge side and the flange down stream from the safety device replacing the traditional seal.

The cables of the alarm system must be connected to the plant's safety system with an intrinsically safe barrier adequate to the sensor (max tension 24 AC/DC and max current 150 mA) and the hazardous area classification.

When the disc bursts the silver circuit of the SVT/AT alarm system is destroyed 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 SVT/AT alarm system is classified as “basic electrical material” and is certified according to European Directive 94/9/EC (ATEX).

It may be installed in zone 0; 20 and 1; 21 and 2; 22 if connected to a barrier certified Eex ia or in zone 1; 21 and 2; 22 if connected to a barrier certified Eex ib

Technical Properties

Nominal diameter	DN 25 - 600	
Minimum pressure:	DN 25-40-50	0,3 bar
	DN 80	0,2 bar
	DN 100	0,1 bar
	from DN 150 to DN 600	0,07 bar
Thickness	5 mm	
Temperature	From -40 to +200°C	
Seals	Asbestos free	
Membrane	Polyimide	
Printed circuit	Silver	
Resistance Max	20 OHM	
Voltage Max	24 V AC/DC	
Intensity Max	150 mA	
Cable length	2 meters, bipolar, shielded	

Donadon IRP Rupture Indicator

The IRP alarm system is a simple and efficient instrument for recording the bursting of an explosion venting panel



The detector is installed during manufacturing of the explosion venting panel and has a 2m shielded cable

The cables of the alarm system must be connected to the plant's safety system with an intrinsically safe barrier adequate to the sensor (max tension 24 AC/DC and max current 150 mA) and the hazardous area classification.

When the panel bursts the silver circuit of the SVT/AT alarm system is destroyed and as a result of this the flow of current is cut off, allowing the connected equipment to signal that the safety device has opened.

The IRP alarm system is classified as "basic electrical material" and is certified according to European Directive 94/9/EC (ATEX).

It may be installed in zone 0; 20 and 1; 21 and 2; 22 if connected to a barrier certified Eex ia or in zone 1; 21 and 2; 22 if connected to a barrier certified Eex ib

L'installation must be according to EN 60079-14 Standard

Technical Properties

Temperature	From -40°C up to +200°C
Membrane	Polyimide
Circuit	Copper
Resistance Max	20 Ohm
Voltage Max	24 V DC/AC
Intensity Max	50 mA
Cable length	2 meters bipolar shielded

Donadon NAM 03/HT Magnetic Alarm System



Donadon NAM 03/HT alarm system is recommended for installation with Donadon SDD rupture discs.

NAM 03/HT Alarm System made of:

- A proximity type sensor installed in the disc holder downstream the disc in order to detect the bursting of the disc.

- a target with a permanent magnet supplied with the disc

When the disc bursts the magnet is displaced and the sensor activated.

Replacement discs are supplied with a new target.

NAM 03/HT is an intrinsic safety device certified ATEX II 2GD Eex m IIC T4/T6 and ATEX II 1GD Eex ia II T3/T6 and therefore may be used in locations where potentially explosive atmospheres with gas, steam or mist are continually present (locations classified zone 0; 20 and 1; 21 and 2; 22 by European Directive 94/9/EC (ATEX)). Barrier type must be adequate to the zone:

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

NAM 03/HT is normally supplied with 2 meters of bipolar cable C2 class protection grade IP67.

The cables of the alarm system must be connected to the plant's safety system through an intrinsic safety barrier adequate to the location.

Technical Properties

Model	NAM 03/HT
Fit for discs of nominal diameter	Minimum DN 25
Minimum / Maximum temperature	Min -20°C / Max +200 °C
Materials in contact with process fluid	Same as disc and disc holder
Max. switching power	10W – 12 VA
Max. switching voltage	60 VDC
Max. switching current	0,4 A
Encapsulating resin	silicone
Electrical cable	2 meters, bipolar
Protection degree	IP 67

Donadon NAM 05 Inductive Alarm System

Donadon NAM 05 alarm system is recommended for installation on Rupture discs and explosion vent panels.



NAM 05 Alarm System is made of:

- an inductive proximity sensor installed downstream the disc or panel

- a target supplied with the disc or panel

When the disc or panel opens the target is moved and the sensor sends a signal to the plant safety system.

Spare discs or panels are supplied with a new actuator

NAM 05 is an intrinsic safety device certified ATEX II 1G Eex ia IIC T6 and ATEX II 1D Ex

iaD 20 T 108 °C therefore may be used in locations where potentially explosive atmospheres are probable (locations classified zone 0, 20, 1, 21, 2, 22 by European Directive 94/9/CE (ATEX)).

Barrier must be adequate to the zone:

- barriera Eex ia > zone 0; 20 ; 1; 21; 2; 22
- barriera Eex ib > zone 1; 21; 2; 22

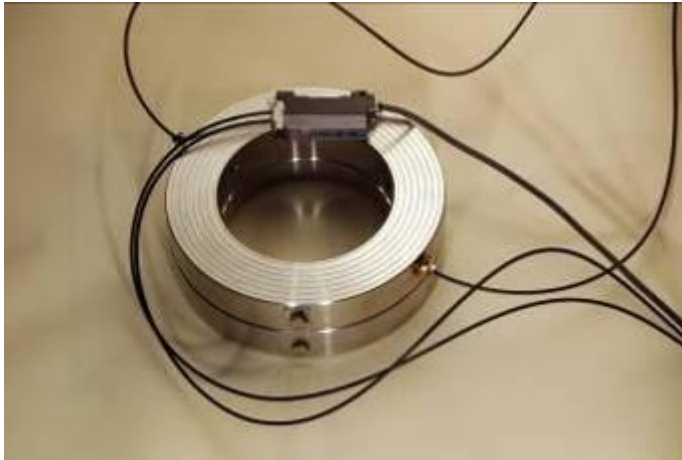
NAM 05 is normally supplied with 2m silicon cable that must be connected to the plant's safety system through an intrinsic safety barrier.

Technical Properties

Model	NAM 05
Fit for panels of nominal size	Minimum 200 mm
Maximum pressure on downstream side	2 bar g
Minimum / Maximum temperature	Min. - 25°C / Max +100 °C
Material in contact with fluid (downstream side)	PPS; Ryton R4
Supply voltage	8 VDC
Current consumption	1 – 3 mA
Intrinsic capacitance	36 nF
Intrinsic inductance	43 µH
Cable cross section	0,34 mm
Protection degree	IP 68
Ignition protection	Intrinsic safety

Donadon OFI 04 e OFI 07 Rupture indicators

Optical rupture indicators Donadon OFI are very simple and reliable instruments for detecting bursting of discs



The terminals of the optical fibres are installed in the disc holder and are connected to a signal amplifier

Light transmission 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 must be installed inside an Excd certified box and fed with DC at 12-24 V through an Eex ia barrier.

There are no electrical or moving parts in contact with the equipment to be controlled

and the OFI indicators are not an ignition source

OFI 04 and OFI 07 are not damaged by the bursting of the disc and therefore do not need to be replaced when replacing the discs.

OFI 04 and OFI 07 indicate the bursting of the disc for eventual maintenance / substitution; in case a safety device is required in order to activate other equipment, please contact our Technical Service

Technical Properties

Type	OFI 04	OFI 07
Temperature	From -55°C to +115°C	From -40°C to +300°C
Optical fibre	Plastic	Glass with steel protection
Minimum bending radius	R25	R23
Supply voltage	12 – 24 VDC	12 – 24 VDC
Current consumption	35 mA max	35 mA max
Feedback time	0,5 msec	0,5 msec
Amplifier box	ABS resin	ABS resin

Pressure Relief Valves

Safety Valves		Type			Lift		Material					Rating							Connection		Bonnet		Certification					
Model	DN	Spring loaded	Lever and Weight	PFA Lining	Progressive	Full	Cast Iron	Carbon Steel	Alloy Steel	Stainless Steel	Chrome Steel	PN 16	PN 25	PN 40	PN 63	PN 100	PN 160	ANSI 150	ANSI 300	ANSI 600	ANSI 900	Threaded	Flanged	Open	Closed	P.E.D.	RIINA	ATEX
131	15 - 15	X			X		X	X		X		X	X	X				X	X				X		X	X	X	
132	15 - 15	X			X		X	X		X		X	X	X				X	X				X	X	X	X	X	
139	1/2" -	X			X					X	X										X			X	X	X	X	
241	20 - 25	X				X	X	X		X		X	X	X				X	X				X		X	X	X	X
241 T	20 - 25	X		X		X	X	X		X		X	X	X				X	X				X		X	X	X	X
242	20 - 25	X				X	X	X		X		X	X	X				X	X				X	X	X	X	X	X
249	3/4" -	X				X				X	X										X				X	X	X	
251	25 - 10	X				X		X	X			X	X	X	X	X	X	X	X	X	X		X		X	X	X	
252	25 - 10	X				X		X	X			X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	
241F	1" - 2"	X				X	X	X		X												X			X	X		
242F	1" - 2"	X				X	X	X		X												X		X		X		
261	25 - 10	X				X	X	X				X	X	X	X	X	X	X	X	X	X		X		X	X	X	X
262	25 - 10	X				X		X				X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	
241P	25 - 150	X				X	X	X		X		X	X					X	X				X					

Note: models 241, 242, 241F e 242F also available with full nozzle

Pressure Safety Valve + Rupture Disc

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

Possible combinations are:

Disc and PSV in **parallel**: the disc is a second safety device in order to increase equipment safety (usually the rupture pressure of the disc is slightly above the setting of the valve). Typical application: liquefied gas tanks

Disc **downstream** a PSV in order to protect the PSV from corrosive chemicals present in the vent duct

Disc **upstream** a PSV: this solution allows combining the positive aspects of both devices: tightness of the disc and re-closure of the valve. In addition the discs protects the valve from corrosive or scaling process fluids, reducing the maintenance required by the more expensive and sensitive device. Main advantages are:

- ★ Protection of the valve from aggressive or scaling fluids
- ★ Avoid leakage due to valve scaling or corrosion (very important for dangerous fluids)
- ★ Reduce maintenance (cleaning, calibration)
- ★ Reduce the cost of the valve by using less expensive materials
- ★ Test the correct performance of the valve without plant shut-down and valve dismounting

The rupture pressure of the discs is the same of the setting of the valve; build up of pressure in the space between the disc and the valve must be monitored and avoided